GULL Week 2023: State of Learning

2023 ASSESSMENTS: INFORMATION LITERACY AND ENVIRONMENTAL SUSTAINABILTY

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Contents

Summary

- The GULL Week 2023 sample size is an adequate percentage of students overall.
- The GULL Week 2023 sample skews heavily towards female respondents, with underrepresentation of male students.
- Freshman and Seniors are slightly underrepresented as well.
- The ILT scores indicate that SU students' information literacy competency improves with each class level, with Seniors being considered proficient in information literacy based on the Association of College and Research Library Standards.
- Freshman have the lowest proficiency level in the ILT with only 1/3 considered proficient.
- Salisbury University's ILT scores are slightly higher than those of other 4-year Universities cited in previous research but below those of James Madison University's.
- For the Environmental Sustainability Assessment (ESA), which assesses knowledge and behavior, SU scores are lower than University of Maryland-College Park and Ohio State University, both of which are larger flagship public universities than Salisbury University.
- Students score progressively higher on the knowledge and behavioral portions as they advance through their education journey at SU (Seniors score higher than Freshman).
- SU students show better knowledge of higher visibility sustainability issues such as wealth inequality, pollution, and recycling, and have lower scores on questions relying on knowledge of food production systems, and the intersection of market economics and sustainability.
- More than 4 in 5 SU students indicate that, from a behavioral standpoint, they are willing to personally take a *modicum* of responsibility for environmental sustainability in their everyday lives.

Overview

Gaining Understanding as a Lifelong Learner Week, or G.U.L.L. Week, is held in September every year and constitutes Salisbury University's annual assessment of the General Education Student Learning Goals. GULL Week relies on a series of instruments that are rotated each year so as to cover all eighteen competencies, points of knowledge, and responsibilities that form the General Education program. The outcomes targeted during GULL Week 2023 for assessment include:

Table 1: Assessment Information

Essential Competencies	Instrument	Questions
Information Literacy: Students will be able to determine the extent of information needed; access information effectively and efficiently; evaluate information and its sources critically; use information ethically and effectively to accomplish a specific purpose.	Information Literacy Test, (Madison Assessment LLC, Center for Assessment and Research Studies, James Madison University)	60, multiple choice (standard format with 4-5 answer choices per question)
Personal, Social, and Cultural Responsibility	Instrument	Questions
Environmental Sustainability: Students will describe the interconnections of natural, human, and social systems, including strategies to improve ecological integrity, human well-being, and/or social equity.	Environmental Sustainability Assessment (Assessment of Sustainability Knowledge – Ohio State University & Graduate Attribute Assessment Tool – RMIT University)	16, multiple choice and ordering (12 standard format, 1 ordering, 3 scenario-based questions with 7-8 possible choices)

Methodology

This year GULL Week was conducted from September 11-18, 2023. Students participated in GULL Week virtually and in-person during proctored sessions. Participation in GULL Week is voluntary, though in select instances students may be incentivized with extra credit or even a course grade, provided at the discretion of SU faculty. GULL Week participation is available to all SU students, and the opportunity is advertised across campus via multi-media channels at the start of the fall semester. Assessments were not timed, though students were given an expected timeframe for completion of one hour.

Due to the nature of GULL Week as a low-stakes assessment arrangement, some students may not be inclined to put forth a sincere effort to engage with assessment questions and answer to the best of their ability. Wise and Kong's (2005) research of response time in testing settings indicates that the time it takes for a student to register a response can reveal whether that student has engaged fully. As a result, data for students who spent less than five seconds on each question in both the Information Literacy Test (ILT) and the Environmental Sustainability Assessment (ESA) were not included as *quality data*. This five second cutoff is quite conservative, as certain questions, particularly on the ILT, require students to review charts, graphs, or written passages prior to selecting the correct answer in multiple choice format.

Sample

Salisbury University students participate in GULL Week voluntarily and may register for an in-person, proctored experience, or sit for the assessments virtually in a location of their choosing. In addition, walk-in sessions are available to students who are unable to sign up in-advance but would like to participate. Students register for GULL Week sessions using a Qualtrics survey. Participation in GULL Week is incentivized through extra credit and a trophy to be provided to the Salisbury University school or college with the most participants as a portion of its current year enrollment.

Of the 7,030 students enrolled at Salisbury University in the fall of 2023, 2,833 (~40 %) students signed up for GULL Week using the designated GULL Week sign-up form. Of those 2,833 students who registered for GULL Week, 1,710 (~60% of the 2,833 students who initially expressed interest in GULL Week participation by completing the registration form) students provided *quality data* for the Information Literacy Test (ILT), and 1,716 students submitted data *quality data* for the Environmental Sustainability Assessment (ESA). The difference in the total number of data submissions between the two assessments can be explained by a small number of students (~1%) submitting *quality* data for only one assessment, and not the other. Please note: for a respondent's data to be considered "*quality data*," the student must have 1) answered all questions, and 2) spent a minimum of five seconds in answering the question.

Table 2: % of Enrolled Students Participating in GULL Week by School

School	Fall 2023	Fall 2022	Fall 2021	Fall 2019	Fall 2018
CHHS	36.3% (515 of 1419 total)	40.4%	33.9%	46.7%	45.9%
Fulton	20.3% (305 of 1499 total)	18.3%	22.3%	29.6%	33.3%
Henson	36.0% (334 of 929 total)	33.8%	36.8%	46.7%	46.7%
Perdue	22.2% (318 of 1435 total)	27.2%	22.4%	40.0%	38.0%
Seidel	30.7% (195 of 635 total)	34.3%	36.1%	53.8%	42.4%
Total UG	27.2% (1705 of 6281 total)*	28.7%	27.7%	39.8%	39.3%

Note: GULL Week 2020 did not happen as-planned due to the COVID-19 pandemic. Of 7030 enrolled SU students in the fall of 2023, 6281 are classified as undergraduates. The remainder are unclassified/non-degree seeking or graduate students.

