

Embedding Sustainability within the Curriculum

Curriculum Audit Methodologies and Good Practice

Responsible Futures

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Sustainability and the Curriculum

Abstract

As the trend towards embedding sustainability in higher and further education institutions continues to grow, understanding where an institution stands with regards to sustainability objectives, developing strategies to increase its capacity and to build a culture committed to sustainability is essential. Assessment tools that seek to conduct comprehensive, long-term and integrated assessments of education and research will help to move institutions towards sustainability. These new initiatives will push to transcend mere efficient environmental management of an institution's infrastructure to build an environment that embraces a different ethos¹. Recently, a variety of assessment tools have been developed to address the environmental impacts of an institution. While most assessment tools do not focus solely on curriculum, many do have curriculum components. Characteristics and limitations of various tools are discussed in order to help institutions develop an approach that identifies the level of sustainability in the curriculum.

Existing Tools

In this chapter, you can gain an overview of tools that can enable your institution to carry out a curriculum audit.

STARS

The Sustainability Tracking Assessment & Rating System

STARS is considered one of the most effective tools for assessing and tracking sustainability in all areas of campus life² and is used by many North American FE and HE institutions as well as internationally. STARS is a transparent, self-reporting framework that measures overall sustainability performance. The tool is applicable for institutions that have actively pursued a sustainability agenda as well as for those institutions that are taking first steps toward sustainability³.

There are 4 rating levels: bronze, silver, gold, and platinum that cover 4 categories; academics (curriculum and research), engagement, operations and innovation. There also is a reporting level for institutions that participate in STARS but who do not wish to be rated or have results publicly displayed³.

Under the Education and Research category, there are 58 available credits, 40 for curriculum and 18 for research. The subcategory of curriculum is further broken down into 8 areas to further identify ESD: academic courses (14), learning outcomes (8), undergraduate program (3), graduate program (3), immersive experience (2), sustainability literacy assessment (4), incentives for developing course (2), and campus as a living laboratory (4). The subcategory of research is broken down further into 3 areas, academic research (12), support for research (4) and access to research (2).

STARS provide comparisons over time and across institutions using a common set of measurements. The program facilitates information sharing about higher education sustainability practices and performance. STARS help to limit redundancy in gathering information and reporting.

5 Step Methodology

- Engage – Organizing data collection team, familiarisation with STARS Technical Manual, and preparing strategy for data collection and documenting.
- Report – enter data in STARS Reporting Tool and confirm accuracy of information by identifying a responsible party for each credit.
- Submit – STARS report and all information, and upload letter from highest ranking executive affirming accuracy of submission.
- Celebrate – Download STARS seal and template press release to communicate institution's achievements.
- Evaluate – Access STARS data displays and use report to further sustainability within campus³.

Limitations

STARS requires active participation and payment by institutions is needed to acquire full access and information.

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Website: <https://stars.aashe.org>

View [STARS Technical Manual](#):

http://www.aashe.org/files/documents/STARS/2.0/stars_2.0_technical_manual_-_administrative_update_two.pdf



SAQ

Sustainability Assessment Questionnaire

Developed by University Leaders for a Sustainable Future, SAQ is a free, simple, and largely qualitative tool that enables institutions to assess to what extent sustainability is embedded in 7 identified areas: Curriculum, Research and Scholarship, Operations; Faculty and Staff Development and Rewards; Outreach and Service, Student Opportunities and Institutional Mission, Structure and Planning⁴. The tool's collaborative nature assists in facilitating a rich and dynamic discussion on sustainability within an institution.

The curriculum section of the questionnaire is a series of 5 questions, while the research and scholarship section is an additional 3 questions. Questions are rated on a 5-point scale and include qualitative analysis.

5 Step Methodology

- The institution assembles a team of 10-15 representatives from all aspects of campus life including, faculty, staff, administration, and students.
- The team reviews the purpose and objectives of the assessment, including a review of ESD.
- For 30+ minutes, individually or in small groups, specific sections of the assessment are filled out.
- The questionnaire is reviewed and discussed section by section as a whole team.
- To figure out the institutions next steps in strengthen sustainability on campus, a facilitated brainstorming session is carried out.⁴

Depending on the length of the entire assessment process (usually 3+ hours), multiple sessions may be carried out.

Limitations

SAQ is a simple and mainly qualitative assessment tool. Results are mainly subjective, impressionistic and unable to be used in comparison to other departments and colleges within campuses, as well as to other institutions.

