Sulitest.org

TEACHING THE CHANGE: Equipping Educators for Sustainability

2025 REPORT

Produced by the Sulitest movement,
a tangible implementation of the HESI &
a contributor to the review of the 2030 Agenda

HIGH-LEVEL POLITICAL FORUM
ON SUSTAINABLE DEVELOPMENT

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Advancing Sustainability in Higher Education: Sulitest's Contribution and Impact

In many parts of the world, the past year has been marked by a series of worrying setbacks on ecological, social, and geopolitical fronts—far from the ideals of justice, peace, and planetary protection we had hoped for (and that the SDGs promised).

The decisions that brought us here were made—over and over again—by "educated" individuals. If we are to change course, then **higher education must take responsibility for ensuring that tomorrow's leaders are better prepared—cognitively, emotionally, and ethically—to make informed, just, and sustainable decisions.** Our goal is to ensure that everyone, regardless of their profession, is **sustainability literate**—meaning they possess the knowledge, skills, and mindset needed to make fully conscious decisions.

It's clear that the higher education sector has made progress: initiatives are multiplying. Yet very **few institutions** have undertaken a complete overhaul of their curricula, **embedding sustainability across the entire student journey**—beyond just a few isolated courses or lectures. Even rarer are those institutions that **reliably assess** their students' level of understanding of sustainability as they enter the workforce. Without systematic evaluation and rigorous tracking, progress and scaling up remain impossible.

Two years ago, we launched the first certificate assessing sustainability knowledge—**TASK™**—*The Assessment of Sustainability Knowledge*. Today, over 80 higher education institutions worldwide have adopted TASK™, and more than 50,000 assessments have been completed—generating **a wealth of data on student sustainability knowledge that is robust, reliable and comparable**.

Thanks to this, these 80 institutions are now beginning to:

- **Assess** their graduates' systemic understanding of sustainability,
- **Adapt** their teaching approach based on entry-level proficiency scores,
- **Measure the impact** of initiatives implemented throughout the academic journey.

Of course, measuring knowledge alone is not enough. But in an era when science is contested, education is questioned, and Artificial Intelligence challenges how we produce, acquire and share information, **it is crucial that everyone share a common language of sustainability**. Such a foundation enables **productive debates, critical reflection, co-creation, and a systemic understanding** of the consequences of our decisions.

As Einstein said, "If I had an hour to solve a problem on which my life depended, I would spend 55 minutes understanding it and 5 minutes solving it." We must ensure current and future decision-makers grasp the full complexity of sustainability and ask the right questions first.

We are humble enough to know we, as Sulitest, are just one piece of the puzzle—yet proud to have contributed an important but missing piece with TASK™, and helping institutions equip students to navigate the complexity of today's challenges for a sustainable future

Thank you all for your trust and support.

Aurélien Decamps

Co-founder of the Sulitest Movement

Jean-Christophe Carteron

Co-founder of the Sulitest Movement

Sulitest, a signature initiative of HESI

The Higher Education Sustainability Initiative (HESI) is an open partnership among several United Nations entities* and the higher education community which was launched in the lead-up to the United Nations Conference on Sustainable Development in Rio. HESI accounted for more than one-third of all voluntary commitments launched at Rio+20 and each year in the margins of the HLPF, a global HESI event is organized to showcase how the 2030 Agenda for Sustainable Development is progressing.

Through its strong association with the United Nations, HESI aims to provide higher education with an interface between higher education, science, and policy making by raising the profile of higher education's sector in supporting sustainable development, convening multi-stakeholder discussions and action, and sharing good practice.

Higher Education Institutions (HEIs) joining HESI commit to:

1. Teach sustainable development across all disciplines of study;

2. Encourage research and dissemination of sustainable development knowledge;

3. Create green campuses and support local sustainability efforts; and

4. Engage and share information with international networks.

HEIs can register at: https://sdgs.un.org/HESI

Recognized as one of the first 17 featured initiatives of the United Nations Partnerships for Sustainable Development Goals, Sulitest has, since its launch, been considered a flagship project of HESI. Today, Sulitest co-chairs HESI, alongside UNDESA, UNU and UNESCO.

**United Nations Department of Economic and Social Affairs, UNESCO, UN Environment Programme, UN Global Compact's Principles for Responsible Management Education initiative, UN University, UN-HABITAT, UNCTAD, UNITAR, UN Office for Partnerships, and UN Academic Impact.*

HESI Higher Education Sustainability Initiative

Introduction to the Sulitest movement

The mission of higher education

With its 17 Sustainable Development Goals (SDGs) and 169 targets, the 2030 Agenda provides a coherent framework and roadmap to coordinate stakeholder initiatives and to accelerate the transition towards a sustainable future. It is a "plan of action for people, planet and prosperity," leaving no one behind.

To realise this agenda, it is fundamental that **all individuals—irrespective of discipline, professional, or geography—share the understanding of the challenges we face, and most importantly, how to address them**. Under SDG-4, Goal 4.7 states that by 2030 "all learners (should) 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."

Here lies **the mission of higher education**. On a day-to-day basis, and like any organization, HEIs have an immediate impact on the environment and local community. But as providers of education, they also—and above all—**have a societal impact through the knowledge they create and transmit, the skills they equip students with, the mindsets they nurture, and the behaviors and actions they encourage.**

Times Higher Education

"I believe that universities are the world's greatest hope for solving the world's grand challenges – through their knowledge creation and inventions, of course, but vitally, through their role in nurturing the next generation of sustainable citizens. Universities will not just provide graduates with the specific labour market 'green skills' required for a net-zero future, but will also nurture the attitudes and mindsets across the whole graduate population that the world will need to take on the existential threats we all face. I applaud all efforts to support universities in ensuring they are sending their graduates out into the world as true sustainability leaders."

– Phil Baty, Chief Global Affairs Officer, Times Higher Education

The role of Sulitest

The Sulitest vision is a world where everyone understands sustainability, develops a mindset of sustainability, and becomes deeply committed to building a sustainable future. Born in the higher education space, and an advocate for the mission of Higher Education aforementioned, Sulitest enables institutions to measure and improve sustainability literacy, through various tools and insightful data to drive such transformational change, and by redefining the ethos and outcomes of Higher Education for a sustainable future.

The education system exists within a complex web of interests, incentives, barriers to change and inequalities, which itself is embedded in a context of environmental collapse and social injustices. To break this cycle, how, then, can HEIs systematically improve sustainability literacy? How can they monitor, measure, and demonstrate their impact vis-à-vis promoting sustainability education? How can institutions be recognized for this positive impact? Answering these questions is the "raison d'être" of the Sulitest movement.

For more than a decade, Sulitest has developed and provided easy access to three online tools designed to raise awareness about sustainability, namely the ***Awareness Test***; an engaging and interactive ***Quiz***, and the reverse pedagogy platform called ***Looping*** (more on page 12). **Over 350,000 people worldwide have used these tools over the past decade**—a notable contribution to the achievement of SDG Goal 4.7.

"Sulitest is an innovative pedagogical tool that can be deployed in various ways to advance educational objectives in sustainability and global responsibility. Sulitest has proved its relevance in promoting action toward addressing urgent global challenges and fostering transformation in sustainability education and beyond."

– Eric Cornuel, President at EFMD

However, it was clear that HEIs needed a more robust assessment tool to build, monitor, and evaluate actual sustainability learning. Therefore, in March of 2023, Sulitest launched TASK™ – *The Assessment of Sustainability Knowledge,* the first online, psychometric assessment and certification of sustainability knowledge. **Today, TASK™ is used by HEIs in pre- and post-assessment, generating relevant and reliable data for adapting, monitoring, and improving the dissemination of sustainability as a common language.** In just over two years since its launch, **over 50,000 TASK™ assessments have been done**, generating a wealth of data and revealing interesting trends that are further discussed in this report.

Yet, given the challenge humanity faces, no initiative on its own can promote systemic change and so **Sulitest continues to collaborate and find synergies within the higher education sector and beyond**. Sulitest played a leading role in creating the Higher Education Sustainability Initiative (HESI), and today it co-chairs this initiative—alongside UNDESA, UN University, and IESALC— facilitating multi-stakeholder discussions, actions, and the dissemination of good practice. Sulitest has also collaborated with several UN entities to create SDG-specific modules (a set of multiple-choice questions complemented with learning feedback) designed to raise awareness about specific SDG goals. Moreover, Sulitest continues to facilitate and contribute to global conversations that advance the 2030 Agenda and help transform Higher Education, such as moderating panels in key conferences, publishing articles in leading magazines, and contributing to impactful research projects (more on page 46).

With our four tools and a continuous contribution to the higher education sector, **Sulitest is accelerating the sustainability literacy movement worldwide and contributing to a planetary ambition to empower everyone to understand and engage in the collective building of a sustainable future.**

Defining sustainability knowledge

Sustainability remains a contested concept, encompassing as it does diverse and sometimes conflicting notions and approaches, each reflective of the relative importance assigned to environmental protection, social welfare, or economic growth.

Moreover, while sustainability literacy also requires a discrete mix of appropriate attitudes and competency-based skills and behaviors that enable action, **several studies provide compelling evidence that the sharing of a common base of knowledge is crucial to enabling transformative action and triggering systemic change.**

In developing TASK™–*The Assessment of Sustainability Knowledge*, Sulitest first defined what should be included in the domain of sustainability knowledge. To this end, Sulitest created a "Task Force" of academics and sustainability professionals, and mobilized the "Fellows", an assembly of relevant stakeholders (about 70 representatives from academic and corporate networks, accreditation and rankings bodies, student organizations, NGOs, and public institutions) charged with providing counsel and feedback for ensuring the relevance of the domain of sustainability knowledge as articulated by the Sulitest Task Force.

To develop a unifying framework, the Sulitest Task Force engaged with **recent and relevant science-based literature and existing approaches, methodologies, and frameworks for sustainability.**

Main sources of conceptual inspiration

Having conducted an extensive literature review of the many existing reports, tools, and frameworks on sustainability literacy, Education for Sustainability (EfS), Education for Sustainable Development (ESD), sustainability assessment, and related research on the topic, the Task Force began building the **Sulitest model of sustainability which was informed by four main institutional and academic approaches to sustainability:**

- **The UN 2030 Agenda for Sustainable Development**, which provides a common roadmap embracing the systemic nature of sustainability with 17 Sustainable Development Goals (SDGs) and 169 related targets. Holistic and integrated by design, the 17 SDGs reveal a systemic approach to sustainability via their multiple interlinkages, synergies, co-benefits, trickledown effects, feedback loops, but also potential conflicts, trade-offs, and zero-sum gains.

- **The Planetary Boundaries Framework** by the Stockholm Resilience Centre, which identifies nine planetary boundaries that regulate the stability and

resilience of the Earth system and provide a safe operating space for humanity to thrive. We note however, that as of 2023, humanity had already crossed six of the nine boundaries.

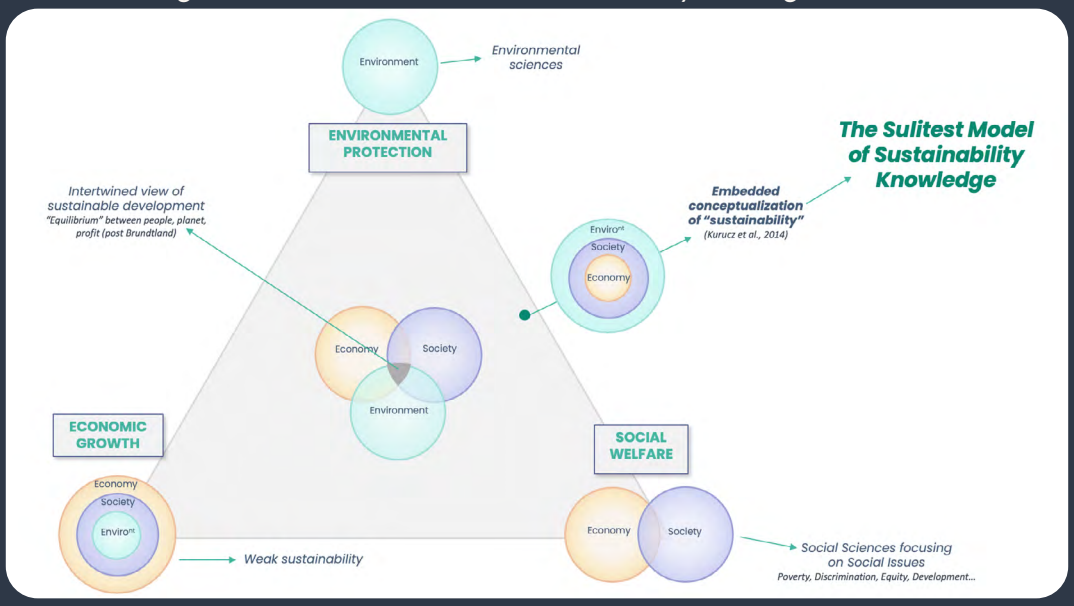
- **Kate Raworth's Model of "Doughnut Economics",** which allows us to "rethink" the economy as a system that ethically should meet human needs (the social foundation) and ecologically must remain subject to the ability of the living planet to provide for such needs (the ecological ceiling).

- **The UN's 2019 Global Sustainable Development Report—The Future Is Now:** Science for Achieving Sustainable Development—provides the conceptual foundation for what Sulitest calls Levers of Opportunity—i.e., the principles, strategies, and techniques available to humans for implementing impactful solutions and effecting transformative societal change. Specifically, the Global Sustainable Development Report (GSDR) identifies four levers of action that support deep transformation for the global goals: Governance; Economy and Finance; Science and Technology; and Individual and Collective Action.

The Sulitest Model of Sustainability Knowledge

After a year-long process and making conscious decisions and intentional choices, the Sulitest model of sustainability is situated at the intersection of environmental and social sciences in what is considered an **"embedded conceptualization" of sustainability** (Figure 1).

Figure 1. Positioning of the Sulitest model of sustainability among common discourses



The Sulitest model provides both a bold vision and a scientifically grounded definition of sustainability knowledge:

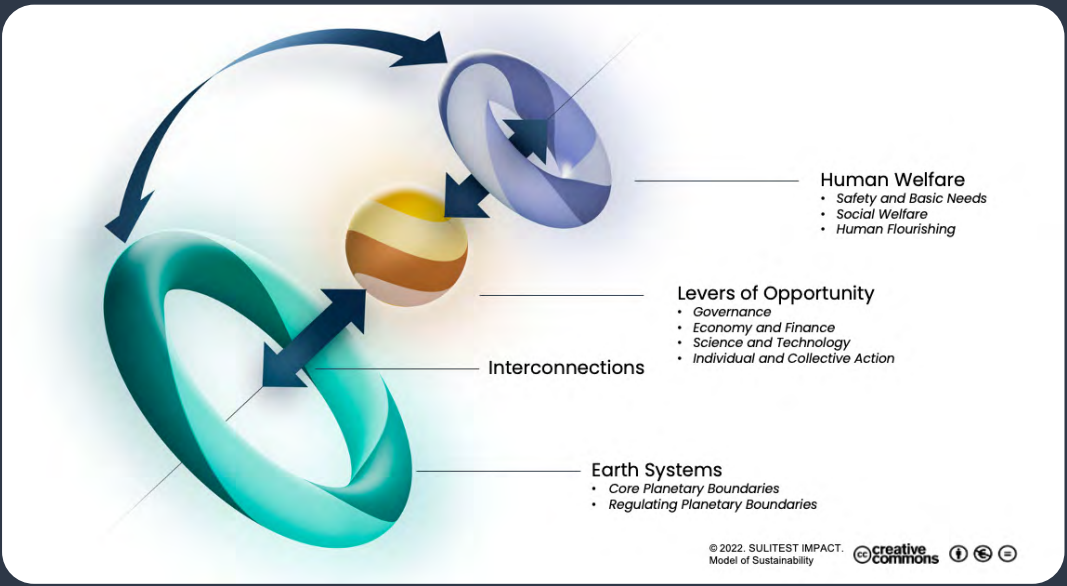
> ***all individuals should know and understand Earth systems, the social foundations of human welfare, and the levers of action and opportunity that inform and influence our ability to build a sustainable future; and identify and appreciate the systemic interlinkages existing between and across them.***

The Sulitest articulation of sustainability knowledge is **a call for radical systemic change in what we need to know and understand to empower ourselves for the building of the sustainable future we all want and need.**

Articulating a Foundational Matrix of Sustainability Knowledge

The Sulitest knowledge model is structured and operationalized via a Foundational Matrix of Sustainability Knowledge organized into **three Frameworks: Earth Systems** (our environmental ceiling), **Human Welfare** (our social foundation), and **Levers of Opportunity** (which make sustainability possible, although, alas, still uncertain). Each Framework (i.e., first-order) is further structured into second order "Domains" and third order "Subjects".

Figure 2. The Sulitest sustainability knowledge model



In the model, Earth Systems is schematically presented as the largest because the other two frameworks—Human Welfare, and Levers of Opportunity—depend upon, and are embedded within it. Without a stable and sustainable Earth system, there can be no meaningful human welfare nor levers of opportunity to seize.

The second framework—Human Welfare—is conceptually embedded in Earth Systems, given that humans are but one species in the community of life, and that the pursuit of such human welfare cannot exceed the capacity of the Earth to provide for the welfare of all life-forms. The framework of Human Welfare builds upon the framework of the Sustainable Development Goals (SDGs).

The "sphere" in yellow in the middle represents the Levers of Opportunity that act upon both Earth Systems and Human Welfare. These levers are the many individual and collective public policies and processes, as well as cognitive capacities, at humanity's disposal for making decisions and taking actions that either advance or, alas, impede progress towards sustainability.

The arrows in the schematic indicate **the many direct and indirect relationships, interconnections, causal relationships, systemic impacts, and**

feedback loops both within and across the three frameworks.

Under each Framework, a list of Subjects—28 in all—was also clearly defined. Moreover, **four discrete types of sustainability knowledge that constitute a holistic understanding of each subject** were identified:

- Descriptive knowledge: What are we talking about? How does this work?
- Contextualized knowledge: Where are we now? How are things changing?
- Causal knowledge: Why is this happening? Who is doing what and why?
- Integrated knowledge: What are the related effects? How is this affecting the larger system?

The resulting Matrix, which can be found in Appendix B (page 65), both expresses Sulitest's systemic vision of sustainability knowledge and guides the creation and structuring of its assessments and learning resources.

Alignment with sustainability competency frameworks

By design, TASK™ was both **inspired by, and built to align with, existing pedagogical approaches to education for sustainability**, such as Education for Sustainable Development Goals: Learning Objectives (UNESCO, 2017), the GreenComp — European Sustainability Competence Framework, (European Union, 2022), the Jean Jouzel report: "Sensibiliser et former aux enjeux de la transition écologique dans l'Enseignement supérieur" (French Ministry of Higher Education, 2022), and the four-dimensional Competencies/Sub-competencies Framework focused on knowledge, skills, character, and meta-learning (Center for Curriculum Redesign, 2019).

To describe and, in some cases, quantify the alignment between the content of TASK™ sustainability knowledge and selected competency frameworks, Sulitest created a series of comparative "Alignment Reference Frameworks" (available at sulitest.org/methodology) for the following competency frameworks:

- Education for Sustainable Development Goals: Learning Objectives. UNESCO, 2017
- GreenComp — European Sustainability Competence Framework. European Union, 2022
- Reference Framework of Sustainable Development and Social Responsibility knowledge and skills ("Référentiel de connaissances et de compétences en DD et RSO"). IAE France, 2023
- Reference Framework of Sustainable Development and Social Responsibility skills ("Référentiel de compétences DD&RS"). CDEFM, 2023
- Common base of cross-disciplinary knowledge and skills on the Anthropocene ("Socle commun de connaissances et de compétences transversales sur l'anthropocène"). Fondation UVED, 2023

Improving sustainability knowledge – The learning tools

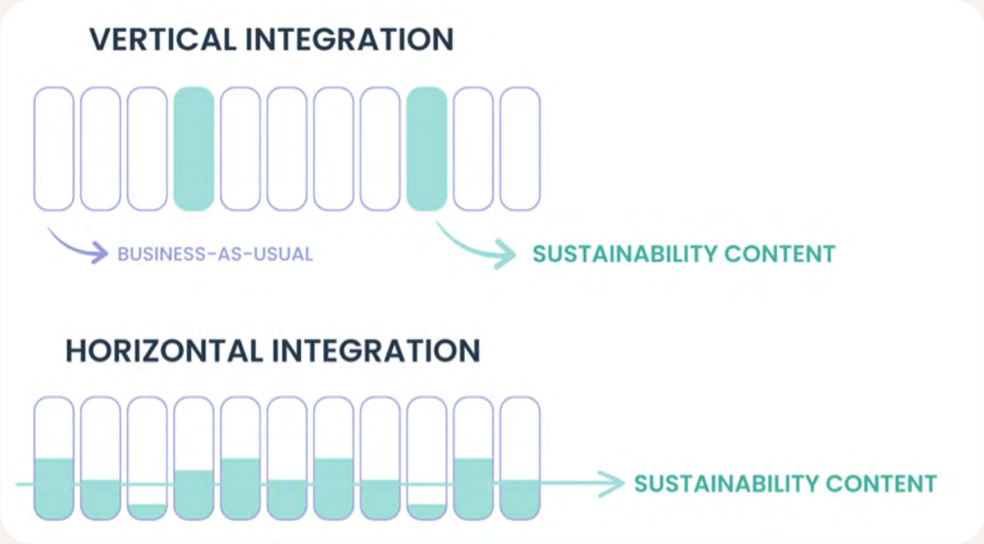
In an era marked by urgent sustainability challenges, **education must evolve and equip future leaders with the tools to address complex, interconnected global issues**. Specific sustainability courses are essential to set solid foundations with science-based knowledge of sustainability. They are necessary anchors, essential prior learnings—but they are not enough. It is critical to go beyond few courses and **fully embed sustainability across curricula**. This is a much more ambitious and exciting undertaking, r**equiring a collegial effort involving instructors from multiple disciplines to integrate sustainability knowledge into the curriculum horizontally—rather than vertically** (Figueiró & Raufflet, 2015). Teaching and learning, therefore, require a shift from traditional, fragmented educational models to a more holistic approach where sustainability content is embedded into all courses or modules, as indicated below.

GLOBALLY RESPONSIBLE LEADERSHIP INITIATIVE

"Sulitest's work to improve sustainability literacy is a crucial part of helping accelerate the planetary movement and aligned with the call held by the Globally Responsible Leadership Initiative (GRLI)."

– John North, Executive Director at GRLI

Figure 3. Horizontal vs. vertical integration of sustainability in the curriculum



Since its creation, Sulitest has been providing organizations with locally and internationally recognized online tools to increase awareness of sustainability and the UN SGDs, that can be used and embedded throughout the student learning journey.

Awareness Test

Launched 11 years ago, **the Awareness Test is designed to improve sustainability awareness through an engaging formative test**. It consists of 28 multiple-choice questions (the "International Core Module"), which can be complemented with optional country-specific, SDG-specific, or even customized modules. Over 375,000 people participated in an Awareness Test session in the last decade.

Moreover, Sulitest launched several projects in partnership with UN entities to create modules related to specific SDGs, including: **SDG Framework**, in partnership with UN DESA; **SDG-7: Affordable and Clean Energy**, in partnership with UN DESA; **SDG-11: Sustainable Cities and Community**, focused on Holistic Waste Management, in partnership with UNEP; **SDG-12: Sustainable Consumption and Production**, focused on Circular Economy, in partnership with UNEP; and **SDG-14: Life Under Water**, focused on Oceans, in partnership with UN DESA and Mercator Ocean International.

Quiz

The Quiz is a dynamic activity featuring 6-10 thought-provoking questions. Players connect on hand-held devices, have one minute to answer each question, and get instant feedback with live and dynamic team scores. This 15-minutes activity is perfect for classrooms, meetings, welcome orientations, or social events, serving as both a fun icebreaker and a tool to raise sustainability awareness.

Looping is a platform where participants create sustainability-linked questions, with the aim of promoting active learning through questioning, synthesizing information, and providing peer feedback.

Intro2TASK BY Sulitest

Intro2TASK is an online pathway designed to help individuals gain a better understanding of the main topics covered by TASK™ and, as a result, of sustainability more generally. It includes resources (mostly short videos or interactive websites) which can be shared directly with TASK™ takers in the structured pathway, or that can be selected by educators for use in their classes.

Navigational Charts

While different tools and resources (like the ones described above) can support the integration of sustainability into current teaching practices, it is undeniable that much of the HEI's curriculum today is anchored to inequitable principles, outdated theories, extractive models, and business-as-usual practices. Therefore, in the endeavor to promote sustainability education, HEIs are more and more being called upon to review and revise course content, the learning objectives they expect graduates to achieve, and the resources and learning supports they use throughout the process.

Recognizing the challenge and complexity of this work, Sulitest developed a considerable bank of **Navigational Charts, easy-to-read synoptic overviews of each subject listed on the TASK™ Foundational Matrix of Sustainability Knowledge**, which include:

- the definitions of key concepts
- the current state regarding planetary boundaries or minimum social foundations
- key international regulatory initiatives and legal regimes
- a breakdown of core subject content into "bite-size" themes and bullet-point lists
- ready-to-adapt learning objectives around all four types of knowledge assessed by TASK™ (i.e., descriptive, contextualized, causal, and integrated); and a bibliography of key resources.

Their primary purpose is to **inform the ongoing process of reviewing and revising course learning objectives and corresponding curricular content in line with the Sulitest TASK™ model and definition of sustainability knowledge.**

In practice, and in a collaborative effort, educators can**"take inventory"** of what is currently being taught in the syllabus, compare that to the content described in each Navigational Chart; and then identify topics that should be included in a future-revised syllabus. By tracking such comparative information, an image progressively emerges of how much program content covers the domain of sustainability knowledge as articulated in the Sulitest matrix of sustainability knowledge. **Such a process helps identify curricular gaps and exposes areas of shared concern and interest, revealing where faculty synergies exist and where comparative advantages might be easily leveraged**. On an individual level, faculty members who want to infuse their own teaching with more sustainability concepts can find in the Navigational Charts a source of inspiration and key reference materials.

Figure 4. Example of curriculum mapping exercise per the TASK™ matrix

TASK™ Subject	Courses covering subject in depth	Courses mentioning subject
Climate Change	> Course name	> Course name
Biosphere Integrity		
Freshwater Use	> Course name	
Land-System Change		> Course name
Ocean Acidification	> Course name	
Novel Entities	> Course name	
Biogeochemical Flows		
Atmospheric Aerosols Loading		
Stratospheric Ozone Depletion		
Nutrition	> Course name	
Health	> Course name	
Access to Water and Sanitation		
Housing and Human Settlements		> Course name
Access to Energy		
Basic Income	> Course name	
Social Equity	> Course name	
Gender Equality	> Course name	
Education and Culture	> Course name	
Peace, Justice, and Political Voice		> Course name
Access to Networks and Social Interaction		
Laws, Policies, and Institutions		> Course name
Infrastructure, Planning, and Natural Resource Management		
Macroeconomic Considerations and Finance	> Course name	
Microeconomic Considerations, Business, and Industry	> Course name	
Sustainability Science		
Technology and Innovation		
Transformative Change		
Cognitive Capacity for Sustainable Development		> Course name

Assessing sustainability knowledge with TASK™

To equip future leaders with the tools to address complex, interconnected global issues, through embedding sustainability across the curriculum, **assessment plays an essential role in teaching and learning** (Levy-Feldman, 2025), **and as a key driver of educational change.**

In early 2023, Sulitest released TASK™—*The Assessment of Sustainability Knowledge*—with the ambition of transforming education by (re) setting the standard of sustainability knowledge which, henceforth, must constitute the very foundation of human decision-making and agency. **TASK™ is an online, 112-item, multiple-choice, psychometric test that measures both the quantity and quality of knowledge about sustainability possessed by test-takers.**

Leading to an internationally **recognized micro-credential**, and upon completion of the test, the TASK™ platform provides individuals with a digital certificate of the scores earned across TASK™'s 28 subjects. Many candidates choose to share their certificate on LinkedIn and other professional platforms, using it to showcase their readiness to infuse sustainability knowledge and values into careers in business, law, engineering, and beyond.

For HEIs offering the assessment, TASK™ provides extensive aggregated and disaggregated data that can be used for measuring, monitoring, and steering both sustainability strategy and education throughout the institution. Ultimately, **TASK™ provides a global diagnostic and benchmark of sustainability knowledge, which can be leveraged for strategy design, research, policymaking, reporting, and more.**

Today, TASK™ is **recognized as a reliable assessment** of sustainability knowledge, and a valuable tool to promote sustainability education in the following **rankings and networks**: QS, Times Higher Education (THE), AASHE, PRME and

"As progress around the world on tackling the impending climate catastrophe has been stalling, role of the great minds of future generations in saving the planet has never become more acute. Sulitest provides a vital lens on how well we are equipping those generations to solve the crisis that they are on course to inherit. It provides important insights for higher education institutions around the world to ensure they adapt their pedagogical approaches to equip students with the right skills and mindset to not only challenge the status quo, but to tackle these challenges well into the future."

– Leigh Kamolins, Director of Analytics & Evaluation at QS Quacquarelli Symonds

"Understanding ecological issues in all their complexity and systemic dimension must become the norm. Initiatives such as Sulitest and TASK™ help to ensure that the subject is taken seriously, through systematic assessment of learners, which is essential if any approach to teaching about transition issues is to be credible."

– Clémence Vorreux, Higher Education Coordinator at The Shift Project

IAE France. Moreover, QS, THE, and AASHE specifically ask in their reporting process whether institutions are assessing sustainability knowledge, and if yes, whether they are using TASK™.

While TASK™ is but one tool in Sulitest's education for sustainability toolbox—focused as it is on core cognitive knowledge—it fills an important gap in the landscape of sustainability assessment by measuring one's level of knowledge revealed through multiple item-responses situated within a holistic, integrated, systemic, and interdisciplinary structure.

Assessment design

CONTENT COVERED

The content of TASK™ is determined by the Sulitest Foundational Matrix of Sustainability Knowledge described previously. While questions vary from one test to the next, each TASK™ assessment covers all 96 items identified in the Matrix, thus guaranteeing its standardization and comparability.

Figure 5. Simplified TASK™ Matrix

TASK™ Subject	Definitions & Key Concepts	Current State & Trends	Major Causes	Systemic Impact
Climate Change				
Biosphere Integrity				
Freshwater Use				
Land-System Change				
Ocean Acidification				
Novel Entities				
Biogeochemical Flows				
Atmospheric Aerosols Loading				
Stratospheric Ozone Depletion				
Nutrition				
Health				
Access to Water and Sanitation				
Housing and Human Settlements				
Access to Energy				
Basic Income				
Social Equity				
Gender Equality				
Education and Culture				
Peace, Justice, and Political Voice				
Access to Networks and Social Interaction				
Laws, Policies, and Institutions				
Infrastructure, Planning, and Natural Resource Management				
Macroeconomic Considerations and Finance				
Microeconomic Considerations, Business, and Industry				
Sustainability Science				
Technology and Innovation				
Transformative Change				
Cognitive Capacity for Sustainable Development				

PSYCHOMETRIC MODEL

At its core, psychometrics is the field of study that deals with the measurement of human knowledge, abilities, attitudes, and personality traits. Its assessment processes allow us to measure, track, and facilitate learning in a systematic, reliable, and objective way, ultimately helping to enhance educational outcomes. To provide a robust psychometric measure of sustainability knowledge, TASK™ is grounded within Modern Test Theory (MTT) and Item Response Theory (IRT).

In practice, our algorithm models the relationship between the respondent's ability and the parameters associated with each question. The measure generated by the model is then geometrically transformed into a score between 0 and 100. As such, a TASK™ score is calculated to reflect:

- the total number of questions answered by the candidate
- whether or not each question was answered correctly and
- the parameters associated with each question (difficulty level, ability to discriminate, place in the matrix).

Sulitest developed a reformulated IRT model that includes parameterizations of items, which allows the model to integrate the structure of the matrix of sustainability knowledge, and be able to translate into a set representation of ability. The inclusion of item parameters, and the representation of ability aim to provide a system of measurement that can be used to inform curriculum structures with quantitative science. The use of data science techniques, such as machine learning, to analyze large amounts of assessment data and the specification of the model support the robustness of TASK™ as a measure of ability and allow for continuous improvement of the validity and reliability of test scores.

The technical specification of the TASK™ model as well as the test reliability analysis are detailed in Appendix C. The detailed granularity of this model is particularly paramount given the systemic nature of sustainability. This multifaceted concept, embracing an extensive range of subjects from environmental science to social justice, necessitates a multidisciplinary understanding. By leveraging the intricate parameterization in our model, we can accurately identify areas where respondents demonstrate proficiency or reveal gaps in knowledge. This insight not only enhances our understanding of an individual's sustainability knowledge but also provides valuable information for educational programming. With this level of detail, we can guide the refinement of education and training programs to ensure they address identified gaps and further strengthen areas of proficiency. In essence, the integration of item family parameters offers a novel and comprehensive method to assess, enhance, and tailor sustainability education.

Research papers describing our model were presented at the Academy of Management in 2023 and 2024.

Best practices in assessment *of* and *for* learning

TASK™—*The Assessment of Sustainability Knowledge*—serves as a unique and versatile tool for HEIs seeking to evaluate and strengthen sustainability literacy among their students. **When used strategically, TASK™ not only measures student knowledge. It helps refine teaching strategies, enhance program coherence, and demonstrate institutional impact.**

Effective implementation of TASK™ is commonly anchored in a two-stage deployment: i.e., **entry and exit assessments.**

As an entry assessment, TASK™ serves to:

- Establish a baseline understanding of student sustainability knowledge
- Identify gaps that help inform curriculum planning and instructional strategy
- Allow students to become familiar with the platform, easing future engagement.

Deploying TASK™ early in the student's academic journey—either at the beginning of a program or prior to engaging in sustainability-related content—enables educators to tailor learning pathways to individual and cohort needs. In other words, **TASK™ helps educators to meet their students where they are, and to track progress in a meaningful way, all along their learning journey.**

Figure 6. TASK™ results viewing

The need for adequate student preparation and engagement is also highlighted in the wider educational literature, which shows that **transformative teaching is likely to fail when students have an insufficient foundation of prior knowledge and learning upon which they can build new knowledge; when the support, guidance, and scaffolding lack sufficient competence, robustness, and sustained attention** (Kirschner et al., 2016). By pinpointing specific areas where knowledge is lacking, instructors can adapt their course content, teaching methods, and supplementary materials to ensure a sufficient foundation of sustainability knowledge. This basis is also critical to develop the skills, mindsets and attitudes needed for sustainability literacy. With a documented

domain of knowledge, based on science and conveying a systemic vision of sustainability, TASK™ provides a common language with which students can develop sustainability learning and competencies.

Based on TASK™ assessment results, educators and institutions can:

- Recommend specific academic courses or extracurricular opportunities to students
- Adjust or enhance co-curricular activities such as conferences, events, or campaigns to address common gaps in knowledge
- Support faculty in refining their course content to address identified priority topics or underrepresented themes
- Use the TASK™ Navigational Charts to guide classroom discussions and curriculum mapping across the SDGs.

It is important to note that for the entry assessment, some educators choose to administer TASK™ without preparatory resources, in order to measure unfiltered understanding. Others prefer to equip students with materials ahead of the assessment. For this purpose, Intro2TASK, a curated collection of introductory videos and interactive resources, can be shared to help students feel more confident and informed about what the assessment entails.

The exit assessment plays a critical role in helping institutions evaluate their overall impact on student learning. By comparing TASK™ results before and after exposure to sustainability-related instruction, institutions can:

- Identify which topics have seen significant progress and which require further attention
- Compare the performance of different programs or cohorts to uncover patterns of effectiveness
- Detect high-performing students and trace their engagement back to specific courses or activities, thereby identifying potential "impact hotspots" within the institution's sustainability ecosystem.

Such insights not only enhance curriculum development but also inform

aashe
The Association for the Advancement of Sustainability in Higher Education

"TASK™ is an exciting initiative for measuring sustainability knowledge across the globe. At AASHE, we believe that sustainability should be incorporated throughout the curriculum so that all graduating students, no matter what career path they chose, are equipped with the knowledge and solutions they need to address sustainability challenges. TASK™, through its evaluation of students and their skills, will help realize this goal throughout the world."

– Meghan Fay Zahniser, Executive Director at AASHE

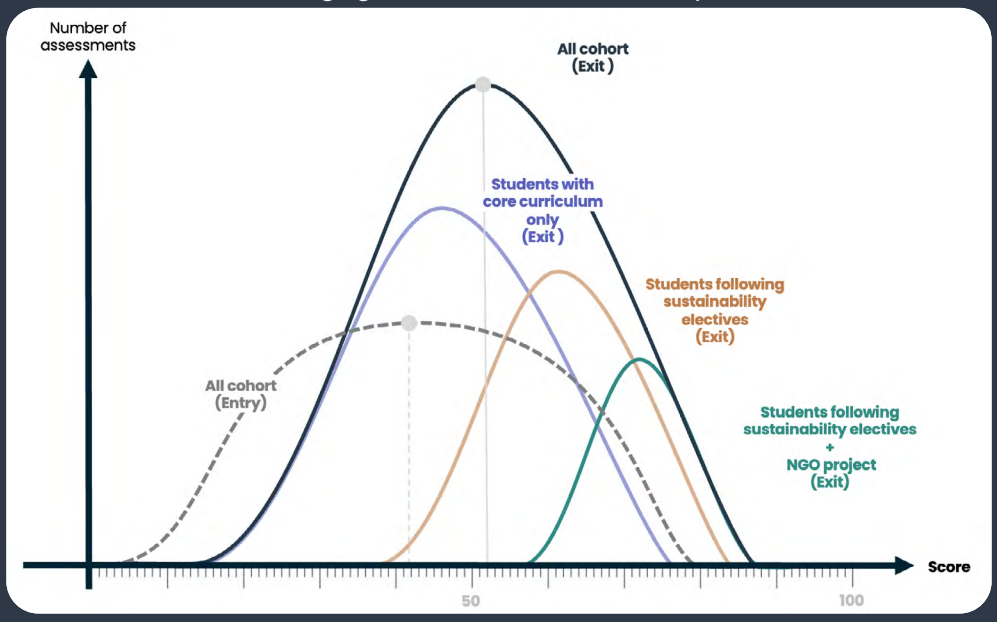
FT FINANCIAL TIMES

"I support the idea of seeking to identify key principles and insights around sustainability, track initial awareness and progress in business education and beyond to raise quality and ultimately action to tackle global warming. Sulitest is an important initiative to explore ways to meet these goals."

– Andrew Jack, Global Education Editor at Financial Times

strategic decisions at the institutional level, supporting continuous improvement and long-term planning.

Figure 7. Example of an analysis of score distribution curves per student's engagement with sustainability



To maximize the educational value of the assessment process, **it is recommended that institutions embed follow-up assignments and reflective activities into their pedagogical strategies.** Research in educational theory highlights that reflective learning consolidates knowledge, deepens personal relevance, and supports behavioral change (Blair, 2024; Fullana et al., 2014; Chang, 2019). **Learning, after all, is shaped not just by instructional or pedagogical intentions, but by the actions and engagement of the students themselves** (Goodyear et al, 2021, as cited in Fischer et al, 2023).

Suggested follow-up practices include:

- Reflective essays or journals that encourage students to explore their TASK™ score and personal understanding of sustainability, and to connect it to their academic and career goals
- Goal-setting assignments, where students outline specific steps they intend to take to expand their sustainability literacy
- Facilitated discussions based on assessment results, allowing students to collectively explore themes and share perspectives
- Peer-to-peer learning activities, where students research areas based on their TASK™ results and share insights with one another through presentations or group discussions, reinforcing collaborative learning and strengthens communication skills.

oikos

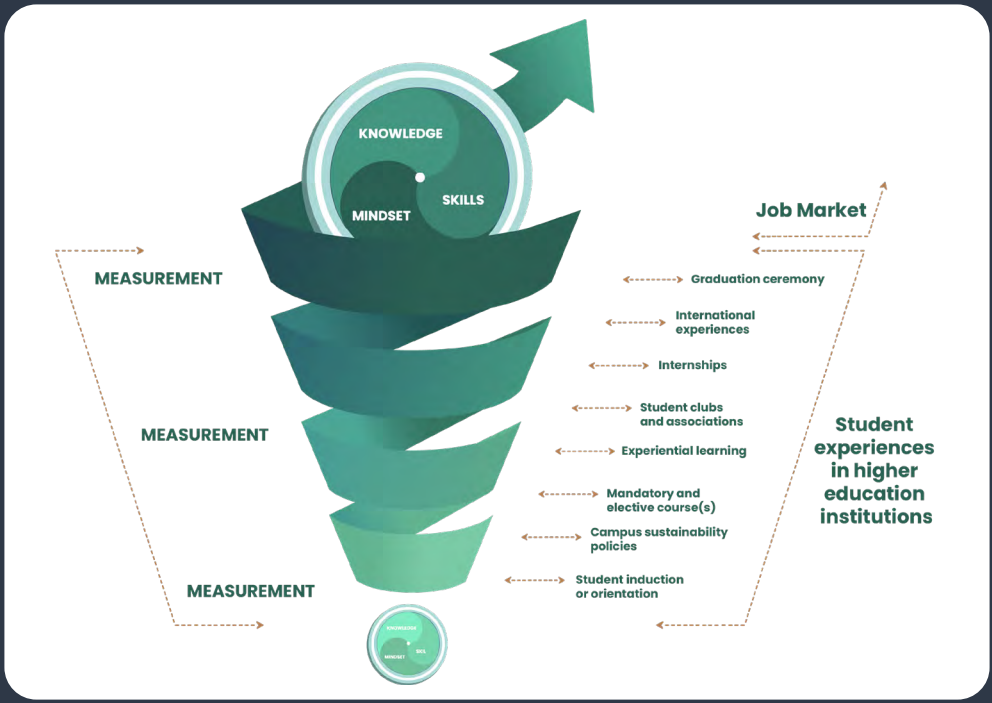
"Sulitest movement challenges the outdated metrics of success in education, that's exactly what we need. The TASK framework goes beyond grades and job-readiness — it surfaces the mindsets, values, and competencies we actually need to navigate a world in crisis. At oikos, we work to transform education into a force for systems change. Sulitest is a powerful ally in shifting assessment from passive evaluation to active transformation — of learners, curriculum, and institutions."

– Patricija Zizyte, Co-president at oikos International

These pedagogical strategies help ensure that students do not merely acquire sustainability knowledge but internalize it and apply it in meaningful ways. They also promote a culture of ongoing reflection and action—critical components of transformative education.

Scientific literature suggests that effective learning about the complex interconnections between people, planet, and prosperity (Wals & Benavot, 2017) requires—at a minimum—active, participative, and experiential learning methods that engage learners and transform their understanding, thinking, and behavior (Sterling, 2013). To this end, **it is critical that sustainability be embedded not only throughout the curriculum, but throughout the learning journey, within and outside the classroom.**

Figure 8. Visual schematic of sustainability embedded throughout the learner journey



Ultimately, the effectiveness of TASK™ depends on how well it is integrated into the specific context of each institution. Variables such as institutional culture, student maturity level, and existing sustainability initiatives all influence deployment strategies. There is no universal formula, but best practice suggests that TASK™ achieves the greatest impact when:

- Students engage with the tool meaningfully, not just as an evaluation but as a learning opportunity
- Educators use the data it generates to inform both curricular and extracurricular design
- Assessment is paired with reflection, discussion, and action to foster deeper understanding and long-term change.

TASK™ is not only a means of assessment—it is a catalyst for educational transformation. When deployed thoughtfully, it enables institutions to fulfil their role in preparing the next generation of informed, ethical, and capable leaders for a sustainable world.

.ecopia

CASE STUDY: INSTITUTIONALIZING TASK™ AT ECOPIA

Ecopia, a young Paris-based institution dedicated to training future CSR professionals, has integrated TASK™ as a central part of its curriculum. Offering Bachelor's and Master's programs through a blended learning model combining coursework and corporate apprenticeships, Ecopia prepares students to become agents of sustainable transformation.

"As a school focused on forming specialized CSR professionals, it's essential that our students have a minimum knowledge of all aspects of sustainability. That's why we've made TASK™ a graduation requirement," said Aude Serrano, Pedagogical Director at Ecopia.

TASK™ is used both at entry and exit points. New students take TASK™ during orientation to establish a baseline, and retake it before graduation to measure progress and receive a globally recognized certificate. The school supports this process by scheduling dedicated assessment time and offering Intro2TASK™ as preparation, which students appreciate.

The structured framework of TASK™ has also informed Ecopia's course design. After identifying gaps in environmental knowledge, a new master's course on ecological issues and planetary boundaries was introduced. Faculty and staff are also encouraged to engage with TASK™, strengthening internal alignment with the school's mission.

Beyond curriculum impact, TASK™ reinforces Ecopia's credibility and connects it to a global community of sustainability-focused institutions. In the 2025 academic year, the initiative continues to foster pride, legitimacy, and purpose among students and staff alike.

CASE STUDY: BUILDING A CULTURE OF SUSTAINABILITY AT HEC MONTRÉAL

HEC Montréal has undertaken a comprehensive transformation to embed sustainability at the core of its institutional culture. This effort began with the creation of a coalition of faculty, directors, and key stakeholders united around a shared vision of responsible leadership. A student and alumni survey confirmed the relevance of sustainability in business careers—90% of students expected to need this knowledge, and 62% of alumni confirmed they used it in their jobs. These findings helped drive a shift in the school's mission, now focused on developing leaders for a sustainable society.

TASK™ plays a key role in measuring this transformation. Administered at the beginning and end of the BBA and MBA programs, it tracks student progress in sustainability literacy and informs curriculum development. This longitudinal data helps HEC Montréal understand and demonstrate its impact to internal and external stakeholders.

The school complements TASK™ results with data from syllabus surveys completed by faculty, providing insight into how sustainability is integrated into teaching. This dual approach enables targeted curriculum improvements and support for faculty.

As Luc Bélanger-Martin, senior lecturer, explains: " We want to develop [students'] knowledge, their sense of responsibility, and their capacity to act. TASK™ enables them to acknowledge the responsibilities they'll have as managers."

Through its data-driven and mission-aligned approach, HEC Montréal is cultivating a new generation of responsible leaders and positioning itself as a model for sustainability in business education.

UniLaSalle
Institut Polytechnique

CASE STUDY: EMBEDDING SUSTAINABILITY AT THE CORE OF ENGINEERING EDUCATION AT UNILASALLE

UniLaSalle, a French polytechnic institute specializing in environmental and life sciences, has placed ecological and social transition at the heart of its educational strategy. As part of its Uni4change institutional transformation, the school has adopted TASK™ as a key learning and assessment tool to build a strong sustainability foundation across all five years of its engineering programs.

From the first year, students take TASK™ as part of an introductory module and are directed to tailored learning resources based on their results. In the second year, core sustainability topics are integrated into disciplinary courses. After participating in international mobility programs focused on social and environmental impact, students retake TASK™ in Year 3 to measure progress. Final-year students specialize in sustainability themes aligned with their majors, with TASK™ data helping refine curricula to address real-world challenges.

Early results show a clear increase in sustainability knowledge, with notable differences across disciplines—students in environmental sciences often score higher. Beyond student learning, TASK™ has catalyzed a broader institutional shift: since 2023, faculty and administrative staff are also invited to take TASK™, access custom learning paths, and participate in workshops such as Climate Fresk and Atelier 2 Tonnes.

By engaging the entire UniLaSalle community, TASK™ is helping shape a shared culture of sustainability and supporting the school's mission to prepare responsible, future-ready engineers.

A growing community of "Change Leaders"

HEIs have a unique and critical role to play in equipping students to address the complex challenges of our time. While one-off initiatives can raise awareness, truly transformative impact requires sustained, systemic change. The **TASK™ Change Leader** was therefore designed to bring together HEIs who have a shared commitment to make sustainability a core competency for all graduates.

These institutions have taken on **the ambitious goal of assessing and certifying the majority of their students with TASK™ within three years**. Rather than treating sustainability as an optional or peripheral topic, they aim to make it a shared language and integral part of every student's learning journey, regardless of their field of study.

As part of this long-term engagement, they receive unlimited access to the assessment tool and become part of a growing network of like-minded educators committed to sustainability in higher education. Over a three-year horizon, institutions can experiment, refine, and institutionalize sustainability learning outcomes. It is also observed that, through this extended engagement, **Change Leaders are able to incorporate TASK™ and sustainability education into their assurance of learning processes, ensuring that impact is measurable, visible, and an important element of quality assurance.**

Transforming education and mainstreaming sustainability literacy is a global endeavor—one that requires collaboration, adaptation, and the sharing of best practices. The Change Leader network fosters a vibrant **community of practice** where institutions learn from one another, co-create tools, and support each other in this shared journey. Together, they are pioneering innovative ways to integrate sustainability into higher education and scale up impact across diverse educational and cultural contexts.

SOS STUDENTS ORGANIZING FOR SUSTAINABILITY INTERNATIONAL

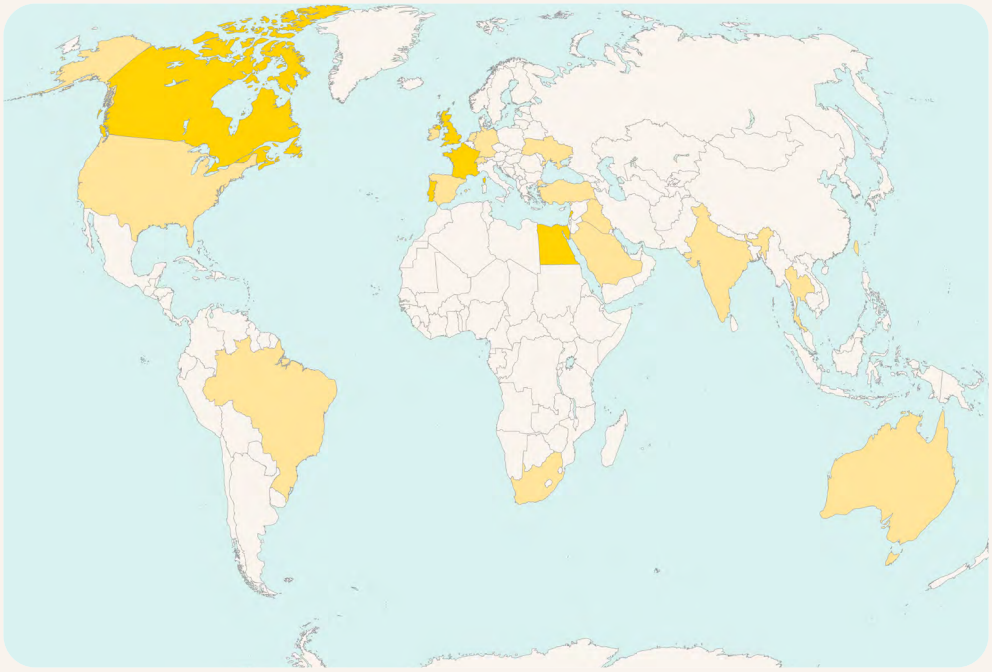
"Collaborating with the Sulitest team is a great pleasure. At SOS-International, we consider Sulitest a critical partner in our work advancing sustainability and environmental justice in higher education. We perform a convening role in the Higher Education Sustainability Initiative (HESI), Student Action Group and we have been delighted to work with Sulitest in their capacity as co-chair of HESI to advance opportunities for our student members on the global education policy agenda. The TASK metrics are a vital indicator of sustainability competency across institutions and provide a benchmark and insight on how we can work together at a global level to advance student skills, knowledge and mindset to address global challenges."

– Darren Axe, Membership and Engagement Manager at SOS-International

Today, 45 HEIs have joined the TASK Change Leader program*, and over 40 other institutions use TASK™ in smaller scopes. Together, they represent over 23 countries.

To further expand the reach and inclusivity of the program, **TASK™ is now being translated into Spanish**. This strategic step will support the growing interest from institutions in Latin America and Spain, enabling a wider community of educators and students to participate in the movement. As we extend the Change Leader network into new regions and languages, we move closer to a world where sustainability becomes a truly universal graduate attribute.

Figure 9. Map showcasing countries where TASK™ is being used



**Change Leader institutions: 3iL Ingénieurs; American University in Cairo School of Business; AUB Suliman S. Olayan School of Business; Campus XII Avenue; Católica Porto Business School; Cergy Université; ECAM LaSalle; École des Ponts ParisTech; École Supérieure des Technologies et des Affaires (ESTA); ECOPIA; EDHEC; EKYLA / HYBRIA; EM Normandie; ENS Lyon; ENSEA; ENSG; ENTPE; EPISEN - UPEC (Université Paris-Est Créteil); EPITA; ESCP Business School; ESG Act; ESME; ESSEC; ESTHUA; Excelia; Grenoble Ecole de Management; Groupe OMNES; HEC Montréal; IESEG; IMT BS; IREST; JUNIA; KEDGE Business School; Nantes Université; RegenSchool; Sup de V; TBS Education; TERRA Institute; The Education University of Hong Kong; UniLaSalle; Université Paris Saclay; Université Senghor; University of Sussex Business School; YNOV; YSCHOOLS.*

Sustainability Knowledge: Trends and Data Analysis

Trends at a glance

- Over 50,000 TASK™ assessments completed since launch (March 2023); 20,525 analyzed from the 2024–25 academic year
- Data represents participants from 161 nationalities and 18 countries
- Adjusted average score in 2024–25 is 56.95 with a normal distribution (standard deviation: 16.89).
- Program-level entry/exit assessments show positive knowledge progression across Bachelor and Master cohorts.
- Average scores across the three Frameworks (Earth Systems, Human Welfare, Levers of Opportunity) are similar, but subject-level differences are significant.
- Performance varies by major: Environmental & Sustainability Studies students scored highest overall with balanced results across Frameworks; Engineering & Mathematics students scored well in Earth Systems but lower in Levers of Opportunity; Social Sciences students scored well
- in Human Welfare; Business Studies showed a left-skewed curve with overall lower scores, highlighting discipline-specific strengths and gaps.
- Entry/exit comparison shows rising scores, supporting the value of two-stage deployment to track learning progress.
- Faculty scores are generally higher than student scores but may reflect self-selection bias (engaged educators); subject-level gaps still exist.
- Alumni scored higher on average but showed weaker performance in Levers of Opportunity; survey responses reveal many feel underprepared by their education to address sustainability in their roles, highlighting the need for targeted upskilling and stronger links between academic training and real-world application.
- Lowest scoring SDGs: SDG 16 (Peace & Justice), SDG 7 (Energy), SDG 9 (Industry & Innovation).
- Highest scoring SDGs: SDG 1 (No Poverty), SDG 6 (Clean Water), SDG 3 (Health & Well-being).

TASK™ Descriptive Statistics

SCORE DISTRIBUTION

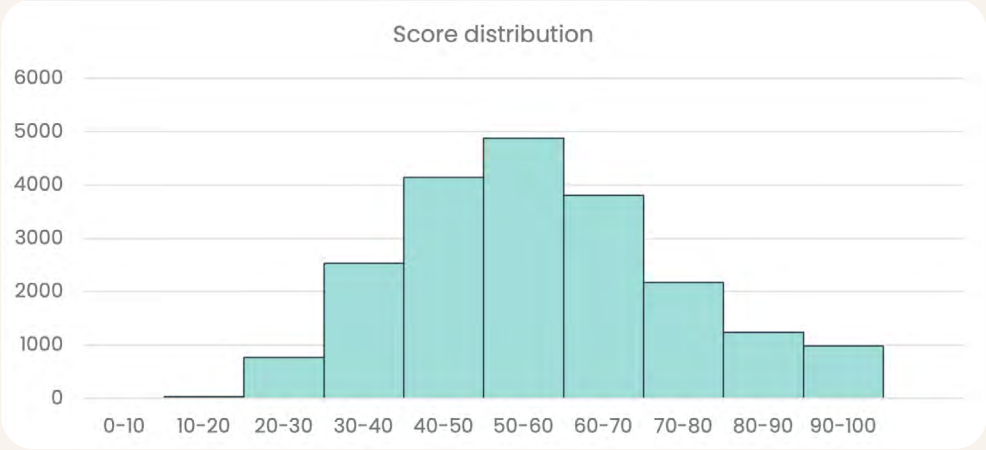
Since the launch of TASK™ on 1 March 2023, **over 50,000 assessments have been completed**. The analysis of TASK™ data outcomes presented below is based on a rich **dataset of 20,525 completions** of the assessment in the last academic year, between 1 July 2024 and 15 June 2025. These completions are by participants from 161 different nationalities, who took TASK™ in institutions from 18 countries.

Before analysing the results, the Sulitest Data team **pre-processed the data to filter out assessments** with a very short completion time, a highly suspicious indicator of guessing; where the assessment conditions have not been respected; and/or the certificates have been cancelled.

Over the last 18 months, the growing functionality and accessibility of generative artificial intelligence threatened the reliability of online exams. Universities across the world have been challenged to rethink their assessment design, and as a standardized assessment provider, Sulitest has also been challenged to improve the conditions under which TASK™ is taken. As such, in the last academic year, i**ncreased prevention and monitoring features** have been implemented, enabling the organization to identify breach of assessment conditions and cancel certificates.

In the last academic year, **the adjusted average score among all respondents is 56.95**. The standard deviation, a measure of the spread or dispersion of scores, is calculated to be 16.89. Figure 10 shows the distribution curve of scores, which represents a normal distribution.

