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EXPLORING STUDENT SELF-ASSESSMENT IN GENERAL EDUCATION: A PILOT STUDY USING SURVEYING TOOLS

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Abstract—This exploratory study at a STEM university supports the Middle States Commission on Higher Education (MSCHE) accreditation review, linking accreditation standards with institutional effectiveness in General Education Requirements (GER). It examined student self-awareness and self-assessment of GER outcomes, assessing the viability of using existing tools for out-of-course pre-and post-tests. A survey tailored to AAC&U VALUE Rubrics on a 5-point Likert scale facilitated this innovative approach. The Spring 2023 pilot verified its feasibility, revealing student awareness insights. The research promoted connections across educational domains and will explore response rates, student growth, and wide-scale applications to enhance GER outcomes. This model's integration fosters a dialogical space between student self-reflection and instructor assessments, intertwining GER coursework with student skills and knowledge and clarifying congruence between course content, effort, and learning outcomes**.**

INTRODUCTION

The institution under study successfully achieved reaccreditation from the Middle States Commission on Higher Education (MSCHE, 2022), receiving one specific recommendation related to the assessment of its General Education Requirements (GER) program, cited as "MSCHE Standard III.5" (2023, p. 9). The institution has embarked on a robust initiative to revamp policies, systems, and processes to enhance the GER program assessment. This paper introduces an innovative approach by exploring the potential of using existing course evaluation tools for out-of-course pre-and post-tests to bolster outcomes assessment within the GER program. The recent reaccreditation by MSCHE underscores the urgency to refine evaluation methods in this domain. The proposed student self-assessments (SSA) are designed to align with instructor evaluations, constituting a synchronized strategy aimed at elevating outcomes assessment in the GER program.

The paper begins with a brief literature review to provide a background on SSA and the need for GER assessment across university programs. This article describes the research design used to explore the feasibility of using course evaluation tools to gather data on SSA for oral and written communication, followed by the methodology for the process. The article then moves to a discussion of the findings from the preliminary administration of the survey tool using the institution's course evaluation systems currently in place. Finally, the article concludes with results and reflections on the path forward and our next steps in the research.

LITERATURE REVIEW

Research on summative SSA has yielded some general findings, albeit predominantly related to single-course tasks. However, limited attention has been given to preparing students to reflect on their work in the context of more extensive longitudinal studies, such as those involving the GER program (Andrade, 2019). Nonetheless, evidence supports using reflection to improve self-assessment, notably when decoupled from grading, showing positive results for learning and curricular design (Andrade, 2019).

For the present work, the authors researched program evaluation and program design. Kirkpatrick's four-level model (Kirkpatrick & Kirkpatrick, 2006; Kirkpatrick

Partners, 2021; Praslova, 2010) is widely used for educational program evaluation. The level-1 'Reaction' survey tools focus on the experience of participants. In academic settings, instructional models for design were consulted (Biggs, 1996; Davis, 2013; Gámez, 2014; Lipuma & León, 2020) to clarify the connection between programmatic evaluation and in-course assessments, both summative and formative. This was counterbalanced with insight into higher education teaching excellence resources (Brittingham et al., 2008; Chang et al., 2014; Gravestock & Gregor-Greenleaf, 2008; Haras et al., 2017; McGoldrick & Tobey, 2016). Additional sources were identified and reviewed to inform teaching methods, e-learning perceptions, student satisfaction, and technology-based learning strategies (Dos Santos et al., 2019; Giuffré & E. Ratto, 2013; Han & Liu, 2022; Koller et al., 2005; Lint, 2013; Mwiya et al., 2017; Prenger et al., 2019). Finally, the authors have previous work discussing Learning Communities (Bukiet et al., 2023; León & Lipuma, 2023; Yáñez León et al., 2023).

Many studies have debated all aspects of using course evaluations for evaluating learning, but few have examined student self-assessment applications of the tool. Research into summative SSA has some general findings but is tied mainly to single-course tasks. Little has been done to prepare students to reflect on their work, and no studies examine the use of SSA in a more extensive longitudinal study of progress through higher educational programs like the GER (Andrade, 2019). However, research into using reflection to improve self-assessment, especially when not connected with grading, showed positive results for learning and curricular design (Andrade, 2019).

