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Technology-Enhanced instruction in learning world languages: The middlebury interactive learning program

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Abstract

Middlebury Interactive Language (MIL) programs are designed to teach world language courses using blended and online learning for students in kindergarten through grade 12. Middlebury Interactive courses start with fundamental building blocks in four key areas of world-language study: listening comprehension, speaking, reading, and writing. As students progress through the course levels, they deepen their understanding of the target language, continuing to focus on the three modes of communication: interpretive, interpersonal, and presentational. The extensive use of authentic materials (video, audio, images, or texts) is intended to provide a contextualized and interactive presentation of the vocabulary and the linguistic structures. In the present paper, we describe the MIL program and the results of a mixed-methods survey and case-study evaluation of its implementation in a broad sample of schools. Technology application is examined with regard to MIL instructional strategies and the present evaluation approach relative to those employed in the literature.

Keywords: Middlebury Interactive Language, materials, technology.

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1. Introduction

Advancements in computer technology have not only substantially increased global communications but also enabled the teaching of world languages to be more accessible to students. The potential teaching applications far extend and enhance what can be achieved in traditional instructor-led classrooms. For example, computer-assisted foreign language instruction can offer advantages for developing writing skills via web-based lessons (Al-Jarf, 2004), while affording dynamic online interactions through blogs, wikis, social networking tools, and multi-user games (Wang & Vasquez, 2012). These and other applications will be described from the literature in establishing research and practice frameworks for the present study of a technology-based program in world languages.

2. Program Description

The specific focus of this paper is the technology-based programs used by Middlebury Interactive Learning (MIL) to teach world languages to K–12 students. Specifically, the Middlebury Interactive Competency (MIC) courses take a unique pedagogical approach by employing multiple learning strategies supported by linguistics research and theory. Included in the MIC approach are communicative activities, standards-based activities to direct grammar practice, and “fun” interactions by students with the language. The courses are designed to help students develop communicative proficiency in the target language while building a strong foundation in correct grammar usage and vocabulary.

In fluency courses, students start with fundamental building blocks in four key areas of world-language Spanish study: listening comprehension, speaking, reading, and writing. As they progress through the course levels, students deepen their understanding of Spanish, continuing to focus on the three modes of communication: interpretive, interpersonal, and presentational. The extensive use of authentic materials (video, audio, images, or texts) is intended to provide a contextualized and interactive presentation of the vocabulary and the linguistic structures. Students are actively engaged in completing task-based activities individually and collaboratively while formulating and testing hypotheses about different aspects of the target language. A pedagogical goal is to engage students such that they learn to develop the necessary metacognitive strategies to be successful both in processing the authentic input and in negotiating meaning to reach mutual understanding with other speakers.

In the sections below, we will examine how technology is used to facilitate program delivery and fidelity. We will then report findings from recent case study research (Lake & Ross, 2013) that examined program applications in several schools.

3. Background Literature

Although technology has been a staple in foreign language teaching for decades, the array of learning opportunities and environments has greatly expanded with the advent of new technology tools designed to enhance language learning and teaching. Even though today’s technological environment is very different in scope and breadth of language program offerings and device options, second language acquisition (SLA) and computer-assisted language learning (CALL) researchers have long been striving to identify how various technological innovations impact language learning processes and outcomes (Chapelle, 1997, 2009; Fischer, 2013; Garrett, 1991, 2009; Thorne & Smith, 2011). From the early days of listening to cassette tapes in language labs to the popularization of computers at home and in the language classroom to the current proliferation of mobile Internet-accessible devices, technology continues to play a central role in language learning (Chinnery, 2008; Garrett, 2009; Hubbard, 2013; Negretti, 1999). The rapid growth in both the type of technology and

the way we use technology has necessitated a more focused examination of both the benefits and pitfalls of using various technologies across the foreign language learning landscape.

Findings from Literature Reviews

Despite the fact that technology-based foreign language instruction has been subject to investigation for several decades, there lacks a unified research agenda and definitive support for its efficacy in improving foreign language acquisition (Felix, 2008). Reviews on the topic of technology-enhanced language learning over the past decade (Aguilar, 2012; Felix, 2008; Golonka, Bowles, Frank, Richardson, & Freynik, 2012; Grgurovic, Chapelle & Shelley, 2013; Liu, Moore, Graham & Lee, 2002; McGee & Reis, 2012; Vorobel & Kim, 2012; Zhao, 2003) have largely come to the same conclusions: (a) the number of well-designed empirical evaluations is very small, (b) the K–12 setting and the less common languages are underrepresented, (c) the experiments tend to be brief, and (d) the evidence of efficacy is limited.

In a recent meta-analysis of effectiveness studies in CALL, Grgurovic et al. (2013) summarized empirical research—from 1970 to 2006—that investigated language outcomes from technology-supported foreign language instruction. Overall results from 37 studies showed a small but positive effect for technology-supported instruction. However, the authors cautioned that the different characteristics of participants, varied instructional and research design conditions, and small sample sizes across studies prohibit generalizable results.

Similarly, in their review of over 350 studies, Golonka et al. (2012) found that despite the large number of publications, evidence for the effectiveness of technology use in foreign language learning and teaching was limited. However, they did find that studies on computer-assisted pronunciation, in particular automatic speech recognition (ASR), showed a measurable impact on language learning. Additionally, the use of a form of synchronous computer-mediated communication called Chat increased the amount of learners' language production and complexity. The literature also reinforced the belief that technology strengthened learners' output and interaction, affect and motivation, feedback, and metalinguistic knowledge.

In a third review concerning use of technology in second language (L2) learning, Wang and Vasquez (2012) examined research using Web 2.0 technologies, which afford dynamic online interactions through blogs, wikis, social networking tools, and multi-user games. They identified 85 publications, of which 43 were empirical studies and 42 were nonempirical discussion papers that tended to focus on specific uses of certain technologies or address the potential benefits and pedagogical applications of Web 2.0 in language learning environments. The review notes that even though blogs and wikis were the most studied tools, they represent only a small portion of the Web 2.0 technologies. Further research is needed on the pedagogical uses of technologies, such as social networking applications and virtual worlds. The review highlighted that Web 2.0 technologies have encouraged more interest in topics related to learners' identities, online collaboration, and learning communities. The most frequently reported benefit of Web 2.0 technologies is their capability to foster favorable language learning environments, but the authors underscored the importance of future research connecting this impact to how students' language proficiency and intercultural competence are strengthened by using these tools.

4. Diverse Impacts of Technology Enhancement

While many of the reviews aim to quantify the value of technology for second language learning, the complexity of that task has led to an incomplete understanding of the extent to which technology is enhancing foreign language acquisition. Even though the empirical evidence may be limited, a great deal of the literature explores the potential of using technology for teaching and learning languages more effectively. For example, a significant amount addresses the affordances of different types of technology and demonstrates the positive reactions of students and teachers. At their best,

technological tools heighten interest and motivation for language learning, increase authentic target language input and interactions, provide individualized instruction and self-paced learning, raise cultural awareness, reduce student anxiety, and equip educators with efficient means to reach different types of learners and create a more constructivist environment (Chen, 2011; Hoven, 1999; Liu et al., 2002; Stepp-Greany, 2002). At its worst, technology can overshadow the learning objectives, be burdensome and time-consuming, and lead to surface interaction, inaccurate feedback, and inappropriate input (Golonka et al., 2012; Pawan, Paulus, Yalcin & Chang, 2003; Tang & Lam, 2014).

One of the main advantages of technology, in both distance education and in the classroom, is the individualization of instruction and the ability to self-pace (Hoven, 1999). Connection to the Internet allows language learners to access material and revisit instruction at any time, from essentially any place. The proliferation of mobile technologies has softened the boundaries between classroom and out-of school (OST) learning and contributed to even wider access to rich language and culture input (Chinnery, 2006; Kukulka-Hulme & Shield, 2008). Learners easily tap into real-life communication situations and can receive immediate feedback. In a classroom setting, these features can help teachers tailor instruction and accommodate students of different abilities, potentially leading to more effective use of time. High-achieving students are freed to explore more advanced material, whereas low-performing students are able to focus on areas of weakness without the frustrations of falling behind (Wu & Zhang, 2010). In addition, the ability to control pace and choose content lends itself to a more constructivist environment, where students become more active learners, and teachers, facilitators (Wang, 2005). Blended learning, which applies to a range of combinations of face-to-face and technology-mediated teaching and learning, has been shown to increase both teacher and student satisfaction and enjoyment, in large part because of the increased flexibility and differentiated instruction (Murday, Ushida & Chenoweth, 2008; Sharma, 2010).

Whereas the ability to tailor instruction to individual needs is valuable, it is also important to incorporate social dimensions and promote collaborative learning. Gass and Varonis (1994) purported that interaction is crucial to comprehending target language input. Computer-mediated communication (CMC) tools such as online chats, video conferencing, email, and threaded discussions help create a peer social interaction language environment. The abundance of online sources provides students with multiple means for creating a personal, authentic, and interactive relationship with the foreign language. They have been shown to encourage meaningful collaboration, as well as promote critical thinking and reflective practices both with the student and teacher population (Arnold & Ducate, 2006; Lee & Lee, 2007; Tang & Lam, 2014). The ease of accessing authentic material and connecting with native speakers has helped students develop a stronger sense of belonging, improve communication skills, and overall be more active learners (Davies, 2011; Wu, Yen & Marek, 2011).

What ultimately determines the effectiveness of technology varies with the extent and ways technology is used. SLA and CALL researchers largely agree that

Best practices in using technology to support language teaching and learning see technology as a tool that can enhance learning by augmenting input, providing additional opportunities for language practice, and serving as a platform for interaction and task-based learning activities (Hoopingartner, 2009).

Therefore, even though research and practice suggest that technology-enhanced instruction can lend itself to the critical conditions of optimal language learning of high quality language input, increased opportunities for language use, and high quality feedback, it does not necessarily translate into better language pedagogy and more efficient language teaching and learning. People often erroneously assume that learners know how to use the resources available to them and are able to effectively regulate their own cognition, motivation, and behavior (Barrette, 2001; Chang, 2010; Godwin-Jones, 2008). Hubbard (2013) explained, "It is not just the technology that matters, nor is it just how teachers use that technology that matters. What really matters is how learners use it." Students and educators need specific skills and strategies to positively affect language learning,

including computer/device literacy specific to language learning, metacognitive knowledge of technology use, and awareness of the education potentials of particular tools for different learning processes (Dooly, 2009; Hubbard, 2013; Lai & Gu, 2011). Research has shown that teachers' and students' readiness to use technology has an impact on creating successful integration of technology and positive learning outcomes. Macaro, Handley and Walter (2012) have argued that future research needs to provide a tighter link between technological applications, Second Language Acquisition (SLA) theory, and learning outcomes.

5. The Role of Technology

In the preceding literature review, we examined research and descriptions of varied approaches for using technology to support foreign language instruction. With this background, we now turn to the MIL strategies. As an overview, the MIL curriculum presents instruction on-line, while supporting in a blended learning approach face-to-face instruction using the pedagogy and instructional goals described earlier. Supplementary lessons and activities are also provided online. Supplementing the curriculum and instruction components are management and reporting systems that help the teacher to monitor student progress and adapt instruction accordingly. A description of the full set of technology-supported components is summarized in Table 1.

Table 1. A Summary of Technology Components Used by MIL

Technology	Description	Affordance
Web Services Architecture	<ul style="list-style-type: none"> Entire system is presented as an integrated series of web services based on Amazon's EC2 cloud 	<ul style="list-style-type: none"> 24x7 availability Instant scaling and load-balancing as students sign on across the country Pieces can be updated without affecting the whole system All updates, once published, can be instantly available to all customers or limited to a beta-test site to ensure system operation
Cloud-based MySQL database	<ul style="list-style-type: none"> Central repository for both Middlebury Interactive authored content and student calendars, grades and notifications. Hosting provider handles off-site backups for data security. 	<ul style="list-style-type: none"> Central repository allows for 24x7 access to all data Reports are run nightly from a single source
Content Authoring System	<ul style="list-style-type: none"> Cloud-based system for creation of pedagogically sound computer-based activities aligned with the scope and sequence 	<ul style="list-style-type: none"> Allows for complete control over creation process Broadcasts edits and error corrections to all users immediately

Content Types	<p>determined by our Academic Affairs team</p> <ul style="list-style-type: none"> • We have over 20 types of activities that content authoring staff can use, including straight text, mixed text and audio, video lectures, stop-action videos and student recordings. Assessment types include text entry, drag-and-drop, reading and audio tests, and recorded language use. 	<ul style="list-style-type: none"> • Content authors can provide an immersive experience with videos of native language speakers at native speeds • Assessments are varied, keeping the student's interest • Standard lesson lengths vary by student's age • Illustrations and animation are used for elementary students with more authentic videos of peer-level interactions for high school students
Course Delivery Platform	<ul style="list-style-type: none"> • Cloud-based platform optimized for the delivery of online content and the assessment of student learning; runs in several standard web browsers for maximum portability across end-user computing devices 	<ul style="list-style-type: none"> • Content created in the Content Authoring System is presented by the Course Delivery Platform (CAP) according to calendar and student progress • Allows for individualized pacing or group demonstration of a lesson on a smart board
Learning Management System-- Calendar	<ul style="list-style-type: none"> • Imposes scope and sequence of a specific course on a set of computer-based activities 	<ul style="list-style-type: none"> • Creates a semester or full-year course for students to follow • Aligns with existing school curricula but allows for individualized pacing
Learning Management System -- Grading and Assessing	<ul style="list-style-type: none"> • Written and recorded language production available for use by virtual or school-based teacher • Centralized 	<ul style="list-style-type: none"> • Tracks student responses to assessment questions, which are instantly graded by the computer to provide quick feedback • Allows for high quality teaching and coaching of students either by Middlebury Interactive certified virtual teachers or in-school mentor/teachers.

Learning Management System -- Notification	<p>grade database available from both school and home</p> <ul style="list-style-type: none"> • Computer-graded versions available where no teacher is required • HS Assessments are randomized • Finely gradated notification system, which allows teachers, administrators and Middlebury Interactive to get appropriate information to individual, small group, full sections or all students in a school. 	<ul style="list-style-type: none"> • Inform students of upcoming requirements • Highlight work that is substandard or behind schedule • Make system availability announcements if needed • "Audio Notes" allow teacher to make corrections and model proper usage and pronunciation
Learning Management System -- Playlists	<ul style="list-style-type: none"> • Playlists are a series of activities that are chosen by online or virtual teacher • Activities come from single course or can include teacher-created projects • Search system by keyword and American Council on the Teaching of Foreign Languages (ACTFL) alignments 	<ul style="list-style-type: none"> • Individualized lessons or whole curriculum • Alignment with other curriculum (joint subjects like science, math or literature) is possible • Allows for greater flexibility in blended use situations • Allows for extra practice for students struggling with certain concepts
Learning Management System -- Roles	<ul style="list-style-type: none"> • Over a dozen typical roles are available for the management of the learning platform. These include student, teacher, mentor, lab 	<ul style="list-style-type: none"> • Limits access to student data to comply with confidentiality regulations • Allows for schools and districts to manage multiple sections • Lets teachers see things from the student's point of view when doing lessons

	administrator, Learning Management System (LMS) administrator and various reporting roles	
Reports	<ul style="list-style-type: none"> • Dozens of standard reports available for students, teachers and administrators • Customized reports easily created with our online reporting system • Scheduled reports sent through email 	<ul style="list-style-type: none"> • Tracks student progress • Tracks teacher grading progress and level of interactions with students • Provides information district and state regulators need to monitor success of online courses

Note: Table content is provided by MIL.

6. Evaluation Study

In an initial independent evaluation of the MIL program, we conducted a case study at one school and surveyed teachers in schools using different program models nationally (Lake & Ross, 2013). In this section, we provide a summary of the design, methods, and findings.

The evaluation questions addressed were as follows:

1. To what degree do teachers/schools define Middlebury Interactive program to be effective in supporting the world language proficiency-based instruction model?
 - Integration into the teaching context
 - Support of world language objectives of the course
2. What are students' reactions to the Middlebury Interactive program with regard to interest, learning experiences, instructional materials and activities, and effectiveness for learning?
3. What is the overall student success in world languages with use of the Middlebury course design?
 - Cultural awareness and appreciation
 - Language proficiency
 - Motivating experience to continue world language

7. Evaluation Design

For all evaluation questions, a mixed-methods (qualitative and quantitative) "descriptive" design was employed with a focus on characterizing the processes and outputs associated with program

implementation and outcomes during the 2012–2013 school year. The study was implemented in three phases as described below.

8. Phase I: Preliminary lab site observation.

In Phase I, the evaluator gained exposure to the two types of courses—competency and fluency—to provide preliminary feedback and inform the design of a survey to be administered to a national population of teachers/schools implementing the MIL program. For the fluency course, an evaluator made a two-day visit to a “lab” school that was implementing the Fluency I Course. During the visit, the evaluator discussed the program with teachers and students, and observed actual classes. To further inform the design of the survey, Phase I included interviews with a range of MIL implementers (fully online, blended, and classroom-based).

9. Phase II: Survey development

Based on the Phase I findings, we developed, with input from MIL, an online survey to be administered to a national sample of MIL implementers. Survey design addressed the different major genres of program implementation (e.g., online, classroom-based, blended) and built in branching routines, as needed, to adapt survey items to the particular genre. The survey consisted of both Likert-type ratings items and open-ended questions that addressed Evaluation Questions 1 and 2 and, in general, activities and experiences with the courses. The survey was designed to be anonymous, take 15–20 minutes to complete, and capture the unique aspects of different instructional models using various Middlebury courses.

10. Phase III: Case study follow-up

In this phase, we returned to the case-study school in May for one day to once again interview students and teachers to assess their experiences and reactions to the MIL Fluency I courses and to learn more about perceived impacts, strengths, and weaknesses, and to elicit their recommendations. End-of-semester grades, both MIL-generated and teacher-created, were received in early June and examined for first and second semester students. Results from the STAMP™ Assessment, a web-based assessment used to determine proficiency in multiple domains and languages, were also examined.

11. Participants and Measures

11.1. MIL teacher and implementer interviews (n = 7)

These interviews represented a range of implementation models and MIL affiliations. The primary purpose of these discussions was to inform the design of the survey.

11.2. Online survey (n = 172)

The following samples participated.

- a. MIL virtual teacher (n = 52)
- b. Non-MIL fully online language teacher (n = 21)
- c. Non-MIL in-classroom language teacher (n = 33)
- d. Non-MIL in-classroom lab monitor (n = 32)
- e. Non-MIL program administrator (n = 50)

11.3. Student focus groups (n = 94)

Students at the case study school, from one fall class and two spring classes of Spanish I/II, participated in groups of 36 to share their feelings about and experiences with the MIL Fluency I course. Also, 32 students from the two spring semester classes were interviewed twice, once during the winter visit when they were just beginning their Spanish class and once in the spring when they were nearing completion.

11.4. Teacher interviews (n = 4)

In the fall, only one section of Spanish was offered using MIL, taught by the head Spanish teacher with a student teacher present for part of the semester. In second semester, both Spanish teachers taught MIL Fluency I courses, also with one student teacher periodically present.

11.5. Student STAMP™ scores and grades (n = 116)

Scores from students at the case study school were provided for the three classes of MIL Spanish as well as STAMP™ scores for one class that completed Spanish I/II using a nonspecific, teacher-driven curriculum over the course of a year.

12. Results

12.1. Teacher and Implementer Interviews

Seven interviews were conducted with a variety of MIL implementers, teaching a range of MIL courses. Three of the teachers were employed by Middlebury Interactive and taught primarily online; however, one instructor also visited the classroom for proficiency building and tutoring. Two of the teachers were fully online instructors employed by a virtual school using MIL courses, and the remaining two, also MIL clients, served as a lab monitor and program administrator, respectively. The feedback was overwhelmingly positive surrounding the pedagogy, the authentic material, and overall content. The issues that were raised stemmed in large part from logistical or technical problems. Because the primary purpose of these interviews was to inform the design of the survey, and because the information and sentiments shared by this small sample were echoed on a larger scale in the online survey, their specific feedback is not included in this discussion but is reflected in the more detailed findings below.

12.2. Online Survey Findings

Overall, there were 172 respondents to the survey: 30% MIL teachers and 70% non-MIL teachers, lab monitors, and program administrators who had students using Middlebury Interactive courses. Nearly 75% of those surveyed used MIL in a fully online model, and one quarter in a blended/hybrid model. Spanish courses, in particular the Grades 9–12 Competency I & II, were the most common language classes taught across all MIL affiliations, followed by French. The survey sample was largely female (80%), nearly 50% between the ages of 25–40, and highly educated, with just over 70% having a minimum of a master’s degree. Over half of the survey population was certified in a world language, which increased to 95% for MIL virtual teachers and non-MIL fully online language teachers. The bulk of teaching experience was in grades 9–12, with over 100 respondents averaging just above 10 years of teaching. Among all respondents, the total number of students enrolled in their MIL classes was 10,339, an overall average of 62.4 students. Findings by MIL affiliation are discussed below.

12.3. MIL virtual teachers

Of the 52 MIL virtual teachers who responded to the survey, nearly 80% was female, just over 50% was between the ages of 25–40, 83% had a master’s degree, and 96% was certified as world language teachers. Almost all MIL virtual teacher respondents taught in a fully online implementation model, and had been teaching Middlebury Interactive courses for an average of 2.7 semesters.

Reactions to the MIL professional development were extremely positive. The highest levels of disagreement were with the statement that teachers are equipped with significant resources to maximize planning and instructional time. Still, there was more agreement than disagreement (58% vs. 27%) with that statement. In terms of program management, teachers were particularly satisfied with communication with MIL headquarters and the knowledge and response of customer service; averaging above 60% satisfaction. Among the 21 teachers who had taught a fluency course and the 36 teachers who taught a competency course, the highest rating for important course benchmarks was for students’ ability to analyze and compare cultural practices and perspectives. Respondents also strongly indicated that both types of courses encourage a positive attitude toward the target language and those speaking the language and that the consistent use of authentic videos and texts encourages cultural awareness and appreciation. The competency teachers also consistently agreed or strongly agreed that the content is aligned with district and school language targets and goals and that they can easily observe student progress and ensure students are on task. They highly valued all the components and activities used in fluency courses and competency courses, with the exception of discussion board activities and journal assignments. Regarding program value, MIL virtual teachers were the top raters of the program.

12.4. Non-MIL fully online language teachers

Twenty-one non-MIL fully online language teachers responded to the survey. They had been teaching a world language for an average of 15 years in grades 9–12 and had been using Middlebury Interactive courses for an average of close to three semesters.

Reactions to MIL professional development were most positive regarding the clarity of the core pedagogical principles underlying the design of MIL courses. The two lowest-rated categories, still with an average of above 50% agreement, regarded the sufficiency of training prior to the program, and encouragement and support of ongoing professional development and training. Regarding program management, the fully online teachers were most satisfied with the knowledge and responsiveness of

the customer support team and the implementation improvements. The most dissatisfaction was with the incidence of technical issues. Among the 10 teachers who taught a fluency course and the 18 who taught a competency course, the highest rating for course benchmarks surrounded students' ability to analyze and compare cultural practices and perspectives and to appreciate the different cultures. The competency teachers also agreed or strongly agreed 72% of the time that students adequately comprehended a wide range of appropriate language grammar patterns. They also strongly indicated that both types of courses encourage a positive attitude toward the target language and those speaking the language and that the consistent use of authentic videos and texts encourage cultural awareness and appreciation. They highly valued the majority of components and activities used in fluency courses, with slightly less enthusiasm for end-of-the-unit tests, exploration activities, and dictionary and notebook. The same high enthusiasm was had for many components in the competency courses, with the exception of "out of seat" activities, "life-long learner" assignments, "Webquest," discussion board activities, and journal assignments. Overall, the teachers particularly agreed that MIL offers an interactive and engaging environment for students and that they valued the opportunity to learn from Middlebury Interactive.

12.5. Non-MIL in-classroom language teachers.

Of the 33 non-MIL in-classroom teachers who responded to the survey, 58% indicated using Middlebury Interactive programs in a blended/hybrid manner and had been using MIL courses for an average of 2.6 semesters. Similar to the other groups, they strongly agreed that the core pedagogical principles underlying the design of MIL courses are clear but felt that the training prior to the start of the program was not as strong. They were the most satisfied of all groups with the individualized learning for the student. Like other groups, they were dissatisfied with the incidence of technical issues.

Only eight non-MIL in-classroom teachers had taught a fluency course and nine who had taught a competency course. Ratings for all categories of professional development were slightly lower than both MIL virtual teachers and non-MIL fully online teachers but still consistently more positive than negative. The teachers highly valued the majority of components and activities used in fluency and competency courses, with the exception of "dictionary and notebook," and to a lesser degree with midterm and semester exams and forum/discussion board in fluency classes and "out-of-seat" activities, "life-long learner" assignments, "Webquest," and discussion board in competency classes. Regarding program value, non-MIL in-classroom teachers had slightly lower overall ratings than the other teachers but still were overwhelmingly positive about the opportunity to work with the MIL program.

12.6. Non-MIL in-classroom lab monitors

Thirty-two non-MIL classroom lab monitors responded to the survey. Overall, 78% of lab monitors indicated using Middlebury Interactive programs in a fully online model and had been monitoring MIL courses for an average of 3.3 semesters for grades 9–12 and 1.7 for grades 6–8.

The respondents were evenly split on the training being sufficient prior to start of program and teachers being equipped with sufficient resources. They had higher levels of agreement surrounding core pedagogical principles being clear and MIL's professional development building teacher capacity by leveraging Middlebury College's world language methodology. They gave particularly high ratings in the areas of communication with Middlebury Interactive headquarters, knowledge and responsiveness of the customer support team, and course customization, with the lowest rating (still

with 40% satisfaction) given to incidence of technical issues. Regarding program value, non-MIL lab monitors had the highest level of agreement that MIL programs offer an interactive and engaging environment for students.

12.7. Non-MIL program administrators

Fifty non-MIL program administrators responded to the survey. Their reactions to professional development had the lowest ratings across all categories. They shared the general opinion that, for at least a portion of the population, training was insufficient prior to program start; they also rated the quality of training below the other groups, but still had 30% indicating the quality was high. Regarding program management, they shared in the satisfaction of other respondents on knowledge and responsiveness of the customer support team. Concerning program value, non-MIL program administrators had the lowest rating for all aspects of MIL value but still generally high levels of agreement about MIL's interactive and engaging environment, its uniqueness among world language providers, and its ability to support proficiency-based instruction.

13. Case Study Results

13.1. Context

The case study site was a 50,000-square-foot building located in a suburban Kentucky town, which offers challenging, high-level, technology-infused "career majors/pathways" to students from two nearby high schools. World language was offered as a career major under the arts and humanities branch. The decision to implement the Middlebury Interactive Fluency I course was made in part to offer Spanish I/II as a one semester, double-period offering, and because it fit with the school's philosophy of infusing virtual learning into the classroom to maximize student learning.

Initially, only one section of Spanish I/II using MIL was offered, which expanded to two for the spring semester. In the fall, the MIL course was used almost exclusively, but the class evolved into a more blended approach, with a balance of MIL course work and teacher-taught lessons. This evolution was met with higher levels of satisfaction and enthusiasm from both the students and teachers.

The following sections summarize the responses given by students and teachers from the winter and spring focus group sessions and interviews at JCTC. Teachers were asked to share reactions/experiences they had had during the year regarding such topics as: (a) perceived effectiveness of MIL in supporting world language proficiency; (b) how they used the course in their daily lesson planning and instructional delivery; (c) adequacy of professional development and support; and (d) impacts on their teaching and their students. Students were asked to convey motivating factors for taking the course and specific experiences with various MIL program components. They were also asked questions that spoke to the success of MIL in promoting language proficiency and cultural awareness and appreciation.

13.2. Student Focus Group

There were 62 students from three different classes, one fall class and two spring classes, of Spanish I/II using Middlebury Interactive Fluency I. They were brought out in groups of 3–6 to share their feelings about and experiences with the MIL Fluency I course. Overall, the students were evenly split along gender lines and also across grades 9–12. The majority of students were both new to studying Spanish and to formal online learning.

When prompted, "Please tell me a bit about your reactions/feelings about the MIL course in terms of instructional materials, effectiveness for learning, interest, and learning experience," the responses were quite different for the first semester students and second semester students. That the former group felt the online learning aspect had been sprung on them clouded many of the responses. A few indicated that they felt "cheated out of a teacher," and some felt like "guinea pigs" given it was the first time the program was implemented. In addition, because Spanish I and II were condensed into one semester, the amount of material felt overwhelming to many, especially near the beginning when the course was used almost exclusively. The responses by the second semester students were much more favorable. Below are a few representative comments by the students in terms of instructional materials and activities, effectiveness of learning, interest and learning experience:

- Instructional Materials and Activities:
 - *Once we started having the teacher input and her teaching us in combination with the program, I liked it. I could see what I like about the program – the videos, the fact that I can go at my own pace, things like that.*
 - *It is logical and you know what to expect.*
 - *I like that I can record myself and not feel insecure about talking in front of the whole class. I mean, that is fine but it is nice to be able to practice first.*
- Effectiveness for Learning
 - *Because the videos were so fast, the people were talking like they actually do, I can understand more easily what real Spanish speakers are saying.*
 - *You can always go back to parts that you don't get, you don't necessarily get to do this with a teacher, and that was helpful.*
 - *You end up getting a lot more speaking in than in a regular class because it is just you practicing with the computer—you don't have to wait to be called on.*
 - *The structure was very clear and since it followed the same sequence of activities, I felt comfortable and confident about what to do.*
- Interest and Learning Experience
 - *I feel like I know what people in Spain or Spanish-speaking places sound like, how they dress—That is kinda cool.*
 - *I do understand about Hispanic culture much more than I knew I would. I thought I was just learning Spanish. I feel like I'm even more aware of it around me here in Kentucky.*
 - *I never realized all the different holidays that are celebrated around the world. I never thought much past Christmas and Easter. It makes you think about a bigger world.*

When asked, "What part of MIL do you like the most and why?" the majority of students indicated appreciating the differentiated learning opportunities inherent in MIL courses. The sense of freedom that comes with being able to determine one's own pace was new and enjoyed by many. Another feature that was highlighted by a number of students was the authentic videos. The following are specific responses from students:

- *There is a lot of freedom—this can be good and bad but for me it was good because I like being in charge of how I learn.*
- *I liked learning being transported to the different Spanish worlds—this was new and different.*
- *I'm shy and so this being able to record on my own is a really comfortable way to learn.*

- *It was like we had many teachers, our real one who we could turn to for things we didn't understand and our virtual ones who also taught us to speak and understand Spanish.*

When asked about what part of the course they did not like as much, the main issue that the students from first semester had was that the balance of live teaching and virtual learning was too heavily skewed toward the latter. However, students in the second semester seemed more comfortable with the balance of learning from the computer and learning from the teacher. Unrelated to the MIL program, some students felt overwhelmed by the amount of material to cover and did not feel like they had adequate time to process material before having to move on. The following are specific responses from students:

- *Sometimes it was hard to figure out why something was wrong and then it would turn out that it wasn't the Spanish that was wrong but some spacing or capitalization. So, you ended up spending a lot of time figuring things like this out.*
- *The presentation videos are not detailed enough—monotone, white-background with no why's or where's—I might not skip them if they were different.*
- *It can be too much computer time and I just need to get up a lot more and interact with people.*

The students had a few suggestions on how to improve the MIL experience. Many of the responses addressed recalibrating the balance between computer time and live teacher time to be more evenly split. Along similar lines, a desire for more student collaboration built-in to the programming was suggested. The following are a few specific suggestions for improvement:

- *There shouldn't be a way to just click, click, click and get answers because that is what we all did to just be able to move on without learning as much as I should.*
- *The number of activities should not be set, they should adapt to your level of understanding. Progression should be individualized.*
- *There should be a learner type quiz in the beginning and then activities should correspond to how you learn best.*
- *If I am in the same place as a classmate, we should be able to work together somehow.*
- *Sometimes I just want the rules, I don't want to figure it out all the time—it slows me down. I get why but maybe more of a balance of live instruction.*
- *Relax the standards for capitalization or punctuation so we don't get stuck on something that is being marked wrong even though it is basically right.*

14. Teacher Interview

Given that this was the first year that Spanish I and II were offered as a double block, single semester course and the first year that a MIL Fluency I was implemented, there was a learning curve for both the teachers and students. During the first semester, the teacher used the course almost exclusively but realized that a more balanced approach would be better received and therefore more effective. Despite the newness of both formats, the teachers were overwhelmingly positive about the program and felt that the combination of classroom instruction and virtual learning was ideal.

15. Overall MIL Fluency I experience.

The teachers felt that implementing the program was straightforward and were pleased about the ease of incorporating their own style and being able to leverage the Middlebury Interactive resources toward providing a stronger Spanish language learning experience for their students. Representative comments are:

- *Throughout the course I noticed the students had amazing pronunciation that sounded very native. I believe this was because of all the oral practice and all the listening practice with native speakers.*
- *I like that there is an emphasis on culture without it being in your face—it is woven in in a seamless way and I think things spark interest organically.*
- *The fact that so many resources are at my fingertips is fantastic, I would never be able to pull all the varied material in on my own.*
- *Student engagement has to be high but course scores show whether students get it and specifically what they don't get and that is helpful. I have a better idea of what I should focus on for my lessons.*
- *In terms of student achievement, they are speaking better and earlier.*

16. Blended/ hybrid instruction.

The balance between classroom and virtual teaching evolved throughout the year, and by second semester both teachers felt confident in striking that right balance. The following are comments about that process:

- *In second semester, we had the other class to interact with and so we would have activities with everyone and we got to a happy medium of using the course and interacting with teachers and peers.*
- *Modeling—in terms of listening, I modeled about clues. We would review some of the videos, which are fast, and I would break them down, show them targeted listening skills where you pay attention to setting, tone of voice and things like that and this was helpful.*
- *I became better at which lessons and activities to let them do on the computer and which ones to present myself—the balance works well now, I think the students enjoy it more.*
- *The MIL vocabulary in general is rich and in the clothing unit there are a lot of great adjectives to describe fashion. The online course provides excellent options for students to collaborate, however those collaborations are not necessary per se to do well on assessments (as in they are not assignments specific to test prep—it is more of a culminating activity to use whole language). I like the flexibility of being able to incorporate some of my favorite activities with the course.*

17. Successful components

The teachers were excited about many components of MIL programming but when asked to identify the most successful components, they often pointed to the differentiated learning, the authentic videos, and the infusion of culture throughout the course. They were pleased by the support from Middlebury Interactive and felt supported through the initial phases. They also appreciated the wealth of material and the instant accountability that comes from the assessments built in to the

course. Below are a few representative comments about their favorite aspects of the MIL Fluency I course:

- *The course provided so much culture, and that is by far one of the most important aspects of learning a language. I also loved the oral aspect. In regular classroom instruction, it is difficult to have each student speak regularly.*
- *The structure. The set-up of the lessons, the similar progression and how it all spirals and builds on itself is excellent.*
- *Engagement—the fact that the students are engaged in meaningful learning makes it easier for me to pull 1 or 2 students and talk with them in Spanish and listen to them speak and give feedback.*
- *In a classroom, I might get a lot of nodding like there is understanding but you often don't know. With MIL there is instant accountability and you know what students are getting and not.*
- *The balance of writing, listening, speaking, and reading is great, nicely linked and leads to very well-rounded Spanish learners.*

18. Less successful components and suggestions

- The teachers also had important feedback on what aspects of MIL had been less successful and were able to provide valuable suggestions for improvement. They commented on wanting more upfront training and guidance on using certain features. The grading, while straightforward, did not completely align with their state standards, and so they had to create two grading systems. Below are a few specific comments regarding some of the less desirable aspects of the course:
- *The feedback is too hard to find/access or too easy to ignore—so when students open up the program there should be a pop-up that lets them know to look at feedback.*
- *The teachers can't tell whether feedback has been read so that would be nice to be able to see.*
- *More training for the teachers – especially on how to balance with classroom teaching.*
- *I discovered certain helpful features mid-way into the program like the activity log and I love it but I wish I had known about it sooner.*
- *There should be a teacher forum where ideas, successful activities are shared. Also a bank of "extras" that we can tap into if we feel some lesson needs to be supplemented.*
- *Another way to possibly introduce a new feature or highlight an old one is to send monthly newsletters to the teachers that have a video of one particular feature and how it is being used. Or a pop-up feature that has some feature that says, "Do you know about X?"*

19. Discussion and Conclusion

19.1. Study Results

Overall the survey, interview, and observation results suggest the MIL programs offer unique and robust courses that effectively build language proficiency and enhance cultural appreciation. The preliminary findings of the study are examined below relative to the three evaluation questions.

1. *Effectiveness in supporting world language proficiency.* Both the case study teachers and the online survey respondents were enthusiastic and confident about the program's ability to

effectively support world language proficiency-based instruction. In particular, they expressed satisfaction with the individualized learning for the students and held wide agreement that world language objectives concerning mastering vocabulary and grammar patterns, and analyzing and comparing cultural practices and perspectives of various countries, were enhanced. They felt the content was well-aligned with district and state language targets and goals and agreed that Middlebury's method of immersion learning helps students gain a stronger base of comprehension and accelerates language acquisition. The lower ratings, albeit still positive, surrounding professional development, most likely detracted from even higher scores in other categories. Meeting world language objectives will only become easier as implementers become more comfortable with the program and more adept at capitalizing on its strengths. Overall, the flexibility in delivery options, the depth and breadth of course options, the quality of the content, and the significant resources that teachers and schools are able to utilize all contribute to effective teaching and learning of world languages.

2. *Student reactions.* A factor influencing student reactions was likely the challenging combination at the case-study school of Spanish I and II into a one-semester, double-block course. