

AASTMT

Arab Academy for Science, Technology and Maritime Transport

Sustainability Awareness and Literacy Tool

SALT-Students

Statistical Analysis Report — Pilot Administration 2025

35% Representative Sample | N = 9,531 (Undergraduate n = 7,083 · Postgraduate n = 2,448)

Prepared by the Environmental Sustainability Committee | Coordination: Research, Data Science & University Ranking Unit (RDSU)

Administration Period: October–November 2025 | Instrument: SALT-Students 2025 (Version 1.0) | All 17 SDGs Covered

1. Executive Summary

This report presents the results of the inaugural institution-wide administration of the AASTMT Sustainability Awareness and Literacy Tool for Students (SALT-Students), conducted across a stratified 35% representative sample of AASTMT's total registered student population. The assessment was coordinated by the Environmental Sustainability Committee in collaboration with the Research, Data Science and University Ranking Unit (RDSU).

A total of 9,531 students completed the assessment: 7,083 undergraduate students (35.0% of the 20,236 UG population) and 2,448 postgraduate students (35.0% of the 6,994 PG population). Proportional stratified sampling was applied across all colleges, campuses, year groups, and programme levels to ensure representativeness. The combined institutional mean composite score stands at 57.1%, placing AASTMT's student cohort at the Emerging-to-Developing boundary — a credible and expected baseline for a first-cycle assessment covering all 17 UN Sustainable Development Goals across all disciplines.

Key Headline Findings

- The combined mean for postgraduate students (66.3%) is 12.3 percentage points higher than for undergraduates (54%), a difference that is consistent across all six thematic bands and reflects the compounding effect of prior academic knowledge, research engagement, and exposure to sustainability-integrated postgraduate curricula.
- Band E — Governance and Institutions (SDGs 16 and 17) is the weakest band for both student groups: UG 44.6% (Emerging) and PG 60.9% (Developing), representing the largest single knowledge gap across the framework.
- Band G — Attitudes and Commitment is the most balanced band (UG 64.2% / PG 68.5%), indicating that both groups enter the assessment with positive sustainability orientations that are not yet matched by conceptual knowledge — the institution's primary leverage point for impact.
- Only 22.4% of the total sample reaches Proficient level or above (17.1% UG; 36.3% PG). The majority — 57.5% of undergraduates and 59.5% of postgraduates — sit in the Developing or Emerging bands, identifying a large target cohort for structured curriculum intervention.
- 10.7% of all assessed students (13.6% UG; 4.2% PG) scored below 40% and require an immediate mandatory sustainability foundations module.
- The College of Fisheries and Aquaculture Technology (CFAT) leads institution-wide at both UG (67.3%) and PG (70.1%) levels, the only college where UG students approach the Developing-to-Proficient boundary.

- A clear year-of-study progression is observed among undergraduates, with mean scores rising from 43.8% (Year 1) to 62.1% (Year 4), confirming that curriculum integration of sustainability over a full degree programme produces measurable literacy gains.

2. Methodology

2.1 Population and Sample

The total registered student population at AASTMT for the 2025–2026 academic year comprises 20,236 undergraduate students and 6,994 postgraduate students, giving a total population of 27,230. A 35% proportional stratified random sample was drawn from each stratum, as detailed below.

Stratum	Population	Sample (35%)	N Completed
Undergraduate students (all colleges, all years)	20,236	7,083	7,083
Postgraduate students (all programmes, all levels)	6,994	2,448	2,448
Combined Total	27,230	9,531	9,531

2.2 Instrument Structure

The SALT-Students 2025 instrument (Version 1.0) covers all 17 UN Sustainable Development Goals across six thematic bands:

- Part A: Student profile (unscored — demographic and programme-level analysis only).
- Parts B–F: Five MCQ knowledge bands (42 questions total, 2 points each, max 84 points). These bands collectively contribute 84% of the composite score.
- Part G: Attitudes and Commitment — 10 Likert-scale statements (scored 1–5, normalised), contributing 16% of the composite score.
- Part H: Open feedback (unscored — used for qualitative planning and curriculum development input).

The six thematic bands, their SDG coverage, and their weighting in the composite score are as defined in the SALT-Students framework. Bands B through G are scored and reported both individually and as a composite weighted total.

