





## Language Learning Outcomes in on Ground Vs. Online Settings: Comparison and Correlation

I Ju Tu & Andrew Bartlett



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ARTICLE



# Language Learning Outcomes in on Ground Vs. Online Settings: Comparison and Correlation

I Ju Tu <sup>a</sup> and Andrew Bartlett<sup>b</sup>

<sup>a</sup>University of California, Santa Cruz; <sup>b</sup>Southern Connecticut State University

## ABSTRACT

While the effectiveness of online instruction has been well established, there remains a limited understanding of the correlation between language skills and performance across various instructional sections. This study investigates the language proficiency outcomes of college students in online and on-ground language instruction, focusing on four essential language skills: Reading, Writing, Listening, and Speaking. Data were collected from students enrolled in third-semester language courses in French, German, Italian, and Spanish during the Spring semesters of 2019 and 2021 with on-ground and online instruction respectively in a public university in the United States. Descriptive statistics, the Kruskal-Wallis test, and pairwise correlation analysis were used to analyze the students' performance in both modalities. The results indicate that students generally outperformed in the online modality, demonstrating a significantly higher positive correlation range compared to on-ground instruction. This finding suggests that multi-modality language instruction has the potential to foster more integrated and cohesive language proficiency development. The implications firstly show the positive correlation range in the online modality indicates that college instructors may be more capable of implementing effective online teaching methods due to various reasons. Secondly, college students' potential for self-directed learning in the online setting may contribute to their enhanced outcomes. However, the study also reveals challenges for less taught languages, such as the need for additional support in terms of resource curation and networking opportunities for instructors.

## ARTICLE HISTORY


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## Introduction

Scholarly attention to online language learning effectiveness surged post-2020, with a notable increase in publications (Zhou & Zhang, 2022). However, comparative studies often focus on one language in a single setting, neglecting variations across different languages and modalities. Building on prior work, including Gleason et al. (2024), examined the impact of the COVID-19 pandemic on student Spanish language proficiency, using the Avant STAMP 4S assessment for language learning effectiveness, finding a significant decline due to disruptions in traditional classroom instruction and reduced interactive opportunities. This study aims to address these gaps by retrospectively analyzing STAMP outcomes before and during COVID, and echoes Gleason et al. (2024) suggestions

**CONTACT** I Ju Tu  [etu6@ucsc.edu](mailto:etu6@ucsc.edu)  Department of Languages and Applied Linguistics, University of California, LAAL UC Santa Cruz 1156 High Street, Santa Cruz, CA 95064, USA

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on collecting World Language (WL) learning outcomes through proficiency-based and performance-oriented assessments for validity and reliability. Key questions arising include:

- (1) Is there a significant difference in overall language proficiency scores between on ground and online students across different language sections?
- (2) Is there a significant difference in proficiency skill (reading, writing, listening, and speaking) scores between on ground and online students across different language sections?
- (3) Is there a significant correlation in proficiency skill (reading, writing, listening, and speaking) scores between on ground and online students?

### **Comparison studies between online and on-ground courses**

Several review studies examined learning effectiveness under different learning modalities, including online, on ground, and blended. Castro and Tumibay (2021) investigated the comparison between online and on-ground courses in terms of setting, identification of instructional factors in online courses, and institutional adoption of online courses. Zhou and Zhang (2022) examined 103 empirical studies and revealed that online English learning particularly in writing benefited from online assisted tools.

Topping et al. (2022) examined the impact of different instructional approaches on student learning compared to regular on-ground instruction at the k-16 level. Among the different modalities, Blended Learning was found to be considerably more effective than Online Learning, with 83% of the studies showing it to be more effective compared to regular instruction, whereas Online Learning showed 74% effectiveness. However, it is noted that higher education is highly represented over the selected 1,355 studies.

### **Comparison studies in language education**

In higher education, comparison studies in language education offer specific insights into the four language skills in different target languages. The majority of studies (Chenoweth et al., 2013; De Paepe, 2018; Gleason et al., 2024; Moneypenny & Aldrich, 2016, 2018) showed that online learning is as effective, if not more effective, than on-ground methods. However, it's important to note that students' self-reported perceptions of their learning outcomes may not always align with these findings (Klimova, 2021).