SAQ Contact Information:

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http://www.ulsf.org/programs_saq.html

To download the manual:

<http://www.ulsf.org/pdf/SAQforHigherEd09.pdf>



STAUNCH

Sustainability Tool for Assessing Universities Curricula Holistically

STAUNCH was first created in 2007 at Cardiff University to undertake systemic auditing of curricula related to sustainability in undergraduate teaching⁵. The tool is designed to audit education for sustainability content of higher education curricula, but also has the capacity to facilitate discussion on SD amongst schools, departments and faculties⁶. The newest version is STAUNCH® 2010.

STAUNCH seeks to address the ability to quantify curriculum content by scoring sustainability course descriptors against 40 criteria in 4 categories: economic, social, environmental, and cross-cutting themes (holistic thinking, ethics, and transparency). Information on each criterion is included, as well as the number of credits for each course and the number of students.

STAUNCH has been used by a number of HE institutions including, all Welsh universities, Georgia Tech (USA), Monterrey Tech (MX), Worcester University, and the University of Leeds⁶.

4 Step Methodology:

- Criteria Selection – 40 broad criteria, divided into the 4 categories
- Data Collect and Input - 40 criteria to identify content
- Criteria grading - levels of grading aimed at determining strength of content covered
- Analysis and results

The STAUNCH (RTM) Report

It summarises key findings in a series of graphs charts, and numerical formats that include: the percentage of modules contributing to SD; the level of contribution; the relative strength of the contributions; and the performance for the different aspects and their indicators⁷.

Details on the relative contribution to each category, the number of modules and relative percentage that contribute to SD, the relative frequency percentage of the strength levels, the degree SD contribution, and its strength, and the performance for the different aspects and their indicators are included⁷.

Limitations

It is hard to distinguish the contributions and impact identified ESD curricula may have on a student's personal and professional life in helping make societies more sustainable⁸. The tool identifies what the curriculum offers but does not necessarily reflect what is actually studied by students⁵. Content from dissertations, student placements and other content is not assessed and would take much effort to account for.

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Information:

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USAT

Unit-based Sustainability Assessment Tool

USAT was developed under a broad initiative of the UNEP (United Nations Environment program) and MESA (Mainstreaming Environment and Sustainability in African Universities)⁹. The tool has been used and adapted by multiple African universities.

The tool uses a holistic approach by focusing on different functional units of a university, as well as through a broader systemic framework⁹. USAT provides a baseline of sustainability integration by assessing informal and formal curriculum activities as well as management, operations, and policy. USAT is applicable to an individual level up to an institution level.

USAT is organised into 4 categories⁹:

- Part A - Teaching and research Teaching Approach
- Part B - Operations and management
- Part C - Student Involvement (with sustainability issues on/off campus)
- Part D - Policy and written statements

Part A is specifically focused on embedding sustainability in academic departments, curriculum, teaching, and research units. There are 20 indicators grouped under 6 clusters⁹:

- Curriculum
- Teaching Approach
- Research/and scholarship activities
- Community service
- Examination / assessment of sustainability topics
- Staff expertise and willingness to participate in sustainability teaching and research

Limitations

While USAT is an indicator-based tool, it does not allow for a precise measurement of sustainability but rather facilitates reflexive learning to decide course of action regarding sustainability¹⁰.

USAT Contact Information:

Organisation: Swedish/Africa International Training Programme (ITP)
UN Environment Programme – Mainstreaming Environment and Sustainability in African Universities (MESA)

To access USAT tool:

[http://www.pnuma.org/educamb/Red%20de%20Formacion%20Ambiental/Contenido%20GUPES/Docs%20GUPES%20-PNUMA%202012/7%20MESA%20Audit%20tool%20FINAL%202012%20\(Africa\).pdf](http://www.pnuma.org/educamb/Red%20de%20Formacion%20Ambiental/Contenido%20GUPES/Docs%20GUPES%20-PNUMA%202012/7%20MESA%20Audit%20tool%20FINAL%202012%20(Africa).pdf)



AISHE

Auditing Instrument for Sustainability in Higher Education

AISHE 2.0 is an instrument used to develop a sustainability policy as well as to assess the level of sustainability within an institution¹¹.

AISHE provides a flexible framework for institutional comparisons¹². The assessment process helps to prioritize and set goals through developmental stages, created through an internal consensus¹². AISHE consists of five modules, operations, education, research, society, and identity. Institutions may be formally certified on a 1-5 star level if they have completed an AISHE 2.0 assessment on any two modules aforementioned and are externally assessed by an AISHE 2.0 Licensed Institution¹¹.