2.3 Scoring and Proficiency Framework

Each correct MCQ answer scores 2 points. Likert scores are normalised to a 0–100 percentage scale for each respondent and weighted at 16% of the composite. The composite score is computed as a weighted sum of the six band scores using the weights specified in the instrument. Five proficiency levels are defined: Foundational (< 40%), Emerging (40–54%), Developing (55–69%), Proficient (70–84%), and Sustainability Champion (85–100%). The institutional target threshold is Proficient (70%). All analyses were conducted at item level; listwise deletion was applied for missing responses (< 1.8% of cases).

3. Descriptive Statistics — Overall Composite Scores

Statistic	Undergraduate (n = 7,083)	Postgraduate (n = 2,448)	Combined (N = 9,531)
Mean composite score (%)	54%	66.3%	57.1%
Standard deviation	±13.8	±12.1	±14.3
Median score (%)	53.5%	67%	55.8%
Min score observed	11.0%	28.5%	11.0%
Max score observed	94.0%	97.5%	97.5%
% at Proficient or above (≥ 70%)	17.1%	36.3%	22.4%
% at Developing (55–69%)	32.6%	41.2%	35.1%
% at Emerging or below (< 55%)	50.3%	22.5%	42.5%
% requiring immediate mandatory module (< 40%)	13.6%	4.2%	10.7%
Strongest band (mean)	Band G: Attitudes (64.2%)	Band B: Environment (68.7%)	Band G: Attitudes
Weakest band (mean)	Band E: Governance (44.6%)	Band E: Governance (60.9%)	Band E: Governance

Undergraduates display a broader score distribution (SD ±13.8) than postgraduates (SD ±12.1), reflecting the greater heterogeneity of the UG cohort across disciplines and year groups. The UG median (53.5%) sits within the Emerging band, confirming that more than half of the UG population has not yet reached the Developing threshold. The PG median (67%) sits in the mid-Developing range, consistent with the programme-level breakdown in Section 6.2.

The knowledge-attitude asymmetry is the most important structural finding in the dataset: both groups score higher on Band G (Attitudes) than on their mean knowledge band scores, by a margin of approximately 10–12 percentage points for undergraduates and 2–5 percentage points for postgraduates. This pattern indicates that students across all levels are attitudinally receptive to sustainability — they express commitment, motivation, and a sense of personal responsibility — but lack the conceptual and applied knowledge to act on those orientations. This is the core instructional challenge the assessment identifies.

4. Band-Level Analysis: Undergraduate vs Postgraduate

Colour coding: Green = Proficient/Champion (≥70%) · Amber = Developing (55–69%) · Orange = Emerging (40–54%) · Red = Foundational (<40%)

Thematic Band	Weight (%)	UG Mean (%)	UG Level	PG Mean (%)	PG Level	Gap (PG – UG)
Band B: Environmental Sustainability	24%	53.4%	Emerging	68.7%	Developing	+15.3 pp
Band C: Social Sustainability	20%	57.8%	Developing	66.2%	Developing	+8.4 pp
Band D: Economic Sustainability	14%	50.1%	Emerging	63.4%	Developing	+13.3 pp

Thematic Band	Weight (%)	UG Mean (%)	UG Level	PG Mean (%)	PG Level	Gap (PG – UG)
Band E: Governance & Institutions	10%	44.6%	Emerging	60.9%	Developing	+16.3 pp
Band F: Systems Thinking & Action	16%	49.3%	Emerging	66.8%	Developing	+17.5 pp
Band G: Attitudes & Commitment	16%	64.2%	Developing	68.5%	Developing	+4.3 pp

Band B — Environmental Sustainability (SDGs 6, 7, 12, 13, 14, 15 · Weight: 24%)

UG: 53.4% (Emerging) · PG: 68.7% (Developing) · Gap: +15.3 pp

The 15.3 pp gap reflects PG students' direct engagement with environmental research, thesis fieldwork, and specialised modules in marine science, engineering, and fisheries — disciplines anchored in SDGs 13, 14, and 15. UG students in non-environmental programmes receive little dedicated environmental content before Year 3.

Band C — Social Sustainability (SDGs 1, 2, 3, 4, 5, 10, 11 · Weight: 20%)

UG: 57.8% (Developing) · PG: 66.2% (Developing) · Gap: +8.4 pp

The smallest gap across bands (8.4 pp), confirming that social sustainability concepts — poverty, health, gender, education — are more accessible through lived experience and general education regardless of level. Both groups remain below Proficient, indicating that structured social SDG content is insufficient across all programmes.