Chenoweth et al. (2013) compared Spanish and French at novice and intermediate levels with a total of 354 university students across 34 sections in 5 semesters. The results showed that students in online courses performed in Spanish and French as effectively or better than on-ground courses except some aspects of writing and reading. They found that Novice French on-ground students' writing was more on topic and their use of vocabulary are more accurate than online students. As for reading, the online students outperformed the on-ground students in fluency, comprehensibility, and use of syntax and grammar. De Paepe (2018) conducted a study comparing online and on-ground adult Dutch classes, both following the Common European Framework of References (CEFR) and lasting one semester. The study controlled key variables like previous knowledge, course level, content, teacher, assessment, and learning outcomes. The results revealed that online Dutch L2 learning in adult education is at least as

effective as on-ground learning. While reading, speaking, writing, and total exams showed no significant differences between the two modalities, continuous assessments, including quizzes, classroom discussions, group projects, homework, presentations, and online activities, were performed significantly better by the online group. Overall, the study indicates that online learning can be just as effective, if not more so, than traditional on-ground learning in adult Dutch classes.

Money Penny and Aldrich (2016, 2018) compared college students' oral proficiency in both online and on-ground modalities. Students had options to receive fully online, fully on ground, or mixed modality for their Spanish classes. The results suggested that, regardless of course delivery patterns, students can reach the ACTFL benchmarks of Intermediate-Low after two semesters and Intermediate-Mid after four semesters. It showed that students performed at similar levels in different modalities.

Gleason et al. (2024) focused on the impact of moving all on-ground language courses online at a small public university in the northeastern US in March 2020 due to the COVID pandemic. They compared the Spanish language proficiency of students before and after the shift, using the STAMP test. Analyzing 30 sections of a third-semester Spanish course with a total of 568 participants, they investigated learning outcomes based on instructional modality. The results revealed a significant increase in students' overall Spanish language proficiency and significant improvements in three out of the four sub-level proficiencies (reading, listening, and speaking) in the online modality. Comparing spring 2019 to spring 2021 semesters, the study found that students who took their third-semester Spanish course fully online performed significantly better on the STAMP test, demonstrating enhanced language skills in reading, listening, and speaking.

The collective findings from the above-mentioned studies support the potential effectiveness of online language learning in various language skills and educational settings. However, Klimova's (2021) study took a different perspective, utilizing self-reported data from college students who have experienced both modalities. According to their responses, students prioritized developing listening and speaking skills, and they preferred printed materials than electronic resources. While students generally found online language classes effective, many expressed a longing for face-to-face interactions, and some felt that their language skills haven't significantly improved through purely online instruction. This suggests that while online learning shows promise, it may not fully replace the benefits of traditional in-person interactions in language education. A thorough review suggests that students are likely to excel in language proficiency in the online modality, despite not having entirely positive perceptions of online language learning. However, the reasons behind this improved performance remain unclear, necessitating deeper insights to understand why online learning yields better results. Additionally, the current body of research predominantly focuses on one language in a single setting, overlooking the variations in proficiency outcomes across different languages.

## Methods

This study compared two STAMP exams outcomes in the Spring semester 2019 (on-ground modality) and 2021 (online modality). STAMP stands for STAndards-based Measurement of Proficiency (STAMP) test and it is a computer-adaptive test that measures student proficiency in world languages. STAMP is administered by AVANT Inc. <https://avantassessment.com/stamp>.

## Research context

This study was conducted at a small public university located in the northeastern United States. As of fall 2022, the university had a faculty of 409 full-time members and an enrollment of 8,889 undergraduate and graduate students, offering 360 programs, including majors, minors, and pre-professional offerings at the undergraduate level, as well as various graduate degree programs. During the COVID-19 pandemic, which encompassed six weeks into the spring 2020 semester, the entire fall 2020 semester, and the spring 2021 semester, the university implemented emergency remote teaching (ERT) as temporary policy modifications. During the Emergency Remote Teaching (ERT) period, all WL courses were required to be delivered synchronously online for 200 minutes per week. Additionally, a 50-minute lab hour was originally conducted in the campus lab. However, due to the ERT, the lab hour transitioned to an online format. Instructors had the autonomy to conduct the lab hour either synchronously or asynchronously.