The AISHE tool is used by a group of about 15 individuals that are representative of the administration, staff, faculty, students, and the professional field within an institution. Over the course of a day, the team seek consensus on the present state of the university concerning ESD, and about the desired developments in the years to come¹².

Methodology

Each module consists of 6 criteria that are split into four steps¹¹:

- Plan – Define goals, plan actions and processes, and have necessary expertise and resources.
- Do – Execute planned activities.
- Check – Evaluate the result of activities.
- Act – Compare and evaluate the results from 'Check' with the goals established in 'Plan' and formulate a plan to correct any discrepancies.

The 6 criteria for both Education and Research modules are listed below according to the four steps¹¹:

- Plan – Goals

- Do – Interdisciplinary integration, thematic integration, awareness & basics, and methodology
- Check – Output assessments
- Act – Compare/evaluate results from 'Check' with goals established in 'Plan' and formulate plan to correct any discrepancies.

Limitations

The instrument can at times be difficult to understand and motivations are potentially excluded¹².

AISHE Contact Information:

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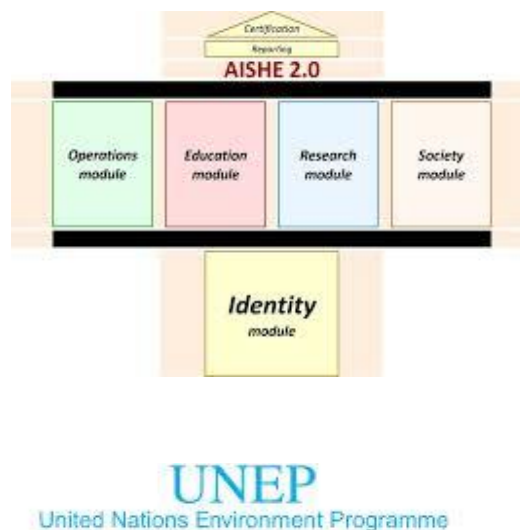
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AISHE 2.0 manual:

<http://www.slideshare.net/NRoorda/aishe-20-manual>



CSAF

Campus Sustainability Assessment Framework

Designed specifically for Canadian universities, CSAF is the product of a master's thesis and is now coordinated by the Sierra Youth Coalition (SYC). Over 25 Canadian universities and colleges have actively used the tool. CSAF is known as a useful tool in developing a baseline for sustainability and its 'synergistic' nature¹⁴.

The tool provides a framework for campus sustainability and includes 10 themes and over 170 indicators of action¹³. Themes include; health and wellbeing, community, knowledge, governance, economy and wealth, water, air, and materials, energy and land¹³.

The knowledge theme is broken down into 3 categories, and 8 subcategories¹³:

- **Training** - Orientation and Ongoing
- **Research** - Collaboration, Funding and Practice
- **Curriculum** – Internalization of learning, Education for Sustainability, and Development

The process of completing the whole of CSAF is a two-part project traditionally intended to be carried out over the course of two years. The first part and year is dedicated to collecting data and analysis, while the second part is intended for improving the institutions level of sustainability².

Limitations

Due to its use of large data collection, CSAF can be very time intensive. Since we are specifically interested in just one of CSAF's themes, knowledge, must contact the Sierra Youth Coalition to get an accurate time quote. CSAF as a participatory action research and critical inquiry framework is limited¹⁴.

CSAF Contact Information:

Organisation: Sierra Youth Coalition

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Website: <http://www.syc-cjs.org/sc/tools>

CSAF Master Thesis: <http://www.syc-cjs.org/sites/default/files/CSAF%20thesis.pdf>

CSAF condensed manual of main indicators:

<http://www.syc-cjs.org/sites/default/files/SYC-CSAF-core.pdf>



LiFE

Learning in Future Environments

LiFE is a planning and self-assessment tool for EAUC members to address a whole institution approach to sustainability through 4 Priority Areas: Leadership and Governance; Partnerships and Engagement; Learning, Teaching and Research; and Estates and Operations¹⁵. Priority Areas can be achieved one at a time or simultaneously in order to tailor the program to the institution's needs.

Each Priority Area is accompanied by strategic information to assist in developing a business case for sustainability, and is underpinned by a number of sub-themes called Frameworks to better define the elements of each of the Priority Areas¹⁵. Guidelines within the frameworks list supporting resources, as well as examples of what good practice could look like. Each Priority Area has 14 frameworks and 8 activity areas within each to add evidence of practice.

