

IntelliWriter™

2022 Efficacy Report

FIU Case Study:

Overview

This report details the efficacy of IntelliWriter, a web-based virtual writing coach developed by Vantage Learning. The report begins with an overview of IntelliWriter and a Case Study from an institution that is utilizing the platform including the efficacy and data they've seen with their unique student cohort.

Description of IntelliWriter

IntelliWriter™ is the most advanced virtual writing coach powered by Artificial Intelligence to improve student writing across the curriculum. More than a grammar check, IntelliWriter delivers immediate feedback aligned by the domains of writing including Focus, Content Development, Organization, and Style. The feedback delivered can be converted into nine different languages making the platform ideal for ESL students. Cite.ai™ plagiarism detection, the Lexepedia™ vocabulary builder, and Writer's Guides, round out the features provided by IntelliWriter. Powered by IntelliMetric®, the most advanced automated essay scoring engine, IntelliWriter has been shown to improve student writing by a full letter grade in a single term, enabling administrators to monitor student growth at scale.

Summary of Writing Instruction Research

Students Need to Have Multiple Opportunities to Practice Writing

Students learn to write by writing frequently. Contrary to the popular phrase, in the context of learning to write, practice does not make perfect: practice makes permanent. Studies consistently show that the amount of writing that students complete is positively related to tests of writing ability (Cotton, 1988; Boersma, Dye, Hartmann, Herbert, & Walsh, 1997; Coe, Keys, Meehan, Orletsky, Lewis, Rigney, et al., 1999; Chircop, 2005; Graves, 2013). Writing-

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intensive programs that require multiple drafts and a high volume of written work, such as those using writing portfolios or software to leverage success in writing, have been particularly effective in increasing writing aptitude across a wide range of students of varying abilities (Boersma et al., 1997; Chircop, 2005). Douglas Reeves (2002), founder of the Leadership and Learning Center, states that “when students write more frequently, their ability to think, reason, analyze, communicate, and perform on tests will improve.” (p. 5). The best schools have frequent assessments and multiple opportunities for students to succeed. The most common characteristic of these high-performing schools is that they have an ongoing writing performance assessment and feedback program (Hattie, 2012).

“The research is crystal clear: schools that do well insist that their students write every day and [are] provided regular and timely feedback” (National Commission on Writing, 2003, p. 28).

IntelliWriter provides the opportunity for students to write and receive feedback much more frequently than using traditional methods of writing instruction. Combined with a comprehensive curriculum, the ongoing, formative writing opportunities that IntelliWriter provides maximizes student achievement.

Cross-Curricular Writing

Writing is critical to all academic subject areas. Studies show that as the emphasis on classroom writing grows, student achievement improves, and when a portfolio program is instituted and students are required to write frequently across all subject areas, students perform significantly better on statewide assessment tests. Evidence exists not only for reading and writing score improvement, but also for score improvements in math, science, and social studies (Freidus, 2010; Pearson, Moje, & Greenleaf, 2010; Jewett, 2013). When students write about what they have read, there is an 18% percentile point increase in the comprehension of what they have read (Graham & Herbert, 2011). Writing must be effectively integrated with classroom instruction to produce the largest gains (Coe et al., 1999; Quesenberry et al., 2000; National Commission on Writing, 2003). Reeves (2000) furthers this opinion and suggests that writing is an integral part of student learning:

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Through the complex cognitive processes involved in writing, students can process information in a much clearer way. They 'write to think' and, thus, gain the opportunity to clarify their own thought processes, demonstrating vital critical thinking and reasoning skills. (p. 189)

IntelliWriter supports writing in any discipline. IntelliWriter provides cross-curricular guides to support student writing in any major. Each guide delivers step-by-step instruction on discipline specific writing assignments, exemplars, and revision suggestions delivered in a multi-media format.