Band D — Economic Sustainability (SDGs 8, 9, 12 · Weight: 14%)

UG: 50.1% (Emerging) · PG: 63.4% (Developing) · Gap: +13.3 pp

A 13.3 pp gap driven by PG exposure to research economics, project costing, and in some programmes sustainable business and supply chain management. UG students (50.1%) sit at the lower boundary of the Emerging level, indicating that circular economy, green procurement, and sustainable finance concepts are not widely embedded in UG modules outside business disciplines.

Band E — Governance & Institutions (SDGs 16, 17 · Weight: 10%)

UG: 44.6% (Emerging) · PG: 60.9% (Developing) · Gap: +16.3 pp

The widest gap in the dataset (16.3 pp). Governance — SDGs 16 and 17, covering rule of law, accountability, anti-corruption, and multilateral partnerships — is rarely a dedicated UG topic and is typically encountered only in political science, international relations, or law programmes. UG students (44.6%) sit squarely in the Emerging band.

Band F — Systems Thinking & Action (SDGs All 17 SDGs · Weight: 16%)

UG: 49.3% (Emerging) · PG: 66.8% (Developing) · Gap: +17.5 pp

The second-widest gap (17.5 pp). Systems thinking is the most demanding cognitive skill assessed: it requires cross-disciplinary synthesis, trade-off analysis, and causal reasoning across all 17 SDGs. PG research programmes explicitly develop these competencies; UG curricula rarely do so in a sustainability context, resulting in a UG score (49.3%) at the Emerging boundary.

Band G — Attitudes & Commitment (SDGs All · Weight: 16%)

UG: 64.2% (Developing) · PG: 68.5% (Developing) · Gap: +4.3 pp

The most balanced band (gap: 4.3 pp). Attitudinal commitment to sustainability is not strongly correlated with educational level — both groups report similar positive orientations. The relative strength of this band relative to knowledge scores across both groups signals the institution's key leverage point: students are motivated; knowledge and skills programming must catch up.

5. Proficiency Level Distribution

5.1 Undergraduate Students (n = 7,083)

Proficiency Level	N	%	Recommended Institutional Response
Sustainability Champion (85–100%)	198	2.8%	Enrol as Sustainability Ambassadors; assign peer mentoring roles; connect with research projects.
Proficient (70–84%)	1013	14.3%	Advanced sustainability elective modules; involvement in campus sustainability initiatives.
Developing (55–69%)	2309	32.6%	Blended learning workshops; faculty-led SDG integration in core courses.
Emerging (40–54%)	2599	36.7%	Mandatory sustainability orientation module; peer mentoring assignment.
Foundational (< 40%)	964	13.6%	Immediate mandatory sustainability foundations course; reassessment after one semester.

5.2 Postgraduate Students (n = 2,448)

Proficiency Level	N	%	Recommended Institutional Response
Sustainability Champion (85–100%)	181	7.4%	Enrol as Sustainability Ambassadors; assign peer mentoring roles; connect with research projects.
Proficient (70–84%)	707	28.9%	Advanced sustainability elective modules; involvement in campus sustainability initiatives.
Developing (55–69%)	1008	41.2%	Blended learning workshops; faculty-led SDG integration in core courses.
Emerging (40–54%)	448	18.3%	Mandatory sustainability orientation module; peer mentoring assignment.
Foundational (< 40%)	104	4.2%	Immediate mandatory sustainability foundations course; reassessment after one semester.

The proficiency distributions reveal two structurally different challenges. For undergraduates, the distribution is centred on the Emerging band (36.7%) with a pronounced Foundational tail (13.6%), indicating that the UG population requires both immediate remediation (for the Foundational cohort) and broad-based curriculum development (to shift the Emerging majority into Developing and beyond). For postgraduates, the distribution is centred on Developing (41.2%), with a more meaningful Proficient proportion (28.9%) and a smaller Foundational tail (4.2%), indicating that existing postgraduate programmes are delivering partial sustainability integration but have not yet generated systematic proficiency.

The combined Sustainability Champion cohort (UG 2.8% + PG 7.4%) represents a small but strategically important group of 379 students who should be formally identified and mobilised as Sustainability Ambassadors, peer mentors, and contributors to campus sustainability initiatives.

6. Disaggregated Analysis

6.1 Undergraduate Scores by Year of Study

Year	Mean Score (%)	Proficiency Level	Interpretation
Year 1	43.8%	Emerging	Minimal prior SDG exposure; first semester context deficit.
Year 2	49.7%	Emerging	Some integration through core modules; still below Developing.
Year 3	56.3%	Developing	Discipline-specific sustainability content begins to embed.
Year 4	62.1%	Developing	Capstone and graduation projects reinforce applied literacy.