However, by the fall 2021 semester, the university returned to its pre-pandemic policies and procedures, and WL courses are back to on-ground setting. At the time of this study, students at the university were required to achieve score of 4 in STAMP for four skills to waive language requirement. For students had little WL experience could take a placement exam to determine what course to enroll. The department used self-developed placement exam to place students in the proficiency-appropriate course. The language placement exams were developed by each language section and presented as multiple choices with highly reading components. Notably, speaking, listening, and writing were not included in the placement exams. Students with no prior WL learning experience were requested to either pass a third-semester language course in the department or demonstrate an ACTFL level of Intermediate-Low language proficiency on an external assessment (AAPPL or STAMP) to fulfill their language requirement. Prior to the spring 2020 semester, all sections of the third-semester world language courses were conducted in an on-ground modality, meeting for 200 minutes per week, with 50 minutes spent in the language lab under the instructor's guidance.

At the end of the third-semester course, students took the STAMP 4S proficiency test as their final exam. The STAMP measured their reading, writing, listening, and speaking skills, and the test-taker scores corresponded to the sub-levels of the ACTFL proficiency scale, as depicted in [Table 1](#). The university's proficiency benchmark required students to achieve a minimum score of 4 (Intermediate-Low) for each of the four skills, ideally attaining an overall score of 16 on the STAMP. Scores of "1," "2," and "3" on the STAMP aligned with ACTFL proficiency scores of Novice-Low, Novice-Mid, and Novice-High, respectively. Those who achieve score of 4 for four skills can waive language requirement.

Before the ERT period, students used to take the STAMP test in the language lab during their final exam period for two hours, with instructors proctoring the exam. Additionally, onsite lab assistants were available to address any unforeseen technological issues. However, during the ERT, Avant Assessment and the Department collaborated to provide the option for students completing the third-semester language courses to take the STAMP test remotely for two hours as well.

**Table 1.** Alignment map between STAMP score and ACTFL proficiency benchmark (adapted from AVANT assessment).

The numbers 1–9 relate to the ACTFL scale in the following manner:

Reading and listening level key			Writing and speaking level key		
Novice	Intermediate	Advanced	Novice	Intermediate	Advanced
1-Novice-Low	4-Intermediate -Low	7-Advanced-Low	1-Novice-Low	4-Intermediate-Low	7-Advanced-low
2- Novice -Mid	5-intermediate -Mid	8-Advanced-Mid	2-Novice-Mid	5-Intermediate-Mid	8-Adcanced-Mid/High
3-Novice-High	6-Intermediate-High	9-Advanced-High	3-Novice-High	6-Intermediate-High	

## Participants

The participants of this study were students who took a world language in the third semester. The proficiency of the third-semester WL learners at university should align with the ACTFL proficiency level of intermediated-low for languages. [Table 2](#) lists the numbers of participants in different semesters across language sections.

## Data analysis

We collected students' test results on STAMP during the Spring semesters of 2019 and 2021 to compare their performance and explore the correlation between the four language skills in both on-ground and online settings. To analyze the data, we first used the Nonparametric Kruskal-Wallis test to determine if there was a significant difference in performance as measured on STAMP among the four languages (Spanish, German, French, or Italian).

To further investigate pairwise differences between the four languages, we performed Dunn's Nonparametric test as a Post Hoc analysis. This test controlled for the inflation of type one errors that may occur when conducting multiple pairwise comparisons independently.

In addition, we also employed the pairwise correlation between skills (Reading, Writing, Listening, and Speaking) as well as the overall STAMP score for the Spring 2019 and Spring 2021 semesters, to examine the relationship between the four language skills in both on-ground and online settings. The correlation method allowed us to determine if there is an association between two variables, in this case, the proficiency scores in different language skills. By calculating correlation coefficients, we could quantify the strength and direction of the relationship between the language skills resulting from different instructional modalities. This analysis helped us understand if improvements in one language skill are associated with changes in another skill and explore potential patterns of performance among students in different language modalities.

**Table 2.** The numbers of participants across language sections in the spring 2019 and spring 2021.

The number of students	Spring 2019	Spring 2021
French	43	51
German	13	11
Italian	46	40
Spanish	388	389

## Results

This section presents the STAMP test performances of students in both on-ground and online modalities across four language sections. The results are categorized and presented under the following subtitles.

### *The comparison between skills in on ground and online modalities*

At the investigated University, students are expected to achieve a minimum passing score of 4 in each skill. The descriptive statistics are used to compare the performance of students in on ground and online modalities. Table 3 present students' STAMP test outcomes in overall score across language sections in both on-ground (Spring 2019) and online (Spring 2021) modalities.