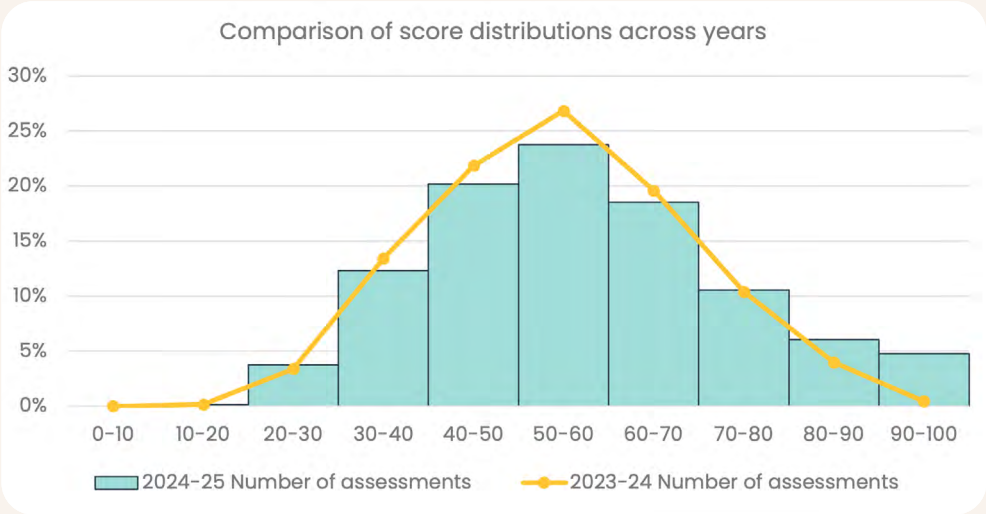
Figure 10. Score distribution



Scores are well distributed around the average score, following a gaussian distribution. However, compared to the 2023-24 curve, the 2024–25 data show a rise in assessments scoring in the 80–90 range (now representing 6% of completed assessments, up from 4%) and the 90–100 range (now representing 5% of completed assessments, up from 0%). Using the 2023–24 curve as a "pre-genAI" baseline, it is reasonable to assume that such high scores are unlikely to occur under normal testing conditions. Although Sulitest has continuously introduced new features to prevent and filter out assessments

that have violated exam conditions, some instances might still go undetected. Since these higher scores can distort averages, this report presents both average scores and distribution curves for most trends. Readers are advised to interpret results—particularly the volume of assessments scoring above 80—with caution.

Figure 11. Comparison of score distribution curves: 2023-24 vs. 2024-25



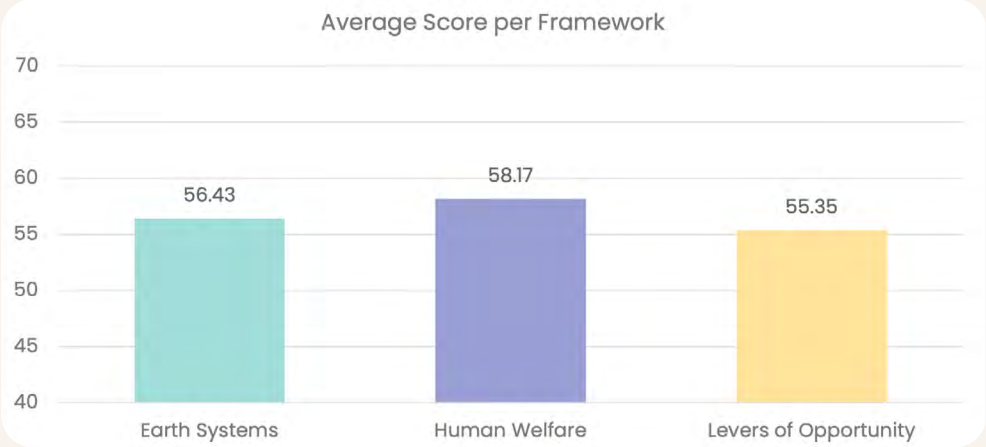
SCORE PER SUBJECT

A critical area of the TASK™ data investigation centers on analyzing the average scores of respondents' abilities. This analysis is organized around two significant dimensions: the 28 subjects of the Foundational Matrix of Sustainability Knowledge defined by Sulitest, and the globally recognized Sustainable Development Goals (SDGs).

The Matrix Subjects provide a fine-grained view of specific knowledge areas and competencies that Sulitest has identified as integral to sustainability literacy. By examining the respondent scores according to these Matrix Subjects a more detailed understanding emerges of respondents' relative strengths and weaknesses across a wide range of sustainability-related knowledge areas. Simultaneously, aligning this investigation with the SDGs allows Sulitest to examine respondents' abilities in the context of the Global 2030 Sustainability Agenda. This alignment presents a unique opportunity to understand to what extent respondents are cognitively equipped to contribute to these universally agreed-upon goals.

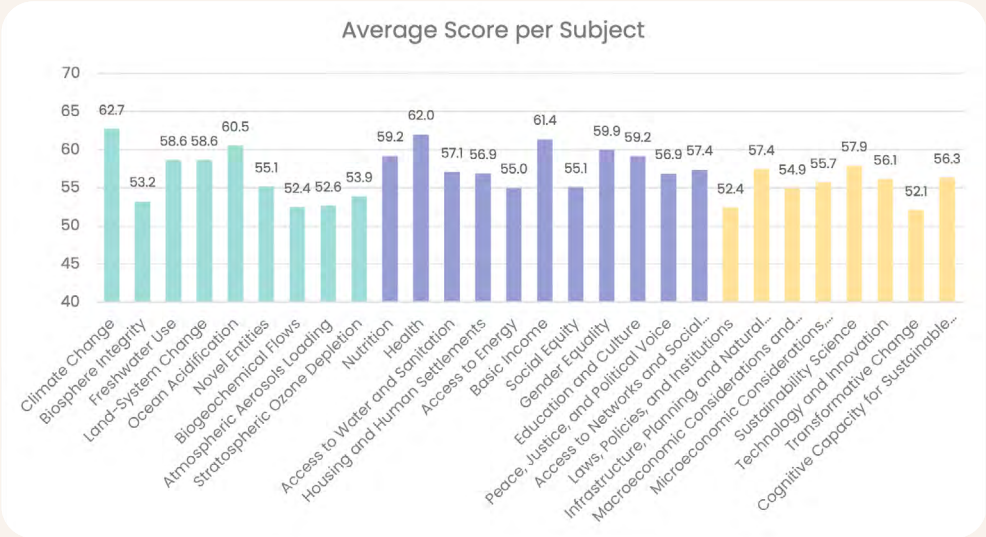
Per the mean score among all respondents on the TASK™ Frameworks of Earth Systems, Human Welfare, and Levers of Opportunity, no significant differences are observed, as shown in Figure 12.

Figure 12. Average Score per Framework



Yet, if the three Frameworks structuring the matrix seem relatively balanced in terms of overall aggregate ability (i.e., very close average scores), **significant differences in abilities appear within each Framework**, as shown in Figure 13.

Figure 13. Average Score per Subject



These differences remain within a reasonable range (above 50 and less than 65), so no single subject reveals an average ability significantly lower or higher than the others. However, **the disparities that are observable are meaningful**, and provide useful insights for educators seeking to build curricular and pedagogical strategies that address such knowledge gaps vis-à-vis sustainability education and action. Table 1 below presents the highest and lowest scoring Subjects per Framework, highlighting areas of strength and those which deserve more attention.

Table 1. Highest and lowest scoring subjects per framework

	Earth Systems	Human Welfare	Levers of Opportunity
Highest scoring subjects	• Climate Change (62.72) • Ocean Acidification (60.53) • Land-System Change (58.64)	• Health (62) • Basic Income (61.36) • Gender Equality (59.95)	• Sustainability Science (57.9) • Infrastructure, Planning, and Natural Resource Management (57.44) • Cognitive Capacity for Sustainable Development (56.33)
Lowest scoring subjects	• Biosphere Integrity (53.22) • Atmospheric Aerosols Loading (52.61) • Biogeochemical Flows (52.45)	• Peace, Justice, and Political Voice (56.87) • Social Equity (55.05) • Access to Energy (54.98)	• Macroeconomic Considerations and Finance (54.86) • Laws, Policies, and Institutions (52.37) • Transformative Change (52.07)

ASSESSMENTS METADATA

To provide more granularity to the dataset, Sulitest introduced in 2024 "Metadata", enabling the TASK™ moderators to provide more information about the candidate profile when setting up an assessment session. Metadata can be indicated at the session level, therefore applying to all assessments within that session, or individually per candidate. Categories of Metadata include:

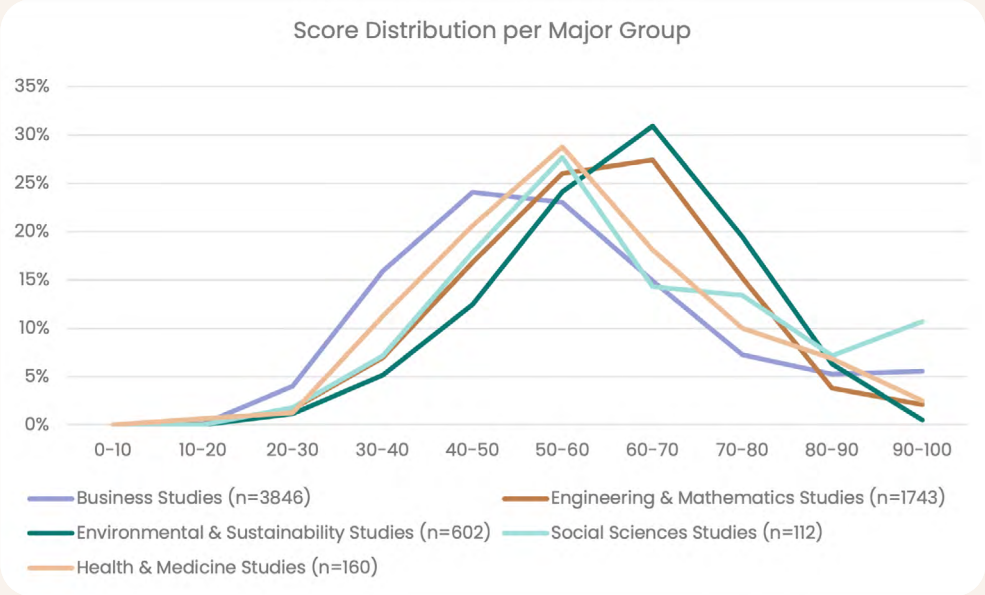
- Location (Remote, In-class)
- Role (e.g. Student, Teacher, Employee, etc.)
- Program Level (e.g. Bachelors, Masters, Executive Education, etc.)
- Major (e.g. Business Administration, Mathematics, etc.)
- Stage (e.g. Entry, Intermediate, Exit)
- Engagement (Mandatory, Optional, Recommended)

It is important to note that as an optional field, not all assessments have their Metadata indicated, and as such, the sample size of the analysis shown below has been reduced. Significant disparities are present between the cohort size for each program, major or stage. As such, the sample size of each is displayed in the figures, as the *n* number next to each label.

SCORE PER MAJOR GROUP

To facilitate the analysis of scores per Major, the different options have been categorized into five main areas of studies: Business Studies (n=3846); Engineering & Mathematics Studies (n=1743); Environmental & Sustainability Studies (n=602); Social Sciences Studies (n=112); and Health & Medicine Studies (n=160).

Figure 14. Score distribution per major group

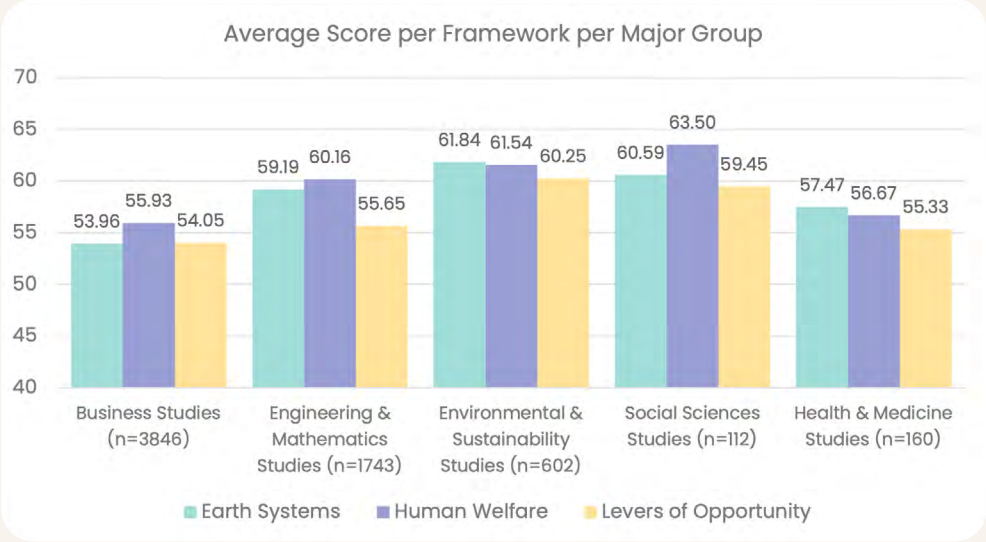


As seen in Figure 14 above, **Environmental & Sustainability Studies candidates (n=602) demonstrate a higher score**, followed closely by those in Engineering & Mathematics Studies (n=1743), in comparison to those of Business Studies (n=3846) which have a more left-skewed curve.

Looking at the averages, however, shows that candidates from Social Sciences Studies (n=112) show the highest average score (61.73), likely influenced by the smaller sample size and the spike in scores within the 90-100 range. They also show a more peaked distribution of scores, suggesting a smaller disparity in ability levels. Social Sciences Studies candidates are followed by Environmental & Sustainability Studies candidates (n=602), with an average score of 61.45; Engineering & Mathematics Studies candidates (n=1743), with an average score of 59.05; Health & Medicine Studies candidates (n=160), with an average score of 56.75; and finally Business Studies candidates (n=3846), with an average score of 54.88.

For a more insightful analysis, it is important to observe the scores per Framework and Subject. Figure 15 shows that **Environmental & Sustainability Studies candidates have a balanced distribution of scores, whereas those in Engineering & Mathematics Studies have a significantly lower score in Levers of Opportunities in comparison to other Frameworks**. Overall, candidates from Environmental & Sustainability Studies score the highest in the Earth Systems and Levers of Opportunity Frameworks, while **candidates from Social Sciences Studies score the highest in Human Welfare.**

Figure 15. Average score per framework per major group



Given the interconnected and systemic nature of sustainability, it is valuable to **identify knowledge gaps that might emerge in each area of study**, enabling educators to develop learning pathways, inside or outside the classroom, to bridge those gaps and instill a more holistic understanding of sustainability. Table 2 presents the subjects that, on average, major groups tend to score highest and lowest on, informing educators of those disciplines of the strengths and weaknesses their students are likely to experience.

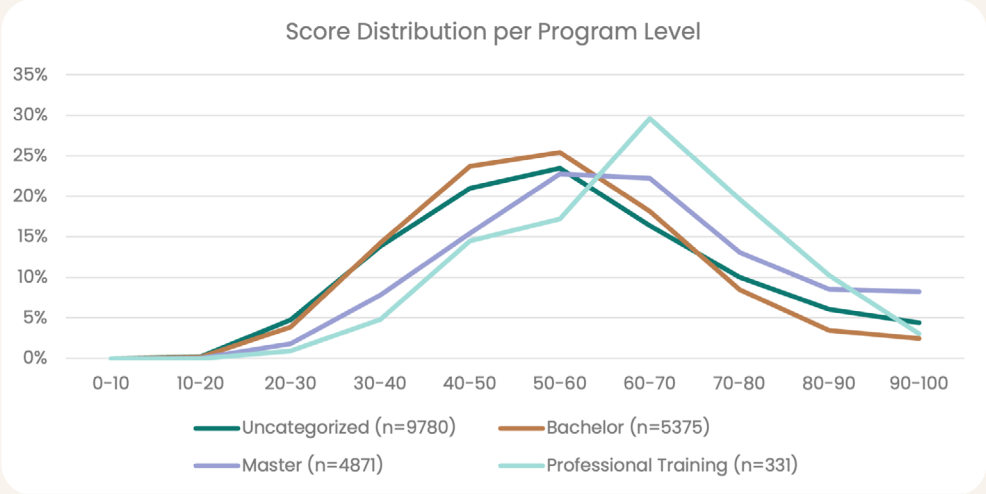
Table 2. Highest and lowest scoring subjects per framework per major group

	Earth Systems	Human Welfare	Levers of Opportunity
Business Studies (n=3846)			
Highest scoring subjects	• Climate Change (60.4) • Ocean Acidification (57.54) • Freshwater Use (55.74)	• Health (59.96) • Basic Income (59.09) • Education and Culture (58.95)	• Macroeconomic Considerations and Finance (56.98) • Cognitive Capacity for Sustainable Development (56.33) • Sustainability Science (55.25)
Lowest scoring subjects	• Biosphere Integrity (51.95) • Atmospheric Aerosols Loading (51.18) • Biogeochemical Flows (49.26)	• Housing and Human Settlements (53.41) • Peace, Justice, and Political Voice (52.83) • Access to Water and Sanitation (52.48)	• Transformative Change (52.38) • Laws, Policies, and Institutions (51.24) • Technology and Innovation (50.35)
Engineering & Mathematics Studies (n=1743)			
Highest scoring subjects	• Climate Change (67.53) • Ocean Acidification (66.94) • Land-System Change (63.34)	• Basic Income (65.79) • Health (64.89) • Gender Equality (60.9)	• Technology and Innovation (61.14) • Sustainability Science (60.49) • Infrastructure, Planning, and Natural Resource Management (58.72)
Lowest scoring subjects	• Biosphere Integrity (53.9) • Stratospheric Ozone Depletion (53.81) • Atmospheric Aerosols Loading (52.76)	• Peace, Justice, and Political Voice (58.89) • Access to Energy (57.39) • Social Equity (55.13)	• Laws, Policies, and Institutions (53.91) • Macroeconomic Considerations and Finance (53.21) • Transformative Change (48.56)
Environmental & Sustainability Studies (n=602)			
Highest scoring subjects	• Climate Change (68.98) • Ocean Acidification (67.13) • Land-System Change (65.12)	• Health (65.99) • Basic Income (64.72) • Gender Equality (64.31)	• Infrastructure, Planning, and Natural Resource Management (65.67) • Sustainability Science (65.35) • Microeconomic Considerations, Business, and Industry (61.56)
Lowest scoring subjects	• Stratospheric Ozone Depletion (58.86) • Biosphere Integrity (55.85) • Atmospheric Aerosols Loading (55.26)	• Education and Culture (60.32) • Access to Energy (57.73) • Social Equity (54.49)	• Macroeconomic Considerations and Finance (57.48) • Transformative Change (56.58) • Laws, Policies, and Institutions (56.1)
Social Sciences Studies (n=112)			
Highest scoring subjects	• Climate Change (67.28) • Freshwater Use (65.58) • Land-System Change (64)	• Basic Income (67.63) • Peace, Justice, and Political Voice (66.26) • Health (66.24)	• Sustainability Science (62.72) • Technology and Innovation (62.5) • Infrastructure, Planning, and Natural Resource Management (62.42)
Lowest scoring subjects	• Biosphere Integrity (57.01) • Atmospheric Aerosols Loading (56.28) • Biogeochemical Flows (53.92)	• Education and Culture (61.1) • Social Equity (61.1) • Access to Networks and Social Interaction (59.38)	• Cognitive Capacity for Sustainable Development (56.68) • Macroeconomic Considerations and Finance (54.47) • Transformative Change (53.09)
Health & Medicine Studies (n=160)			
Highest scoring subjects	• Ocean Acidification (65.94) • Novel Entities (61.26) • Climate Change (60.9)	• Health (64.36) • Education and Culture (61.92) • Nutrition (60.89)	• Macroeconomic Considerations and Finance (61.24) • Sustainability Science (60.67) • Infrastructure, Planning, and Natural Resource Management (58.01)
Lowest scoring subjects	• Biosphere Integrity (53.26) • Atmospheric Aerosols Loading (52.08) • Biogeochemical Flows (50.47)	• Access to Energy (52.83) • Access to Networks and Social Interaction (52.59) • Access to Water and Sanitation (51.18)	• Transformative Change (53.65) • Technology and Innovation (49.36) • Laws, Policies, and Institutions (48.93)

SCORE PER PROGRAM LEVEL

Despite the notable difference in sample size, Figure 16 shows that Professional Training candidates (which include MBA and Executive Education) present a negatively skewed curve, with the highest average score of 63.39. Master students present slightly higher scores than Bachelor students, with averages of 61.99 and 54,01, respectively.