Feedback Regarding Writing Performance Must Be Timely

Research has shown that timely feedback is essential to improving writing proficiency. Studies indicate that when feedback is received often and in the early stages of writing, it is more likely to be judged by the student as valuable. This feedback will have a positive effect on the quality of the writing (Cowie, 1995). Notably, Graham, Herbert, and Harris (2015) find that there is a 23 percentile increase in the quality of student writing when they are given feedback. The simple feedback questions such as, "Where am I going?," "How am I going to get there?," and "What do I do next?" are among the most powerful influences of student achievement (Hattie, 2012). Given immediate feedback, students gain a better understanding of where they are and how they need to proceed to become more successful (Black & William, 2009). Douglas Reeves (2006) refers to the importance of immediate feedback as "The Nintendo Effect." Kids respond to feedback from electronic games because it is immediate, accurate, and incremental. When students receive a two on their electronically scored essay, they are as eager to revise and resubmit the essay for a higher score as they would be to get to the next level of a video game. The immediate, prescriptive feedback is crucial in allowing students to discover what constitutes quality writing. Without immediate feedback, testing becomes nothing more than an "academic autopsy," which only details, after the fact, the level of student achievement, with no opportunity for remediation (Reeves, 2007).

"Feedback is the single most potent teaching strategy that teachers can use with all ages and across all subjects—leading to an average academic gain of 29 percentile points" (Hattie, 2000, p. 5).

The purpose of feedback is to immediately help students discover where they are in the learning process and give the next steps for achieving the goal. (Marzano, Pickering, & Pollock, 2001; Graham & Harris, 2005)

IntelliWriter targets a student's zone of proximal development while at the same time provides a reach for them that will help them grow. The writing samples do what Gerald Duffy (2009)

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advocates literacy teachers do: “demystify.” IntelliWriter does this by providing specific think-aloud models of writers that “demystify” the revision process. The instructional feedback guides the students to become what Nancy Sommers (2012) calls “independent revisers,” and it will also lead them to recognize good writing. IntelliWriter analyzes each essay submitted holistically and across four domains of writing:

1. Focus & Meaning (Focus): The extent to which the response establishes and maintains a controlling idea (or central idea), an understanding of purpose and audience, and completion of the task.
2. Content Development (Content): The extent to which the response develops ideas fully and artfully using extensive, specific, accurate, and relevant details (facts, examples, anecdotes, statistics, reasons, and/or explanations).
3. Organization: The extent to which the response demonstrates a unified structure, direction, paragraphing and transitional devices.
4. Language Use, Voice & Style (Language): The extent to which the response demonstrates an awareness of audience and purpose through effective sentence structure, sentence variety, and word choice that creates tone and voice.

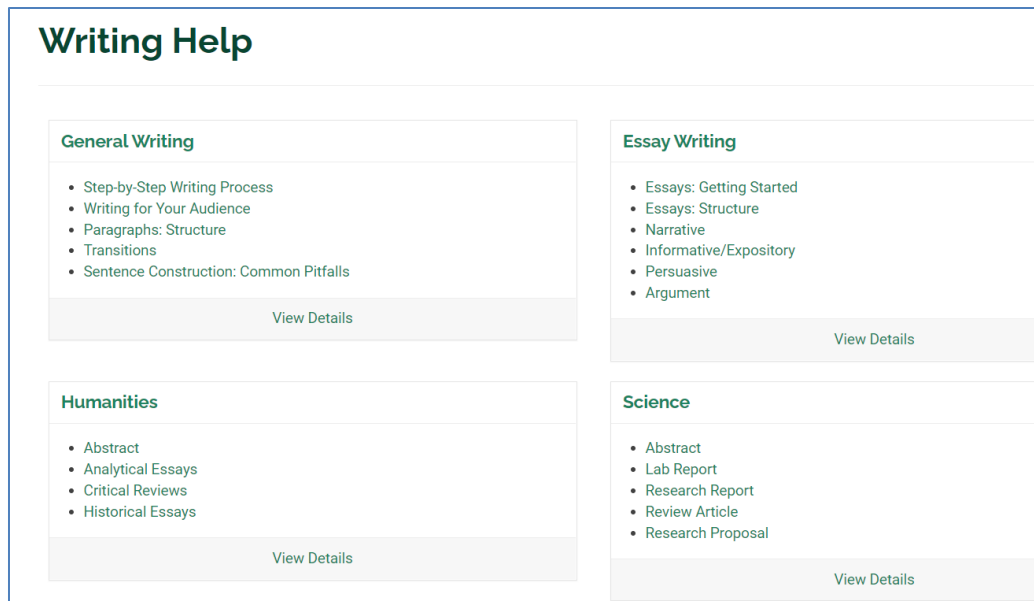
Florida International University Case Study