3 Frameworks for 'Learning, Teaching and Research' Priority Area:

- Learning and Teaching
- Research
- Student Engagement

8 Activity Areas¹⁵:

- Communication
- Training and Support
- Action Planning
- Policy and Strategy
- Link to the Curriculum
- Stakeholder Engagement
- Implementation
- Measurement

Methodology

The LiFE approach is set up to be transparent, fair, yet challenging. Each framework has a maximum score of 100, with each activity area scored out of 10 that is weighted and

automatically calculated for an institution's total score¹⁵.

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Green Teaching

American University Certification

The Green Teaching certification at American University (AU) is an award-winning program that awards teachers for implementing green measures in the classroom. Each spring, a Green Teacher of the Year Award is given to a faculty member who was certified during the year, and who in some way went beyond the regular certification requirements in innovative ways¹⁶. The certification has been awarded to over 300 AU faculty members and has been replicated at other universities in the U.S¹⁶.

The Green Teaching certification is a self-reporting tool. There are 5 levels of certification: 45-54 points, 55-64 points, 65-74 points, 75-89 points, and 90-100 points. There are 46 criterion split between three categories: reducing paper use (25), saving energy and reducing emissions (10), and other measures (11). Each criterion is worth 1-5 points. Under the "other measures" category, example criteria include, teach about aspects of sustainability within the subject area, connect students with campus environmental programs and opportunities; and encourage student volunteer activities in sustainability related areas¹⁶.

Upon evaluation, qualified courses will be rewarded with a seal representing one of five different levels of the Green Teaching Certificate, which can be a tool used to market courses as green to students.

This certification is great way to empower teachers to implement many sustainability measures in the informal curriculum that has the opportunity to advance the SD knowledge of students.

Limitations

This tool does not holistically assess the level of sustainability within formal curriculum of an institution.

Green Teaching Certification Contact Information:

Organisation: American University

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Management and Assessment

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<http://www.american.edu/ctrl/green.cfm>



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E&D

Equality and Diversity Curriculum Audit

While the Equality and Diversity curriculum audit is a tool specifically designed to provide a simple baseline of a department's ability to embed equality and diversity within the curriculum, it can be easily adapted to provide the same baseline for sustainability curriculum audits.

The E&D Audit reviews curriculum content in order to:

- Mainstream E&D into the curriculum
- Develop resources and materials
- Improve trainees awareness of E&D issues among
- Raise staff awareness through process and future processes¹⁷

E&D Contact Information:

Organisation: The Education & Training Foundation

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Telephone: 020 3092 5001

Website: <https://www.ifl.ac.uk>

To Download the E&D Curriculum Audit:

<http://reflect.ifl.ac.uk/viewasset.aspx?oid=3201762&type=file&webfolioid=320164>



Pilot Partners

During the pilot of Responsible Futures, partnering institutions reported challenges associated with curriculum assessments. Highlighted below are processes Bristol University, Keele University and South Lanarkshire College took to conduct curriculum audits.

Pilot Partners' Experience

Bristol University

In order to conduct its baseline review, Bristol began by framing their definition of sustainability around the UNESCO definition that stresses the importance of critical thinking, inter-disciplinary, multi-method approaches to assessment as well as challenging approaches to, and ideas about, teaching and learning.

Aim of Assessment:

- Identify all ESD related content in all academic units
- Quantify engagement with ESD
- Promote dialogue and engagement with ESD
- Create an explanatory tool that demonstrates ESD in the context of individual units within each school

Methodology

Over the course of two months, two ESD interns undertook a baseline review of all taught formal curriculum academic units within all faculties to understand and document the current status of ESD-integration. A desk study with qualitative assessment of course descriptions from Bristol's online catalogue was conducted. Due to individual interpretations of UNESCO framework and ESD values and definitions, subjectivity was accounted for.

Limitations

While the number of students enrolled in each unit was accounted for, data did not allow for assessment of a singular student who sat on more than one unit. It is difficult to assess the individual level of exposure to ESD.

Data does not reflect the strength and quality of ESD related content in units. Since Bristol is a fairly large university, the assessment was very time intensive.

Keele University

An individual conducted an assessment of the entire formal curriculum by reviewing its module descriptors. As a small university, Keele was able to assess its total number of modules offered, 2,823.

