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CURRICULUM & TEACHING STUDIES | RESEARCH ARTICLE

Creating a network between community college students in first-year seminars and in capstone courses using writing assignments

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Abstract: Writing, a critical pedagogical tool, cultivates student learning and fosters deeper understanding of the material. When frequent, low -stakes (informal) writing activities help students write more freely, engage with the material and thus become active learners. Looking at students who are at opposite ends of a community college spectrum, this article compares and contrasts students' writing skills using low-stakes assignments, including peer-reviewing of each other's work, in a capstone course and in a First-Year Seminar in terms of organization, clarity in communication and content analysis. The data generated from this study stem from an interdisciplinary collaboration among three instructors from Humanities, Mathematics and Natural Sciences, with the goal of creating a network between students in First-Year Seminars and students in the capstone course. Research methods in this context included assigning common readings to students in different classes on the theme of Women in STEM. It also included a peer review component: students reviewed each other's assignments and instructors visited each other's class to lead a discussion on the paucity of women in the fields of sciences or as Nobel Prize winner, with the additional aim of improving women's interest in STEM courses.

ABOUT THE AUTHORS

The authors' collaborative research efforts are focused on incorporating critical thinking and creativity, inquiry and problem solving, and integrative learning into a cross-disciplinary student learning environment. Within this context, our work has involved incorporating writing to learn and critical literacy activities among students at opposite ends of the longitudinal spectrum, those who are completely new to College life and those who are encountering the culminating College experience. In order to actively engage students in the dynamics of the learning process, we have focused on critical societal concerns, such as the underrepresentation of women in the sciences and the key contributions of women Nobel Prize winners to their scientific fields. The research reported in the paper serves to provide a platform for first year students to be guided and learn from the experiences of students in their culminating course and also makes students aware of important current civic issues.

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PUBLIC INTEREST STATEMENT

Although a community college Associate Program is designed for two years, it takes on average six years for students to graduate. Our article details a novel collaboration effort taking place in an urban community college environment, comprising close interactions between students, who are freshly enrolled in the College and their peers, who are about to graduate. We assigned these students similar assignments and readings and we had senior students peer review freshmen's assignments. The article discusses the benefits of low stakes assignments in terms of enhancing learning and writing skills and elaborates on the importance of bringing coherence to the capstone curricula that Liberal Arts majors need to fulfill before transferring to a four-year college in order to improve student retention and graduation rates.

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1. Introduction

It is known that writing is a critical aspect of student learning as it fosters deeper insight and understanding of disseminated information as well as the integration of knowledge from distinct contexts (Emig, 1977). Studies have shown that writing assignments increase students' reading comprehension skills and analytic writing competencies (Matsumura, Wang, & Correnti, 2016). This exemplifies the importance of writing as a critical pedagogical tool.

LaGuardia Community College provides an excellent environment to explore instructional strategies that comprise significant writing activities, due to its commitment to the practice of Writing Across the Curriculum (WAC) ("Writing in the Disciplines at LaGuardia Community College," n.d.). WAC endeavors are typically focused on one of two possible theoretical frameworks: writing-to-Learn (WTL) or Writing in the Disciplines (WID). The former comprises informal, short writing activities that serve to promote more critical thinking and reflection about concepts and ideas covered in class (Knoblauch & Brannon, 1983). From this perspective, writing is utilized as a tool to cultivate student learning (McLeod & Soven, 1992). WID is often termed "learning to write" and focuses on helping students learn the language, conventions, format and discourse of a specialized discipline (Kaufer & Young, 1993; Maimon, 1981). This form of writing usually comprises more formal assignments, although it can also integrate less formal WTL activities to stimulate student critical thinking about a discipline. Within the WAC conceptual framework, our work described herein encapsulates a greater emphasis on WTL as our courses are not discipline specific, and we believe this perspective encourages engagement and involvement of students in the learning process (Emig, 1977).

WTL activities can capture both commonly termed high-stakes and low-stakes assignments (Elbow & Sorcinelli, 2006). High-stakes writing assignments, including essays, project papers or lab reports, tend to be formal and are designed to capture students' knowledge and understanding of the course material in order to illustrate their learning. In contrast, low-stakes writing assignments are typically more informal. They can be graded with few points assigned or ungraded and aim to promote a dynamic, participatory learning climate. Such activities include exploratory questions for students concerning the topic under consideration, student reflections on lectures, course material, readings and discussions or even on their own thinking, as well as outlines and drafts of a final formal written paper.