Table 3 and Figure 1 both shows that in the online modality, the French and Spanish sections achieved higher means, while the German and Italian sections were stronger in the on-ground modality. For reading skills, all language sections reached the minimum passing score of 4 in both semesters, except for the Italian section in the online modality in Spring 2021. French and Spanish sections performed better in the online modality for reading.

However, students failed to achieve the minimum passing score of 4 in writing and speaking across both modalities and languages. Notably, the STAMP writing scores were lower in the online modality (See Figure 2), although the Spanish section still showed a slight increase of 0.02 in the mean. Despite the challenges in speaking proficiency for both modalities, most language sections performed better in the online modality, except for the Italian section. Every language section achieved a higher listening score in the online modality, except for the Italian section.

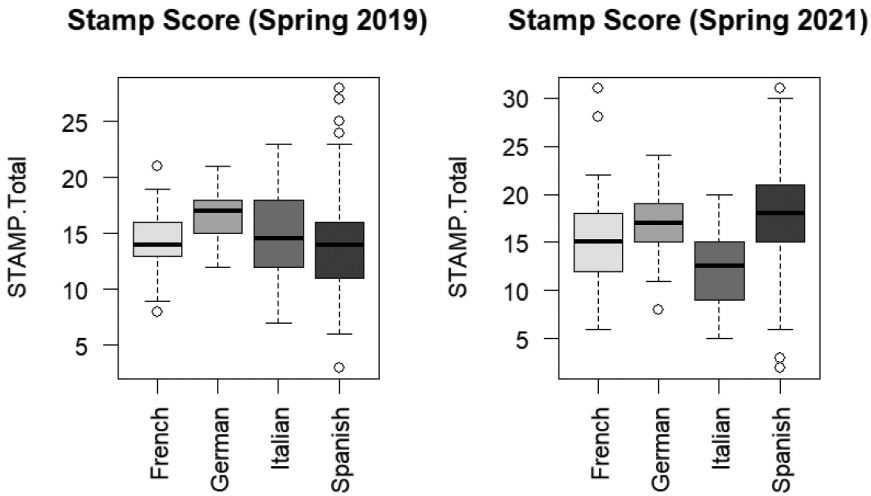
One notable observation is that the standard deviation in the online modality is more spread out compared to the on-ground modality, indicating greater variability in student performance. The sub-scores for reading, writing, listening, and speaking across language sections in both on-ground (Spring 2019) and online (Spring 2021) modalities can be seen in Table 3a,b,c,d and Figure 1b,c,d listed in the appendices.

### *The comparison between language sections in on ground and online modalities*

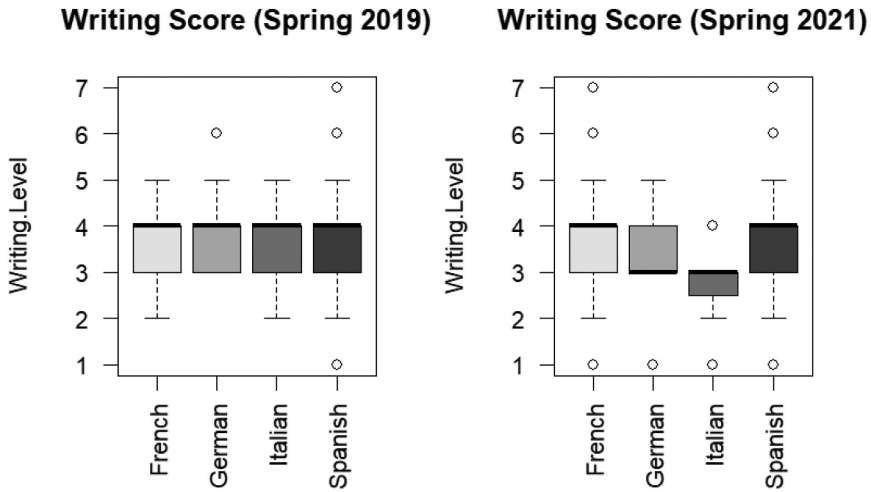
To gain insights into how students performed in different languages, we conducted statistical inference using the Kruskal-Wallis test. Before the pandemic, when instruction was

**Table 3.** Summary statistics in overall stamp score across languages in different semesters.

		Summary statistics (STAMP scores)			
		Sample size	Mean	Median	St.Dev
French	SP 19	43	14.16	14	2.68
	SP 21	52	15.29	15	4.86
German	SP 19	13	16.69	17	2.84
	SP 21	11	16.64	17	4.48
Italian	SP 19	46	14.91	14.5	3.31
	SP 21	40	12.2	12.5	3.70
Spanish	SP 19	389	13.76	14	3.56
	SP 21	392	17.78	18	4.93