Figure 16. Score distribution per program level

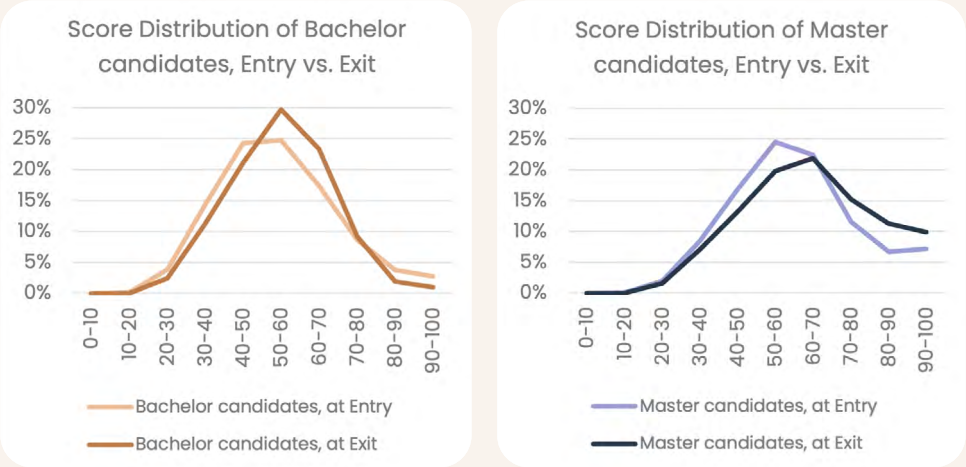


SCORE PER STAGE IN EACH PROGRAM LEVEL

As described previously, **the recommended implementation of TASK™ is based on a two-stage deployment—entry and exit assessments**—which allows educators to track progress within their cohorts. While this analysis is most meaningful at the program level, where educators and curriculum designers understand the specific learning objectives and can evaluate progress accordingly, a global analysis is presented below.

For both Bachelor and Master students, average exit scores exceed entry scores, showing a general increase in knowledge levels.

Figure 17. Score distribution comparison between entry and exit assessments

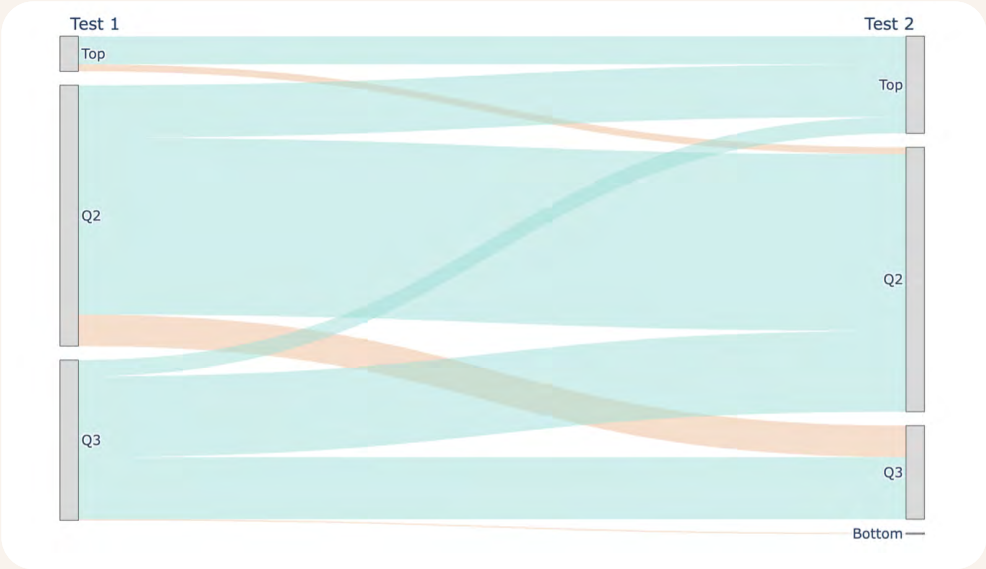


Bachelor students' average score at Entry is 54.15, while at Exit it is 54.79. This small gap can be due to the higher ratio of Entry assessments scoring 80 or higher, which should be considered with caution, as previously discussed. Master students have an average Entry score of 60.44 and an average Exit score of 64.24, demonstrating a more visible knowledge growth.

LONGITUDINAL ANALYSIS OF REPEATED TASK™ TAKERS

While analyzing global performance at entry and exit is insightful, a longitudinal analysis of the same sample of students who completed the assessment twice offers a more reliable look into knowledge progression. While the results must be interpreted with caution due to the limited sample size (390 assessments), they provide valuable insights.

Figure 18. Sankey Diagram showing performance differences between two assessments



The Sankey diagram above shows how test takers' performance changed between their first and second TASK™ assessments, based on quartile groupings (Top, Q2, Q3, Bottom). Each flow represents the movement of individuals across score bands from Test 1 to Test 2. The majority of participants remained in the same quartile, particularly within Q2, suggesting a general consistency in performance. Notably, upward shifts indicate learning progress over time: most show a continuum —such as from Q3 to Q2 and Q2 to Top— and a smaller number of assessments show bigger progress – from Q3 to top. Some downward movement also highlights fluctuations that could be attributed to differences in context, motivation, or exam conditions. For example, when a high score has been already achieved at the first attempt, some candidates might demonstrate lower motivation to perform well at the second attempt. Overall, score stability or increases between two assessments are significantly higher than score decreases.

Table 3. Average score difference between assessment instances per Subject

Earth Systems		Human Welfare		Levers of Opportunity	
Subject	Avg. Δ	Subject	Avg. Δ	Subject	Avg. Δ
Freshwater Use	10.65	Access to Water and Sanitation	9.59	Technology and Innovation	8.60
Biogeochemical Flows	9.47	Peace, Justice, and Political Voice	9.32	Microeconomic Considerations, Business, and Industry	7.41
Climate Change	9.45	Basic Income	9.30	Laws, Policies, and Institutions	6.49
Ocean Acidification	9.13	Health	8.85	Infrastructure, Planning, and Natural Resource Management	6.25
Land-System Change	8.80	Housing and Human Settlements	8.72	Sustainability Science	6.13
Novel Entities	6.28	Social Equity	6.57	Transformative Change	4.26
Biosphere Integrity	5.98	Access to Networks and Social Interaction	6.39	Cognitive Capacity for Sustainable Development	3.62
Stratospheric Ozone Depletion	5.21	Access to Energy	5.88	Macroeconomic Considerations and Finance	-0.11
Atmospheric Aerosols Loading	1.94	Nutrition	5.87		
		Gender Equality	4.92		
		Education and Culture	3.58		

Table 3 presents the **average score change (Δ)** between first and second attempts for each subject within TASK™, grouped into its three thematic dimensions: *Earth Systems, Human Welfare*, and *Levers of Opportunity*. These values offer a view into where learners demonstrated the most progress, highlighting potential areas of learning impact and engagement.

Several notable patterns emerge. First, subjects such as Freshwater Use (+10.65), Biogeochemical Flows (+9.47), and Access to Water and Sanitation (+9.59) stand out for their **high average gains**. Interestingly, these same subjects also appear in the **lower range of global average scores** (as shown Figure 13), suggesting that participants generally began with less baseline knowledge in these areas. This reinforces the idea that **TASK™ not only assesses what learners know but also provides an opportunity for meaningful learning and growth, particularly in underexplored or less familiar sustainability topics.**

The pattern underscores a crucial strength of the assessment: by exposing participants to a broad, interdisciplinary range of sustainability issues, TASK™ helps reveal blind spots or knowledge gaps that might not be surfaced through traditional academic pathways. Subjects with lower initial familiarity, especially within Earth Systems, seem to benefit most from repeated engagement, indicating the potential for **conceptual gains** when learners are introduced to these often-complex topics.

It's also worth noting that some subjects within the Levers of Opportunity dimension, such as Technology and Innovation and Microeconomic Considerations, showed both **moderate improvement and higher baseline scores, which may reflect broader exposure in standard curricula or professional contexts**. In contrast, areas like Macroeconomic Considerations and Finance showed negative average score changes, potentially indicating persistent conceptual difficulty or lack of clarity around framing these topics in sustainability contexts.

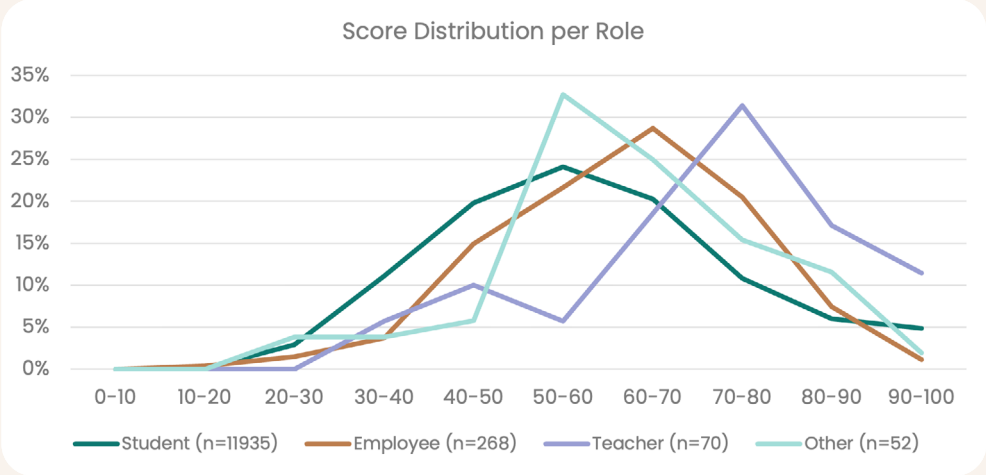
While this global-level view is illuminating, the **true value of this data emerges when disaggregated at the institutional level**. Understanding which subjects see the most improvement—or which remain stubbornly low—within specific learning environments can help educators and administrators fine-tune sustainability education strategies. It allows institutions to spot areas where learners are excelling, where additional support is needed, and how the exposure to a diverse set of topics through TASK™ might be contributing to broader systems thinking.

Overall, this analysis suggests that **TASK™ not only measures knowledge but also fosters it, particularly by helping participants discover and engage with areas of sustainability that are vital yet often underrepresented in formal education**.

SCORE PER ROLE

The distribution curves below compare student scores with faculty scores. As expected, faculty scores are generally higher; however, it is important to acknowledge a self-selection bias, as these educators are typically those already interested in TASK™ and often responsible for organizing and promoting its deployment within their institutions.

Figure 19. Score distribution per role



Understanding faculty performance is equally valuable, as it helps identify areas where educators may feel less prepared to address certain topics and highlights opportunities for ongoing professional development. Interestingly, faculty demonstrate a balanced score across the Frameworks. Yet, differences are notable at the Subject level.

Figure 20. Average score per framework per role

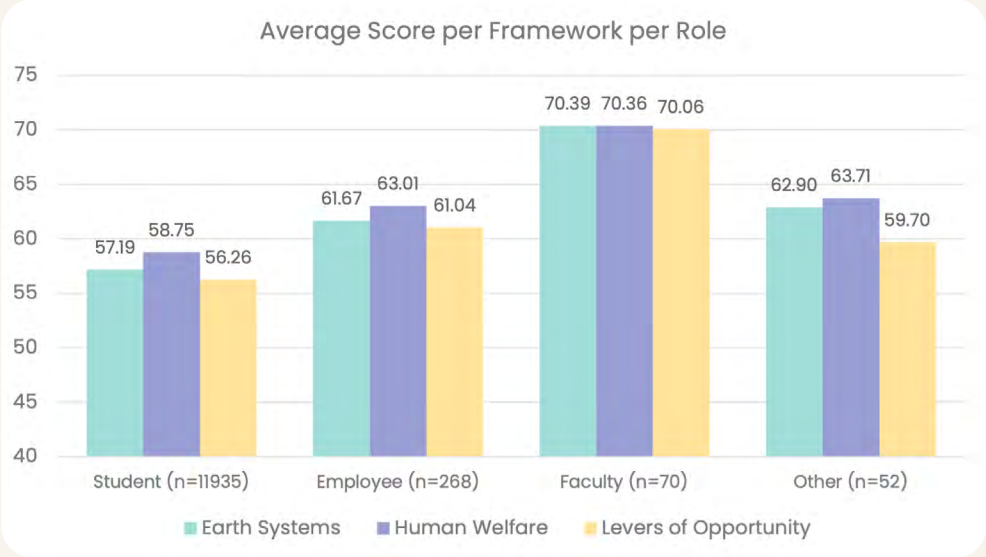
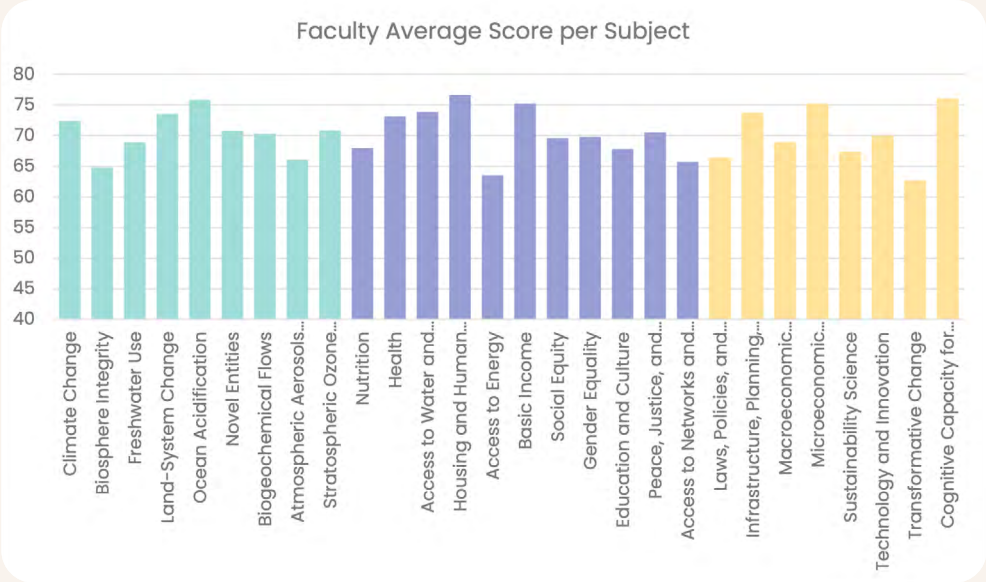


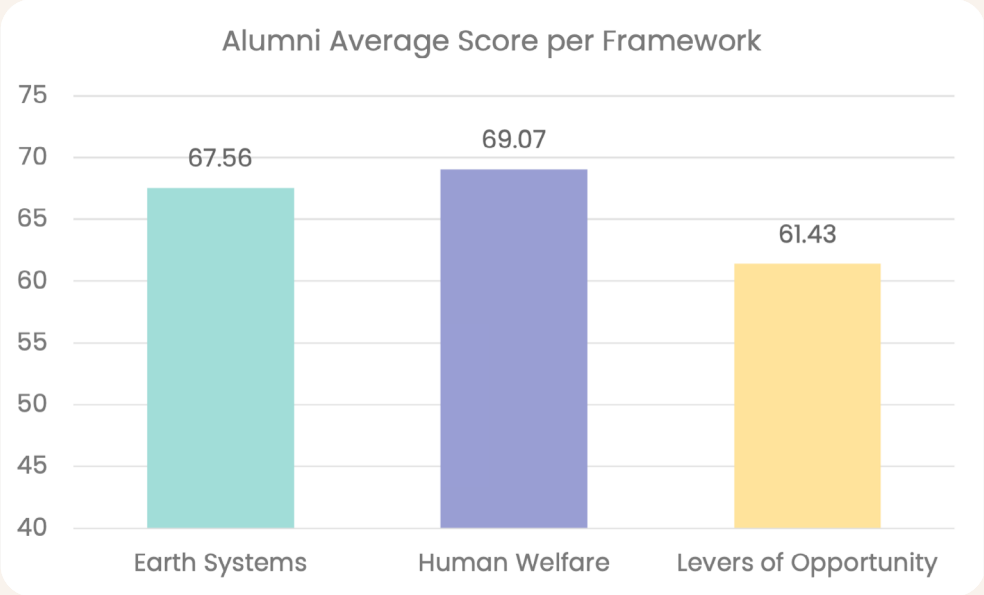
Figure 21. Average score per subject by faculty respondents



ASSESSING ALUMNI

Every year, Sulitest invites its Change Leaders, those HEIs using TASK™ institution-wide, to offer the sustainability assessment to **alumni**. Besides offering a certification to those already part of the workforce, this is an opportunity to gain insights into this population. In 2025, 796 assessments were completed and the analysis below represents a sample of 682 assessments, filtered by the criteria previously described.

Figure 22. Alumni average score per framework

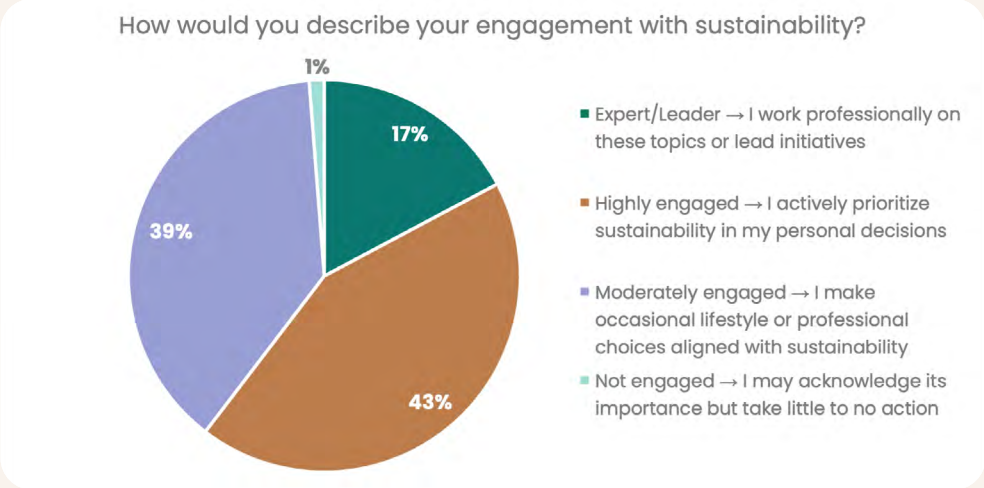


Overall, alumni present **a higher average score per Framework**. However, they show an imbalanced split between the three areas of knowledge, specifically with a lower Levers of Opportunity Score.

In 2025, specific survey questions were added at the end of the assessment to better understand how alumni perceive the preparedness provided by their previous education to tackle sustainability in their roles and the relevance of these challenges to their day to day.

In this analysis, it is important to consider a self-selection bias, as 60% of respondents consider themselves highly engaged or experts in sustainability.

Figure 23. Alumni engagement with sustainability



While for 69% of respondents stated sustainability is either frequently relevant or core to their roles, **only 21% answered that their higher education prepared them well to address sustainability challenges and promote better practices in their role.**

Figure 24. Sustainability relevance to respondents' roles

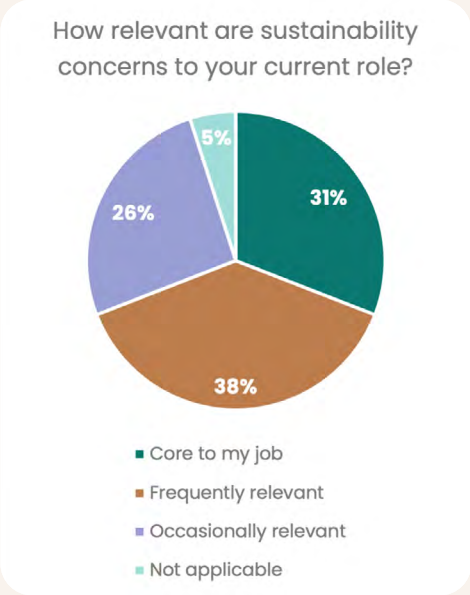
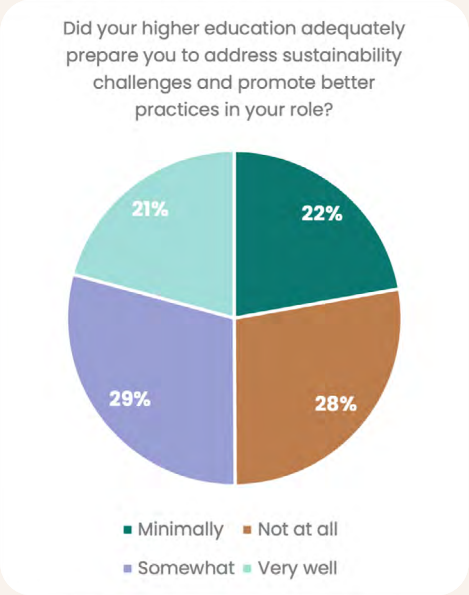


Figure 25. Preparedness provided by higher education



This survey highlighted **opportunities for upskilling**. Most alumni are working in companies where there is no clear sustainability strategies or actions (11%) or that some policies are in place, but they lead to limited impact (41%). Half of respondents also state they are moderately comfortable (41%) or lack tools or knowledge to implement sustainability in their roles (9%). Finally, 92% of respondents are seeking information about sustainability, occasionally (32%), frequently (45%) or as a core part of their roles and lives (15%).

Figure 26. Sustainability maturity of the organizations alumni work for

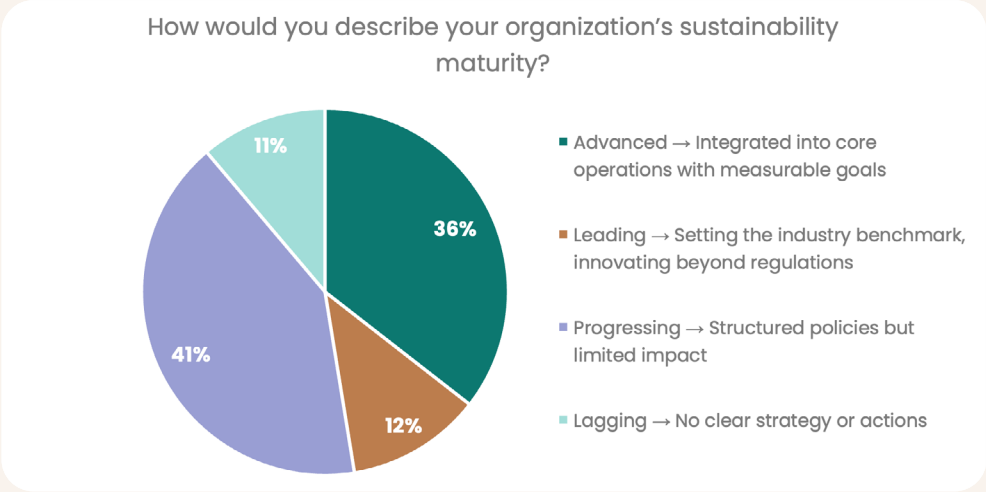


Figure 27. Perceived confidence level to promote sustainability at work

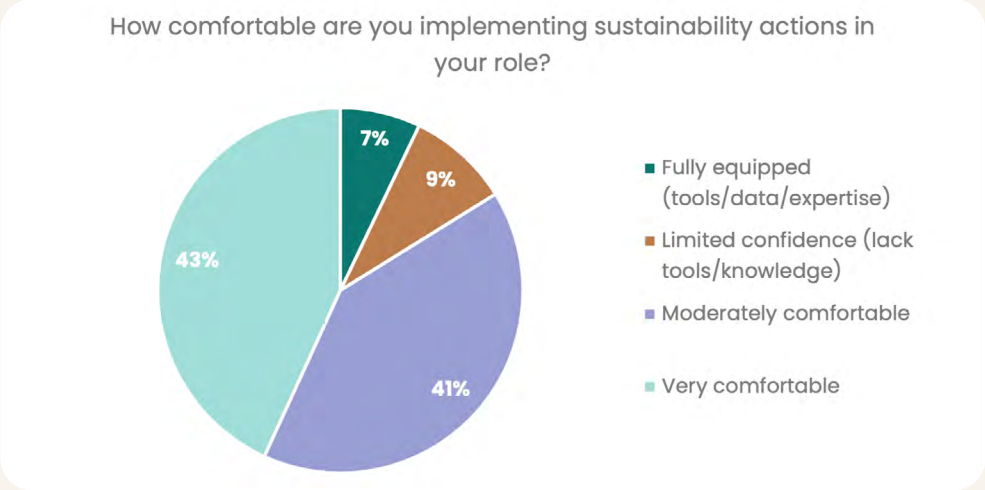
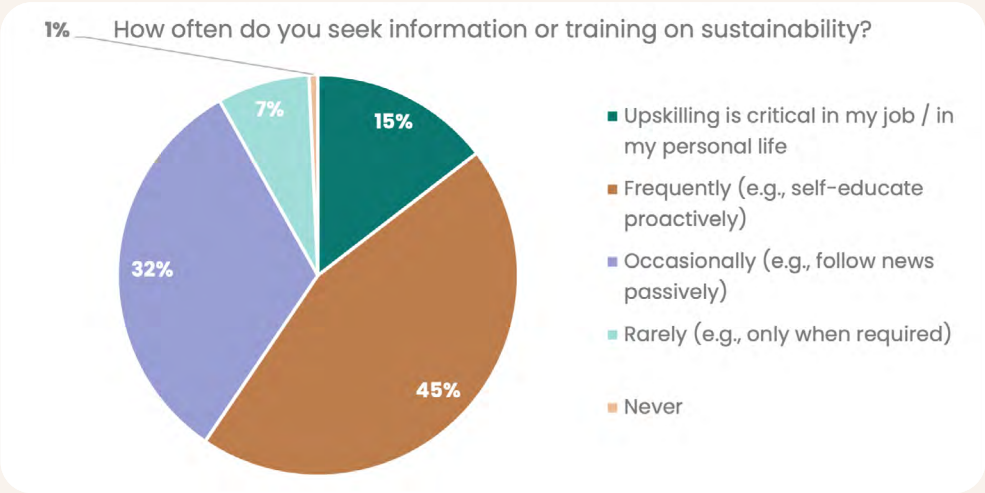


Figure 28. Interest in learning more about sustainability

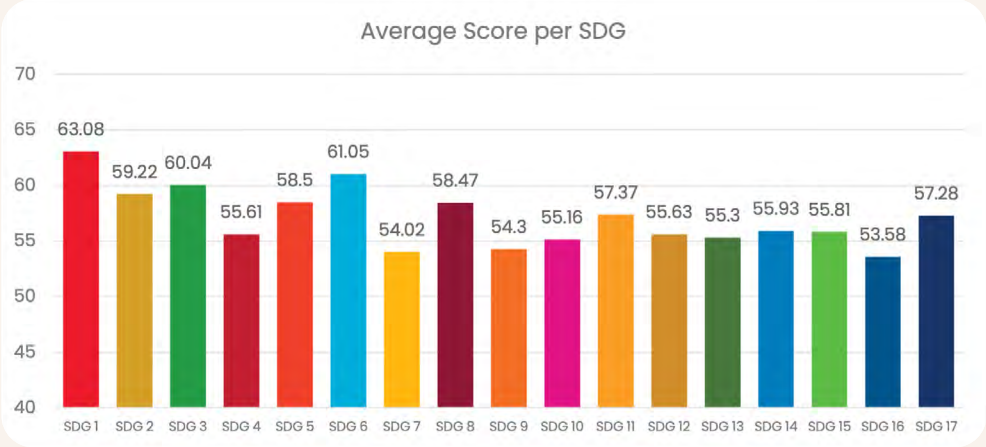


These findings highlight both the potential and the gaps in sustainability preparedness among alumni. **While many are engaged and see sustainability as relevant to their roles, a significant portion feel underprepared by their education and lack the tools to drive meaningful change.** This underscores the importance of integrating sustainability more deeply into higher education and continuing to support alumni through targeted upskilling opportunities.

SCORE PER SDG

The bar chart per SDGs also provides interesting insights vis-à-vis the average scores of respondent's abilities linked to each of the Sustainable Development Goals (SDGs).

Figure 29. Average score per SDG



Starting from the lower end of the spectrum, the following SDGs present the lowest average scores:

- SDG 16 - Peace, Justice, and Strong Institutions (53.58)
- SDG 7 – Access to Energy (54.02)
- SDG 9 - Industry, Innovation, and Infrastructure (54.3)

This suggests that respondents on average may find concepts or competencies related to these goals more challenging to comprehend or apply, or it may reflect a lack of knowledge or emphasis on these areas in their educational or professional experiences.

Meanwhile, the following SDGs present the highest average scores:

- SDG 1 – No Poverty (63.08)
- SDG 6 – Clean Water and Sanitation (61.05)
- SDG 3 – Good Health and Well-being (60.04)

These scores may indicate a stronger understanding or ability related to these goals among respondents, potentially due to greater exposure, interest, or emphasis on these areas in their education, training, or media environment, and reflecting the fundamental and cross-cutting nature of poverty reduction in sustainability efforts.

RESPONDENTS' METACHARACTERISTICS

To delve further into the complex relationship between respondents' meta-characteristics and test scores, linear regression analysis was applied. This approach aids in identifying potential linear relationships between these meta-characteristics—including factors such as age, gender, and education level —and the test scores obtained, thus providing valuable insights that can help us better understand the determinants of performance on the test.

This analysis used a sample of 18,894 respondents who answered the optional

survey questions embedded within TASK™. In the context of the analysis, categorical survey questions such as having completed a degree of not, amount of sustainability training received), and self-reported sustainability knowledge (categorized as 'basic', 'some', 'expert') are transformed into dummy variables. This allows each category to be treated independently in the regression model, enabling us to investigate the impact of each category on the dependent variable (in this case, the test scores) while holding other variables constant. To ensure an accurate and valid regression analysis, and avoid multicollinearity, one category from each of the categorical variables is typically excluded from the regression model. These are referred to as the "reference categories": 'none' for having completed a degree, '0' for amount of sustainability training received, 'basic' for self-reported sustainability knowledge, and 'men' for gender.

The results of the linear regression model confirm significant connections between respondent attributes and their performance on TASK™ (see Result Table in Appendix D).

- Firstly, education matters! The analysis shows a positive coefficient of having completed a degree in higher education to better performance on TASK™.

- Education for sustainability significantly matters! A positive relationship exists between the number of sustainability trainings completed and the TASK™ score. Respondents who completed three or more sustainability trainings experienced a noticeable average score increase, evidenced by a mean increment of 4.14 points.

- Self-perceived sustainability knowledge proved to have a significant impact on TASK™ scores. This resonates with the principle of 'self-efficacy' prevalent in psychometrics, suggesting that individuals who believe in their competence in a particular domain do perform better in that area. Supporting this notion, respondents who classified their sustainability knowledge as having "some" knowledge and "expert level" knowledge experienced an average score increase of 10.61 and 15.73 points, respectively. This result differs from last year's observation with a similar analysis based on a different sample of test takers, where expert level had a less positive impact on than moderate knowledge. This highlights the need to further investigate the complex relationship between self-perceived sustainability knowledge and ability as measured by TASK™, opening an interesting research question.

- In terms of socio-demographics, age still has a positive effect on TASK™ scores, even when controlling for having completed a degree or not, suggesting a positive impact of life-long learning beyond graduation. Gender does not have a significant coefficient in this regression, confirming results observed in previous analysis.

Projects & Research

PRME Impactful Five (i5)

The Principles for Responsible Management Education (PRME) is a United Nations-supported initiative founded in 2007. As a platform to raise the profile of sustainability in business and management schools around the world, PRME's goal is to **equip today's business students with the understanding and ability to deliver change tomorrow**. As such, PRME's mission aligns with the Sulitest commitment to support deep and urgent transformational change in higher education.

Between 2021 and 2024, Sulitest collaborated with PRME on the **Impactful Five (i5) project**. Building upon LEGO Foundation's prior research and expertise in high-impact teaching methods, the i5 project developed and piloted innovative pedagogical approaches for holistic skills development in higher education to help the next generation of leaders both envision and build a sustainable future for all. Via the i5 Playbook and corresponding series of workshops, **i5 invited educators to explore how they can innovate in ways that make learning meaningful, joyful, social, active, and iterative.**

Figure 30. The i5 Framework and its Five Characteristics

Each of the five Characteristics of impactful pedagogy is broken down into four Signature Moves, i.e., concrete strategies to actualize the Characteristic

and bring it into the classroom effectively.

Throughout the project, **Sulitest designed assessment frameworks and conducted research to better understand both how educators adopt the i5 Framework and what impact it has on learning**. Such research included:

- Longitudinal surveys sent to workshop attendees
- Ethnographic research with a group of eight educators (including interviews, in-class observations, and focus groups)
- Literature reviews, to bridge pedagogical theory and research to what was observed in i5

In sustainability education, and in this report thus far, much of the focus has traditionally been on what we teach—on the content and facts—and why we teach—empowering students to address the ecological and social crises we face. **Equally important, though, is the how we teach—the pedagogical methods we use to share that knowledge while fostering critical thinking, deep reflection, and meaningful action**. Therefore, key insights emerging from the i5 research are presented below.

PRME
an initiative of the
United Nations Global Compact

"The Principles for Responsible Management Education (PRME) is a United Nations-supported initiative that works to transform business and management education through the values of sustainability, ethics, and global responsibility. PRME supports business schools in embedding the SDGs across curriculum, pedagogy, research, and faculty development. Sulitest plays an important role in this effort by helping institutions both raise awareness and assess student learning on sustainability topics. PRME is proud to recommend Sulitest and TASK as valuable tools for strengthening responsible management education."

– Meredith Storey, Senior Manager at Principles for Responsible Management Education (PRME)

One of the first trends was that **impactful teaching tends to attract educators who are already personally committed to improving their pedagogy**. At the same time, they report that much of their professional development took place informally—through self-reflection, networking, and peer-sharing experiences. This highlights a systemic gap in professional development: structured support for educators to improve their teaching is too often lacking. **Institutions need to invest in comprehensive professional development programs that give all educators—not just the most dedicated—access to impactful pedagogical training.**

Educators appreciated i5 as it provided them with **practical tools and insights they could use to build upon existing values**. Many educators already believed in interactive, experiential, and student-centered teaching, but i5 helped them implement or hone these methods more systematically. While some made dramatic changes to their teaching using i5 principles, others took smaller, incremental steps such as creating safe spaces for student voices, celebrating student success, or sharing personal experiences. The research found, through a series of interviews and classroom observations, that both approaches proved valuable.

A particularly rewarding outcome was seeing **educators rediscover their**

passion for teaching. Initially, some felt constrained, believing they had no room for trial and error. But the more they engaged with i5, the more they realized that students were responding positively to experimentation. One educator reported: "I have learned that students don't mind when we try something new and it doesn't work perfectly. I will be more willing to experiment with new tools. I believe I will have more courage to try." This revitalization of teaching practice echoes across the research.

Yet, embracing impactful pedagogy isn't always easy. Transformative learning often challenges both educators and students. In fact, studies suggest that engaging deeply in learning can create discomfort, confusion, and even crisis (Sterling, 2011), as students may not be mentally or emotionally prepared for this type of engagement (Moore, 2005).

As with any change process and despite its successes, integrating i5 into teaching was not without challenges. Through surveys and interviews, educators reported struggling with:

- allocating enough time to engage with this framework and change
- ensuring consistency across the curriculum
- sustaining student engagement especially in culturally diverse and/or large classrooms, and
- ensuring students were adequately prepared for active participation.

Despite such challenges, the most compelling evidence of i5's impact was its effect on students. **Educators observed increased engagement, stronger teacher-student relationships, and improved learning outcomes. Students became more autonomous, more collaborative, and more inclusive.** These findings align with broader research indicating that student engagement is a strong predictor of academic success and personal development (Carini et al., 2006; Reeve & Tseng, 2011). Experiential learning, in particular, has been shown to enhance critical thinking, collaboration, and overall enjoyment of coursework (Zelechoski et al., 2017). **Beyond academic achievement, i5 also helped students develop essential responsible leadership skills,** including:

- Critical reflection and ethical reasoning
- Emotional resilience and self-awareness
- Cross-cultural understanding and empathetic communication
- Future-visioning and systems-thinking
- Problem-solving and prototyping skills.

While i5 is not focused on sustainability, **by inviting students to connect with one another, reflect on their background and interests, develop empathy and curiosity, it organically led students to seeking greater purpose in their learning and future careers**. Educators in the research cohort found that i5-inspired courses encouraged students to see themselves as change agents.

By connecting learning to real-world contexts, students felt empowered to pursue careers aligned with sustainability and social impact.

One of the most powerful takeaways from this project is that **impactful teaching transcends subject matter.** The research found it was not discipline-dependent but rather influenced by value alignment and educators' willingness to incorporate the impactful pedagogy methods into their classes in profound and meaningful ways.

Nevertheless, simply applying a new method or tool to a single lesson isn't enough. Instead, **it needs to be a systemic, deep, and intentional part of the entire curriculum**. Studies, such as Coker et al. (2016), show that impactful learning experiences depend not only on the breadth of activities but also on their depth. Simply offering a variety of activities is valuable for fostering collaboration and improving relationships, but deeper engagement with transformative pedagogy yields far more significant learning outcomes.

BRIDGING THEORIES, PRACTICES AND PRINCIPLES OF IMPACTFUL TEACHING

To explore such transformative pedagogies within the context of education for sustainability, the final stage of the i5 project resulted in the publication of a joint Sulitest-PRME whitepaper entitled *Situating PRME's Impactful Five (i5) in the Landscape of Higher Education Pedagogy — Bridging Theories, Principles, and Practices.*

Designed to help users better **situate the i5 Framework within the larger landscape of current pedagogical theory and practice in higher education**, a review of relevant literature was performed across a wide array of academic and scholarly publications. It explored the theories, principles, and practices of the following "mainstream" pedagogies: **Constructivist, Experiential, Feminist, and Socratic Method.** A similar exercise is performed upon six "radical" pedagogies centered around sustainability education, namely: **Outdoor Education, Environmental Education, Education for Sustainable Development (ESD), Global Citizen Education (GCE), Critical Ecopedagogy, and Indigenous Pedagogy.**

Moreover, the review of literature provided some insights into key concerns of the larger i5 project, such as: the meaning of "impact" across various pedagogical traditions; the nature and extent of "transformative" learning; the centrality of holistic learning and development; the constituent elements of management education's "signature pedagogy"; and the relative "sensitivity" to the Earth crisis of discrete teaching theories and practices, including the i5 Framework.

Providing synoptic charts for the nine pedagogies discussed, each one indicating the similarities between the pedagogical theory in question and notable i5 Characteristics and Signature Moves, **the White Paper encouraged management educators to embrace the i5 Framework for the sound advice it provides on how to help students learn well. It then called educators to reflect not only on pedagogy but on content and purpose–in other words, learn *what* well–calling for sustainability literacy and ecocentric teaching to be embedded in the curriculum.**

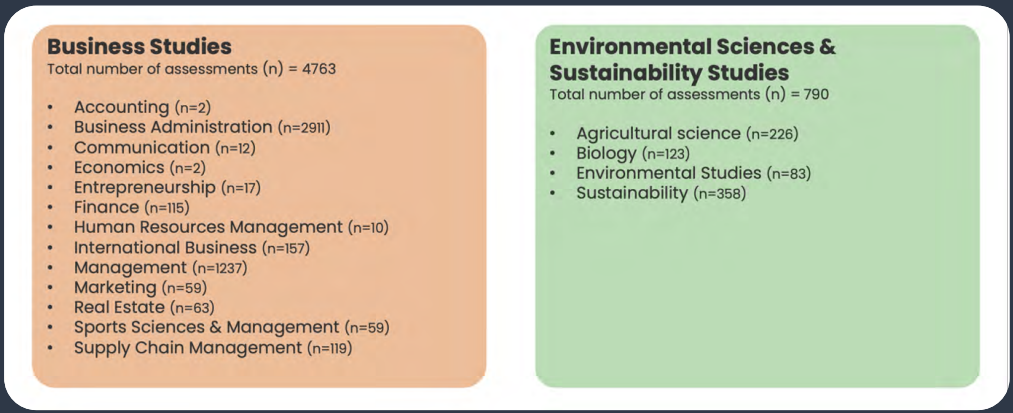
To conclude, impactful pedagogy benefits everyone—students learn better, educators rediscover their passion for teaching, institutions cultivate a more dynamic learning culture, and societies benefit from more civically-engaged future leaders. But for all these benefits to be fully realized, educational leadership must move beyond individual enthusiasm and build systemic support for transformative teaching practices.

BIOFIN-EU: Protecting and Restoring Biodiversity Using Mainstream Finance

Despite growing awareness of environmental issues, **biodiversity often remains an underrepresented topic in both public discourse and educational programs.** The latest IPBES Global Assessment warns that around 1 million species face extinction unless urgent action is taken. BIOFIN-EU (Protecting and Restoring Biodiversity Using Mainstream Finance), an European Union-funded project, aims to unlock and accelerate financial flows to protect and restore biodiversity, through better alignment of regulation, business models, financial instruments, and the skills of the people behind them. Sulitest is a partner in the BIOFIN-EU Consortium and supports its mission by analyzing sustainability knowledge trends and building capacity among current and future finance professionals.

In May 2025, Sulitest provided the BIOFIN-EU Consortium with an **analysis of TASK™ learning outcomes data** and highlighted a number of concerning trends. Given BIOFIN-EU's focus on building capacity in the finance and business sectors, we looked specifically at students from business studies backgrounds, comparing them to peers studying environmental sciences or sustainability.

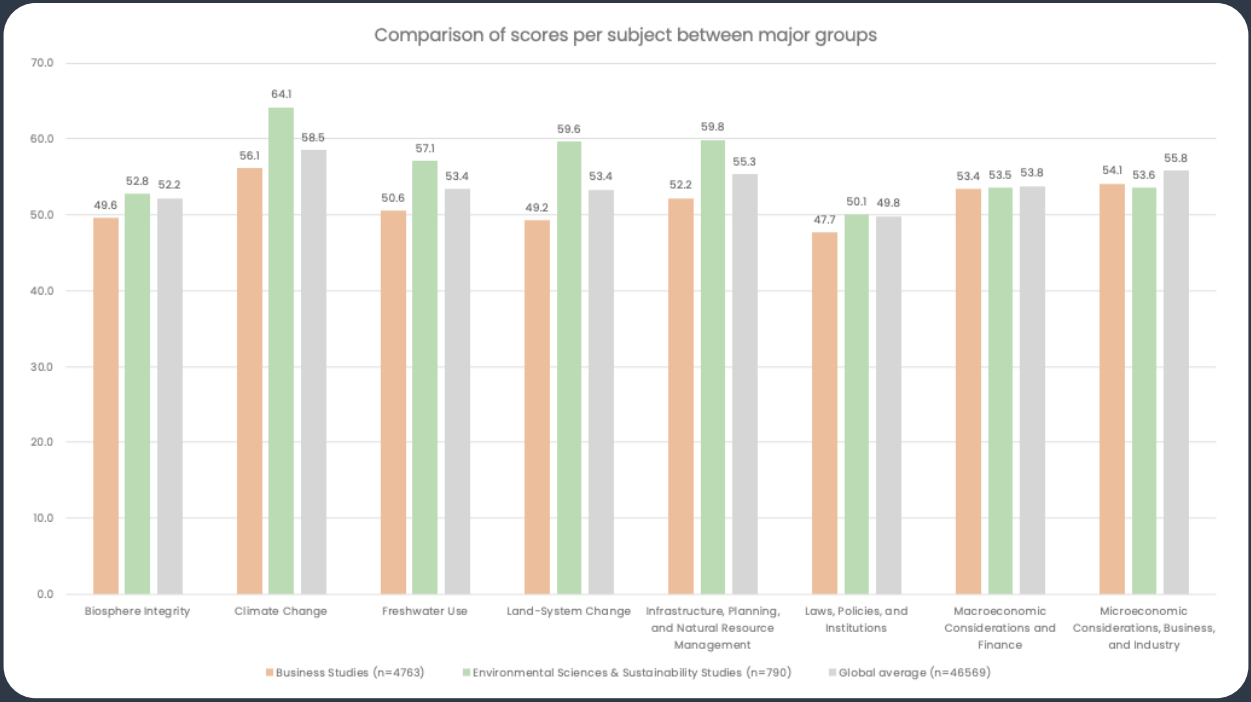
Figure 31. Major groups and sample size for the BIOFIN-EU analysis



While it is important to note the difference in sample size between the two groups, the initial indicators are clear:

- Business students scored lower across all environmental topics, including biodiversity, ecosystem services, and planetary boundaries.
- They also underperformed in levers of change, suggesting a **lack of awareness about how their future roles in finance and business can be used to drive biodiversity-positive outcomes.**

Figure 32. Comparison of scores per subject per major group



To respond to this need, **Sulitest co-developed a conceptual framework with the BIOFIN-EU consortium to inform the future development of tools to empower educators and trainers to better equip finance students and professionals with the understanding they need to support nature-based solutions (NbS) and biodiversity-aligned business models.**

Looking ahead to 2030

HIGHER EDUCATION AT A CROSSROADS

Never before have higher Education Institutions so prominently showcased their commitment to sustainability: dedicated programs, “zero carbon” strategies, green certifications, and participation in international rankings. Yet, behind this seeming mobilization lies a paradox: only a small minority of these institutions systematically measure the impact of their sustainability education on their graduates.

How can we turn promise into action? How can we move from declarations of intent to transformative education and sustainability as a common language? How can we mainstream sustainability literacy?

OUR 2030 AMBITION: SCALING UP

Since the launch of the Sulitest movement, our ambition is to reset educational standards, making sustainability assessment the new norm, and generating data as the new driver for decision-making. Here is how we plan to achieve this:

- Expand TASK™ to 500 institutions, making it an essential tool for assessing higher education through accreditations, ratings, rankings and national education policies—ensuring future leaders share a systemic understanding of sustainability, the minimal yet crucial foundation for meaningful collaboration.

- Turn data into concrete recommendations: support organizations and faculty to better understand and improve the impact of their sustainability education initiatives.

- Co-create with researchers, students, and civil society to make sustainability desirable—not just mandatory. “Learning is remembering your desire to know,” said Albert Jacquard, French geneticist and philosopher. As we have been advocating for years, we must support educators and learners in their journey toward sustainability literacy.

THE CHALLENGE EXTENDS BEYOND CAMPUS

No one can predict with certainty where we will be in 2030. Recent events have shown us how the unpredictable and unexpected can wipe out decades of effort, shake the foundations of science, and jeopardize the future we imagined.

At a time when every crisis (earth, society, geopolitics) reminds us of the urgency to think in interconnected systems rather than silos, but also when sustainability has turned from a niche to a major topic, higher education has a new responsibility: not to train experts able to explain how a world dies, but to cultivate architects able to envision the new world to build.

As René Char, poet and resistance fighter, once wrote:

"Impose your chance, hold tight to your happiness and dare to take risks. By looking your way, they will follow."

Data is our compass. Collective boldness will be our engine.

2030 won't wait. Neither will we.

Words from our community

"Kedge Business School has long stood at the forefront of sustainability in business education, recognized globally for its commitment to integrating ethical, responsible, and forward-thinking practices into its core mission. As an institution deeply aware of the social and environmental challenges facing our world, KEDGE Business School has consistently sought to train the next generation of leaders to not only succeed in business but to do so in a way that drives meaningful, sustainable change.

It is within this visionary and research-driven environment—supported by engaged faculty, innovative academic chairs, and purpose-built programs—that Sulitest was born. More than just a tool, SULITEST is a testament to the school's dedication to transforming business education for good.

Our partnership with SULITEST has grown stronger over the years, rooted in shared values and a mutual aspiration to raise awareness and foster accountability in future leaders. This relationship has evolved into a cornerstone of our educational approach: TASK™ has become a mandatory component for 100% of our student body. It represents not only a pedagogical standard but a cultural one—one that reflects the school's unwavering commitment to sustainable development goals (SDGs) and responsible business practices as stated in its new strategic plan KEDGE 30. No doubt that new developments and projects will be jointly led.

– Céline Davesne, Associate Dean Programmes & International at Kedge Business School

"Sustainability is a strategic priority for the University of Sussex, being integrated into research, teaching, and engagement. In this context, our collaboration with Sulitest—as a Change Leader and advocate for the TASK™ Certificate—is a natural extension of our values. It provides a meaningful opportunity to engage students with globally relevant sustainability education and assessment.

At the Business School, TASK™ has been embedded at multiple points across the student journey. First-year undergraduate students complete the Certificate through a core management module, where it is integrated with a business simulation exercise. This allows us to track knowledge acquisition, identify gaps, and inform curriculum development. The Certificate is also a core component of final-year undergraduate, postgraduate (taught), online distance learning (ODL), and MBA programmes, including within dissertation modules.

This comprehensive integration has required significant planning and coordination, but it has been an essential step in advancing our sustainability agenda. Our partnership with Sulitest has played a critical role in supporting this work—through tailored training, staff development sessions (such as those held on Teaching & Learning Days), and promotional activities across the School. The collaboration remains a highly productive and strategic relationship, and strongly encourage other HEIs to explore the value of incorporating TASK into their own educational provision."

– Alison Bailey, Senior Lecturer at the University of Sussex Business School

ESSEC BUSINESS SCHOOL

"We support the Sulitest movement because we are convinced of the need for a tool to assess students' knowledge of ecological and social issues. The Sulitest tools are based on a strong scientific foundation and cover a wide range of topics (environmental, social and organizations). The TASK™ certification enables students to identify their current degree of expertise on sustainability, and allows us as a school to further improve the content we offer."

– Maud Chassande, Ecological Transformation Lead at ESSEC

OMNES EDUCATION

"The OMNES Education Group is now deploying TASK in all its schools in France and Europe. Nearly 2,500 TASKs have been carried out by our 20 school referents in charge of TASK. This certification enables students to make the most of their CSR knowledge, and enables our Group to get teachers more involved in sustainability, and therefore to transform the syllabus for each subject. For us, the lever of training for the planet is essential and contributes to the transformation of our business model towards a regenerative model."

– Muriel Cordier, OMNES Education Group CSR Director at OMNES Education

IÉSEG SCHOOL OF MANAGEMENT

"At IESEG, we have integrated TASK™ as part of the mandatory course on Change Management for Sustainability. Integrating TASK™ helped us rethink the content of our core sustainability courses to ensure we were going deeper into the understanding of climate change, biodiversity, and planetary boundaries. At the end of the course students pass the test and then write a reflective essay on their knowledge on sustainability and the gaps they identify. TASK™ is also proposed on a voluntary basis to all students and to Alumni. We also want to create awareness around TASK™ among companies so they value the test and see it as valuable in their recruitment process."

– Maria CASTILLO, Social and Environmental Impact Director at IESEG School of Management

جامعة الملك عبدالله للعلوم والتقنية
King Abdullah University of Science and Technology

"We are very excited about implementing TASK™ at KAUST. TASK™ will provide a comprehensive overview of our students' sustainability knowledge, allowing us to identify gaps and tailor their academic paths effectively. This ensures that sustainability literacy is deeply integrated into their education at KAUST, preparing them to address global sustainability challenges. Beyond their academic and professional journeys, this literacy will empower them to become changemakers and responsible citizens, equipped to contribute positively to society."

– Prof. Ana Margarida Costa, Professor of Practice and Head of Sustainability at KAUST

GRENOBLE ECOLE DE MANAGEMENT

"Since 2014, GEM has actively engaged in the development and implementation of Sustainability Literacy Test tools to enhance sustainability awareness among students, alumni, staff, and faculty. The customizable tools, such as Sulitest, Suliquiz, and Looping, have been deployed across various programs and have helped to promote strategic initiatives like GEM's Zero Waste ambition and its Société à Mission status. The recently introduced TASK™ certificate allows for measuring and benchmarking core sustainability knowledge, including understanding planetary limits and emerging economic models like the Donut. Grenoble Ecole de Management is working to equip our students with the knowledge and skills necessary to provide responses to pressing global sustainability issues and create a common language to address them as professionals and citizens. The Sulitest has been an important enabler in this transformation."

– Julie Perrin-Halot, Associate Dean & Director at Grenoble Ecole de Management

Nantes Université

"Experimenting with the TASK™ certificate within our university community corresponds to the idea of increasing the culture of socio-ecological issues and taking seriously a broad understanding of the transformations needed in the socio-economic and institutional worlds. It is a spur to develop training in sustainable development, converging with other initiatives such as the setting up of our sustainable development conference."

– Laurent Devisme, Vice-president at Nantes Université

ésta school of business & technology Belfort

"The TASK™ Change Leader offers an excellent opportunity for higher education institutions to join forces in raising awareness among learners about the major issues in sustainable development. A series of workshops are organised to share best practice and help the users gain a deeper understanding of the platform and its challenges. It is exciting to be in the early stages of its deployment and to be playing a role in its evolution. TASK™ is also a pragmatic tool for our institution, enabling us to assess the level of knowledge of our learners and to measure the positioning of our teaching approach. The results of the initial sessions demonstrate whether or not students have mastered the subjects, thereby enabling us to identify the teaching models that require optimisation in order to train our future decision-makers."

– Sarah Alavi, Lecturer at ESTA - School of Business and Technology

1871 EM NORMANDIE BUSINESS SCHOOL

"At EM Normandie, TASK™ plays a key role in the implementation of our academic strategy on sustainability. The certification allows us to measure our students' level of knowledge in a structured and objective way. This insight guides the evolution of our programs and supports a continuous improvement process. TASK™ contributes to our efforts to design relevant, place-based teaching pathways that match the expectations of students and employers. The Sulitest initiative strengthens our commitment to educating future professionals who are capable of addressing environmental and societal challenges with clarity and purpose."

– Sébastien Bourdin, Professor at EM Normandie

excelia

"EXCELIA's pedagogical commitment to Sustainable Development is widely known and recognised. This manifests itself, in particular, through a learning goal that extends across all our study programmes. For many years, as part of an ongoing drive to constantly improve the quality of our teaching, we have been using the Sulitest as a tool to measure the level of acquisition of such skills by our students at the end of their programme. Then, in 2022, Excelia has joined this movement by becoming a 'change leader', so that its entire community can benefit from this certification. We were a member of the expert committee responsible for ensuring that the project was theoretically and methodologically sound, before taking part in the pilot in Autumn 2022. After the launch, we invited our community to participate on a voluntary basis. With the ambition of 100% of our graduating students obtaining their certification, the decision was taken to develop a specific training course to prepare for TASK™ certification. This is a fantastic opportunity for our community to evolve our teachings and challenge ourselves in the face of transition issues."

– Prof. Tamym Abdessemed, Dean at Excelia Business School

TERRA INSTITUTE

"As a school dedicated to sustainability training, Sulitest's TASK™ came at just the right time. We assess our students at the start and end of their course to measure their progress. The certification requirement is a powerful incentive for students to prepare thoroughly for the tests."

– Celine Degrave, Director at Terra Institute

The American University in Cairo
School of Business

"We started our sustainability journey around 2013. Sulitest was an integral part of our efforts. We started by using the Awareness Test in many exploratory studies to map and improve the level of knowledge of our students. Currently we require all our undergraduate students to take the test to ensure that they gain critical sustainability awareness before graduation. The next natural progress in our journey in sustainability is TASK. We are in our first year of the engagement and the outcomes are promising. The selected students who took the assessment were very excited about obtaining the certification. Our next step is to incorporate some of the provided learning materials into the curriculum and perhaps as a base for core courses for all students. The tools, guidelines and extensive advice provided by the Sulitest team are very crucial for our success in our journey!"

– Ali Awni, Director of the John D. Gerhart Center for Philanthropy, Civic Engagement & Responsible Business at American University in Cairo - School of Business

YSCHOOLS

"Decision-makers and managers need to adapt to the imperatives of transformation while guiding their teams. There is no miracle method for transformation, but rather reflexes to adopt and a way of approaching the subject. With this in mind, Y SCHOOLS has committed to a global approach by becoming a Change Leader. All our students take the TASK™ certificate at the end of their course to objectively assess their level of awareness and involvement in sustainable development."

– Julien Renoult, General Director at YSCHOOLS

"Sulitest should not be reduced to being the TASK supplier, which is already a lot! It is the focal point of energies facilitating and accompanying the teaching/learning themes raised to achieve sustainable behavior. Training and assessments cover all of the SDGs, leading students to acquire and proove knowledge or skills in most areas impacted by global change. We have spent years raising awareness among student populations on these subjects, the work is still going on but remains insufficient, Sulitest makes it possible to move from awareness to literacy on sustainable development."

– Gérard Vidal, Lecturer at ENS de Lyon

"I chose to use TASK™ for all of my students because we are a business school dedicated to sustainability. We used TASK™ at the beginning of the academic year in order for the students to measure their knowledge. We will use it again at the end of the academic year for the students to evaluate their progress. We also proposed the assessment to all of the academic staff, for their own appreciation of their knowledge. The results were very inspiring as many students already passed the assessment with good results, the same for the teachers. We will continue to use the test for the years to come, to compare et evaluate the evolution of knowledge of the cohorts of the students. TASK™ is a very powerful tool, easy to implement, easy to take but not so easy to master–quite the right recipe!"

– Nathalie Patrat, Executive Director at ESG ACT

"As the Director of the Office of Institutional Data and Research at The Education University of Hong Kong, I am proud to support the Sulitest movement. Sulitest TASK is an invaluable tool for advancing sustainability literacy, providing a global framework to assess and enhance knowledge of the UN SDGs. At our university, we use TASK to evaluate and strengthen sustainability education, ensuring our students and staff are equipped to tackle global challenges. By participating in the Sulitest Change Leader Programme, we reaffirm our commitment to nurturing responsible leaders who will drive meaningful, sustainable change in society."