As Peter Elbow states in "High-Stakes and low-stakes in Assigning and Responding to Writing" (1997), the benefits of low-stakes writing assignments are numerous. When they are frequent, they allow students not only to keep up with work, but also be active learners. Finally, low-stakes assignments illustrate students' grasp of course material and they often lead to improvements in the quality of high-stakes writing assignments.

Based on these assumptions, we will compare, contrast and discuss the changes we document among community college students taking what are considered "Bookend Courses," a writing intensive capstone course and a newly designed freshman seminar (also called FYS, First-Year Seminar) at LaGuardia Community College. Looking at students who are at opposite ends of the community college spectrum, those who are completely new to the college experience and are in need of the information and guidance provided in a freshman seminar, and those who are experiencing the culminating community college experience provided by a capstone course, this paper will provide examples and excerpts from their work demonstrating or refuting the above assumptions.

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The paper is structured as follows: first, we present the methodology, then provide students' background, describe some classroom discussions, detail the assignments, including students reviewing the work of their peers, and analyze students' responses to those assignments. Finally, we give details of the challenges experienced during the development and implementation of this work and provide suggestions for improving upon the processes integrated in this project, which could be exploited by other academics irrespective of discipline.

2. Methodology

2.1. Rationale

Our research is based on the idea that interclass collaborations have proven to be successful and effective for both students and faculty in creating an integrated, connected learning environment that not only encapsulates the knowledge and capabilities gained by students in each course, but also integrates the diversity of experience, perspectives, and ideas represented across disciplines and classes. Following on the success of our collaboration in 2014–2015 that bridged three departments, Mathematics, Engineering & Computer Science (MEC), Natural Science (NS), and Humanities (Boumlik, Jaafar, & Alberts, 2016), we decided to renew our collaboration to focus on a Liberal Arts capstone class and on students in the First-Year Seminar (FYS) in the Liberal Arts Math and Science in Spring 2016.

2.2. Design

While teaching the FYS in 2016, the Mathematics and Natural Sciences professors assigned to their students a series of readings, reflections and research summaries on the theme of Women in STEM. The Humanities capstone professor assigned readings on a similar topic. The collaborative aspect consisted of three common assignments in the FYS and capstone classes and having the capstone students peer review the work of the First-Year students (FYS) and vice-versa for these common assignments. The professors also visited each other's classes to lead discussions based on two specific readings related to the paucity of women in the sciences or as Nobel Prize winners.

The data collection consisted primarily of the submitted work – written essays from the common assignments, peer reviews, revised essays (and interactions with instructors in class visits). The data analysis involved the benchmark reading of all the output based on the college's rubric.

Students also watched a video based on "Life at a Walmart Sweatshop" and wrote a detailed reflection about it ("Life at a Walmart Sweatshop Walmart: The High Cost of Low Price, Part 7," 2015). Since the focus is on low-stakes assignments, we wanted to provide students with a variety of assignment formats. In this context, the Walmart video stimulated high quality class discussions concerning an important civic issue related to abuse, discrimination and exploitation in the workplace. It also allowed students to produce a written reflection based on a medium they use frequently (YouTube).

This article sheds light on similarities and differences among students' writing in the capstone course and in First-Year Seminars in terms of organization and structure, articulation of ideas and perspectives and overall content quality. To achieve this purpose, we used the rubrics designed by the college to assess students' core competencies and communication abilities ("LaGuardia Community College Outcomes Assessment," n.d.).

2.3. Purpose

Overall, the purpose of this collaborative project is to build on the professors' previous scholarly efforts to create a network between students in First-Year Seminars and students in the capstone course, explore the quality of the written output produced by students in classes at opposite poles of the educational spectrum, stimulate peer-reviewing activities of student assignments and enhance students' interest in STEM courses at LaGuardia. We firmly believe that our longitudinal, interclass collaboration effectively supports the transition of first-year students to the college

experience, promotes strategies for effective peer mentoring (through the peer-reviewing activities) and encourages lifelong learning in terms of pursuing knowledge for interest-based and professional reasons (Collings, Swanson, & Watkins, 2014; Pruett & Absher, 2015; Windham, Rehfuss, Williams, Pugh, & Tincher-Ladner, 2014).

Cooperative learning is a successful strategy in improving students' understanding (Falchikov, 2013; Kulkarni et al., 2015; Peng, 2010). Collaborative learning helps students develop lifelong learning as long as individual accountability is established in conjunction with groups goals (Sukstrienwong, 2017).