**Figure 1.** Distribution in overall STAMP score across languages in different semesters.



**Figure 2.** Distribution in STAMP writing score across languages in different Semesters.

conducted on-ground, the test results showed significant differences across language sections in reading, listening, and speaking skills. However, writing proficiency remained consistent across languages. In Spring 2021, when world language instruction shifted online, statistical significance was observed across language sections in all skills. In other words, students’ performance showed greater variability in the online modality. The summarized results in Table 4 and Table 5 indicate significant differences can be seen in the appendices.

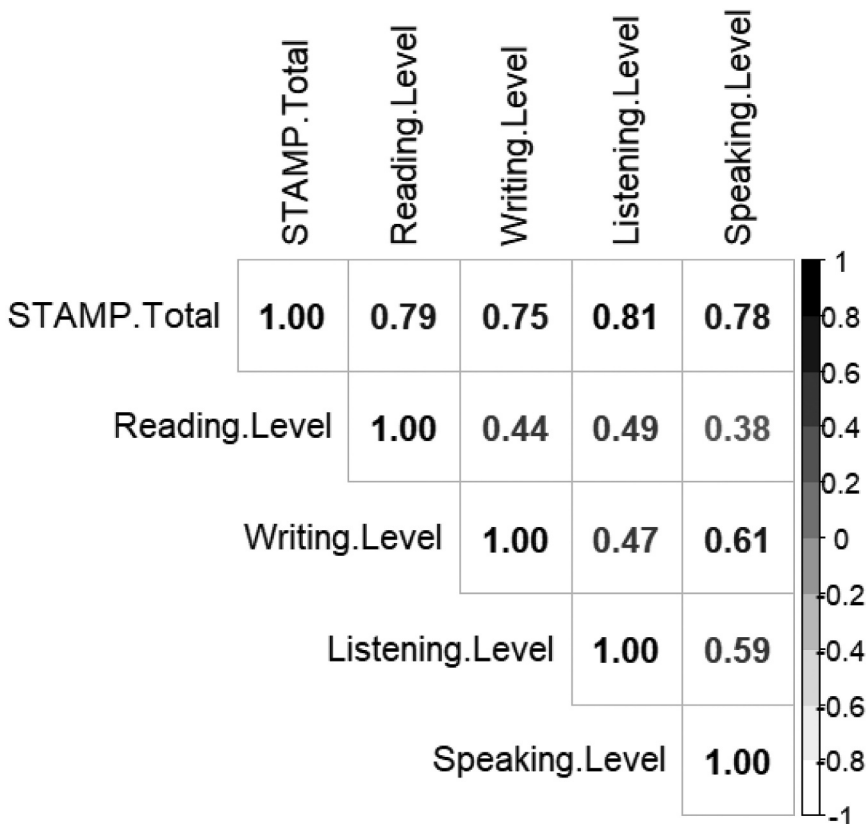
To analyze the overall STAMP comparison across language sections in on-ground and online modalities, Post Hoc Test is conducted for multiple pairwise comparisons with controlled type one error. In the on-ground modality, only Spanish and German performed differently. However, online modality shows that Italian-French, Italian-Spanish, Italian-