Firstly all modules that were easily identified and/or did not incorporate any relevant education for sustainability were eliminated. To identify the current level of ESD integration in the remaining modules, modules were categorized into two distinct groups: those with elements of ESD and those with strong elements of ESD. Keele's audit identified that 4% or 124 of its modules had some level of ESD present, while 61 modules were identified as having a strong level of ESD content. The information gathered from this baseline curriculum audit will be used to address Keele's goal to have each of its students take one module with ESD content during their academic career.

Limitations

While strong interest among Keele University's staff in teaching ESD content was surveyed at 79% and believe that ESD literacy among students is important, only 50% expressed confidence in actually teach ESD curriculum. Keele is working to overcome barriers to incorporating ESD content in modules by incorporating teaching strategies and providing resources increase ESD expertise among faculty. Keele is also looking to address concerns associated with time constraints in modifying modules.

South Lanarkshire College

Over the course of a few months, South Lanarkshire College set up a working group comprised of 13 college representatives, including 8 faculty, 1 from human resources, 1 student, 1 student union rep, 1 facilities rep and 1 quality rep. As a group the Responsible Futures criteria was assessed in order to source necessary evidence.

Due to time constraints, South Lanarkshire was unable to review each individual module to identify the level of ESD content. However, the college called on faculty staff to send ESD evidence from their taught modules. The working group received very positive feedback and results from the college faculty. Courses on construction were found to incorporate many ESD elements, while many economics courses covered many corporate social responsibility aspects.

Limitations

Time constraints made it hard for South Lanarkshire to cover all modules offered at the institution. Although the institution is having an impact with regards to sustainability, finding the most time efficient method to quantify current impacts is a challenge.

Endnotes

¹ YARIME, M and TANAKA, Y, 2012. The issues and methodologies in sustainability assessment tools for higher education institutions: A review of Recent Trends and Future Challenges. *6*(1), pp. 63-77.

² ABU, S.M. and ASMUSS, M., 2013. Benchmarking tools for assessing and tracking sustainability in higher educational institutions; Identifying an effective tool for the University of Saskatchewan. *International Journal of Sustainability in Higher Education*, **14**(4), pp. 449-465.

³ Stars Technical Manual, Version 2.0, <https://stars.aashe.org/pages/about/technical-manual.html>

⁴<http://www.ulsf.org/pdf/SAQforHigherEd09.pdf>

⁵ GLOVER, A., PETERS, C. and HASLETT, S.K., 2011. Education for Sustainable Development and Global Citizenship: An Evaluation of the Validity of the STAUNCH Auditing Tool. *International Journal of Sustainability in Higher Education*, (2), pp. 125-144.

⁶ <http://www.org-sustainability.com/orgsust.php?str=staunch>

⁷<http://www.org-sustainability.com/orgsust.php?str=reporting-in-universities>

⁸ LOZANO, R. and YOUNG, W., 2013. Assessing sustainability in university curricula: exploring the influence of student numbers and course credits. *Journal of Cleaner Production*, **49**, pp. 134-141.

⁹[http://www.pnuma.org/educamb/Red%20de%20Formacion%20Ambiental/Contenido%20GUPES/Docs%20GUPES%20-PNUMA%202012/7%20MESA%20Audit%20tool%20FINANCIAL%202012%20\(Africa\).pdf](http://www.pnuma.org/educamb/Red%20de%20Formacion%20Ambiental/Contenido%20GUPES/Docs%20GUPES%20-PNUMA%202012/7%20MESA%20Audit%20tool%20FINANCIAL%202012%20(Africa).pdf)

¹⁰<http://www.ru.ac.za/elrc/publicationsandresources/unit-basedsustainabilityassessmenttoolusattool/>

¹¹<http://www.slideshare.net/NRoorda/aishe-20-manual>

¹² SHRIBERG, M., 2002. Institutional assessment tools for sustainability in higher education; Strengths, weaknesses, and implications for practice and theory. *International Journal of Sustainability in Higher Education*, **3**(3), pp. 254-270.

¹³<http://waset.org/publications/9122/developing-a-campus-sustainability-assessment-framework-for-the-national-university-of-malaysia>

¹⁴ BERINGER, A., 2006. Campus Sustainability Audit Research in Atlantic Canada: Pioneering the Campus Sustainability Assessment Framework. *International*

Journal of Sustainability in Higher Education, **7**(4), pp. 437-455.

¹⁵ http://www.eauc.org.uk/life/how_to_use_the_tool

¹⁶ <http://www.american.edu/ctrl/green.cfm>

¹⁷ <http://reflect.ifl.ac.uk/viewasset.aspx?oid=3201762&type=file&webfolioid=320164>