To effectively create a curriculum and instructional design that is constructively aligned, it is necessary to take a systematic approach. For this research, we utilize the ADDIE model (Dick et al., 2014) and seek to attain constructively aligned work (Biggs, 1996). The ADDIE Model takes an iterative approach in which designers Assess needs, Design and Develop materials and tools, Implement the items, and Evaluate the work to determine the efficacy to make improvements to debug and optimize the design. This project evaluates the use of the existing tool to measure its usefulness for broadening its application with minimal changes to existing work by faculty while providing a much-needed set of measures for the current curriculum. This also paves the way for aligned evaluations for self-reflection and formative feedback to be added into faculty instructional design with little or no disruption.

METHODOLOGY

This study explores the feasibility of integrating the summative SSA into the institution-wide survey system and well-established course evaluation process on the identified GER outcomes through several successive pilots. By adding questions tied explicitly to the larger institutional GER assessment initiative, the course evaluation system served as an integral and essential part of measuring the GER outcomes, which are specifically identified in MSCHE Standard III.5. The GER-related survey questions were built using the Kirkpatrick model to develop the Likert style measures based on holistic rubrics for the GER outcomes included in the study, which are Written Communication and Oral Communication.

STUDENT SELF-ASSESSMENT SURVEY ADMINISTRATION

Utilizing the course evaluation system in this manner can foster assessment and continuous improvement of GER in several ways. Student self-reflection on their

proficiency in student learning outcomes will provide them with opportunities to connect GER coursework and their contributions to student's skills and knowledge, both within and beyond their fields. Self-reflection data can also be systematically compared with instructor-mediated assessments of students' proficiency. This allows for identifying opportunities to align better or communicate the connections between course content, student coursework, and the GER student learning outcomes.

The study has crafted survey questions per the Kirkpatrick educational program's Level 1 evaluation style. Utilizing a 5-point Likert scale, these questions allow students to select a proficiency level from a holistic rubric corresponding to particular outcomes. These outcomes were deliberately designed, drawing upon the nationally acknowledged written and oral communication standards, notably the AAC&U VALUE Rubrics(AAC&U, 2023). For greater coherence, two exemplary questions reflecting these standards will be included in all General Education Requirements (GER) courses. These courses, compulsory for all enrolled students, will explicitly outline the criteria for assessing oral communication and writing proficiency within the syllabus. Furthermore, a specific subset of courses, under the supervision of the Principal Investigator, will implement the same survey questions. These will be managed through the existing institutional survey system, ensuring a consistent evaluation approach across different curriculum segments.

The pre-semester GER SSA questions were administered at the beginning of the semester using the institution-wide survey system. A set of GER-related questions was designed to collect students' awareness of GER requirements, their familiarity with GER literacies, and their self-assessed abilities in the foundations of writing, writing in context, and oral communication. All students registered for these courses were invited to participate in the pre-semester survey (n=2279). The survey is confidential and voluntary to all students.

The post-semester GER-related questions were tightly coupled in the well-established course evaluation instrument. The same questions regarding students' self-assessed abilities in the foundations of writing, writing in context, and oral communication were added at the end of the current course evaluation questionnaire. A total of 2239 students enrolled in these courses were invited to participate in the course evaluations. The sample includes 108 sections of GER-related courses. Similarly to the pre-semester survey, course evaluations are confidential and voluntary. All students' responses are aggregated and anonymized at the course level.

This study measured both the pre-semester and post-semester survey response rates, student self-assessed comparative growth, functional issues with the programs, and feasibility of wide-scale application of enhancing outcomes assessment of the GER program to support meeting our MSCHE standards and recommendation.

FINDINGS

This section details the distribution and response rates of the pre- and post-semester General Education Requirement (GER) surveys, highlighting the demographic composition of the respondent, Table 1 shows that the pre-semester General Education Requirement Survey (GER) was distributed to 2,279 students from February 14th, 2023, to March 2nd, 2023, with a response rate of 17.42% using the institution-wide survey system. 75% of the students (n=297) were enrolled in first-year courses, while the rest were in fourth-year courses. For the first-year courses, 270 students (68%) are from one section, and 27

(6.8%) are from the other section. For the fourth-year courses, we collected 100 students' responses. The confidence interval for the pre-semester survey is ±1.56%. The post-semester General Education Requirement Survey was distributed to 2,239 students from March 29th to May 2nd as a subset of the university course evaluations. Among these students, we received 1227 responses for the GER-related question at a 54.8% response rate. Among all the respondents, 36% of the students were enrolled in the fourth-year GER courses, and 63% of students were enrolled in the first-year GER courses. The confidence interval for the post-semester survey is ±2.06%. The average course evaluation response rate for the spring of 2023 semester of these courses is 56.1% (n=1255). That is to say, only 28 students who responded to the course evaluations questions did not respond to the GER questions in the course evaluation survey.