The peer review process provides students with formative feedback. With the help of the instructor, this approach provides an opportunity to interact with peers to enhance and refine their assignments after the receiving the peer review (Jeffery, Yankulov, Crerar, & Ritchie, 2016). Incorporating this kind of collaborative activities is beneficial to students and instructors alike.

2.4. Women in science: tackling the representation of women in the sciences from an interdisciplinary perspective

Although it is a known fact, there is little pedagogical effort to tackle the lack of gender diversity in the sciences. We believe that this is a civic issue that should be addressed during students' academic journey. This issue has been explored as a pedagogical feature reported on by the authors (Boumlik et al., 2016).

When designing the common readings and assignments for the FYS and capstone classes (see appendices), we pursued the following two learning goals for students:

1) To understand the issues and factors related to the underrepresentation of women in STEM fields, and to relate these issues to one's personal circumstances and background.

2) To familiarize students with the contributions of a specific woman to her scientific field, to expose students to the social issues and obstacles the woman faced at the time and to consider whether the same obstacles are still relevant today.

2.5. Students' profile

After obtaining the approval of the Institution's Review Board, the project was implemented in three sections: two First-Year Seminar (FYS) sections and one writing intensive capstone course. The three classes had a total of 75 students enrolled. There were some similarities between the capstone and FYS students. For example, they were all majoring in Liberal Arts, which encapsulates a wide variety of disciplines, including mathematics and science. All the FYS students in our study were Math and Science majors, however, out of 27 capstone students, only 10 (or 37%) were Math and Science majors. There was no major difference in terms of being full-time or part-time students. In terms of gender, only 35% were male, compared with 42% for LaGuardia's general enrollment. In terms of the native language of students, in addition to English being reported by the majority, the second major language was Spanish. A few students reported speaking Chinese, Bengali, Japanese, and Creole. Regarding age, there was no major difference between the FYS and capstone students. Although at the college level, the student population is tending to be younger, we still had several adult students above the age of 26 enrolled in the FYS classes. In terms of ethnicity, the data collected reflectscollege-wide trends: 67% of students enrolled report being either Hispanic or Black.

As to be expected, the major difference between the two classes is the number of credits earned. Capstone students have a minimum of 34 credits. For the class targeted, the average number of credits earned was 46. Twenty-three percent of the FYS students have accumulated credits. Surprisingly, some of them have more than 20 credits and one student has a record of 55 credits. This is attributed to the fact that many students took the FYS at the end of their curriculum

instead of fulfilling it at the beginning. The other difference is the GPA: most FYS students do not have a GPA to report, but those who do have a rather high GPA (>3.0). In terms of the highest level of English passed, we do not have much data for FYS students and only assignment comparisons will determine the difference in writing skills.

3. Classroom discussions and assignment choices

It is important to note that we have all contributed to the set of shared assignments. The professors from the Natural Science and Mathematics departments visited the capstone class with several of their students to participate in a debate about stereotypes and women's capabilities in conducting tasks in any job. In all three courses, low-stakes assignments were used to encourage students to focus on the course content more than on the format and language mechanics. The capstone course is writing intensive but FYS courses, although not officially labeled as writing intensive, require at least eight writing assignments throughout the semester. The joint low-stakes assignments in this collaboration (detailed in the Appendices) tackled three key societal topics.

3.1. Assignment #1

Women as factory laborers in Asia. Students watched a brief video about labor conditions in Asia, and the struggles of the factory workers ("Life at a Walmart Sweatshop • Walmart: The High Cost of Low Price • Part 7," 2015).

Students needed to record a one-minute oral reflection about the video. They also had to write a reflection addressing whether they would still consider making purchases at Walmart after watching this video (see Appendix A for assignment details). The targeted competency of the assignment was global learning, using written and oral communication. Students had to apply their learning to engage in an ethical issue. They had to relate how their actions may have a global impact on the labor market in a different country. Global learning "is a critical analysis of and an engagement with complex, interdependent global systems and legacies (such as natural, physical, social, cultural, economic, and political) and their implications for people's lives and the earth's sustainability." ("LaGuardia Community College Outcomes Assessment," n.d.).