– Jesse Xiao, Director at The Education University of Hong Kong

"TASK™ by Sulitest is a tool that we have been using for the past two years at UniLaSalle. We use it has been set up both for our students and our staff: it enables everyone to assess its own knowledge independently and objectively. It makes it easier to identify topics that need strengthening. The measure of their progress is also an asset. The international dimension facilitates comparisons. It offers a common language, especially for students coming from or going abroad."

– Geoffroy Belhenniche, Head of Ecological and Social Change at UniLaSalle

"As a professor, it is essential for me that students become fully aware of all the dimensions and challenges of sustainable development. At the Université Paris-Saclay, we aim to equip them with the multidisciplinary knowledge and skills they need to get to grips with sustainability. Sulitest's TASK™ offers an independent, universal assessment encompassing its multiple facets and their interplay. Through their TASK score, students can assess their overall command of sustainability-related topics and understand where they are lacking and what they need to improve."

– Isabelle Demachy, Vice-President for Academic Affairs at Université Paris-Saclay

"Ecopia supports the Sulitest movement since we are convinced that sustainable transformation is necessary for organizations and thus we need to mainstream sustainability knowledge for that. TASK is a recognition for our students, a "plus" for their resumes. It also enables us to better understand the level of our students' knowledge on several sustainability topics, so that we can improve our programs. Today, each student takes this test during the first weeks of training. They must also pass the TASK certificate to obtain the Ecopia diploma. Ecopia also offers it to its teachers on a voluntary basis, to help them assess their sustainability knowledge."

– Aude Serrano, Academic Director at ECOPIA

"ESTHUA firmly believes that the ecological transition must be a collective effort and that raising awareness among students is vital to ensuring a sustainable future. This is why we are working with Sulitest to pave the way for sustainability education. Similarly, the opportunity offered by TASK™ to certify the majority of our students animates us in this key role we can play in training future generations and agents of change. The TASK™ Change Leader programme is therefore part of our aim to make sustainability the common language in our tourism education."

– Laureline Congnard, Education Projects Engineer at ESTHUA

"Higher education institutions must not only continue their research to understand the challenges facing humanity, but also train the leaders who will help resolve them. The complexity of these issues necessitates humility, and we must find new ways to pool high-level expertise. Thanks to TASK™, we have a tool that allows students to become aware of their own knowledge, as well as the expertise they lack, in order to continue their learning journey and collaborate with each other.."

– Luc Bélanger-Martin. Senior Faculty Lecturer at HEC Montréal

"A mission-driven company since 2022, TBS Education is committed to training a diverse range of open-minded and forward-thinking individuals, ready to drive societal and environmental transformation within organizations. Our support for Sulitest and the integration of TASK™ into our programs reflect this ambition. More than just an assessment tool, TASK™ allows our students to engage with real-world challenges and build practical skills to contribute to a more responsible and sustainable economy."

– Béatrice Chandellier, Director of Social Transition at TBS Education

"At Ynov, with our 15 campuses and 11,000 students in France, we are determined to integrate the sustainability principles defined by the UN's SDGs into our teaching methods. In partnership with Sulitest, we use TASK™ to certify our students' knowledge of sustainability. This partnership aims to raise our graduates' awareness of current environmental and societal challenges. By certifying 75% of our students within three years, we are committed to training aware and responsible leaders, ready to meet the challenges of the future."

– Anil Benard-Dende, General Director at YNOV

"We have implemented a transdisciplinary course on sustainable development for all our students across all majors. Sulitest's TASK has proven to be a highly relevant tool because it covers the entire field and is very easy to implement. The results are clear and allow for detailed feedback. Furthermore, TASK participants are proud of their results and have been quick to promote it."

– Paul Petiot, Program Director at CAMPUS XIIe AVENUE

"The ESME engineering school with Sulitest is the guarantee of being able to challenge our knowledge on environmental and social stakes on a global scale. Our students will progress and evolve professionally and personally by validating a level of certification with the TASK tools to have a common language and culture of the CSR in a fast changing world. Thanks to this tool, we can develop our learning methods and use strong references in sustainability."

– Véronique Bonnet, General Manager at ESME

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Appendix A – Our governance

The Sulitest movement was born out of the dynamics of the Rio+20 Earth Summit. With the mission of “raising awareness and assessing sustainability literacy”, the Sulitest association, created in 2014, intends to play a key role in achieving objective 4.7 of the Sustainable Development Goals (SDGs) Agenda, which aims to “ensure that all learners acquire the knowledge and skills necessary to promote sustainable development”.

Tangible implementation of the Higher Education Sustainability Initiative (HESI), the Sulitest movement was recognized in 2016 as one of the remarkable initiatives in the United Nations partnership for the Sustainable Development Goals. Today, the association holds three United Nations accreditations, co-chairs HESI alongside UN DESA, and has a very strong international recognition.

In order to scale up its impact, the association and its two co-founders decided to create in 2021 a social business. Under French law, Sulitest Impact is a Entreprise de l’Économie Sociale & Solidaire (SAS de type ESUS), a framework that guarantees not only purpose but also commitments and responsibilities of the company as a social business. In January 2022, a fundraising initiative saw the participation of six private and public HEIs, along with business angels, who invested capital into the venture.

We are committed to making Sulitest a movement and a community serving the ”common good”. Today the Sulitest movement is therefore supported by two legal structures, the association and the social business, in order to combine relevance, independence and efficiency. The association, shareholder of the social business, is the guarantor of meaning and purpose. It has a role of advocacy supporting the mainstreaming of sustainability literacy. It will eventually play a role in capacity building, supporting sustainability education and research. The social enterprise is responsible for the design, editing, development and management of all tools, as well as the deployment of the business. Finally, it develops research and development on the impact of the use of Sulitest tools on individuals and organizations.

Appendix B – TASK™ Matrix by Sulitest

Sustainability Knowledge			x.1. **Knowing and Understanding**				x.2. **Interlinkages**			
			x.1.1 **Definitions and Key Concepts** *Descriptive Knowledge* What are we talking about? How does this work?		x.1.2 **Current State and Trends** *Contextualized Knowledge* Where are we now? How are things changing?		x.2.1 **Major Causes** *Causal Knowledge* Why is this happening? Who is doing what and why?		x.2.2 **Systemic Impacts** *Integrated Knowledge* What are the related effects? How is this affecting the larger system?	
1. **Earth Systems** The Environmental Ceiling	1.1 **Core Planetary Boundaries**	1.1.1 **Climate Change**	A	1.1.1.1.1	C	1.1.1.1.2	D	1.1.1.2.1	E	1.1.1.2.2
		1.1.2 **Biosphere Integrity**		1.1.2.1.1		1.1.2.1.2		1.1.2.2.1		1.1.2.2.2
	1.2 **Regulating Planetary Boundaries**	1.2.1 **Freshwater Use**		1.2.1.1.1		1.2.1.1.2		1.2.1.2.1		1.2.1.2.2
		1.2.2 **Land-System Change**		1.2.2.1.1		1.2.2.1.2		1.2.2.2.1		1.2.2.2.2
		1.2.3 **Ocean Acidification**		1.2.3.1.1		1.2.3.1.2		1.2.3.2.1		1.2.3.2.2
		1.2.4 **Novel Entities**		1.2.4.1.1		1.2.4.1.2		1.2.4.2.1		1.2.4.2.2
		1.2.5 **Biogeochemical Flows**		1.2.5.1.1		1.2.5.1.2		1.2.5.2.1		1.2.5.2.2
		1.2.6 **Atmospheric Aerosols Loading**		1.2.6.1.1		1.2.6.1.2		1.2.6.2.1		1.2.6.2.2
		1.2.7 **Stratospheric Ozone Depletion**		1.2.7.1.1		1.2.7.1.2		1.2.7.2.1		1.2.7.2.2
2. **Human Welfare** The Social Foundation	2.1 **Safety and Basic Needs**	2.1.1 **Nutrition**		2.1.1.1.1		2.1.1.1.2		2.1.1.2.1		2.1.1.2.2
		2.1.2 **Health**		2.1.2.1.1		2.1.2.1.2		2.1.2.2.1		2.1.2.2.2
		2.1.3 **Access to Water and Sanitation**		2.1.3.1.1		2.1.3.1.2		2.1.3.2.1		2.1.3.2.2
		2.1.4 **Housing and Human Settlements**		2.1.4.1.1		2.1.4.1.2		2.1.4.2.1		2.1.4.2.2
		2.1.5 **Access to Energy**		2.1.5.1.1		2.1.5.1.2		2.1.5.2.1		2.1.5.2.2
	2.2 **Social Welfare**	2.2.1 **Basic Income**		2.2.1.1.1		2.2.1.1.2		2.2.1.2.1		2.2.1.2.2
		2.2.2 **Social Equity**		2.2.2.1.1		2.2.2.1.2		2.2.2.2.1		2.2.2.2.2
		2.2.3 **Gender Equality**		2.2.3.1.1		2.2.3.1.2		2.2.3.2.1		2.2.3.2.2
	2.3 **Human Flourishing**	2.3.1 **Education and Culture**		2.3.1.1.1		2.3.1.1.2		2.3.1.2.1		2.3.1.2.2
		2.3.2 **Peace, Justice, and Political Voice**		2.3.2.1.1		2.3.2.1.2		2.3.2.2.1		2.3.2.2.2
		2.3.3 **Access to Networks and Social Interaction**		2.3.3.1.1		2.3.3.1.2		2.3.3.2.1		2.3.3.2.2
3. **Levers of Opportunity** That Make Sustainability Possible	3.1 **Governance**	3.1.1 **Laws, Policies, and Institutions**	B	3.1.1.1.1		3.1.1.1.2				
		3.1.2 **Infrastructure, Planning, and Natural Resource Management**		3.1.2.1.1		3.1.2.1.2				
	3.2 **Economy and Finance**	3.2.1 **Macroeconomic Considerations and Finance**		3.2.1.1.1		3.2.1.1.2				
		3.2.2 **Microeconomic Considerations, Business, and Industry**		3.2.2.1.1		3.2.2.1.2				
	3.3 **Science and Technology**	3.3.1 **Sustainability Science**		3.3.1.1.1		3.3.1.1.2				
		3.3.2 **Technology and Innovation**		3.3.2.1.1		3.3.2.1.2				
	3.4 **Individual and Collective Action**	3.4.1 **Transformative Change**		3.4.1.1.1		3.4.1.1.2				
		3.4.2 **Cognitive Capacity for Sustainability**		3.4.2.1.1		3.4.2.1.2				

The letters indicate in which order the sections appear in the assessment.

Appendix C – TASK™ Model: Technical Specification and Test Reliability

The development of the psychometric model for TASK™ is primarily driven by the need to ensure both the precision and accuracy of the scores reported to test takers. To achieve these objectives, the model is expected to be capable of scaling effectively with the increasing volume of questions, the expansion of test forms, and the growing number of test takers. Thus, it is essential that the model maintains robustness and computational efficiency in processing a high throughput of assessments.

As TASK™ continues to grow, the previously implemented psychometric model has begun to demonstrate clear limitations in scalability. While the model initially met performance expectations, significant constraints emerged as additional questions and response data were incorporated into TASK™. These challenges were further compounded by computational inefficiencies in scoring, which became increasingly pronounced with the rising number of assessments administered.

To address these issues, new set of IRT-based models were developed with two primary objectives: (1) to continuously add new questions and generate new assessment forms and (2) to improve scoring efficiency without compromising psychometric scores.

Methodology and Structure of the Model

The core modelling approach remains a Bayesian Two-Parameter Logistic (2PL) Item Response Theory implemented via Markov Chain Monte Carlo (MCMC) sampling (Fox, 2010). There are two models that operates different procedures, training and scoring, in which presenting a significant advantage over synchronous modelling techniques by enabling asynchronous estimation of the item parameters and individual abilities' estimation.

Precision and scalability were achieved through a critical design change: instead of operating on the 96 items of the TASK™ matrix, the latent ability dimensions are now reduced from 96 items to 24 subjects. To be completely precise, the latent ability dimensions are now operating on the 20 subjects comprised in the frameworks Earth Systems and Human Welfare of the TASK™ matrix, and the 4 domains comprised in the framework Levers of Opportunity.

For the training model, the purpose is to scale with the growing content in TASK™. The model produces three primary outputs:

- Discrimination parameters indicating how well items differentiate between levels of ability.

- Difficulty parameters reflecting item challenge relative to the ability.

- Ability correlation matrices capturing ability structure among subject and domain scores.

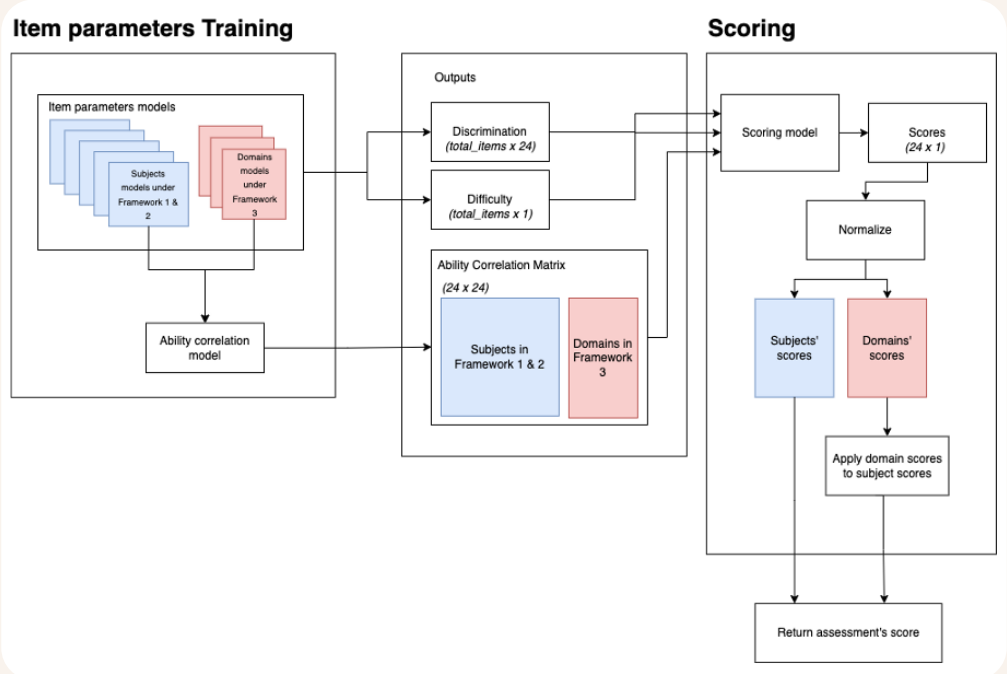
The outputs from training for the discrimination and difficulty parameters are derived from fitting the 24 separates unidimensional IRT models for each dimension. The result from those samplings is then integrated in another model to sample the ability correlation matrix, as illustrated in Figure 1.

The scoring model, in turn, leverages these three parameters to estimate individual scores. As previously mentioned, for framework 1 "Earth Systems" and framework 2 "Human Welfare", scores are computed at the subject level (20 subjects). For framework 3 "Levers of Opportunity", scores are computed at the domain level (4 domains), with domain-to-subject score conversion applied using the ratio of correct answers in each subject.

Thus, the new scoring and training models assign each question to exactly one subject or domain, simplifying the model structure and improving interpretability. The assumption of questions measuring all MIDs (Matrix IDs for each of the 96 items) has been abandoned in favour of a more targeted mapping.

Both training for the parameters and scoring models were designed with the help of J. Templin (personal communication, Jaunary 7, 2025)[1].

Figure 33. Overview of training and scoring workflow. Item parameters training consists of subject and domain models, and ability correlation model. On scoring, there is only a Scoring model alongside the method to convert domains' scores to subjects.



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Model Diagnostics and Reliability

To ensure convergence of the model inferences, we adhered to the STAN diagnostic guidelines (Stan, n.d.) during every sampling iteration. Accordingly, the model's validity and reliability were rigorously evaluated using established Markov Chain Monte Carlo (MCMC) diagnostics, as follows:

- R-hat values for all parameters remained below the critical threshold of 1.01, indicating convergence across chains. Deviations beyond this value typically signal potential non-convergence.

- Bulk Effective Sample Size (Bulk-ESS) exceeded 400 for all parameters, confirming adequate mixing. A higher ESS corresponds to more reliable estimates from the MCMC samples.

- Bayesian Fraction of Missing Information (BFMI) exceeded 0.3, suggesting the Markov chains adequately explored the posterior distribution. A low BFMI indicates poor exploration.

- Divergence occurrences were zero, confirming that the sampler did not encounter pathological regions in the posterior space

- Tree-depth warnings occurred in a few iterations, where the sampler hit the maximum tree depth. However, according to STAN documentation, this is primarily an efficiency issue rather than a validity concern, provided that all other diagnostics remain within acceptable thresholds.

- Step size adaptation was evaluated, with 90% of iterations maintaining a step size near 0.8, which indicates appropriate tuning during the warm-up phase.

In addition to STAN's recommended diagnostics, we employed Pareto-Smoothed Importance Sampling Leave-One-Out cross-validation (PSIS-LOO) as an additional model validation tool. While Luo and Al-Harbi (2017) utilized PSIS-LOO for IRT model selection and evaluation, we adopted the same methodology with a slightly different purpose: to assess the model's ability to generalize beyond the training data.

Following the model validation guidelines provided by (Vehtari, 2025) monitoring the Pareto K-hat values, with the recommended threshold of 0.7. The objective was to ensure that none of the observations, when re-fitted during PSIS-LOO, yielded Pareto K-hat values exceeding this threshold.

During training, a small number of observations exhibited Pareto K-hat values above 0.7. However, after increasing the number of posterior draws from 2,000 to 4,000, the number of such cases decreased. This improvement suggests that the model is not overfitting and can capture the structure of the observed responses.

Comparison with the Previous Model

The most significant change lies in the reduction of the ability dimensionality. This was not merely a matter of simplification but a shift towards more precise and accurate models. Previously, questions were assumed to assess all 96 Matrix IDs simultaneously. However, the new model improves in accuracy when each question is assigned to its specific subject or domain. This allows for a much cleaner interpretation of the score as it defines more sharply which question impacts which latent ability.

The ability correlation matrix, absent in the former model during the training procedure, is now explicitly estimated, providing deeper insight into how subject and domain scores interrelate.Moreover, computational performance is now scaled more effectively: scoring throughput is estimated to be able to reach approximately 5,000 assessments per day. This confirms the model's readiness for high-volume deployment.

Appendix D – TASK™ OLS Regression Results

Variable	B	SE	t	p	95% CI Lower	95% CI Upper	VIF
Constant	36.202	0.595	60.867	< .001	35.036	37.368	26.464
is_woman	-0.545	0.234	-2.334	0.02	-1.003	-0.087	1.016
age	0.422	0.021	20.446	< .001	0.382	0.463	1.045
Expert in sustainability	15.738	0.646	24.346	< .001	14.471	17.005	1.137
Has knowledge in sustainability	10.614	0.271	39.162	< .001	10.083	11.146	1.170
Has taken 3+ sustainability classes	4.14	0.322	12.84	< .001	3.508	4.772	1.647
Has taken sustainability class	2.84	0.293	9.709	< .001	2.267	3.414	1.582
Has a degree	1.528	0.301	5.082	< .001	0.938	2.117	1.044

N = 18894. R2 =.127 Adjusted R2 = .127 F(7,18886) = 392.10, p<.001. CI = Confidence Interval.

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Published in July 2025.

The Sulitest Association holds Observer status to the UN Environment Assembly (Accreditation 430/218), Special consultative status with the UN Economic and Social Council since 2019, and is an NGO in official partnership with UNESCO (consultative status) since 2022.

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