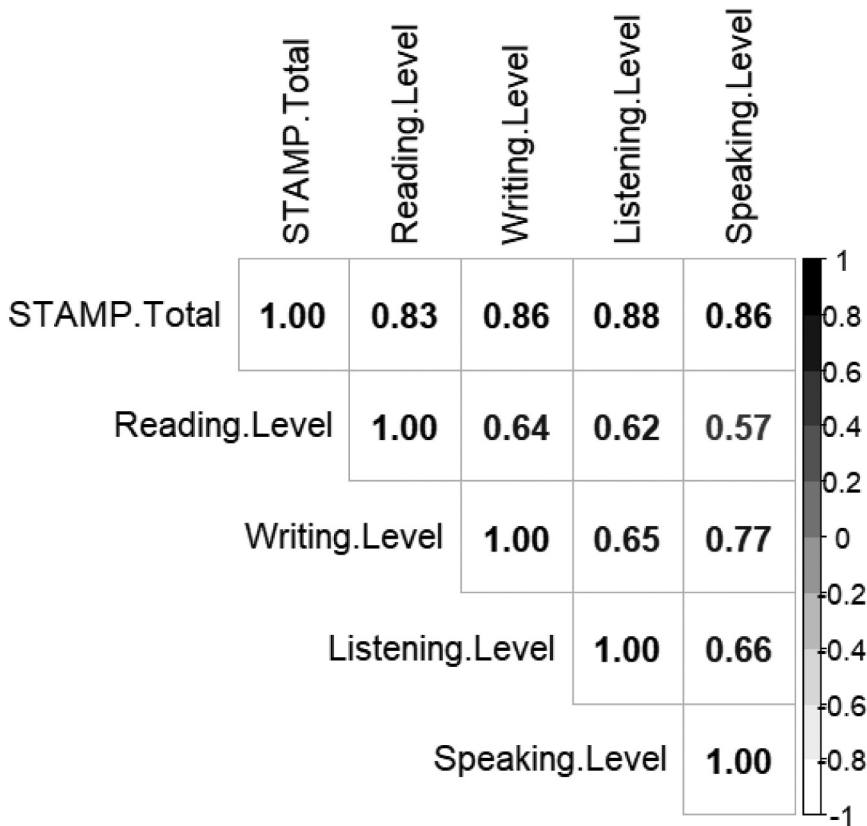
German, and French-Spanish performed significantly different. For reading performance, the on-ground modality reveals differences between Italian-French, Italian-German, Spanish-French, and Spanish-German, while the Italian section performs significantly differently from other sections in the online modality. Writing, on the other hand, remains consistent between language sections in the on-ground modality but shows significant differences in the online modality, particularly between Italian-French and Italian-Spanish. As for listening proficiency comparisons, showing significant differences between language sections in both on-ground and online modalities, except for German-Spanish and Italian-French comparisons in the online modality. Finally, speaking performances differ between Italian-French and Italian-Spanish in the on-ground modality, while the Italian-Spanish comparison shows significant differences in the online modality. The detailed data could be accessed in appendices listed in Table 6a to 6j.

### ***The pairwise correlation between skills***

The purpose of conducting the pairwise correlation between language proficiency skills is to understand how these skills correlate with each other in both on-ground and online settings. Figures 3 and 4 reveal that the online correlation range exhibits a significantly



**Figure 3.** Pairwise correlation between skills (reading, writing, listening, and speaking) and overall STAMP score-spring 2019 (on-ground).



**Figure 4.** Pairwise correlation between skills (reading, writing, listening, and speaking) and overall STAMP score-spring 2021 (online).

higher positive correlation compared to the on-ground correlation range. This finding suggests that in the online learning environment, there is a stronger and more consistent relationship between the different language skills (reading, writing, listening, and speaking) and the overall STAMP score. This positive correlation indicates that students who excel in one language skill are more likely to excel in other skills as well when participating in online instruction. The data hints at the potential benefits of online language learning in fostering a more integrated and cohesive development of language proficiency. However, it is essential to examine and interpret these results with caution and consider other factors that could contribute to the observed differences. Further research and analysis are necessary to gain a deeper understanding of the underlying factors driving the higher positive correlation in the online modality.

## Discussion

The study's comparison between the two modalities indicated that the online format yielded better overall performance in some language sections, particularly in French and Spanish, while German and Italian showed stronger outcomes in on-ground instruction. Such

variations between language sections emphasize the importance of considering individual language courses when assessing the effectiveness of different instructional modes.

Furthermore, the higher positive correlation range in the online modality highlights the potential advantages of online learning for language education. These benefits may include increased flexibility, personalized learning experiences, and access to a wide range of digital resources that cater to diverse learning styles. However, it is essential to acknowledge that the correlation range alone does not provide a complete picture of the learning experience, and other factors like student engagement, teaching approach, and technical infrastructure should be considered.

Despite the overall positive outcomes of the online modality, the study also identified areas of concern. In both modalities, students struggled to meet the minimum passing score of 4 in writing and speaking skills, which both are productive skills and deeply related to communicative competence. This finding underscores the need for continued improvement in designing effective online language courses that targets productive skills adequately. The wide standard deviation observed in the online modality compared to on-ground instruction indicates a greater variability in students' performances in the online setting. This variability may be attributed to factors such as varied technology access, personal learning preferences, or the accommodations of students to online learning settings. Ladson-Billings' research (2021) revealed the inequal educational opportunities occurred in disadvantaged students who have limited resource to achieve success in online settings and suggested that online learning needed to reset and consider diversity. In order to provide individualized support, it is suggested that institutions develop strategic plans and collaborate across DRC, IT, and teaching profession committees to achieve an equal, diverse, and inclusive (EDI) online learning environment.

Overall, this study contributes to the growing body of literature on online language learning effectiveness, particularly in the context of the COVID-19 pandemic. The positive correlation range in the online modality demonstrates the promise of online language instruction, while the identified challenges underscore the importance of continuous research and pedagogical development in this field. Language educators and administrators can leverage these findings to optimize language teaching and learning practices and create inclusive and effective language learning environments that suit the needs of diverse learners. Future research can build upon these results to explore additional factors influencing language proficiency outcomes and to further refine online language instruction for optimal student success. For this study, there are three implications are provided to discuss as future directions:

### ***Language instructors' capacity to deliver online courses at post-secondary level***

The data demonstrates that students perform better in online language instruction, as evidenced by both the comparison and correlation analyses. This positive outcome could be attributed to the competence of college instructors in delivering online courses. The findings align with a national survey conducted by Moser et al. (2021) among language educators, revealing significant differences in perceptions between PreK-12 and post-secondary world language (WL) educators who taught during the spring of 2020. Notably, post-secondary WL educators, including those in colleges, displayed higher confidence in the effectiveness of online courses, particularly in terms

of “interaction” and “outcomes.” Their findings (Moser et al., 2021) may result from college instructors have more support on technology and instruction compared with k-12 teachers. As this study took place in a college setting, the results are consistent with existing literature (Moser et al., 2021) that emphasizes the role of capable college WL instructors in developing effective online language courses and skillful online instruction to enhance students’ language proficiency.

### ***College students’ self-directed learning competence***

The second aspect could attribute to college students’ self-directed learning competence. The data highlights a significant finding that the online correlation range exhibits a notably higher positive correlation compared to the on-ground correlation range. This result indicates that students who engage in online language learning demonstrate a stronger and more consistent relationship between the various language skills (reading, writing, listening, and speaking) and their overall STAMP score. Such a positive correlation suggests that students who excel in one language skill are more likely to excel in other language skills as well when participating in online instruction. This finding can be interpreted through the lens of college students’ self-directed learning competence and their autonomy as learners. One possible explanation for the higher correlation in the online modality is that college students, by nature of their academic level and technology fluency, are more likely to possess higher self-directed learning (SDL) competence (Tu, 2021). Yu’s study (Yu, 2023) echoes that there is also a positive correlation between self-regulation ability and language achievement of second language learners in online environment.

College students are expected to take on more responsibility for their learning, engaging in independent resource-seeking and effective time management. De Paepe (2018) comparison study of adult Dutch classes demonstrated that adult learners performed better in continuous assessments, including quizzes, discussions, group projects, homework, presentations, and online activities. The online learning environment provides college students with increased autonomy and control over their learning experience, fostering strategic knowledge (study skills, elaboration, rehearsal, and note-taking), cognitive tasks knowledge (comprehension and conceptualization), and self-knowledge (self-awareness of strengths and weaknesses) (Nilson, 2013).

One interesting observation is that the standard deviation in the online modality is more spread out compared to the on-ground modality, indicating greater variability in student performance. While college students are generally tech-savvy, varying levels of technology adoption in their self-directed learning process may contribute to this wider standard deviation. Tu’s (2021) study highlighted how technology adoption influences students’ self-monitoring of learning strategies and goal setting.

Moreover, productive skills such as writing and speaking in the online modality require further investigation to understand why student performance remains constant, despite receptive skills generally making progress. This trend aligns with findings from other studies by Chenoweth et al. (2013) and Gleason et al. (2024), which also reported constant writing performance in the online modality whereas other skills make progress. These findings underscore the need for continued research to address specific challenges related to productive language skills.

In conclusion, the analysis supports the idea that college students' self-directed learning competence may contribute to the higher correlation observed in the online learning environment. However, further research is needed to explore the proficiency outcome and feedback focusing on productive skills (writing and speaking) in online settings as Shadiev and Yang (2020) echoed in their review between 2014 and 2019, showed that writing was discussed the most while speaking was the second in the field of technology-enhanced language learning (TELL). Understanding these dynamics can inform the design of effective online language courses and enhance language learning outcomes for college students and other learners in diverse educational settings.

### ***Resource curation in less commonly taught languages***

In this study, we compared language proficiency outcomes across different language sections and observed that the French and Spanish sections achieved higher means in both on-ground and online modalities. Conversely, the German and Italian sections demonstrated stronger performance in the on-ground modality. For reading skills (Table 3b, see appendices), all language sections met the minimum passing score of 4 in both modalities, except for the Italian section in the online setting. Notably, the French and Spanish sections performed better in the online modality for reading. The comparison across language sections highlighted that the Italian section exhibited the least competitive performance. Several potential reasons could explain this result, such as the instructors' online teaching experience, the curation of learning materials, or the curriculum design. However, due to limited data collection, we were unable to fully explain the factors contributing to the Italian section's lag in online instruction.

One possible explanation could be the disparity in resource curation for Italian compared to German, Spanish, and French. Another factor could be the relatively smaller number of Italian instructors, leading to isolation and limited opportunities for professional development in online teaching. While Italian is not always classified as a less-taught language in the US context, in this study, it emerges as a less popular language compared to others. According to MLA's report (2022), despite a 15.4% decline in World Language (WL) enrollments (undergraduate and graduate) between 2016 and 2020, Spanish and French have maintained their positions as the two most widely studied languages. In higher education, German enrollment surpassed Italian, with 37,819 students compared to 26,116 Italian students in 2020. Thus, the findings suggest that Italian instructors may have limited access to online teaching resources and a narrower network for curating instructional materials.

To address these implications, Ahmed and Opoku's (2021) perspective on the importance of topics such as online assessments and e-text versions for less commonly taught languages is noteworthy. It underscores the need for further exploration and research to understand the unique challenges faced by less-taught languages in the context of online language instruction. By investigating and addressing these challenges, we suggest that future research can develop targeted strategies to enhance the proficiency outcomes of students studying less commonly taught languages and promote inclusive and effective language learning experiences for all learners.

One limitation of this study is the relatively small sample size. This research was conducted at a single institution, and while efforts were made to include multiple language

sections, the sample size for each language section may not fully represent the diversity and variability of language learners in different contexts. Further research that includes a more diverse range of universities and language programs would strengthen the validity and applicability of the study's conclusions. Additionally, the study focused on language proficiency outcomes and did not delve into the specific factors that may have contributed to the observed performance differences between online and on-ground modalities. Further research exploring these factors, such as student engagement, teaching methods, and technological support, could offer deeper insights into the dynamics of language learning in different instructional formats.

## Conclusion

This study suggests multi-modality mode when considering instructional design since the online modality yields better overall performance in certain language sections, notably French, Spanish, and German, while Italian display stronger outcomes in on-ground instruction. These variations emphasize the importance of considering language resource across different languages when evaluating instructional modes.

The higher positive correlation range observed in the online modality highlights the potential advantages of online learning, including increased flexibility, personalized learning experiences, and access to a diverse range of digital resources. However, it is essential to recognize that correlation alone does not offer a complete picture of the learning experience, and other factors should be taken into account. Although the online modality shows positive outcomes, areas of concern have been identified, particularly regarding writing and speaking skills, which remain challenging in both modalities. Addressing these challenges is crucial to designing effective online language courses that target productive skills adequately.

The study also suggests three implications for future research. First, the competence of college instructors in delivering online courses may contribute to students' better performance in the online modality. Second, college students' self-directed learning competence and autonomy as learners may also play a role in the higher correlation observed online. Third, the study highlights the need for improved resource curation and support for less commonly taught languages in online instruction.

A limitation of this research is the relatively small sample size, which may limit the generalizability of the findings. Future studies with larger and more diverse samples from multiple institutions are needed to strengthen the validity of the conclusions. Additionally, exploring specific factors that influence language proficiency outcomes in different modalities would provide deeper insights into language learning dynamics in various instructional formats.

In summary, this study contributes to the growing body of literature on online language learning effectiveness. The positive correlation range in the online modality underscores the promise of online language instruction, while the identified challenges call for ongoing research and pedagogical development in this area. By leveraging these insights, language educators and administrators can optimize language teaching practices and create inclusive and effective language learning environments that cater to diverse learners. Future research can build upon these findings to explore additional factors influencing language proficiency outcomes and further refine online language instruction for optimal student success.

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## Disclosure statement

No potential conflict of interest was reported by the author(s).

## ORCID

I Ju Tu  <http://orcid.org/0000-0001-9245-9975>

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