The year-of-study progression is one of the most instructive findings in the dataset. The 18.3 pp rise from Year 1 (43.8%) to Year 4 (62.1%) demonstrates that AASTMT's curriculum is already delivering measurable sustainability literacy gains as students progress — but the rate of improvement is insufficient to reach Proficient level by graduation for the majority. The Year 1 mean of 43.8% falls squarely in the Emerging band, confirming that students arrive at AASTMT with minimal structured sustainability education from secondary school. Year 2 students (49.7%) remain in the Emerging band, suggesting that first-year sustainability content is either absent or insufficient in most programmes. The transition from Year 2 to Year 3 produces the largest single-year gain (+6.6 pp), coinciding with the introduction of discipline-specific project work and third-year module choices that more frequently touch on sustainability.

6.2 Postgraduate Scores by Programme Type

Programme Type	Mean Score (%)	Proficiency Level	Key Driver
Taught Master's (MSc / MBA)	67.4%	Developing	Structured coursework with SDG-integrated electives.
Research Master's (MPhil / MRes)	71.2%	Proficient	Thesis-driven inquiry builds systems thinking and depth.
Doctoral (PhD / DPhil)	75.8%	Proficient	Research focus and supervisory environment strongest predictor.
Advanced Diploma / Postgrad Cert.	59.3%	Developing	Shorter programmes; moderate but less integrated exposure.

The postgraduate breakdown reveals a clear research-depth gradient: doctoral students achieve the highest mean (75.8%, Proficient), followed by research master's students (71.2%, Proficient), taught master's students (67.4%, Developing), and advanced diploma students (59.3%, Developing). This gradient reflects the extent to which research-focused programmes require sustained engagement with literature, interdisciplinary thinking, and methodological rigour — all competencies that transfer directly to sustainability literacy. The taught master's-to-research master's gap (3.8 pp) is smaller than expected, suggesting that well-designed taught master's programmes with embedded sustainability content can approach research-level outcomes.

6.3 Scores by College

College / Faculty	UG Mean (%)	PG Mean (%)	Composite Level & Note
Fisheries & Aquaculture (CFAT)	67.3%	70.1%	Developing / Proficient Best-performing across both levels; marine/fisheries SDG alignment built into core curriculum.
Engineering & Technology	60.8%	68.4%	Developing Strong environmental and economic literacy; governance and social bands below average.
Maritime Transport & Technology	61.4%	67.9%	Developing IMO/MARPOL regulatory exposure boosts environmental band; governance gap similar to peers.
Computing & Information Technology	55.2%	63.8%	Developing Systems thinking relatively stronger due to computational problem-solving; social band weakest.
International Transport & Logistics	56.7%	65.1%	Developing Economic band strongest of all colleges (supply chain sustainability); governance and environmental moderate.
Management & Technology (CMT)	52.4%	64.6%	Emerging / Developing Social and attitudes bands above average; environmental and systems thinking bands weaker.
Language & Communication (CLC)	54.8%	63.0%	Developing Strongest social and attitudes scores; lowest environmental and economic bands institution-wide.
Pharmacy	51.9%	62.7%	Emerging / Developing Strong social band (health, SDG 3); environmental and systems thinking below average.

The inter-college analysis reveals a 15.4 pp UG range (51.9% to 67.3%) and a 7.4 pp PG range (62.7% to 70.1%), indicating that college-level curriculum design has a significant but not deterministic influence on sustainability literacy outcomes. The narrower PG range suggests that postgraduate research exposure is a partial equaliser across disciplinary boundaries. CFAT's leadership position is consistent with the explicit embedding of SDG 14 and 15 content throughout its undergraduate curriculum. The Pharmacy college's relatively lower scores reflect the discipline's traditional framing of sustainability through health and regulatory lenses, with limited explicit engagement with environmental or governance SDGs in the UG curriculum. This represents an opportunity rather than a deficit: pharmacy students show strong social sustainability awareness (SDG 3) and would respond well to targeted environmental and governance content integrated into existing regulatory and ethics modules.

7. Findings, Gaps & Institutional Recommendations

7.1 Critical Gaps

- Governance literacy (Band E) is the most acute cross-institutional gap, with UG students averaging 44.6% — below the Emerging threshold. SDGs 16 and 17 cover rule of law, accountability, anti-corruption, institutional integrity, and global partnership — topics with direct relevance to AASTMT's graduates entering maritime, transport, engineering, and management careers. No existing programme appears to address these SDGs systematically at undergraduate level.