ILT

Of the 2,833 students who signed-up for GULL Week, 1,710 total students (N=1710) submitted quality data for the Information Literacy Test.

Table 3: ILT Participants Compared with SU Students Overall

Race	ILT Respondents (1710)	FA23 SU Students Overall (7030)
African American	179 (11%)	977 (14%)
American Indian/Alaska Native	6 (.35%)	25 (.35%)
Asian	62 (4%)	205 (3%)
Hispanic	101 (6%)	506 (7%)
Non-resident Alien	17 (.99%)	61 (.87%)
Two or More Races	81 (5%)	294 (4%)
Unknown/Not specified	36 (2%)	198 (3%)
White	1228 (72%)	4764 (68%)
Total	1710 (24.32% of 7030)	7030

Table 4: ILT Sample - Male vs. Female

Sex	ILT	SU Students Overall
Male	490 (29%)	2933 (42%)
Female	1220 (71%)	4097 (58%)

Table 5: ILT Sample – FTS vs. TRN

First-time vs. Transfer	ILT	SU Students Overall
First-time UG Student	403 (24%)	1376 (20%)
First-time Transfer	136 (8%)	521 (7%)

Note: An additional 19 unclassified/non-degree seeking or graduate students took the ILT (N=1710). "SU Students Overall" reflects only the number of new students at SU as of fall 2023 (percentage of total fall 2023 enrollment in parentheses).

Table 6: ILT Sample by Class

Class	ILT	SU Students Overall
Freshman	478 (28%)	1838 (29%)
Sophomore	383 (22%)	1272 (20%)
Junior	395 (23%)	1381 (22%)
Senior	368 (22%)	1476 (24%)

Note: Of 7030 enrolled SU students in the fall of 2023, 6281 are classified as undergraduates, 5967 are FR, SO, JR, or SR.

ESA

For the Environmental Sustainability Assessment, 1,716 (N=1716) students submitted quality data out of 2,833 who expressed interest in participating in GULL Week.

Table 7 ESA Participants Compared with SU Students Overall

Race	ESA Respondents	SU Students Overall
African American	176 (10%)	977 (14%)
American Indian/Alaska Native	7 (.4%)	25 (.35%)
Asian	63 (4%)	205 (3%)
Hispanic	98 (6%)	506 (7%)

Non-resident Alien	16 (.9%)	61 (.87%)
Two or More Races	80 (5%)	294 (4%)
Unknown/Not specified	38 (2%)	198 (3%)
White	1238 (72%)	4764 (68%)
Total	1710	7030

Table 8: ESA Sample - Male vs. Female

Sex	ESA	SU Students Overall
Male	504 (29%)	2933 (42%)
Female	1212 (71%)	4097 (58%)

Table 9: ESA Sample – FTS vs. TRN

First-time vs. Transfer	ESA	SU Students Overall
First-time Student	410 (24%)	1376 (20%)
Transfer	129 (8%)	521 (7%)

Note: An additional 22 unclassified/non-degree seeking or graduate students took the ILT (N=1716). "SU Students Overall" reflects only the number of new students at SU as of fall 2023 (percentage of total fall 2023 enrollment in parentheses).

Table 10: ESA Results by Class

Class	ESA (% of ESA Takers)	SU Students Overall (% Overall)
Freshman	482 (28%)	1838 (29%)
Sophomore	384 (22%)	1272 (20%)
Junior	398 (23%)	1381 (22%)
Senior	369 (22%)	1476 (24%)

GPA Data

Table: 11: Cumulative GPA as of Fall 2023 - GULL Week 2023 Participants

GPA	Mean	Median	N	No GPA Info
FR	2.752	2.667	95	387
SO	3.229	3.324	330	54
JR	3.290	3.298	343	55
SR	3.391	3.541	364	5
All Undergrad	3.320	3.322	1192	513
Overall	3.210	3.225	1196	520

Table 12: Cumulative GPA as of Fall 2023 - Salisbury University Population Overall

GPA	Mean	Median	N	No GPA Info
FR	2.484	2.462	458	1380
SO	3.002	3.032	1091	181
JR	3.091	3.115	1153	228
SR	3.253	3.299	1461	15
All Undergrad	3.024	3.104	4369	1912
Overall	3.106	3.200	4869	2161

Salisbury University student scores on the ILT had a moderate, positive correlation with grade point averages, where there was data, r= .326 (p<.001). On the ESA, Salisbury University student scores had a weak, positive correlation with grade point averages, r= .205 (p<.001). GULL Week participants had slightly higher GPAs than those of the overall Salisbury University enrolled population in the fall of 2023.

Results

The following describes the results of analysis of responses to the 2023 GULL Week assessments: the Information Literacy Test (ILT) and the Environmental Sustainability Assessment (ESA).

ILT

The Information Literacy Test (ILT) is a 60-question, multiple-choice assessment based on the Association of College & Research Libraries' Information Literacy Competency Standards 1, 2, 3, and 5, as seen in Table 2 below. Standard 4 is not included as it was deemed unsuitable for assessment using a multiple-choice format. The language featured in the ACRL Information Literacy Competency Standards for Higher Education mirrors that of SU's General Education Essential Competencies outcome:

> "Information Literacy: Students will be able to determine the extent of information needed; access information effectively and efficiently; evaluate information and its sources critically; use information ethically and effectively to accomplish a specific purpose."

The ILT is designed to "directly assess collegiate students' competencies in information literacy" (Swain et al., 2014). Recommended proficiency standards for the ILT were set in 2004 by a panel of librarians, research faculty, and a doctoral student from Virginia Institutions of Higher Education. Students who answer 65% (39 questions) correctly are considered proficient.

Table 13: ILT Proficiency Guide

Proficiency Level-Performance Standard	Descriptors – the student can:
Proficient – 39 questions correct (65%)	Describe how libraries are organized. Define major library services. Choose the appropriate type of reference source for a particular information need. Identify common types of citations. Employ basic database search strategies. Locate a variety of sources in a library or online. Discriminate between scholarly and popular publications. Legally and ethically use information.
Advanced – 54 questions correct (90%)	Modify and improve database search strategies to retrieve better results. Employ sophisticated database search strategies.

	Interpret information in a variety of sources. Evaluate information in terms of purpose, authority and reliability. Understand ethical, legal, and socioeconomic issues relating to information access and use.

Table 14: ILT Results by ACRL Standards (Subscale Results)

Scales	# of Items	2023 Results - % Correct
Overall (1710 students)	60 – 100% of test	61.23% (36.74 questions correct out of 60)
Standard 1: defines and articulates the nature and extent of information needed.	12 - 20% of test	69.33%
Standard 2: accesses needed information effectively and efficiently	19 - 32% of test	54.32%
Standard 3: evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.	19 - 32% of test	63.53%
Standard 5: understands many of the ethical, legal, and socio-economic issues surrounding information and information technology.	10 - 17% of test	60.10%

Table 15: ILT Results by Class

Class (N)	Average Percentage Correct	Standard Deviation	% of Class at Proficient Level (N)	% at Advanced Level (N)
Freshman (478)	56.79%	8.56	33% (158)	0% (0)
Sophomore (383)	61.08%	8.52	45% (174)	0.5% (2)
Junior (395)	62.03%	9.13	47% (187)	1.8% (7)
Senior (368)	65.07%	8.91	54% (199)	1.6% (6)
Overall (1624)*	61.24%	8.78	44% (718)	0.9% (15)

*Note: 86 additional non-degree seeking/second degree/graduate students (for 1710 total) were not counted in this table
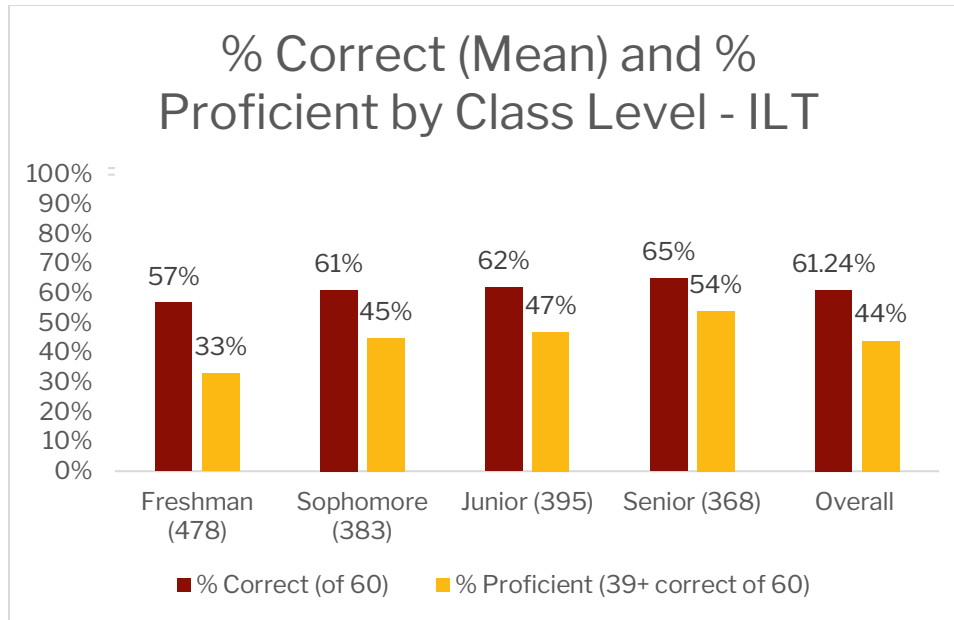
% Correct (Mean) and % Proficient by Class Level - ILT

Table 16: ILT Results by FTS vs. TRN Status

Student Status (N)	AVG % Correct (of 12)
First-time Student (403)	57.95%
Transfer (136)	64.62%

ESA

The Environmental Sustainability Assessment measures achievement of Salisbury University's General Education Learning Goals & Outcomes under the Personal, Social, and Cultural Responsibility category:

> "Environmental Sustainability: Students will describe the interconnections of natural, human, and social systems, including strategies to improve ecological integrity, human well-being, and/or social equity."

The Environmental Sustainability Assessment (ESA) contains two instruments combined together in order to best meet Salisbury University's assessment needs: the Assessment of Sustainability Knowledge (ASK), developed by Ohio State University, and the Graduate Attribute Assessment Tool (GAAT), developed by RMIT University in Australia. The two instruments were combined to form the ESA in order to address one of the challenges of assessing students' orientation towards environmental sustainability, which is that having sustainability knowledge does not necessarily translate to more sustainable actions (Heeren et al., 2016). The 16-question ESA contains 12 knowledge questions, 3 scenario-based questions asking students how they would respond to an opportunity to engage in more sustainable behaviors, and 1 final question asking students where they acquired their sustainability knowledge. Please see Appendix 1 for more information about the questions students are asked in the Environmental Sustainability Assessment.

The term and definition of "sustainable" as it concerns the ESA is aligned to the same word's use by the United Nations World Commission on Environment and Development,

and "sustainability" for the purposes of this assessment comprises three domains: environmental, economic, and social (Swain et al., 2014). The domains are reflected in the questions on both the ASK and the GAAT, which address all three, sometimes in combination. On the ASK, Questions 1-4 are environmental in focus, 5-6 are social, and 7-8 economic. The remaining questions combine domains such that 9-10 are environmental and economic, 11 is social and economic, and 12 is environmental and social. All questions on the GAAT refer to the intersection between the environmental, economic, and social domains, except for the final question, which asks students to identify the source of their sustainability knowledge.

ASK

Benchmarking for the Environmental Sustainability Assessment is more challenging than for the Information Literacy Test, as no panels for this purpose were convened during the development of the respective instruments making up the ESA (the Assessment of Sustainability Knowledge [ASK] and the Graduate Attribute Attainment Test [GAAT]). Nevertheless, performance data for the University of Maryland, College Park and Ohio State University was provided in the literature and research leading to the development and use of ASK as an instrument (Education Sustainability Work Group, 2014; Zwickle et al, 2014).

Table 17: % of ASK Answers Correct – Salisbury University (2023) Compared with the University of Maryland, College Park (2014) and Ohio State University (2014, 2018, 2022)

Institution	Average % Correct	Average Correct (of 12)
SU (2023)	54.54%	6.56
UMD (2014)	62.17%	7.46
OSU (2014)	66.62%	8
OSU (2018)	67.18%	8.06
OSU (2022)	70.57%	8.47

Using the performance data from a 2014 administration of the Assessment of Sustainability Knowledge (ASK) at the University of Maryland, College Park (UMD-College Park) and 2014, 2018, and 2022 administrations at Ohio State University (OSU), and comparisons of the respective universities' missions, characteristics and resources, a performance standard of 7 questions correct, or 58%, on the ASK was established for graduates of a course of study at Salisbury University.

Table 18: % of SU Students Scoring At or Above Benchmark (7 questions correct of 12 total)

Class (N)	# of Respondents at or above Benchmark	% of Each Class (FR, SO, JR, SR) of ESA Respondents
FR (482)	220	46%
SO (384)	201	52%
JR (398)	218	55%
SR (369)	219	59%
Overall (1716)*	907	52.86%

*Note: includes 83 additional non-degree seeking/second degree/graduate students (for 1716 total) not categorized by class.
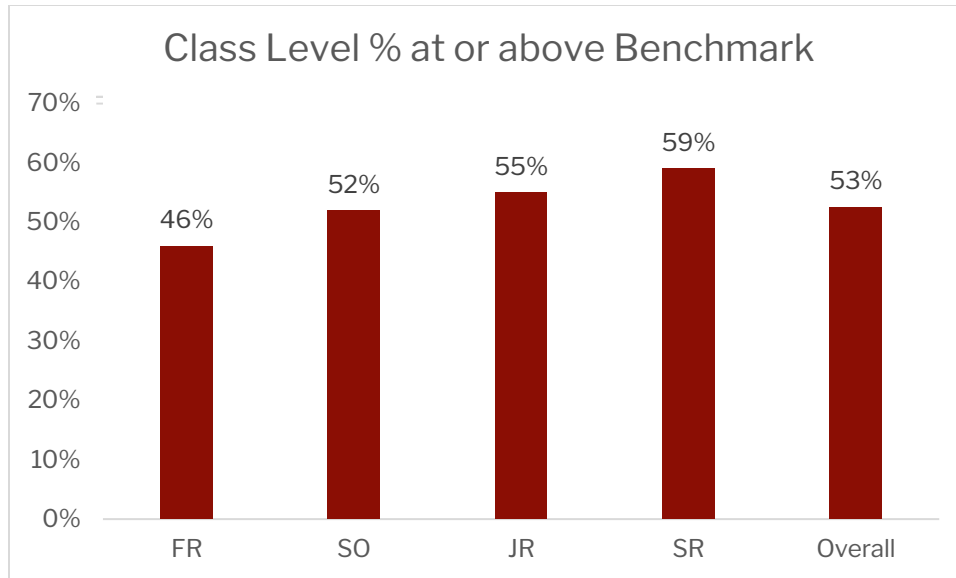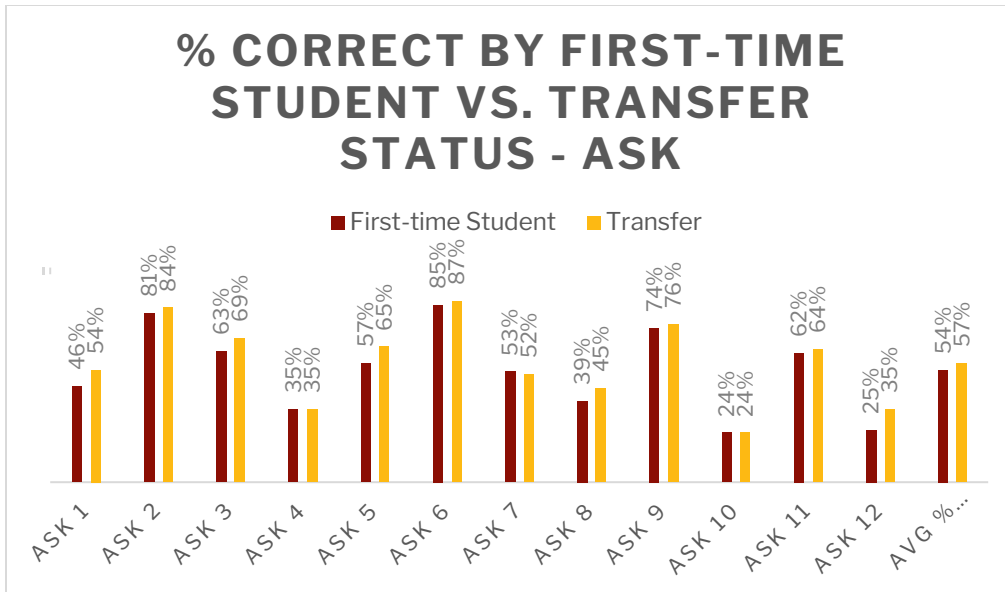
Class Level % at or above Benchmark

Table 19: ASK Performance by Class Level at Salisbury University (2023)

Class (N)	Average Percentage Correct (N out of 12)	Standard Deviation	% of Class at Proficient Level (7+ correct of 12)
Freshman (482)	50.69% (6.08)	2.40	46%
Sophomore (384)	54.34% (6.52)	2.41	52%
Junior (398)	56.22% (6.75)	2.49	55%
Senior (369)	57.35% (6.88)	2.55	59%
*Overall (1633)**	*54.65% (6.55)*	*2.49*	52.54%

*Note: 83 additional non-degree seeking/second degree/graduate students (for 1716 total) were not counted in this table

Table 20: First-time Students vs. Transfer

Student Status (N)	AVG % Correct of 12 (N out of 12)
First-time Student (410)	52.38% (6.29)
Transfer (129)	55.43% (6.65)

% CORRECT BY FIRST-TIME STUDENT VS. TRANSFER STATUS - ASK

Legend: ■ First-time Student   ■ Transfer

	ASK 1	ASK 2	ASK 3	ASK 4	ASK 5	ASK 6	ASK 7	ASK 8	ASK 9	ASK 10	ASK 11	ASK 12	AVG %...
First-time Student	46%	81%	63%	35%	57%	85%	53%	39%	74%	24%	62%	25%	54%
Transfer	54%	84%	69%	35%	65%	87%	52%	45%	76%	24%	64%	35%	57%

GAAT

The Graduate Attribute Assessment Tool contains four multiple-choice questions, three which ask students to choose a response action to a scenario, and one which asks students to identify the source of their sustainability knowledge used to answer the previous questions. The GAAT questions are specifically designed to draw out the interrelationship between environmental, social, and economic sustainability" (Holdsworth et al., 2018, p. 124). GAAT responses are evaluated on a 7-level scale from "Non-awareness" of the sustainability-related impact of an action to "Leadership 2" (see Table 21 below). Student responses showing Responsibility 1 and above were established by Salisbury University's Academic Assessment Committee (UAAC) as evidence of sustainability knowledge such that students can "describe interconnections of natural, human, and social systems, including strategies to improve ecological integrity, human well-being, and/or social equity." ("General Education| Salisbury University", N.D.). Students whose answers to the scenario-based questions match the descriptors below at the "Responsibility 1" level and above meet the benchmark set for Salisbury University graduates.

Table 21: GAAT Scale and Benchmark for Salisbury University (2023)

GAAT Level of Attribute Attainment (Items 13-16)	Descriptor
Non-awareness	Does not recognize social and environmental impacts of practice/human activity
Awareness 1	Recognizes social and environmental impacts of practice/human activity, however does not believe change is necessary
Awareness 2	Recognizes social and environmental impacts of practice/human activity and sees that some level of change may be

	necessary, however leaves it to others to take responsibility
Responsibility 1	Recognizes social and environmental impacts of practice/human activity and takes minimum action to make changes to practice
Responsibility 2	Recognizes social and environmental impacts of practice/human activity and takes active responsibility for taking action to reduce these impacts
Leadership 1	Recognizes social and environmental impacts of practice/human activity and makes changes and supports others to do the same
Leadership 2	Recognizes social and environmental impacts of practice/human activity and creates and implements change projects that influence others in community or workplace

Source: Holdsworth, Thomas, and Sandri, 2018, p. 127

Table 22: GAAT Questions 1-3 - % At or Above Benchmark (Responsibility Level 1 – See table 21 above)

	Question 1	Question 2	Question 3	AVG % Above R1 (GAAT 1-3)
FR (482)	88%	84%	78%	83%
SO (384)	90%	90%	81%	87%
JR (398)	91%	87%	83%	87%
SR (369)	88%	86%	80%	85%
*Overall (1633)**	89%	87%	81%	85%

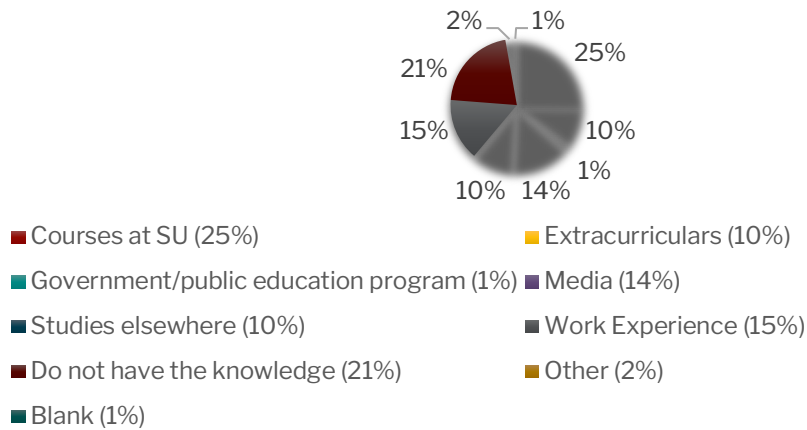*Note: 83 additional non-degree seeking/second degree/graduate students (for 1716 total) were not counted in this table

Table 23: First-time Students vs. Transfer % at Responsibility Level 1 or Above

Student Status (N)	AVG % at RI or above (GAAT Questions 1-3)
First-time Student (410)	85.20%
Transfer (129)	88.11%

Table 24: GAAT Question 4 - "Where did you gain the knowledge or experience to answer the previous Environmental Sustainability-related questions?"

Class	GAAT 6: % of Respondents Who Answered "Courses or activities at Salisbury University"
FR	14%
SO	29%
JR	30%
SR	30%
Overall (N=1716)	25%

Where did you gain the knowledge or experience to answer the previous environmental sustainability-related questions?

- Courses at SU (25%)
- Extracurriculars (10%)
- Government/public education program (1%)
- Media (14%)
- Studies elsewhere (10%)
- Work Experience (15%)
- Do not have the knowledge (21%)
- Other (2%)
- Blank (1%)

Reliability, Validity, and Further Assessment Information

Reliability testing for the Information Literacy Test by the test's developer produced coefficients (α) of 0.87 for two-year higher education institutions and 0.91 for four-year institutions (Swain, et al., 2014). Reliability coefficients were calculated using SU data in 2017 at 0.853, and for respondents in the current (2023) administration, that coefficient was 0.873. These validations were established with Cronbach's alpha reliability testing, for which values greater than 0.7 (≥ 0.7) is considered good (Holdsworth, et al., 2019; Kaiser, 1974). ILT content and construct validity were established using a panel of university reference librarians evaluating alignment with ACRL standards for the content, and five studies of administrations of the ILT for the test's constructs (Swain, et al., 2014).

For the ESA, research conducted during the development of the instruments within (ASK and GAAT) established instrument reliability and validity (Holdsworth, Sandri, Thomas, et al., 2019; Holdsworth, Thomas, Wong, et al., 2019; Zwickle, et al., 2014; Zwickle & Jones, 2018). According to Zwickle & Jones (2018), "the concepts that are covered in the ASK have been found to be correlated with a greater amount of sustainability knowledge overall." Furthermore, the ASK in-use has shown "strong convergent validity, with students majoring in sustainability related areas averaging higher scores than other students, seniors averaging higher scores than freshmen, and ASK scores significantly correlated with measures of environmental concern and attitudes." Reliability testing of 2023 ASK results (twelve questions) produced α values of 0.653, which is considered acceptable (≥0.7 is considered good). Due to the complexity of recoding GAAT variable values for those four questions and other considerations regarding the nature of the GAAT questions, analysis of GAAT results using Cronbach's alpha was not attempted.

Discussion

Sampling

Overview –

- The GULL Week 2023 sample sizes for the two assessments, of 1,710 [ILT] and 1,716 [ESA] students, are good, constituting 24% of the total enrolled student population at SU
- In terms of demographics, the sample is relatively representative of the larger SU population with the following caveat
    - The GULL Week 2023 sample skews too heavily towards female respondents, and a goal for future GULL Weeks should be to recruit more male students to participate
- Sampling difficulties can be expected where students are participating voluntarily, as incentives to participate and provide quality data vary; for this reason, capturing students in first-year seminars and later in experiential learning classes that are required as part of the new General Education curriculum presents a crucial opportunity to improve student learning outcomes and the quality of the sample
- Mean and median cumulative GPAs from Salisbury University coursework for GULL Week participants average between .1 and .3 points higher than those of the overall SU population

Of the 7,030 students enrolled at Salisbury University in the fall of 2023, 1,710 students provided quality data for the ILT, and 1,716 students provided quality data for the ESA. These numbers translate to 24.32% of total enrolled students participating in the ILT, and 24.41% of total enrolled SU students participating in the ESA. In investigations of appropriate sample sizes for survey research in the social sciences, the "Sample-to-Item Ratio" method is mentioned as a suggested method for exploratory factor analysis, with a minimum cutoff ratio of 5 respondents per 1 assessment question. The "preferred" ratio is 15:1, or 20:1. Using this formula, the sample size meets both the minimum and preferred cutoffs, with 76 total questions across both the ILT and ESA (Memon, et al., 2020). See table 25 below for a rundown of ideal sample sizes using this method.

Table 25: Sample-to-Item Ratio Cutoffs

Ratio	Minimum - 5:1	Good – 15:1	Better – 20:1
Minimum Sample Size	380	1140	1520

In terms of race and/or ethnicity, the GULL Week 2023 sample slightly overrepresents White and Asian students, and underrepresents Black and Hispanic students (overcounting the former by between 1-4%, and undercounting the latter as representative of the larger population). A more significant sampling weakness is that the GULL Week 2023 sample skews strongly female, with 71% of respondents as female, while the larger SU population is 58% female, 42% male. Among GULL Week 2023 respondents, First-time Students (new) and Transfer students are each slightly overrepresented by between 1-4% as a proportion of their representation in the larger student population. In terms of class level, the GULL Week 2023 sample slightly overcounts Sophomore and Junior-level students, and undercounts Freshman and Seniors. See tables 3-10 on pages 2-4 for demographic breakdowns.

In addition to how the GULL Week sample squares with the SU population on demographics is consideration of academic performance. Academic performance is commonly established using data points such as grades and standardized test scores in higher education settings. In the case of the latter, Salisbury University data is limited due to the advent of "test optional" policies that became essential for college access in the urgent days of the COVID-19 pandemic. This leaves grades, and more specifically, cumulative grade point averages (GPAs) as the best available metric for evaluating the profiles of GULL Week participants set alongside their non-participating peers. It is important to note that an in-built limitation with cumulative GPA is that the majority of new Freshman (First-time Students) at Salisbury University will not have valid cumulative GPA data as a result of their class status. The decision was made not to rely on GPA data from students prior to enrollment at SU due to problems with the reliability of GPAs from different secondary schools around the country (Gershenson, 2018). In addition, GULL Week is, by its nature, a low-stakes, voluntary assessment arrangement. As such, it is perhaps unsurprising that GULL Week participants, who must be willing to sit for a minimum of 25 minutes and complete test questions requiring them to weigh scenarios and evidence to choose the best answers, are slightly more academically proficient than their peers in the larger enrolled population. As can be seen in Tables 11 and 12 on page 4, mean and median GPAs for GULL Week participants average between .1 and .3 points higher than for the overall population.

ILT

Overview –

- In terms of information literacy, the average SU Senior (class level) is considered proficient in accordance with Association of College and Research Library Standards; more than half of SU Seniors have information literacy proficiency (54%)
- 1/3 of Freshman come to SU proficient in information Literacy
- 2023 SU ILT scores are slightly higher than those of four other 4-Year Universities cited in Madison Assessment's research of the efficacy of the instrument from 2008-2009; however, SU's results are below those of James Madison University's (another public, 4-Year university in the Mid-Atlantic region)
- Results show that SU students could benefit from enhanced information literacy instruction that helps specifically to prepare students to access information resources "effectively and efficiently" and to consider the "ethical, legal, and socio-economic implications of information technology" (Swain et al., 2014)

For the Information Literacy Test, the data shows that students' literacy improves as they progress through the class levels from Freshman to Senior. Freshman, on average, answer 57% of the ILT questions correctly, progressing to 61% for Sophomores, 62% for Juniors, and culminating at 65% for seniors. The average Salisbury University senior answers 65% of ILT questions (39 of 60 total) correctly, meaning that the average SU Senior is considered "Proficient" in Information Literacy in accordance with the standards for Information Literacy set by the Association of College and Research Libraries (ACRL). For GULL Week 2023, 54% of Seniors can be considered "Proficient" in Information Literacy according to this assessment and the ACRL, whereas only 1/3 of Freshman score at this

level. Please see Tables 13-15 on pages 5-6, as well as Table 26 below, for more information.

Table 26: Comparison of SU ILT Scores with Those of Other Higher Education Institutions (HEI)

HEI	N	Mean	Standard Deviation
James Madison University Freshmen, 2004	422	37.13	7.70
James Madison University Sophomores, 2004	524	41.61	8.45
Four 4-Year HEIs, 2008-2009	683	36.12	7.71
Five 2-Year HEIs, 2008-2009	839	35.77	7.92
Salisbury University, 2023	1624*	36.74	8.78

*Note: 86 additional non-degree seeking/second degree/graduate students (for 1710 total) were not counted in this table

As can be seen in Table 26 above, SU students' overall mean score out of 60 for the ILT is higher than for four 4-Year higher education institutions from 2008-2009 cited in the ILT Test Manual, as well as for five 2-Year Institutions. However, Salisbury University students overall score slightly lower than the Freshman surveyed at James Madison University in 2004, and more than 4 points lower that JMU Sophomores in 2004. Approximately 1% of overall ILT takers at SU in 2023 scored at the "Advanced Level," for which students must answer 90% of the 60 test questions correctly.

The ACRL Information Literacy Competency Standards for Higher Education provide a subscale for evaluation of information literacy competencies on a more granular level; however, Madison Assessments, developer of the ILT, warns that the ILT was not designed for the subscales (ACRL standards) to be used outside of aggregated contexts due to reliability concerns. Subscale-level analysis reveals that SU students are strongest in the area of Standard 1 - "defin[ing] and articulat[ing] the nature and extent of information needed," and weakest in the area of Standard 2 -"access[ing] needed information effectively and efficiently." SU students answered nearly 70% of questions associated with Standard 1 correctly, but less than 55% of those associated with Standard 2. SU students nearly hit the 65% benchmark with Standard 3 – "evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system." Outcomes were weaker, with around 60% of respondents answering correctly, for Standard 5 – "understands many of the ethical, legal, and socio-economic issues surrounding information and information technology."

ESA

Overview –

- SU scores are lower in the first portion of the ESA than its flagship peer university (UMD-College Park in 2014) in the Maryland system of public universities by ~1 out of 12 questions
- Students who have been at SU longer score more highly on both the knowledge and behavioral portions of the ESA
- SU students show better knowledge of higher visibility sustainability issues such as wealth inequality, pollution, and recycling, and have lower scores on questions relying on knowledge of food production systems, and the intersection of market economics and sustainability
- More than 4 in 5 SU students indicate that, from a behavioral standpoint, they are willing to personally take a *modicum* of responsibility for environmental sustainability in their everyday lives
- Incoming Freshman students report having learned their sustainability knowledge in other settings at significantly higher rates than other classes, suggesting that over time, environmental sustainability is a topic of increasing public salience

The Environmental Sustainability Assessment is composed of 16 total questions contained in two parts: 1) the Assessment of Sustainability Knowledge – 12 questions, and 2) the Graduate Attribute Attainment Test – 4 questions. The ASK is a test of knowledge of sustainability issues, and the GAAT is designed to go one step further in terms of asking students how they would respond to a scenario in which sustainability knowledge should inform decision-making.

On the first part of the ESA, the average SU student scored 6.56 out of 12, which is lower than the other two universities to which SU is compared: Ohio State University, 8.0 of 12, and the University of Maryland-College Park, 7.46 of 12. However, outcomes on the ASK portion of the ESA show clear uptrends in terms of students getting progressively more questions correct as they proceed through their educational trajectories: FR – 46%, SO – 52%, JR – 55%, and SR – 59% at or above benchmark. In addition, there is a relatively larger jump in learning outcome achievement from Freshman year to Sophomore year, than in the later stages of the student progression to graduation. This indicates that as students take credits at SU, their sustainability knowledge increases, with stronger return on investment in the earlier learning phases. In addition, almost without exception, new Transfers to SU scored higher than new Freshman across all 12 ASK questions. The benchmark was set at 7 of 12 questions correct on the ASK, and just over 52% (907) of GW ESA participants scored at or above the benchmark. 651 SU students who participated in the ESA (38%) scored higher than the average scores for the University of Maryland-College Park and Ohio State University on the first portion of the ESA (the ASK).

A closer look at the specifics of the ASK questions, as seen in Appendix 1, shows that students' knowledge of sustainability issues is fairly strong in areas such as ozone-layer depletion (question 2 – more than 80% answered correctly overall), forest management (question 3, ≥60% answered correctly), pollution (question 9, ≥75% correct) and wealth inequality (question 6 – ≥85% correct). Students struggle more with questions aimed at the tension between a consumption-based economic model and the need for environmentally sustainable practices (question 4, ≤35% correct), and food-related sustainability information (questions 10 & 12, ≤25% correct and ≤28%, respectively).

For the second portion of the ESA, the GAAT, there were 4 questions. The first 3 questions ask students which action they would take from 7-8 different choices based on a sustainability-related scenario. The last of the 4 questions asks students to identify the source of their sustainability-related knowledge. On the GAAT, the benchmark for SU was Responsibility Level 1 (see Table 21):

"Recognizes social and environmental impacts of practice/human activity and takes minimum action to make changes to practice"

Nearly 90% of students scored at Responsibility Level 1 on the first question of the GAAT part of the Environmental Sustainability Assessment. In this question, the rough outline of the choice students is making is whether to comply with a request from an employer to participate in a workplace sustainability initiative. On question 2 from the GAAT, 86% of students answered at Responsibility Level 1 and above, a slightly lower overall percentage than for the first question. This question asks whether students will participate in a government initiative that asks them to gather sustainability information about home energy use. It is likely that the mention of government and the fact that students are being asked to do this at home, instead of by an employer, has some impact on student willingness to participate. On GAAT question 3, students are asked whether they would initiate a sustainability effort at a workplace that doesn't show a concern for this issue. On this question, just over 80% of students answered with a choice at Responsibility Level 1 and above, suggesting that where students need to take a more proactive, leadership position among relatively greater resistance, willingness to participate in sustainability efforts starts to decline.

For final GAAT question 4, the last question on the ESA, see the table below. Overall, a quarter of respondents indicated that the source of their sustainability knowledge was coursework at SU. Perhaps most instructive is the rough swapping of the ratio of students answering "Courses at SU" versus "Do not have the knowledge" from Freshman to Sophomore year. By the time students have entered their sophomore year, roughly double the number of students report having gained their sustainability knowledge from Salisbury University coursework. Another interesting trend is entering Freshman at SU report having gained sustainability knowledge elsewhere, about 14%, compared with 10% for Sophomores, 9% for Juniors, and 7% for Seniors. This suggests that environmental sustainability may be a topic of increasing focus at the secondary level. Freshman students at SU report learning about environmental sustainability from all sources except government at higher rates than students from other classes, suggesting that environmental sustainability may be a topic of increasing salience.

Table 27: "Where did you gain the knowledge or experience to answer the previous Environmental Sustainability-related questions?"

	FR	SO	JR	SR
Courses at SU	66 (14%)	111 (29%)	118 (30%)	123 (33%)
Government/public education programs	3 (1%)	6 (2%)	7 (2%)	6 (2%)
Studies elsewhere	70 (15%)	40 (10%)	36 (9%)	26 (7%)
Do not have the knowledge	110 (23%)	74 (19%)	80 (20%)	71 (19%)
Extracurriculars	54 (11%)	39 (10%)	35 (9%)	32 (9%)

Media	75 (16%)	44 (11%)	69 (17%)	49 (13%)
Work Experience	88 (18%)	64 (17%)	42 (11%)	52 (14%)
Other	12 (2%)	4 (1%)	8 (2%)	7 (2%)
Blank	4 (1%)	2 (1%)	3 (1%)	3 (1%)

For future Environmental Sustainability Assessment administrations, consideration of the benchmarks used for the ESA (the ASK and the GAAT) would be a worthy ongoing undertaking. This may be especially true in the case of the GAAT portion (the latter 4 of the 16 total questions), where more than 4 in 5 students is meeting the established SU benchmark of Responsibility Level 1.

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Appendix 1

ASK Questions 1-12

1. What is the most common cause of pollution of streams and rivers?

2. Ozone forms a protective layer in the earth's upper atmosphere. What does ozone protect us from?

3. Which of the following is an example of sustainable forest management?

4. Of the following, which would be considered living in the most environmentally sustainable way?

5. Which of the following is the most commonly used definition of sustainable development?

6. Over the past 3 decades, what has happened to the difference between the wealth of the richest and poorest Americans?

7. Many economists argue that electricity prices in the U.S. are too low because...

8. Which of the following is the most commonly used definition of economic sustainability?

9. Which of the following countries passed the U.S. to become the largest emitter of the greenhouse gas carbon dioxide?

10. Which of the following is a leading cause of the depletion of fish stocks in the Atlantic Ocean?

11. Which of the following is the best example of environmental justice?

12. Put the following list in order of the activities with the largest environmental impact at the top to those with the smallest environmental impact at the bottom

    A. Keeping a cell phone charger plugged into an electrical outlet for 12 hours
    B. Producing one McDonald's quarter-pound hamburger
    C. Producing one McDonald's chicken sandwich
    D. Flying in a commercial airplane from Washington D.C. to China

GAAT Questions 1-4

1. An employer you work for has identified new sustainability measures to reduce environmental and social impacts as a result of the business' practice. These changes require you to develop new knowledge and make small changes to your work procedures. How are you most likely to respond?

2. The government is providing free smart meters to measure the energy use in your home to reduce environmental impacts. Installation of the meter will require you to develop some new basic knowledge about how to use it and encourage you to make small changes to how you use appliances in your home. How are you most likely to respond?

3. You have identified an environmental impact (for example excessive waste, use of toxic products, high energy use, impacts on natural environments from water use or land clearing etc.) that a business you work for contributes to in some way. However, the business is not largely concerned with environmental impacts of practice. How are you most likely to respond?

4. Where did you gain the knowledge or experience to answer the previous Environmental Sustainability-related questions?