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1-1-2017

# Language Learning Under Classroom Conditions During the Transition to Hybrid Instruction: A Case-Study of Student Performance During the Implementation of Instructional Technology

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# LANGUAGE LEARNING UNDER CLASSROOM CONDITIONS DURING THE TRANSITION TO HYBRID INSTRUCTION: A CASE-STUDY OF STUDENT PERFORMANCE DURING THE IMPLEMENTATION OF INSTRUCTIONAL TECHNOLOGY

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**Abstract:**

We examined the unmanipulated performance of students under real classroom conditions in order to assess the effect of a technology-enhanced hybrid learning approach to second language (L2) instruction on beginning and advanced Spanish language learners. This research focused on the transition period of technology implementation when the Spanish program of a modern language department of a liberal arts university transitioned from traditional face-to-face instruction, to a technology-enhanced hybrid learning approach with concurrent reduction in face-to-face classroom hours. This implementation provided an opportunity to compare the performance of students prior to, and during the transition to, a hybrid model of instruction across multiple language proficiency levels. This research is designed to critically evaluate the performance of students under real classroom conditions in order to examine the effectiveness of a hybrid approach during its implementation such that the performance of students participating in the methodological transition can be understood in light of the performance of students in the previous quarters. The results indicate that introductory students did not realize the full potential benefits of hybrid instruction in the transition period, but that the performance of advanced students was

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improved, suggesting that a phased-in approach to hybrid instruction implementation, where advanced students are the first to transition to hybrid instruction, may supplement training experiences for instructors and support staff and improve overall student success during technology implementation.

**Keywords:** real classroom conditions, computer assisted language learning, technology-enhanced hybrid learning, class performance, technology effectiveness

## 1. Introduction

Technological advancements enhance modern teaching practices with emerging technologies that alter the language teaching environment with new products and applications for computer-assisted language learning (CALL). Educational institutions are adapting their pedagogies to incorporate these new teaching-technologies, which have become increasingly more complex and individualized. As educational institutions adopt technology-enhanced pedagogies, a common trend is to transition from a fully face-to-face traditional course design to a hybrid design where a portion of the instruction, and associated exercises, are transferred to a digital system that become the responsibility of the student to perform outside of the classroom. This approach reserves valuable and finite classroom time for complex communicative tasks and interactions with the instructor and among students, while shifting basic vocabulary and grammar content introduction outside the classroom. Transitioning to hybrid courses has the potential to improve student satisfaction (Kulik & Kulik, 1987; Strambi & Bouvet, 2003) and learning (Kulik, 2003; Zhao, 2003) by strategically dividing instruction into tasks that can be accomplished individually with pre-programed instructor support and tasks that require dynamic interactions with the instructor and classmates.

While there are clear theoretical and empirical benefits to transitioning to a hybrid instructional approach (Adair-Hauk, Willingham-McLain, & Youngs, 2000; Warschauer & Meskill, (2000); Green & Youngs, 2001; Salaberry, 2001; Moore et al, 2002; Zhao, 2003; Kulik, 2003; Garrett, 2009; Howard & Scott, 2017), the education outcomes for students who participated under real classroom conditions remains unclear. From the perspective of students whose primary focus is successful language acquisition, there are two critical phases to assess: the transition phase where students, instructors, and support staff are implementing hybrid technologies for the first time, and the continuing phase where instructors and support staff, and some students, are more

experienced with the hybrid technologies and their use. There is some evidence that the full benefits of hybrid instruction are not realized until after the transition phase (Sagarra & Zapata, 2008; Arvan & Musumeci, 2000, Swain, 2014), therefore examination of students who participated in the initial implementation of hybrid instruction provides an opportunity to identify which students are most successful under transition conditions. These data can then be used to make specific recommendations about how similar transitions can be most successfully structured, i.e., which groups of students might be best served leading the transition within the department and which students might be best served by only transitioning after additional experience of the instructors and support staff.

The primary purpose of the study is to quantify the performance of diverse students that participated, under real classroom conditions where their primary motivation was language acquisition, in the transition from face-to-face instruction to hybrid instruction to identify which students were most successful during the transition phase. Previous research has mostly focused on investigating hybrid instruction under laboratory conditions; however, several authors have called for additional information collected under real classroom conditions that could help us to understand how applicable our laboratory observations are to the experiences of actual students. Foster (1993 & 1998) questioned if communicative tasks studied under laboratory settings would find similar results under real classroom conditions, and identified contrary results between laboratory and real classroom conditions. Grgurović (2013) emphasized the need for empirical research under classroom conditions, indicating that "learning in real classroom conditions is important to study in order to learn the effects of real CALL use by real classroom learners whose purpose is to learn language" (p. 191), and found that the classroom setting (as opposed to a venue especially arranged for data collecting) was a significant variable with important implications. Swain (2014) examined the performance of actual L2 students under real classroom conditions in order to examine the effectiveness of two different learning-technologies that were implemented sequentially, and to examine the effects of these transitions that students experience immediately after their implementation, finding that the use of learning technologies had statistically significant effects on multiple assessment metrics of student performance.

Although the assessment of student performance in real classrooms is clearly less controlled, and therefore more susceptible to noise in the data, these studies are important for completing the evaluation of learning technologies and testing if the

patterns observed in the laboratory translate to the performance of unmanipulated students.

## 2. Literature review

Classroom instruction has evolved from the traditional setting with face-to-face instruction to hybrid instruction and has been the target of many studies that envision instructional technology as a new direction in teaching second language (L2) learners. Multiple studies on specific topics of language have explored the effectiveness of classes that combine traditional instruction with teaching-technology and have demonstrated generally positive effects for L2 learners. For example, early findings of Cahill & Catanzaro (1997) demonstrated that students who participated in an online Spanish course outperformed students in traditional face-to-face Spanish courses in writing essays. Blake et al., (2008) compared traditional, hybrid, and online distance learning for first year Spanish courses and showed that the traditional classroom students obtained similar oral proficiency levels as students that were instructed online and through hybrid courses. Chenoweth & Murday (2003) compared online to face-to-face instruction for students in a first year French course and examined grammar, written, oral, listening, and reading and found that students in the online environment outperformed those in the face-to-face classroom. Chenoweth et al. (2006) identified successful results for hybrid online instruction, but concluded that online courses needed instructors to support and guide the students in the implementation of those courses. Scida & Saury (2006) examined the performance of students in hybrid and traditional face-to-face instruction, and found higher median grades for students in the hybrid course. Zhao (2003) compiled 156 journal articles by aspects of language-learning and concluded that technology can be effective in almost all areas of language education, however the effectiveness of technology on language learning depends on the way that it is used in classroom settings as some technologies can work more effective than others depending on the learning tasks and the types of learners. More recently, Blake (2016) examined technology and language skills, suggesting that computer-assisted language learning (CALL) can support L2 language learners development and growth in the areas of speaking, listening, reading, and writing.

Although many studies have indicated that learning-technologies benefit L2 students, there are indications that it may take 6–8 months of use to realize the full benefits of technology. Sagarra & Zapata (2008) found no significant differences between technology-enhanced and non-enhanced groups after four months of

instructional treatment, but computer-enhanced classes outperformed the traditional group in grammatical accuracy after 8 months. Arvan & Musumeci (2000) found that students receiving computer-enhanced instruction did not outperform those enrolled in conventional classes until the second semester of working with online activities. Salcedo (2010) measured the learning outcomes in face-to-face traditional classroom versus laboratory and online classes for beginning Spanish, and demonstrated that the classroom performed significantly better than the laboratory class, although the consecutive semester students in a higher language level showed better performance in the laboratory.

To date, there is an extensive discussion among researchers that focuses on how students and teachers can benefit from technology supported pedagogy. Grgurović, Chapelle & Shelley (2013) rigorously synthesized 37 studies conducted since 1984 in a meta-analysis of CALL effectiveness and concluded that the results favored technology-supported pedagogy, which was at least as effective as instruction without technology. The largest effects were observed in laboratory settings where learning conditions and participants could be strictly-controlled; however, less-controlled studies on learning under real classroom conditions, where the participants are students' intent on learning language, remain critical for informing educational policy decisions (Foster, 1998; Grgurović et al., 2013). In the present study, we examined the performance of students who participated in a program-level transition from traditional face-to-face instruction to hybrid instruction (technology-enhanced with reduced face-to-face class time) at multiple proficiency levels to address the following questions:

a. Do students who receive hybrid instruction during the transition period (from face-to-face instruction to hybrid instruction) perform similarly to students who receive traditional face-to-face instruction?

b. Do female and male students who receive hybrid instruction during the transition period (from face-to-face instruction to hybrid instruction) perform similarly to female and male students who receive traditional face-to-face instruction?

c. Do beginning and advanced students who receive hybrid instruction during the transition period (from face-to-face instruction to hybrid instruction) perform similarly to beginning and advanced students who receive traditional face-to-face instruction?

## 3. The present study

This research examined the effect of introducing a hybrid technology model on the performance of Spanish language students. We followed the un-manipulated performance of students whose language proficiency ranged from beginning to advanced as they participated in the program-wide transition from traditional face-to-face instruction to a hybrid of online and face-to-face instruction that reduced the number of contact hours with the instructor in all academic quarters of 2012–2014, and the spring and winter quarters of 2014–2015. A total of 572 Spanish students were included in this study. The performance of students who participated in the transition to hybrid instruction were compared to the performance of students who participated in the identical courses immediately preceding the transition period. The metric of performance employed is the improvement in un-manipulated assessments (test scores and final grades stripped of identifying information) of individual students over the duration of the course, such that the performance of each student is assessed relative to their initial performance in the class. This approach corrects for initial differences in student ability, isolating their improvement over the duration of the course as an objective measure of differential student performance.

### 3.1 Course System

The traditional face-to-face courses met three days a week over a ten-week quarter for a total of thirty 1.5 to 1.0 hour in-class meetings and students could complete a course-level over three quarters. There were no online components and all instruction was completed during class periods. Students completed grammar, vocabulary, writing, reading, listening, and communicative activities in class, with additional reading and written activities performed outside of class. Student learning was assessed through four paper exams composed of grammar, vocabulary, reading, and listening and was proctored in class.

Hybrid enhanced courses mirror the face-to-face courses in content and pace, but reduced the amount of class time by reducing the number of meetings. Hybrid courses met two days a week over a ten-week quarter for a total of 30 hours of in-class meetings and students could complete a course-level over three quarters. The reduced in-class instruction was compensated for with increased outside-class online instruction of approximately one additional hour. The online instruction was delivered by means of an Integrated Learning Platform (ILP) course management system and included adaptive learning activities that offer an intuitive, student–centric design, accessible

through a diversity of electronic devices. The online components are divided into online pre-preparation instruction and activities that students complete before they come to class, and the online activities to prepare students for their tests. The students used an electronic E-Book that supplements online activities through a web-based digital workbook, in which activities such as grammar, vocabulary, reading listening and writing are automatically graded with instant feedback; with exception of video cultural activities, that are instructor graded. Students used an ILP application that is an adaptive study-aid to strengthen memory recall and increase information retention. Students are able to study more efficiently because they are made aware of what they know and do not know. The ILP application reports quickly identify concepts that require more attention from individual students—or the entire class—and delivers individualized content based on each student's needs. Immediate feedback and targeted practice acts as a personal at-home tutor. In addition to the E-Book assignments, online assignments are organized by ten modules that contain learning objectives related to new vocabulary or grammar of a respective chapter. For each objective, there is a corresponding sub-module, in which students will find a video, reading, exercise, or a combination of the three to explain the new grammar or vocabulary followed by a practice assignment, in which students are required to complete a graded task related to the topic to demonstrate their understanding. The modules are designed generally as a form of a quiz or an e-book activity or assessment, or both. Students are required to complete all the sub-modules before the class session. Also, for a better understanding of the hybrid courses, students are required to watch an orientation webcast about the benefits of a hybrid course and the ILP.

## 4. Research Methods

### 4.1 Participants

Participants were undergraduate students enrolled in a Spanish program in the department of Modern Languages at DePaul University located in Chicago, Illinois, United States. This institution is a nationally-ranked 4-year private research university with about 23,539 undergraduate and graduate students, 56% female. The Spanish program at DePaul University applies a communicative approach to language instruction and serves approximately 1,100 students annually. The pool of participants consisted of 572 students from twenty basic (first-year) and thirteen intermediate (second-year) sections of Spanish in autumn 2013 through spring 2015, with a sex-ratio (59% female) reflective of the student population at this institution. Spanish-language

proficiency levels were determined through institutional placement screening; 72% of participants were in basic Spanish. Missed exams and participants who did not complete the course with a minimum of 65% were excluded from the analyses; ensuring that participants demonstrated basic competence in the material and finished the course such that they had similar exposure to the educational materials and technology treatments.

## 4.2 Assessments and Experimental Design

Two different metrics of performance were based on four mid-quarter exams and final grades. The first is a metric of performance improvement in vocabulary, grammar, and language comprehension accuracy assessed through a comparison between first half-of-term and second half-of-term exam means. This metric examined the change in the percentage of material that a student mastered during the progression of the class as the difference between early- and late-term performance; meaning that this assessment metric is individually normalized and not affected by overall grades. For example, a student scoring a mean of 90% on the first two exams and a mean of 94% on the second two exams would have the same improvement in exam scores as a student scoring a mean of 70% on the first two exams and a mean of 74% on the second two exams. The second is a metric of overall performance in vocabulary, grammar, language comprehension, and oral proficiency assessed through the mean final grade. This measure assessed the overall percentage of material that a student mastered during the progression of the class as the weighted mean of all participation, homework, essay, exam, and oral interview scores and is not individually normalized. These two metrics were used to assess differences in the performance of participants in the control and technology-enhanced treatment groups.

By using the actual performance of students under real classroom conditions, we are avoiding the small sample sizes and participant motivational biases that are associated with a more standardized laboratory design in favor of a greater cross-section of student participation, larger participant pools, and higher participant motivation to both learn the language and perform during assessments. While the data collected under this less controlled design will undoubtable be more variable, they should also be more reflective of the effect of instructional treatments with students working under classroom conditions and motivated by their own academic achievement. This is a knowledge base that is underrepresented in the current literature. These types of data, when combined with more rigorously controlled

laboratory assessments, should advance our understanding of the effects of technology-enhanced instruction.

Classroom language instruction across treatment and control groups included level-appropriate grammar and vocabulary, oral and practice activities, and cultural content. Additionally, all participants followed the same course content syllabi and were assessed with the same testing instruments within each course level. Based on previous research, the central prediction was that students using hybrid instruction may out-perform students without access to technology, but that during the transition period targeted in this study, they would not experience the full benefits of hybrid instruction.

## 5. Results

The use of hybrid instruction had statistically significant effects on both assessment metrics of student performance, but disproportionately affected female students in basic courses. Overall, we observed significantly decreased performance improvement (improvement; t-test, t = 4.74, p < 0.0001, Figure 1, parentheticals are sample sizes, error bars are standard error) and significantly decreased overall performance (final grade; t-test, t = 3.70, p = 0.0002, Figure 2) among participants using hybrid technology.
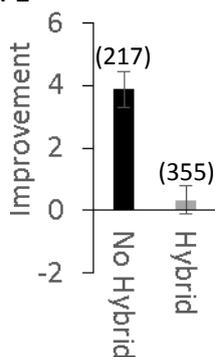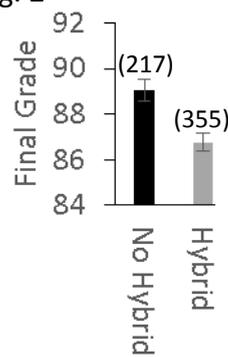


Fig. 1

Fig. 2

Although both male and female participants in hybrid classes experienced a decline in both metrics (ANOVA, improvement, F = 8.02, p <0.001, Figure 3; final grade, F = 7.14, p <0.001, Figure 4), the decline in performance was larger among female (improvement, -3.80 ±0.67, Figure 3; final grade, -3.20 ±0.51, Figure 4) than male participants (improvement, -3.17 ±0.83, Figure 2; final grade, -0.97 ±0.73; Figure 4).

Fig. 3



Fig. 4
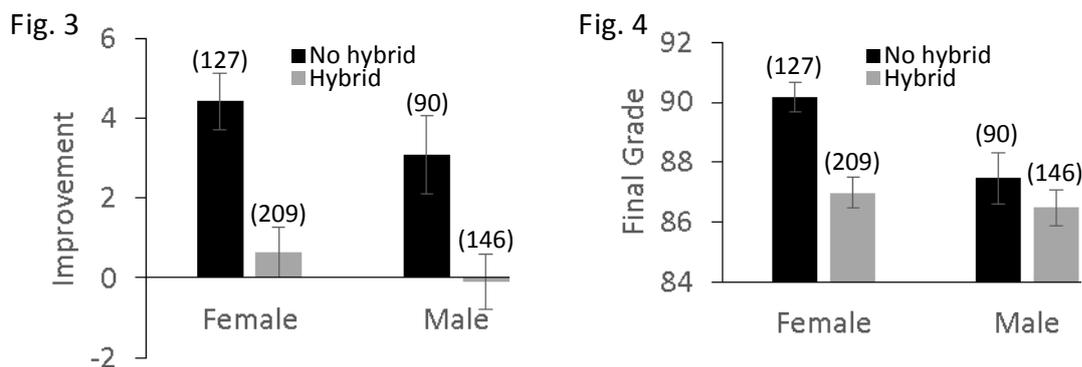
This effect was not equally experienced by students in all course levels. Students in basic hybrid courses experienced declines in performance improvement, whereas participants in advanced hybrid courses experienced increases in improvement compared to non-hybrid courses (ANOVA, improvement, F = 12.01, p <0.001, Figure 5). In both course levels, females experienced a greater effect on improvement of the hybrid technology with greater decreases (females, -7.42 ±0.86; males, -5.37 ±0.95, Figure 5) in basic courses and smaller increases (females, 3.99 ±0.87; males, 6.72 ±1.53, Figure 5) in advanced courses.



Fig. 5
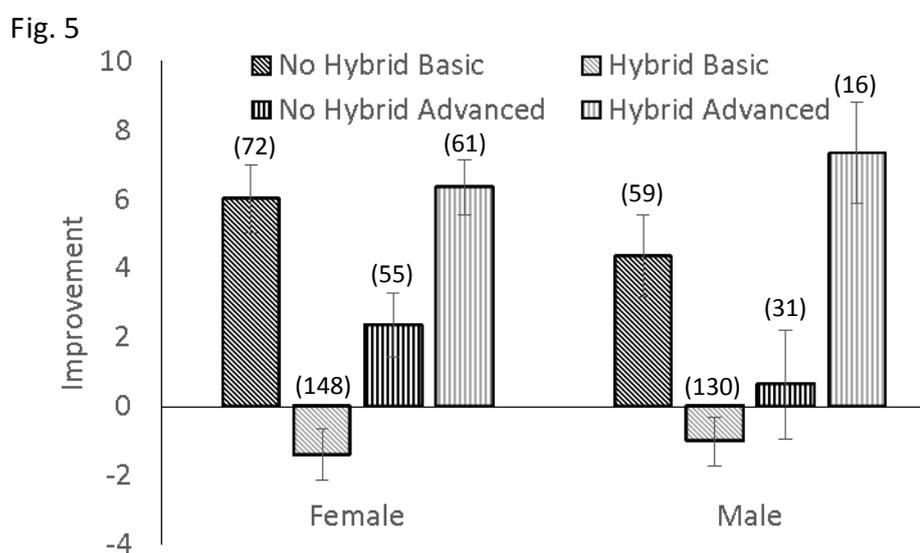
These trends in performance improvement were not mirrored in overall performance, where decreases were observed in both basic and advanced courses with hybrid technology, however significant decreases in overall performance were only experienced by females (ANOVA, final grade, F = 3.91, p <0.001, Figure 6) with larger decreases in advanced courses (basic, -2.42 ±0.67; advanced, -5.11 ±0.75, Figure 6), even though females outperformed males in both basic and advanced non-hybrid courses.