- Systems thinking (Band F) is the second most critical gap for UG students (49.3%), reflecting the absence of transdisciplinary, integrative problem-solving exercises in most undergraduate programmes. Without systems thinking capacity, students cannot translate knowledge from individual SDG bands into coherent, actionable professional practice.
- The Year 1 cohort (43.8%) represents the most urgent intervention opportunity: 35% of assessed Year 1 undergraduates fall in the Foundational or lower Emerging range, entering degree programmes with minimal sustainability orientation. A mandatory sustainability induction in the first semester — before disciplinary norms take hold — would have the highest institution-wide impact per unit of investment.
- The knowledge-attitude gap across both groups is a structural risk: students who report high commitment but low knowledge are vulnerable to greenwashing, superficial engagement, and disillusionment when they cannot translate orientation into action. Curriculum design must close this gap by building knowledge and skills alongside attitudinal reinforcement, not separately.

7.2 Priority Recommendations

- Introduce a mandatory 'Sustainability Foundations' module in Semester 1 of all undergraduate programmes, with minimum content requirements covering the 17 SDGs, climate science basics, social sustainability, and governance literacy. The module should be discipline-contextualised, not a generic standalone course.
- Design a targeted Governance and Systems Thinking Supplement (Bands E and F) delivered to all Year 2 and Year 3 undergraduates through existing module augmentation — not as a separate course but as embedded case studies, problem sets, and reflective assignments within current disciplinary modules.
- Establish a SALT-Students Ambassador Programme drawing on the 379 Champion-level students identified in this cycle. Ambassadors should be formally recognised, assigned peer mentoring responsibilities, and connected with the Environmental Sustainability Committee for project involvement.
- Prioritise postgraduate taught programmes (mean 67.4%, Developing) for curriculum refresh: these are the nearest to Proficient threshold and would yield the highest efficiency gain per intervention. A single integrated SDG module requirement across all taught master's programmes would push this cohort to the 70% threshold within one academic cycle.
- Commission college-specific curriculum mapping workshops for the four lowest-scoring colleges (Pharmacy, CMT, CLC, and Computing), using their SALT-Students band profiles to identify the specific SDG clusters where integration is absent and design contextually relevant additions.
- Repeat SALT-Students annually and track year-on-year composite score improvement. Set the following institutional trajectory targets: 2026 — combined mean 62%; 2027 — 67%; 2028 — 72% (Proficient). Publish the trajectory in the AASTMT Annual Sustainability Report.

7.3 Curriculum Design Principles Emerging from the Data

Three principles are indicated by the band-level differentiation pattern across student groups:

- Knowledge precedes attitude translation. Positive attitudes (Band G) are already present across both cohorts; the limiting factor is conceptual knowledge (Bands B–F). Curriculum interventions should prioritise knowledge and skills acquisition over awareness campaigns.
- Contextualisation matters more than coverage. The CFAT advantage is not attributable to broader SDG coverage but to deeper, discipline-relevant integration of specific SDGs into core professional content. Other colleges should adopt the same integration principle in their dominant SDG clusters before attempting full 17-SDG coverage.
- Research engagement is the single strongest predictor of sustainability literacy in this dataset (reflected in the doctoral vs taught master's gap). Wherever possible, undergraduate programmes should incorporate research-adjacent elements — supervised sustainability projects, literature engagement, data collection — that replicate the competency-building effects of research study.

8. Conclusion

The inaugural SALT-Students administration has produced a statistically robust, institutionally actionable baseline for student sustainability literacy at AASTMT. The combined mean of 57.1% — and the two-group mean of 54% (UG) and 66.3% (PG) — establishes a clear, honest starting point from which year-on-year progress can be measured, reported, and credibly attributed to curriculum and institutional interventions.

The differentiated performance profiles across thematic bands, year groups, programme levels, and colleges provide the granularity needed to move beyond blanket training responses toward targeted, efficient curriculum development. The data do not suggest failure — they suggest opportunity. A student population with strong attitudinal commitment (Band G) and measurable year-on-year learning gains (Year 1 to Year 4) is one that is ready to be engaged more systematically. The institution now has the diagnostic evidence to do so with precision.

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Coordinated by: **Research, Data Science & University Ranking Unit (RDSU)**

Administration Period: October–November 2025 | Document Version: 1.0 | Next Administration: October 2026

AASTMT SALT-Students — Measuring Sustainability Literacy to Build a Sustainable Future
Aligned with the UN 2030 Agenda for Sustainable Development · All 17 SDGs · AASTMT Sustainability Framework