Florida International University (FIU) has used IntelliWriter (formerly CorrectEnglish) since January of 2021 as a way to better support those students that visit the Center for Academic Success and the tutors that are employed by the center. FIU is a Hispanic serving institute (HSI) supporting more than 60,000 students annually. After reviewing a number of virtual writing support tools on the market (including Grammarly), FIU selected IntelliWriter for its’ superior features, its’ ability to support ESL students, and for scalable writing analytics. As a result of implementing IntelliWriter at FIU, they are seeing an average improvement in student writing by ~30%.

FIU’s implementation of IntelliWriter began in the Center for Academic Success, led by its’ Director, Vicenta Sheppard. Tutors and administrators were trained on both the IntelliWriter platform as well as the reporting engine, WriteVue. Tutors utilize the program to support those students that visit the center and attend their workshops throughout the year. The tutors also utilize the writing guides provided in IntelliWriter as resources for their workshops.(See Graph 1)

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Graph 1

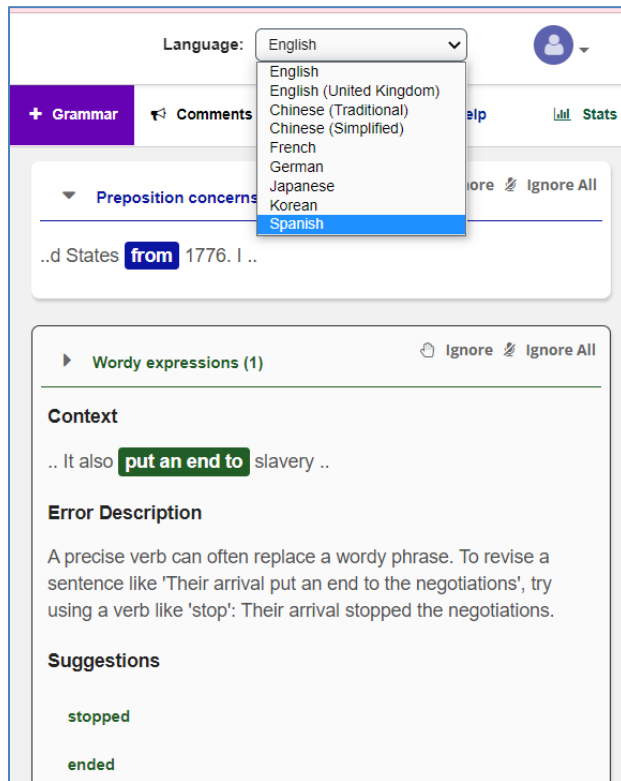


Students and tutors have the ability to virtually collaborate within the platform. Tutors receive student work alongside AI data analytics prior to tutoring session (virtually or in-person) to better coach students on how to improve their writing.

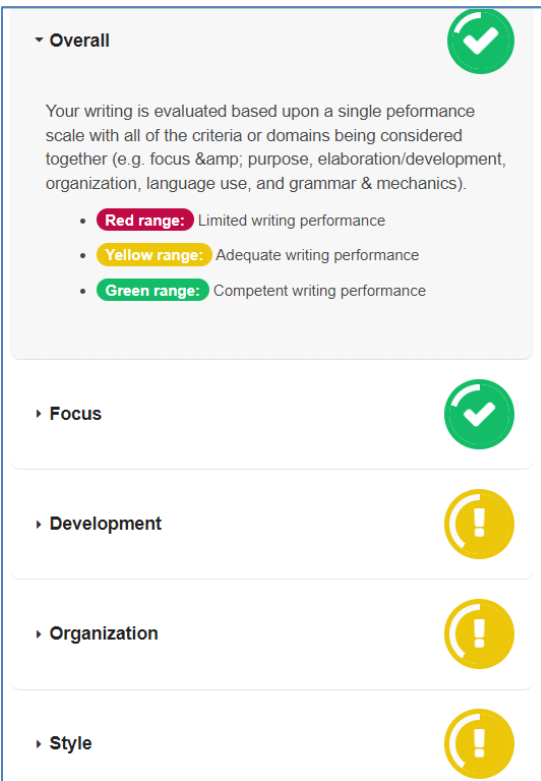
Students that are provided access to IntelliWriter are given a full year subscription, which can be used in any course beyond the support of the Center for Academic Success. As students write in the platform, they are provided with immediate feedback and guidance on how to improve their writing. The feedback delivered can be converted into nine (9) different languages making IntelliWriter ideal for ESL students. (See Graph 2) Students are also given color-coded indicators aligned with the domains of writing, so they can clearly see what areas need improvement. (see Graph 3)

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Graph 2



Graph 3



The Center for Academic Success also partnered with a variety of Departments including the Biology Department, the Psychology Department, and the Department of Criminology and Criminal Justice to launch the use of IntelliWriter at the curricular level. Faculty in these departments were also trained on the platform.

The Department of Criminology and Criminal Justice expanded access to the platform via an LTI integration with Canvas and have seen staggering improvements in student writing ability as a result.

Tutors, faculty, and administrators have access to the companion technology WriteVue to monitor writing growth. With WriteVue, tutors can filter to a single student to view the average holistic and per domain scores and most common errors.

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With WriteVue, tutors and administrators can see the total number of users and the average holistic scores and domain scores including Content Development, Organization, Language Use & Style, and Grammar & Mechanics. This particular cohort of students during the 2021 struggled with most with organization (See Table 1)

Table 1:

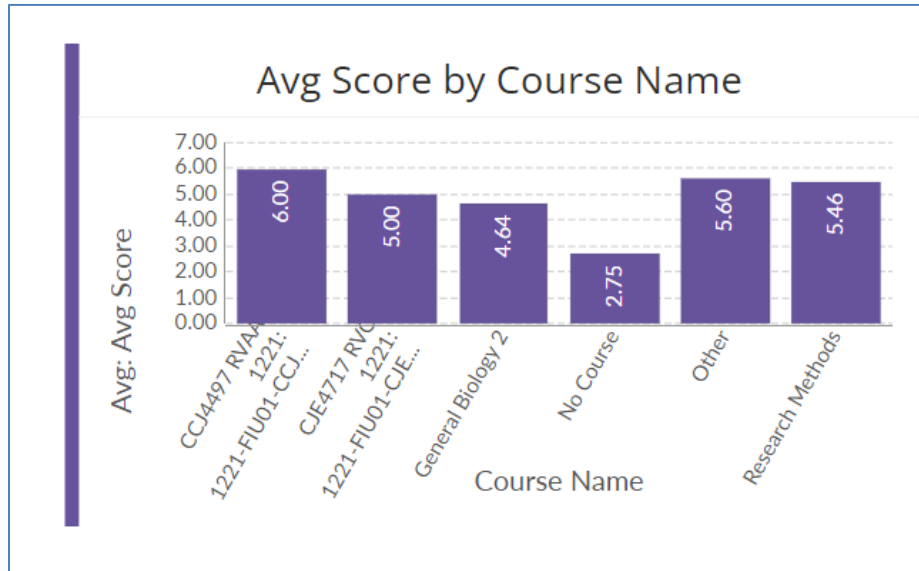
STORYBOARD

2.75 Holistic	2.55 Content Development	2.50 Organization	2.87 Language Use & Style	2.69 Grammar & Mechanics
240 Total Users	491 Document Count	6.0 Avg Paragraph Count	17.0 Avg Sentence Count	18 Avg Words Per Sentence
12 Avg KinCaid Grade Level	285 Avg Word Count			

Vantage produced a custom version of IntelliWriter to allow data filtration by course outside of an LTI integration. Students are given the option of saving their document to a course/assignment in order to showcase specific data aligned by program. However, we uncovered that many students did not self- select their course/assignment when creating a new document or saving a document. As a result, the data aligned by General Biology and Research Methods is limited. (See Table 2)The LTI integration resolved this issue, and FIU can now monitor student writing data by courses directly within Canvas.

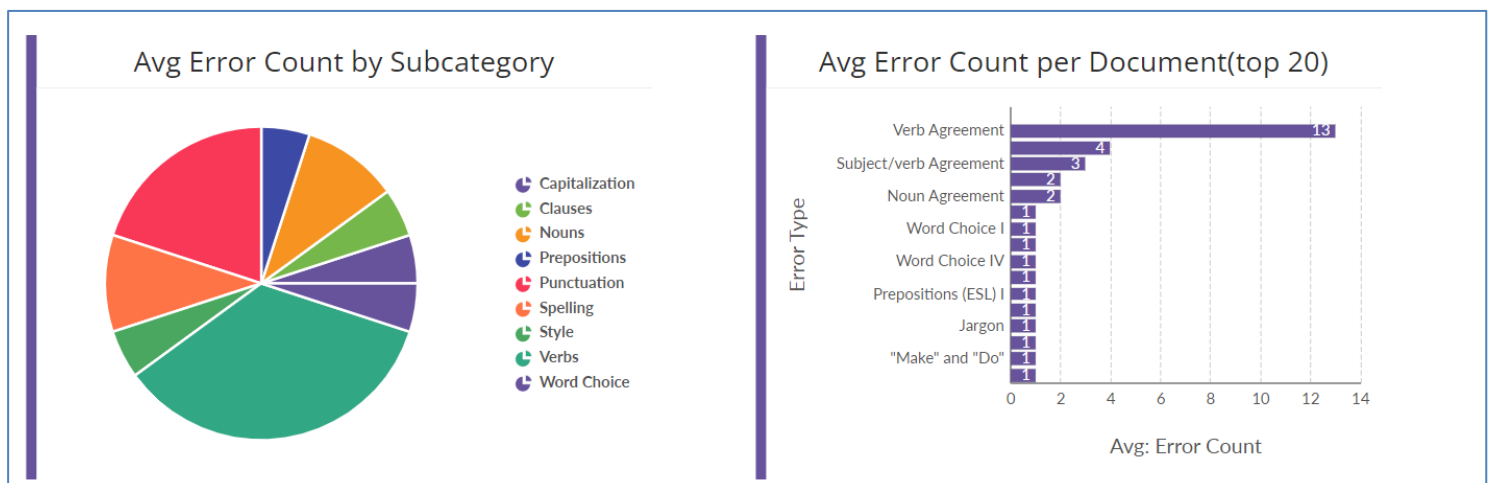
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Table 2:



FIU Tutors utilize the WriteVue data while working with individual students. One key piece of data accessible by tutors is the average error by subcategory (See Table 3) which provides insight as to the types of grammatical and mechanical errors individual students are struggling with. (i.e. syntax vs. verb agreement).

Table 3:



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WriteVue also provides the holistic and per domain scores for every document written by a student within the IntelliWriter platform. The data also includes Kincaid scores, the number of words per sentence, and how often the student utilize other functionality including sharing documents and utilizing the onboard resources Lexepedia and iSeek.ai. With WriteVue faculty, tutors and administrators can view the writing progression for a single student. (See Table 4)

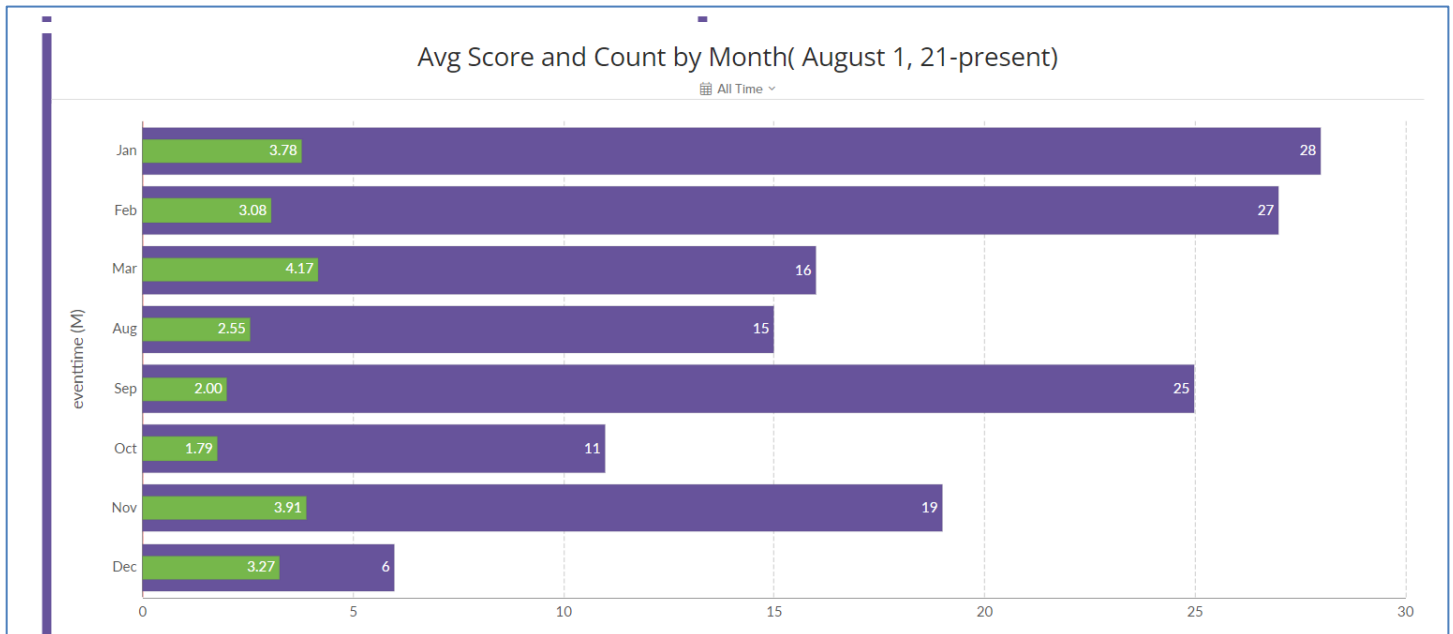
Table 4:

Course Na...	Avg: Avg Sc...	Avg: Focus	Avg: Cont... ↑	Avg: Organi...	Avg: Langua...	Avg: Gramm...	Avg: KinCai...	Avg: Origina...
https://...	1.00	1.00	1.00	1.00	1.00	1.00	1	
https://...	1.00	1.00	1.00	1.00	2.00	1.00	14	
https://...	2.00	2.00	1.00	1.00	2.00	2.00	8	
https://...	1.00	1.00	1.00	1.00	1.00	1.00	12	
https://...	1.00	1.00	1.00	1.00	1.00	1.00	5	
https://...	2.00	2.00	2.00	2.00	2.00	2.00	6	
https://...	2.00	2.00	2.00	2.00	2.00	2.00	9	
https://...	2.00	2.00	2.00	2.00	3.00	3.00	14	
https://...	3.00	3.00	3.00	3.00	3.00	3.00	17	
https://...	3.00	3.00	3.00	3.00	3.00	3.00	17	
https://...	5.00	5.00	5.00	5.00	6.00	5.00	13	
https://...	5.00	5.00	5.00	5.00	6.00	5.00	13	
https://...	5.00	5.00	5.00	5.00	6.00	5.00	13	
https://...	5.00	5.00	5.00	5.00	5.00	5.00	13	

WriteVue also provides statistics on average holistic scores by month alongside usage data. In Table 5, you can see FIU data for all users of the IntelliWriter platform for all of 2021. The purple bar indicates the activity while the green bar reveals the average holistic score for that month. You'll notice that when students are most active in the system (i.e. January) we also see a correlation to high average holistic scores (i.e. 3.78 in January). We also can showcase student growth in a single semester. In this example, student writing went from a 2.55 in August to a 3.27 in December (which is a 28% increase).

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Table 5



Criminal Justice LTI Pilot

In Spring 2022, the Criminal Justice Department wanted to use IntelliWriter in conjunction with their capstone course, which requires a research paper at the end of the course. In order to provide students in this course with access to IntelliWriter, the department piloted an LTI integration with IntelliWriter into Canvas. With the integration, FIU was able to get writing data aligned with a single course and sections without relying on students to self-identify. The data is aligned by student and course via the integration.

The data captured for this cohort was different than those students that visited the Center for Academic Success. Their average holistic score was 4.64 and these students struggled the most with Grammar & Mechanics.

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Table 6:

STORYBOARD				
4.64 Holistic	4.16 Content Development	4.10 Organization	4.48 Language Use & Style	3.92 Grammar & Mechanics
47 Total Users	58 Document Count	39.0 Avg Paragraph Count	101.0 Avg Sentence Count	14 Avg Words Per Sentence
11 Avg KinCaid Grade Level	1,397 Avg Word Count			

The data also reveals a different set of most common errors (Spelling and Clauses) (See Table 7)

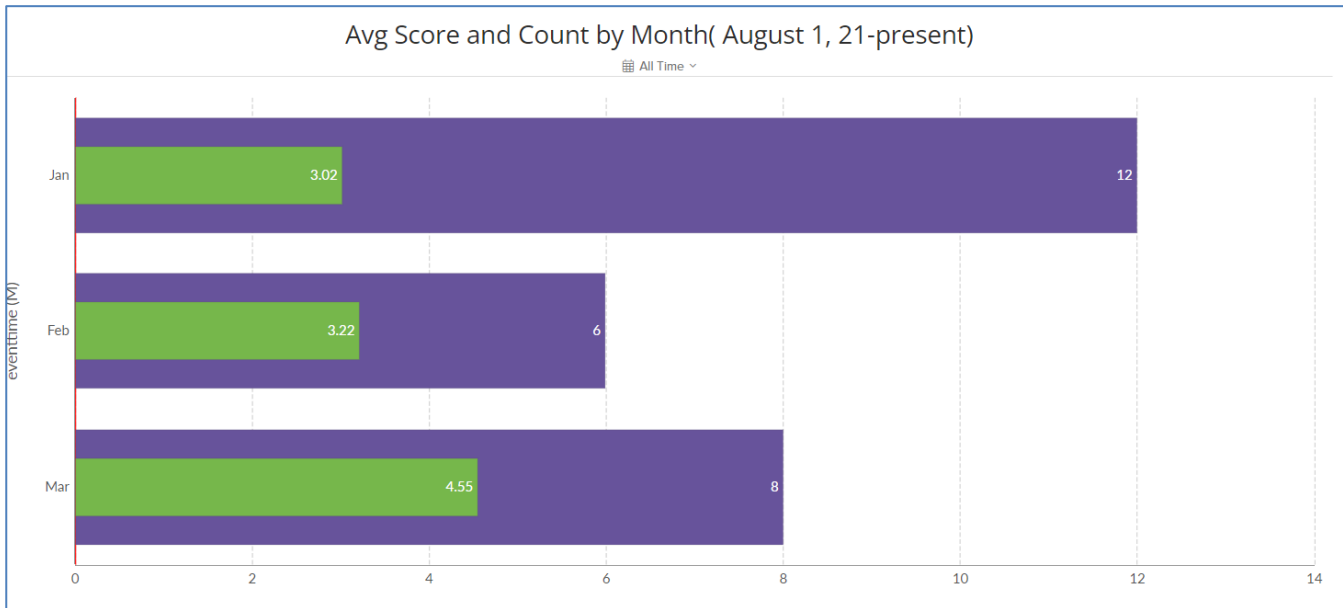
Table 7:



A measurement of writing improvement was also found via the LTI, with students starting with an average holistic score of a 3.02 in January and concluding the semester with a 4.55 in March (a 50% increase). (See Table 8)

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Table 8



Summary

Florida International University showcases a successful case study of IntelliWriter utilized in an Academic Support Center for Higher Education. Tutors, students, and administrators benefit from the platform. Students receive immediate feedback delivered via the AI that powers IntelliWriter. Tutors have the ability to collaborate with students within the platform and evaluate student writing data to effectively support each student's individual strengths and weaknesses. IntelliWriter allows FIU tutors to meet students "where they are." The administration at FIU are able to evaluate student writing data at scale, monitor growth, and influence policy and practice. FIU anticipates continued use of IntelliWriter in the Center for Academic Success and expanding their use of the platform at the curricular level via the LTI integration for the 2022/2023 academic year.

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