Fig. 6
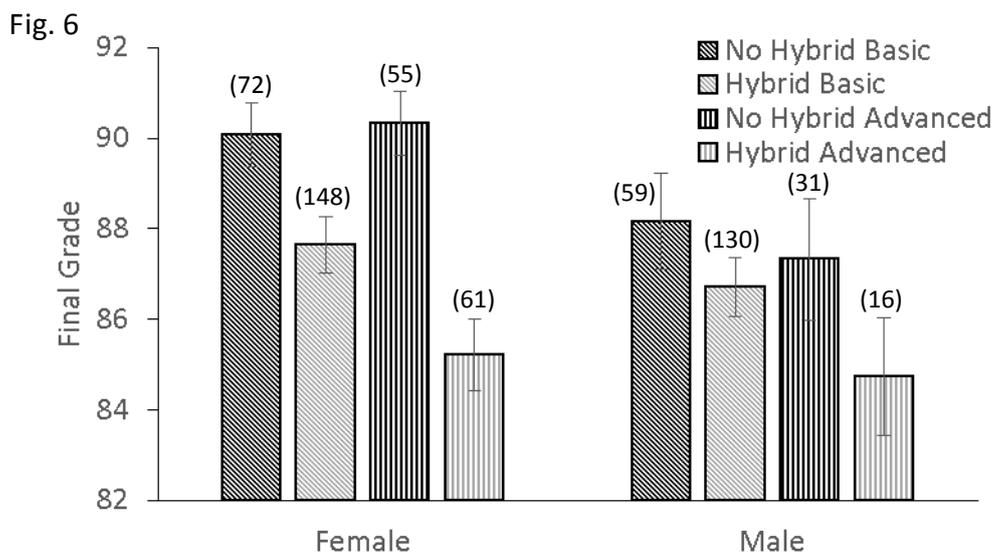


## 6. Discussion

The implementation of learning technologies had statistically significant effects on both assessment metrics of student performance (improvement and overall). During this period of transition to hybrid instruction, performance improvement and overall performance was significantly depressed compared to control (non-hybrid) classes. However, this effect was mostly the result of depressed performance among females in the basic courses, as there was significantly higher performance improvement with hybrid instruction at advanced levels. Overall performance (final grade) was depressed at both the basic and advanced instructional levels, although again, the effect was larger among females.

That there was a significant reduction in performance with the implementation of hybrid instruction is unsurprising, as students, instructors, and support staff learn how to use novel technologies, there are bound to be issues that waste limited time and attention on learning tech-operation and distract from the language-learning process. Although administrators, instructors, and students were each trained in the use of the new technology, student performance suffered during its implementation. This pattern has been observed elsewhere, where significant gains in using hybrid instruction are not realized during the transition period, but only after extended use (Sagarra, 2008; Arvan & Musumeci, 2000, Swain, 2014). This should serve as a precautionary tale to institutions that are looking to transition to hybrid technologies to heavily invest in training of instructors and staff, as well as students, to attempt to eliminate the transition depression as much as possible.

The disparity among basic and advanced instructional levels may indicate (among other possibilities) that more experienced students were better able to participate in the successful implementation of the new technology, and suggest that a strategy of gradual introduction of hybrid instruction, beginning with advanced courses, may help alleviate performance depression of the entire transition. This may be particularly successful if the instructors who will participate in the transition to hybrid classes for beginning students, first participate in the transition for advanced students, and thereby gain additional experience in assisting students through the transition. This would provide additional training to the instructors in both the use of the technology and in assisting students in acclimating to its use while minimizing the performance depression that we observed. Perhaps this more gradual transition, where advanced courses are transitioned to hybrid instruction first, could help to improve the performance of all students through the transition period. Additionally, greater efforts at training in the use of technology for all those involved may allow the benefits of hybrid instruction that have been observed to occur subsequent to the transition period in other studies, to be realized earlier in the transition process.

## 7. Conclusions

The use of technology-assisted hybrid instruction generally resulted in suppressed student performance during the transition period as the new technology was being implemented. This pattern was disproportionally driven by the performance of female introductory language learners, but was near parity with traditional face-to-face instruction among advanced students. As previous research suggests that the full benefits of hybrid instruction are often not realized until after an initial transition period, these findings suggest that a phased approach, where the first students to transition to hybrid instruction are the students who perform the best during the transition (advanced students) and that their instructors are subsequently responsible for the transition of the remaining students, may provide additional experience for instructors and support staff that could improve transition-period performance of introductory students and therefore overall student success through the technology implementation.

## 8. Limitations and Future Directions

This study relied upon the performance of students actively enrolled in a multi-course program of second-language learning and used unmanipulated assessments and course grades as metrics. These types of real-classroom studies can offer insight into the success of hybrid-instruction implementation that is complementary to, but not independent of, more stringently controlled laboratory studies of language learners and instructors. The results of the current study offers possibilities of continued examination of student performance in the later stages of technology-implementation, examination of student performance among students who are inexperienced in hybrid instruction being taught by instructors and support staff who now have the benefit of experience in assisting students through the transition period, and testing the hypothesis that a more successful transition could be achieved by a phased-in approach that begins with advanced language learners.

### Acknowledgements

### Note

The investigator presented the research project to the Dean's office of the College of Arts and Sciences and to the department of Modern Languages at DePaul University for approval. After the authorization, the researcher completed the CITI Training for Research Services Institutional Review Board (IRB) for human subject's protection, follow by the submission of a proposal to DePaul University IRB office which granted approval to conduct the study. The data collection and management adhered to the policies of the IRB.

### References

1. Adair-Hauck, B., Willingham-McLain, L., & Youngs, B. E. (2000). Evaluating the integration of technology and second language learning. *CALICO journal*, 269-306.

2.  Arvan, L., & Musumeci, D. (2000). Instructor attitudes within the SCALE efficiency projects. *Journal of Asynchronous Learning Network*, *4*(3), 196-215.

3.  Blake, R. (2016). Technology and the Four Skills. *Language Learning & Technology*, *20*(2), 129-142.

4.  Blake, R., Wilson, N. L., Cetto, M., & Pardo-Ballester, C. (2008). Measuring oral proficiency in distance, face-to-face, and blended classrooms. *Language Learning & Technology*, *12*(3), 114.

5.  Cahill, D., & Catanzaro, D. (1997). Teaching first-year Spanish on-line. CALICO Journal, 14(2-4), 97–114.

6.  Chenoweth, N., & Murday, K. (2003). Measuring Student Learning in an Online French Course. *CALICO Journal*, *20*(2), 285-314.

7.  Chenoweth, N. A., Ushida, E., & Murday, K. (2006). Student learning in hybrid French and Spanish courses: An overview of language online. *Calico Journal*, 115-146

8.  Foster, P. (1993). Discoursal outcomes of small group work in an EFL classroom: A look at the interaction of non-native speakers. *T haw Valley Univer*.

9.  Foster, P. (1998). A classroom perspective on the negotiation of meaning. *Applied linguistics*, *19*(1), 1-23.

10. Garrett, N. (2009). Computer-assisted language learning trends and issues revisited: Integrating innovation. *The Modern Language Journal*, *93*(s1), 719-740.

11. Grgurović, M. (2011). Blended learning in an ESL class: A case study. *Calico Journal*, *29*(1), 100-117.

12. Grgurović, M., Chapelle, C. A., & Shelley, M. C. (2013). A meta-analysis of effectiveness studies on computer technology-supported language learning. *ReCALL*, *25*(2), 165-198.

13. Howard, J. M., & Scott, A. (2017). Any time, any place, flexible pace: Technology-enhanced language learning in a teacher education programme. Australian Journal of Teacher Education (Online), 42(6), 51.

14. Liu, M., Moore, Z., Graham, L., & Lee, S. (2002). A look at the research on computer-based technology use in second language learning: A review of the literature from 1990–2000. Journal of Research on Technology in Education, 34(3), 250-273.

15. Kulik, J. A. (2003). Effects of using instructional technology in elementary and secondary schools: What controlled evaluation studies say? Arlington, VA: sri International.

16. Kulik, J.A. & Kulik C., L.C. (1987a) Computer-based instruction: What 200 evaluations say. Paper presented at the Annual Convention of the Association for Educational Communications and Technology, Atlanta, GA. (ERIC Document Reproduction Service No. ED 285 521).

17. Salcedo, C. S. (2010). Comparative analysis of learning outcomes in face-to-face foreign language classes vs. language lab and online. *Journal of College Teaching and Learning*, *7*(2), 43.

18. Sagarra, N., & Zapata, G. (2008). Computer-assisted instruction and L2 grammar accuracy. *Hispania*, 93-109.

19. Scida, E. E., & Saury, R. E. (2006). Hybrid courses and their impact on student and classroom performance: A case study at the University of Virginia. *Calico Journal*, 517-531.

20. Salaberry, M. R. (2001). The use of technology for second language learning and teaching: A retrospective. *The Modern Language Journal*, *85*(1), 39-56.

21. Strambi, A., & Bouvet, E. (2003). Flexibility and interaction at a distance: A mixed-mode environment for language learning. 7(3), 81-102. Retrieved July 2016, from http://llt.msu.edu/vol7num3/strambi/default.html

22. Swain, L.O. (2014). Technological enhancement of instruction and its effect on performance in the Spanish language classroom. Paper presented at the 96th Annual Conference:  Articulation: a pathway to Success. American Association of Teachers of Spanish and Portuguese. Retrieved July 2016, from AATSP, http://www.aatsp.org/?page=2014 conference.

23. Swain, M., & Lapkin, S. (1995). Problems in output and the cognitive processes they generate: A step towards second language learning. *Applied linguistics*, *16*(3), 371-391.

24. Warschauer, M., & Meskill, C. (2000). Technology and second language teaching. *Handbook of undergraduate second language education*, *15*, 303-318.

25. Zhao, Y. (2003). Recent developments in technology and language learning: a literature review and meta-analysis. CALICO Journal, 21(1): 7-27.

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