The following four sections provide a discussion of the results for each of the survey questions: I. Awareness & Familiarity with GER, II. Foundations of Writing, III. Writing in Context, and IV. Oral Communication.

I. *Awareness & Familiarity with GER: This subsection explores students' awareness and familiarity with GER requirements and literacies, uncovering a distinction between first-year and fourth-year students' understanding.*

• *Awareness of GER.* The pre-semester survey results indicate (Table 2) that 58% of the students agreed that they were aware that this course satisfies a GER requirement before taking the survey, while the rest, 42%, were not. 63% of students in the fourth-year courses were aware that this course satisfied a GER requirement, while 56% of students in the first-year courses were aware that this course met a GER requirement.

• *Familiarity with GER Literacies.* In the pre-semester survey (Table 3), the students were asked about their familiarity with the institution'sinstitution's GER literacies (i.e., students demonstrate proficiency in five general education literacies: computing, cultural, quantitative reasoning/mathematics, scientific, and social science; the answers were measured on a 5-point scale with one being "Not Familiar At All to five being "Completely Familiar.") The mean score of the 354 students who answered was three; on average, students were "Somewhat Familiar" with it.

• 34.8% of the students reported being "Completely" or "Very Familiar" with the GER literacies. In comparison, 35% voted that they were "Somewhat Familiar," and 30.2% were "Less Familiar" or " Not Familiar" at all. Specifically, 50% of students in the fourth-year courses compared to 30% who were in the first-year courses said they are "Completely Familiar" or "Very Familiar" with the GER literacies. The average for students in the fourth-year courses is 3.42 compared to those in the first-year courses, which is 2.85.

• Overall, students' responses showed that they are not completely aware of the GER courses and are familiar with the GER literacies. The findings suggested a slight increase for the fourth-year students regarding their awareness and familiarity with GER courses and literacies compared to the first-year students. This might be due to the university endeavors of GER education throughout the undergraduate curriculum. However, a substantial portion of fourth-year students were still unaware and felt familiar with the GER courses and literacies.

II. *Foundations of Writing: Focusing on self-assessment, this segment analyzes students' perceptions of their writing skills, offering*

comparisons between pre- and post-semester evaluations in specific writing domains.

- In both the pre and post-semester GER survey (Table 4), students were asked to self-evaluate their skills on a scale of 1-5, which were as follows, 1 – Emerging, 2 – Developing, 3 – Competent, 4 – Proficient, and 5 – Accomplished. The question stated that in fulfilling the Foundations of Writing learning outcome if they were able to develop and clearly express ideas in writing that are responsive and appropriate to audience, topic, and purpose.

- In the pre-semester survey, students felt that they were most accomplished in Utilizing mechanics and writing conventions (i.e., capitals and punctuations) (4th sub-question), which had a mean of 4.24, where 82.8% of them expressed themselves as being Proficient and Accomplished. They followed it by Using vocabulary and word choices to convey ideas (3rd sub-question) which had a mean of 4.03 (77.7% being Proficient and Accomplished), Composing writing (1st sub-question) with a mean score of 3.97 (75.6% being Proficient and Accomplished) and adjusting for different styles, tones, purposes, and audiences (2nd sub-question) was the least among them with a mean of 3.84 (66.2% being Proficient and Accomplished).

- The overall mean of 4.02 matched with the final sub-questions mean, which Overall integrated the above elements to effectively utilize the foundations of writing, so the students felt proficient in this regard. All the sub-questions had less than 5% of the students who selected the developing and emerging options.

- In the post-semester survey, however, students reported an average of 3.99 on Utilizing mechanics and writing conventions (i.e., capitals and punctuations) and only an average of 3.82 on the overall question regarding integrating the above elements to effectively utilize the foundations of writing. Students who participated in both pre and post-semester surveys reported a slightly higher post-semester average self-assessed skill level compared to students who only participated in the post-semester survey. Still, their skill level is lower than the average pre-semester self-assessed skill level.

III. Writing in Context: This part examines students' ability to adapt their writing to specific contexts and illustrates how they integrate content, with a comparison of self-assessed skills before and after the semester.

- As Table 5 suggested, students were asked to self-assess their current level of mastery To fulfill the Writing in Context, i.e., if they could apply appropriate, relevant, and compelling content to illustrate knowledge of the subject, demonstrate understanding of context through detailed attention to disciplinary conventions including organization, presentation, formatting, and stylistic choices.

- In the pre-semester survey, for Applying appropriate, relevant, and compelling content to illustrate mastery of the subject, the mean was 3.95, where 73.4% of the students felt they were Proficient or Accomplished and only 5% selected the Developing or Emerging option, and the rest felt competent. For Adjusting the writing style to fit specific contexts (i.e., organization, presentation, formatting, and stylistic choices), more students felt Proficient or Accomplished (75.8%), which gave it a higher mean of 4.03, only 3.9% of them thought they

were still Developing or Emerging while the rest chose competent—in the last sub-question, effectively integrating the above elements to write in context. The mean of 3.95 was nearly equal to the total weighted overall mean of 3.97, where only 5% felt they were Developing or Emerging, while 73.3% voted as being Proficient or Accomplished.

- In the post-semester survey, the student reported an average of 3.80 on applying appropriate, relevant, and compelling content to illustrate mastery of the subject, an average of 3.83 on adjusting writing style to fit the specific context, and an average of 3.81 on integrating the above elements to write in context effectively. For students who participated in both pre and post-semester surveys, they reported a slightly higher post-semester average self-assessed skill level compared to students who only participated in the post-semester survey. Still, their self-assessed skilled level is lower than their average pre-semester self-assessed skill level.

Overall, students rated lowest on adjusting for different styles, tones, purposes, and audiences. The reported negative growth could also be due to a better understanding of the expectations of the Foundations of Writing and Writing in Context throughout the semester. Students who participated in the pre-semester survey have higher post-semester self-assessed skills due to their awareness of the learning objectives of these GER courses and hence pay more attention to the GER learning outcomes.

IV. Oral Communication: Concluding with oral communication, this section reveals students' self-rated proficiency in preparing and presenting content, as well as expressing it orally, and examines the differences between the start and end of the semester.

- For oral communication in Table 6 the pre- and post-semester surveys found a similar pattern. On preparing and presenting effective content (i.e., organization, language, graphics, and other supporting materials), the pre-semester mean was 3.98, where 73.8% of the students felt they were Proficient or Accomplished and 7.4% selected the Developing or Emerging option. The post-semester indicated an average of 3.82. For Expressing content orally (i.e., vocal character, diction, and expression), 68.1% of the students felt Proficient or Accomplished, resulting in a mean of 3.87 in the pre-semester survey and 3.70 in the post-semester survey.

- For the last sub-question, integrating the above elements to deliver the central message effectively, the mean was 3.94 during the pre-semester survey, where 71.2% chose Proficient or Accomplished, and 7.7% decided on the Developing or Emerging options, while the average rated at 3.79 in the post-semester survey. In general, students felt that they were competent and proficient in oral communication and least skilled in expressing content orally. Again, the pre-semester and post-semester differences in student self-assessed skill level may be due to a better understanding of the expectation through semester-wide learning on the object.

LIMITATIONS AND FUTURE PLANS

These pre and post-semester findings have limitations due to using different survey platforms and contexts (i.e., stand-alone survey vs. combined with course evaluations). Previous literature has also well documented the potential bias of self-assessed ability

results. Typically, the bias is lower at the post-test than at the pre-test after the intervention (Rosenman et al., 2011), which helps to explain the negative growth we observed from this project. None of this project's findings should be interpreted as causal results. Ultimately, this project explores the feasibility of integrating GER-related SSA questions into the course evaluation system. The collected data will be analyzed along with the instructor-mediated assessment data to understand student general education learning outcomes better.

REFLECTION ON IMPLICATIONS AND CONCLUSIONS

The findings from this comprehensive study, along with the successive pilots exploring the feasibility of using course evaluation for student self-assessment of GER outcomes, present a profound impact on broader educational and pedagogical landscapes.

Enhancing Curriculum Alignment: The marked difference in awareness and familiarity between different academic years indicates a need for more consistent GER literacy across the curriculum, supporting ongoing development. This approach not only encourages standardization but fosters continued growth in student understanding of essential general education requirements.

Personalized Learning Paths: Insights into foundations of writing and writing in context proficiency levels reveal opportunities for targeted and individualized learning, potentially enhancing skill development. Recognizing these opportunities can lead to tailored educational paths that better meet the specific needs of students.

Oral Communication Development: The study's insights into oral communication call for a reassessment and renewed emphasis on how these skills are cultivated. By focusing on this critical aspect, educational institutions can create a more robust framework for learning and skill development in oral communication.

Integration of GER Self-Assessment into Course Evaluation: The successful integration of GER self-assessment questions into course evaluations offers a promising approach to align with institutional standards such as MSCHE Standard III.5. The increase in students' response rate from 17.4% to 54.8% and the consistency in response rates even after adding three additional matrix questions substantiate this integration as an effective method.

Insights from Response Rates: The self-assessed results post-semester being lower than pre-semester may indicate an enhanced understanding of the expectations in foundations of writing, writing in context, and oral communication. Moreover, students participating in pre- and post-semester assessments demonstrated a higher self-assessed score, signifying the value of continuous evaluation.

Compliance and Ethical Considerations: The alignment with MSCHE Standard III.5 and the assurance of compliance underscores the responsible conduct of this feasibility study. These elements highlight the rigorous ethical framework that guided the research.

Broadening the Scope of GER Awareness: The increased response rate and the comprehensive approach to evaluation and self-assessment strengthen the case for incorporating GER awareness into the broader university culture. This aspect of the study points to the potential for broadening the reach and impact of general education requirements.

Influence on Future Research and Policy: The study and its innovative approaches set a precedent for future research, providing a robust methodological framework adaptable to diverse educational settings. By establishing a solid basis for further investigation, the study

contributes to shaping educational policy and practice.

In conclusion, enriched by the feasibility study of integrating self-assessment into course evaluations, this reflection offers a multifaceted understanding of the implications. It enhances teaching and learning practices, compliance with institutional standards, continuous assessment, and policy development. This synthesis guides educators, administrators, and researchers aiming to cultivate a more innovative and responsive educational environment.

DISCLOSURE OF SUPORT STATEMENT

You can see our Disclosure of Suport Statement (DSS) at: https://osf.io/fwnu6

APPENDIX

Characteristics	Group	Pre-semester				Post-semester			
		Sample Total=397		Population Total=2279		Sample Total=1227		Population Total=2239	
		n	%	n	%	n	%	n	%
Course Level	First-year	297	74.8	1387	60.9	774	63.1	1352	60.4
	Third-year	-	-	25	1.1	7	0.6	24	1.1
	Fourth-year	100	25.2	867	38.7	446	36.3	863	38.5

Table 1. Descriptive statistics

Responses	Count	Percentage
Yes	218	58.0%
No	158	42.0%
Total Responses	376	

Table 2. Before receiving this survey, were you aware that this course satisfies a GER requirement?

Responses	Count	Percentage
Completely familiar (5)	41	11.6%
Very familiar (4)	82	23.2%
Somewhat familiar (3)	124	35.0%
Slightly familiar (2)	46	13.0%
Not familiar at all (1)	61	17.2%
Average:	2.99	
Total	354	

Table 3. The GER requires that students demonstrate proficiency in five general education literacies: computing, cultural, quantitative reasoning/mathematics, scientific, and social science. Before reading this statement, how familiar are you with our institution's GER literacies?

Foundations of Writing	Pre-semester	Total	Post-semester	Total	Participated in Both	Total
Composing writing.	3.97	328	3.75	1221	3.87	282
Adjusting for different styles, tones, purposes, and audiences.	3.84	328	3.68	1220	3.78	283
Using vocabulary and word choices to convey ideas.	4.03	327	3.82	1219	3.95	283
Utilizing mechanics and writing conventions (i.e., capitals and punctuations).	4.24	327	3.99	1219	4.14	282
Overall, integrating the above elements to effectively utilize the foundations of writing.	4.02	326	3.82	1217	3.96	283

Note: 1= Emerging, 2=Developing, 3=Competent, 4=Proficient, 5=Accomplished

Table 4. To fulfill the Foundations of Writing learning outcome, you should be able to develop and clearly express ideas in writing that are responsive and appropriate to the audience, topic, and purpose.

Writing in Context	Pre-semester	Total	Post-semester	Total	Participated in Both	Total
Applying appropriate, relevant, and compelling content to illustrate mastery of the subject.	3.95	316	3.80	1216	3.89	284
Adjusting writing style to fit specific contexts (i.e., organization, presentation, formatting, and stylistic choices).	4.03	315	3.83	1218	3.94	284
Overall, integrating the above elements to effectively write in context.	3.95	315	3.81	1215	3.94	284

Note: 1= Emerging, 2=Developing, 3=Competent, 4=Proficient, 5=Accomplished

Table 5. To fulfill the Writing in Context, you should be able to apply appropriate, relevant, and compelling content to illustrate mastery of the subject and demonstrate your understanding of context through detailed attention to disciplinary conventions, including organization, presentation, formatting, and stylistic choices. Please self-assess your current level of mastery for each statement.

Oral Communication	Pre-semester	Total	Post-semester	Total	Participated in Both	Total
Preparing and presenting effective content (i.e., organization, language, graphics, and other supporting materials).	3.98	313	3.82	1220	3.91	284
Expressing content orally (i.e., vocal character, diction, and expression).	3.87	313	3.70	1216	3.78	283
Overall, integrating the above elements to effectively deliver the central message.	3.94	313	3.79	1214	3.85	284

Note: 1= Emerging, 2=Developing, 3=Competent, 4=Proficient, 5=Accomplished

Table 6. To fulfill the Oral Communication skills, you should be able to verbally express ideas in a responsive and appropriate way to particular topics and audiences while engaging in active listening and adapting to developing situations and contexts. Please self-assess your current level of mastery for each statement.

DISCLOSURE OF SUPPORT STATEMENT OF CONTRIBUTIONS

Title of work: Exploring Student Self-Assessment in General Education

Authors and roles

Cristo Ernesto Yáñez León (Researcher)

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Yi Meng (Data Manager)

Jeremy Reich (Project Manager)

Acknowledgment of individuals, groups, and organizations

Beyond the authors listed, we consulted with the Institutional Review Board (IRB) regarding the exemption of the study; they noted the following:

If you will be collecting data for internal departmental, school, or other University administrative purposes (e.g. teaching evaluations, customer service surveys) or conducting surveys for the purposes of improving services and programs of the University or for developing new services or programs for students, employees, or alumni (with privacy protected, confidentiality maintained, and voluntary participation) or collecting data as part of a class exercise or course requirement and do not intend to use it outside of the classroom, then IRB review and approval is not required. However, if you will be collecting data from human subjects with the intent to contribute to generalized knowledge, then yes, your proposed activities require review and approval by the IRB. (personal communication)

Dr. Eugene P. Deess as director of the Office of Institutional Effectiveness, oversaw the survey data gathering and commented upon the final manuscript.

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To complete the SLR, the NJIT library database search was utilized.

The paper was edited and proofed with Microsoft Office LTSC Professional Plus 2021 using the "Spelling & Grammar" tool. In addition, the authors utilized Grammarly Premium to ensure correctness, clarity, engagement, and delivery and to detect any instances of plagiarism.

The authors used Zotero as a tool to collect, annotate, cite, and organize research.

The authors used facilities software, and equipment from their institution (i.e., Survey platform, Course Evaluations platform, Online meeting platform, Computers, Printers, etc.)

Acknowledgment of other sources of content

Are there other sources of content, authority, and/or support you incorporated into this work beyond what is cited in the work (in-text and reference page) and the disclosure listed above?

No.

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From Cristo Leon: As a visitor to this land from "la Huasteca" a geographical and cultural region located along the Gulf of Mexico; I strive to deepen my understanding of the local Indigenous communities… I commit to reframing my responsibilities to land and community. I come with respect for the land upon which we gather, and I acknowledge it is part of the traditional territory of the Lenni-Lenape, called "Lenapehoking.

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