3.2. Assignment #2

The underrepresentation of women in STEM. Students read an article in the New York Times, "Why Are There Still So Few Women in Science" (Pollack, 2013). They gained an insight about the struggles of the author in pursuing a career in STEM three decades earlier and discussed whether those issues persist today. While reading the article, students came to understand how cultural signals affect student's ability to perform on an exam. They also debated the opposite point of view that "no real harm is done if women choose not to go into science" and the stereotyping associated with women being able to conduct certain duties (e.g. in the military). Students also reflected on their career choice and on the role culture might have played in their decision. The assignment is detailed in Appendix B.

The targeted core competency was integrative learning using written communication. Through the debate, students were able to make connections among the ideas presented in the article and their own experiences. They reflected on their own career choices and some tried to trace their career decisions to their cultural upbringing. Integrative learning is "an understanding & a disposition that a student builds across the curriculum & co-curriculum, from making simple connections among ideas & experiences to synthesizing & transferring learning to new, complex situations within & beyond the campus." ("LaGuardia Community College Outcomes Assessment," n.d.).

3.3. Assignment #3

Nobel prize women in science. Students read several chapters of *Nobel Prize Women in Science. Their Lives, Struggles, and Momentous Discoveries* (McGrayne, 2006). Students learned about the reasons why there have been few women in science, the obstacles women faced a century ago,

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Table 1. Scoring of students' written assignments		
Assignment	**FYS Score (out of 4)**	**Capstone Score (out of 4)**
Assignment #1	3 (Student A), 4 (student B)	3 (student G), 1 (student H)
Assignment #2.	4 (Student C), 2 (Student D)	2 (Students I), 1 (Student J)
Assignment #3.	4 (Student E), 2 (Student F)	4 (Student K), 2 (Student L)

and factors that contributed to the success of some female scientists. They also learned about the contribution of the First-Generation Pioneers, Second Generation and The New Generation of Women in Science, and were asked to summarize their findings (see Appendix C).

3.4. Assignment #4
Peer-reviews. The final low-stakes assignment consisted of FYS students peer-reviewing the assignments of their peers in the capstone class and vice versa.

4. Results

4.1. Content and scoring of student work
In this section, we analyze a diverse sample of students' responses to each of the assignments. In terms of scoring students work, the collaborative project involved use of pre-defined rubrics for global learning, integrative learning as well as the three communication abilities. The oral communication rubric was utilized when FYS students recorded their reaction to the video in assignment #1. However, for the purpose of this paper, we focus on assessing the written communication dimension aspect for the common assignments across the three classes (Appendix D).

Overall, the student grades in the assignments covered the normal distribution of scores in the Capstone and FYS classes. Due to the relatively low student numbers involved, no statistically significant differences were observed in these scores for the Capstone vs FYS students. However, an illustrative sample that represents a diverse skill set is discussed in detail below. Table 1 summarizes the scores of a student sample for the common assignments.

4.2. FYS student scores based on the rubric

4.2.1. Assignment #1
The rubric that assesses writing skills for this low-stakes assignment encompasses content and organization. An assignment that meets all requirements is reflected in a clear, well-organized and logical content. Additionally, not only statements, claims and conclusions must be supported by evidence, but facts are not to be confused with opinions.

Student A integrated her/his personal experience to the video, thus was able to display an integrative learning ability. Based on the written communication ability rubric, the student scored a 3 out of 4. This score reflects the ability of the student to organize their content in a clear and logical way. He/she also stated some facts to support his/her claims.

> This video has captured a popular scenario of my country when they mentioned how people use the ashes of fire with their hand to brush their teeth … In my country the people are also forced to work long hours to sew clothes in dirty buildings (factories) by sweating all day long. The video has also mentioned that the people only get to paid 13 or 14 cents of US dollars per hour. Especially those workers are mostly women since women are not work outside in my country.

This student lacked control of language, syntax, and mechanics, however, the purpose and perspectives of the communication are relatively clear and, as stated earlier, we are more concerned with the content and organization of the student writing rather than the language mechanics. In contrast, student B displayed better content organization and structure as well as a more appropriate, precise, and varied vocabulary:

> I have not read up on a lot of sweatshops but what seems to be a common variable is the horrible wages and work space that is given to the workers. But the big companies are trying to make a profit and amazing feats of the world tend to always be accomplish by being indifferent to the "workers" (whatever that word applies to at the moment). It has always been apart of world history.

4.2.2. Assignment #2

Student C produced an excellent essay earning 4 out of 4 according to the rubric. The content was well organized and logical and the purpose of the communication was very clear. The student displayed an extremely high level of the targeted integrative learning competency as well as global learning by explicitly connecting the perspectives of the New York Times article to their own background culture, personal experiences and career choice. For example, student C wrote:

> ......Those fifteen women mentioned in the [Nobel Prize Women in Science] article faced many obstacles that are still being faced with women today. Women were excluded from science because it appears that Science was made-up to be "tough, rigorous, and rational.

Student D produced a weaker essay earning 2 out of 4 according to the rubric. The content presented was relatively clear, however, it was rather too brief and lacked sufficient depth. This work would have benefited from another revision where the student focuses on the structure of the writing and on the flow of ideas. Student D wrote:

> ... All the obstacles mention in the article that the fifteen women faced are still being faced with women today. A lot of women were excluded from science because supposedly science is a difficult, and dangerous and rational career. Women were considered to be soft, weak, and irrational.

4.2.3. Assignment #3

Student E scored 4 out of 4 according to the rubric. His/her communication was clear, and the usage of language was appropriate. The content was well-organized and structured. The student effectively explained how culture, gender and science were intertwined during the relevant era. Student E wrote:

> The very first thing that strikes me about Marie Curie's story is that while this book is centered around Nobel Prize winning women's achievements, interestingly enough, the very first thing that it discusses is her drama pertaining to her husband. ... Indeed, the author is building her story around her husband and how the media has viewed her success and not beginning with her achievements.

Student F wrote a weaker essay and scored 2 out of 4 according to the rubric. The student attempted to explain their interest in Irene Joliot-Curie's work and why it is still relevant today. In this case, the communication and its purpose were not particularly clear, and the linguistic errors interfered with the comprehension of the writing. There was also little discussion of the cultural influences on Irene during her lifetime. Student F wrote:

> There one female scientist that i feel think most interesting is Irene Joliot-Curie and what makes it interesting to me was how introduced to radio chemist. She is a daughter of another fellow female scientist named Marie Curie who was a physicist. When she was 18 she had spent working alone in Belgian hospital during the WW1. She led on how to x-ray the wounded soldiers, and fractures.

4.3. Capstone student scores based on the rubric

The Capstone course, designated for all Liberal Arts majors, is a writing intensive course where students demonstrate their research and writing skills. In addition to showcasing their writing ability, students are expected to give evidence of integrative learning by developing the ability to make connections among ideas and experiences across the curriculum and co-curriculum in order to synthesize and transfer learning to new situations within and beyond the campus.

4.3.1. Assignment #1

The assignment on sweatshops allowed the capstone students to integrate learning across their courses and between campus and community life. Integrative learning occurred as the class was addressing real-world problems. Ideally, integrative learning generates internal changes in the student. This was evidenced by the reaction of some of them to the Walmart video: "Personally, I will think twice before buying in Walmart because I don't want to be part of making a life miserable in other side of the world." Furthermore, integrative learning asks students to pull together their experiences inside and outside the classroom, making connections between theory and practice and fostering reflective thinking.

Viewing this video and discussing it brought some students to think critically and vow to act responsibly. This burgeoning of awareness was corroborated by the following statement that answers the question, would you still consider making purchase at Walmart after watching this video? "No, I don't give my money to this kind of company like 'Walmart' where they don't treat their employees with dignity, and respect." Writing abilities among the capstone students ranged from 3 (competent) to 1 (novice).

Students with low scores were mostly those with English as a second language (ESL) or recent immigrants as evidenced by the sample from students G and H, who scored 3 and 1 respectively. Student H did not fully differentiate between written phrases and spoken words.

> What the boss claim some bose they really try to do that things but bose to employer has a big gap and here somebody control it in different way (…) In Bangladeshi women they are really benefited by it. Before it they only work for food. Now they work and get freedom to do anything. So if you stop to purchase at walmart they could stop their business and if they stop it, you can not realize how many women have to suffer from it in Bangladesh.

Even though the capstone class is a writing intensive course, it is a content-based course not an English course. Assessing ESL writing in this capstone class is a daunting task. However, the assessment of student writing skills in this project was not primarily focused on linguistic competence that includes grammar, vocabulary and the mechanics of language, but rather on the quality of the content, organization, and structure of the writing.

4.3.2. Assignment #2

The general knowledge that students acquired by reading about women in STEM allowed them to connect the outside knowledge to their personal life, thus, demonstrating a good integrative ability: "As a woman I am aware that there may be competition in a scientific field. I may get paid less or not taken seriously."

Yet, writing abilities remain an issue for several capstone students even with a personal narrative. For example, students I and J scored 2 and 1, respectively, according to writing abilities as their essays did not flow due to poor content structure. The messages they attempted to convey were lost in a mass of poor word choices and phrasing. The excerpts were also full of vague sentences and they lacked compelling arguments supported with concrete and convincing examples. Student I wrote:

> My culture didn't cause impact to my decision in majoring in science because science is fascinating and interesting, but I am not passionate in pursuing this major. Some women and men prefer this major because science is not difficult, but is challenging and they have many reasons for their interests in this field such as working in lab, figuring the techniques or the methods in the lab, or they want learn about the scientific world.

For the sample of the work of student J, while errors do not consistently interfere with

comprehension, the content and structure were flawed and resulted in a score of 1 on the writing abilities.

> If we look at the education system in around the world, we can observe that study in science is more expensive than other subjects. This is one reason why women are less come to study in science (…) Sometimes the parents cannot continue for long time to spend money for their education, so they have to leave it middle or after ½ years. That's why most women walk far away from science by considering the family's economy. In my culture, this is true that very few women are interested to involve themselves in science (…) In general, whoever study in science, they have to be more punctual and they have to give more time to study but most people think women don't have enough time to study in their daily life because they have to do some other stuff like cooking, washing, caring and helping. This is an important reason why many women cannot attend themselves in science.

This message was lost in a mass of poor word choices and phrasing. Furthermore, this excerpt is full of vague sentences and it lacks compelling arguments supported with concrete and convincing examples. The student would have benefited from an English pairing by helping him to acquire/ deepen writing techniques, sentence construction, and build his vocabulary. This, in turn, would have allowed him to focus on specifics, avoid rambling, and redundancy and, thus, enable him to communicate his thoughts more effectively and with fluidity.

4.3.3. Assignment #3

To the question, why have so few women won Nobel Prizes in science? student K responded with appropriate content and structure granting him/her a score of 4 for the writing ability in terms of content development and organization of their assignment. Student K wrote:

> …Many of these women came from highly academic families that emphasized education and perseverance in academic fields. Another factor was the husbands of these women. Many of the female scientist's spouses strongly supported their wives and encouraged their journey of science. And possibly the most important factors that contributed to these women's success, was good luck and timing. These women began their careers just as certain regulations and laws were being lifted, and it allowed an easier journey…

The writing ability remained an issue for some of the capstone students, such as Student L who scored 2. While the content was somewhat well organized and logical, the clarity and flow were flawed, hence the score of 2 for the writing ability. Student L wrote:

> …few women has won the Nobel Prizes because their work goes unnoticed; if a woman married to a scientist or researcher; the woman husband takes credit for her work. However, her husband passed away; her works will die with him and forcing the woman to start from the beginning again.

The above samples from students K and L show that they are still in the process of acquiring language mastery. Nevertheless, these examples exhibited reasonable content in terms of the students expressing their viewpoints and perspectives concerning the topic under consideration.

4.4. Comparison between capstone and FYS

Using low-stakes assignments stems from our belief that writing is a process of steps, from the idea to the finished manuscript. Therefore, it is necessary to evaluate the writing process, not just the final product. In this work, we offered various opportunities for students to improve their writing by providing them with our feedback as well as the feedback from their peer through the peer review exercise. The fact that community college students come to our classes with varied levels of preparedness was evidenced in the writing skills of some First-Year students who outperformed their Capstone peers. The span of our study as well as the relatively small sample of our writing assignments did not allow us to accurately draw general conclusions or to formalize patterns in terms of writing skills at both extremes of the college spectrum. However, some similarities and differences could be identified.

The main difference we observed between First Year and Capstone students was the higher ability to display integrative learning among the latter. As for writing skills, there was a vast spectrum due to the presence of ESL or recent immigrant students in both courses. Poor and strong writing skills were equally present as demonstrated by the following excerpts. First-Year student M raised some useful issues and demonstrated a reasonable level of integrative learning in the written response to assignment 3:

> The very first thing that strikes me about Marie Curie's story is that while this book is centered around Nobel Prize winning women's achievements, interestingly enough, the very first thing that it discusses is her drama pertaining to her husband. ... Indeed, the author is building her story around her husband and how the media has viewed her success and not beginning with her achievements.

> ... It makes me wonder whether if Curie being allowed to pursue science and education not only had measurable differences as far as scientific discovery, but she may have also had a great impact on the preservation of Polish culture. Women being allowed to be educated can indeed bring about many different benefits for everyone.

Conversely, student N from the capstone class demonstrated a good ability to adequately convey complex thoughts, make connections among ideas and experiences and synthesize and transfer learning to new situations within and beyond the campus:

> The presence of fewer women in science would negatively impact the status of women in society. How can women be taken seriously and achieve equal success to men if there aren't enough to compete with the same amount of male counterparts in their respective fields? There must be an increase in women in science, or else women would be where they were 50 years ago (...) In reality, the increased presence of women will make any field better, because diversity is always good.

This student was making connections to their evolving personal, professional and civic lives and, thus, was integrating and applying learning to a new situation. Furthermore, integrative learning asks students to pull together their experiences from inside and outside the classroom, and to make connections between theory and practice by fostering reflective thinking. Future studies should focus on assessing this comparison in more detail with larger student cohorts to produce statistically significant outcomes. All students, including ESL students, have access to and can receive support from the College's writing center. In the current iteration of the project, it was not clear if many students utilized this resource, however, in future implementations, we will actively encourage students to do so in order to improve their writing skills.

5. Peer review of assignments

As Batty and Sinclair explain (p. 340), peer-reviewing pedagogy facilitates rich discussions to enhance classmates writing projects. Additionally, peer-reviewing practices help students "become more critically aware of the specific demands that are placed on producing a coherent practice-based research

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project in an academic context." (p. 340). In our case, peer-reviewing was a low-stakes extra credit assignment that involved capstone students reading and critically assessing the low-stakes assignments of their peers in the FYS classes and vice versa. We provided students with verbal guidelines in a class discussion concerning how to offer analytical and constructive feedback on their peers' work. Within this context, we found that students were not equally motivated, some putting genuine efforts into assessing their peer's work, while others barely gave the assignment a glimpse.

5.1. Peer-reviews by first-year students
In response to an essay written by a capstone student, a student in one of the FYS classes

offered the following critique for assignment #1.

> The author in this essay correctly identifies that his or her role in buying or not buying from Walmart is small in comparison to the big picture, but fails to highlight a complex issue that stems from government systems that are in place which allow companies like Walmart to flourish, and poor workers to be taken advantage of…. The author's attitude is defeatist and does not acknowledge the power he has in being able to offer critique on the subject.

Another FYS student offered the review below for assignment #2.

> It was wonderful to see the contrast from America and the Caribbean…. It's fascinating to know in the Caribbean, the first Bachelors degree attempt is free. I'm glad to know this writer is continuing her efforts to become a radiologist. It was a grave disappointment, to find that there is stiff competition in the Stem Fields. It's fascinating about the writers experiences with the American education system. The writer explains; "It seems to be a pyramid scheme… with only a select few being able to attend". Sometimes it does seem the agencies in America are exclusive.

The first reviewer was more critical and demonstrated a high degree of maturity in formulating their response. The second reviewer was not critical but seemed to appreciate the writer's experiences, which pushed the reviewer to reflect on how cultural background might eventually influence career decisions.

5.2. Peer-reviews by capstone students
The following samples produced by the same student are consistent in terms of writing skills, but vary in terms of quality of peer reviewing.

> The description made in this essay was about having culture author influence to take career as a major subject. The speaker describes nicely have a young girl in the third world countries face problem choosing their profession in science.

> She mentions the obstacles in the society for a women choosing science. She told women are seen as soft, weak and irrational reflects the proper condition of poor social outlook. She mentioned the problems but couldn't describe the solution regarding the matter. No society will change until people make it change….

Overall the review was of good quality, particularly regarding the cultural aspects. In the following peer review, the student displayed a far better ability to comment on various components of the writing sample, such as argument, evidence, conclusion and strengths:

> Nice general idea about the career choose and strong thesis and support. She uses quote and that is very supporting with her thesis…. She explains how her culture influences her to make decision…. Excellent intro, body paragraph support her thesis, and nice ending. Over all her essay is a role model for a perfect essay. Organization, thinking and supporting details all are positive to follow the question.

6. Discussion

Overall, we observed a wide spectrum in terms of the quality of the student output from the assignments, including the peer-reviewing, in both the Capstone and FYS classes. As stated in the Results section, the major observable difference was the improved level of integrative learning demonstrated by the Capstone students. In this section, we focus on the outcomes of reflections on the project conducted by the three faculty participants. In particular, we consider the challenges encountered and provide suggestions for how they can be addressed in future implementations of the collaborative effort in order to enhance student engagement in the work as well as to improve the quality of their written output from the various assignments, including the peer-review activities.

6.1. Challenges

Many challenges were experienced during the development and implementation of this work, including coordinating assignments and class visits and collecting peer reviews by capstone and FYS students. Designing common assignments for students at different points in their academic journey was also challenging. We used common rubrics to score them but we did not normalize the expectations based on whether students were in the FYS or capstone classes or on their earned prior credits. The rubrics provided a set of common expectations for the assignments. However, the longitudinal collaborative effort gave us awareness that comparing student output across levels is demanding, but can provide insight and a measure of the leap students need to make to improve on all dimensions as they progress in their individual journeys.

Class visits and discussions by the faculty in other professor's classes were particularly successful as the dynamics and interactions with the students were motivating for the class and the instructors. One of the aims was for FYS students to come to the capstone class, and vice versa, and participate in the subsequent discussions in order to provide more perspectives and viewpoints from diverse academic as well as cultural backgrounds. However, only a few students came on these inter-class visits. Perhaps extra credit could be assigned to encourage this in future implementations.

The most challenging aspect of this project proved to be the across class peer-reviewing of assignments. Ideally, FYS students would critically explore the ePortfolios of the capstone students, and vice versa, and provide a constructive review of the work depicted therein. The activity was done towards the end of the semester and few students were motivated to respond thoroughly. We also believe that the low-stakes aspect did not encourage wider student engagement. In future implementations, in order to motivate students to participate in the peer-reviewing activity, we plan to create and disseminate a peer-review rubric to students that clearly explicates the expectations and scoring guide for the assignment. Furthermore, we will make this a high-stakes assignment and will also dedicate a session for students to review their peers written papers as well as to conduct reflections on the video document on sweatshops and the paucity of women in STEM readings. Overall, we learned that we need to allocate more time to discuss with students the rubrics and how they are used in assessment ("LaGuardia Community College Outcomes Assessment," n.d.).

6.2. Suggestions for improvement and other collaborative routes

Suggestions for improving upon the processes integrated in this project, which could be exploited by other academics irrespective of discipline, include clearer guidance by the instructors concerning the value for students of working on integrated, collaborative class assignments. Benefits for students include connection of diverse perspectives and the creation of a holistic learning experience in the community college environment. Inter-class peer reviewing of assignments is a key aspect and leads to deeper critical thinking and reflective skills. This should be conducted early in the semester, so that students exploit the experience to improve their own writing in subsequent assignments. Pairing of the FYS with an introductory English course and the capstone course with an advanced English class could provide deeper insights for students into the production of high quality writing output as well as motivating student engagement in the WTL process. In practical terms, ePortfolio was used as a communication tool across classes and we suggest that students could be shown in more depth how to access the ePortfolios of peers in the other class and where

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the assignments are deposited. Furthermore, extra credit or higher stakes could be assigned to these activities to motivate greater student involvement.

7. Conclusion

This article encapsulates our integrated, trans-departmental collaborative effort. In this context, we assigned common assignments for students in classes that are positioned at opposite poles of the College spectrum. First-year and capstone students peer-reviewed each other's work in order to critically assess the strengths and the weaknesses of their peers' papers. Furthermore, the students were exposed, many for the first time, to the contribution of women in STEM as well as the paucity of women in STEM- related fields, which represents a critical societal issue. The three faculty members interacted closely throughout the project period in order to reflect upon, refine and improve the project as it evolved. The assignments were produced to encompass LaGuardia's commitment to a series of core competencies. ePortfolio was used as the communication medium to promote peer-reviewing of assignments across the community as well as to encourage reflective activities. Associated rubrics have been designed to encourage a holistic, dynamic and continuous learning experience for students as they progress through the College towards graduation.

The above aims and objectives of our interdisciplinary research project have been extensively investigated by exploiting the data generated from student surveys, assignments and class discussions. Excerpts from students' responses to issues related to Women in Science and sweatshop conditions revealed their engagement with these issues and the diverse role they play in society. Most students successfully integrated their own personal experiences, in terms of cultural and/or family influences on their choice of major, into their assignment work as well as in the class discussions. The instructors were particularly impressed by the depth and passion that students exhibited in such responses. In future implementations, we plan to setup more FYS and capstone course pairings in order to improve writing and learning within the WTL framework and provide a more formal protocol for assessing the progress of students' writing skills.

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Supplementary material
Supplemental data for this article can be accessed here.

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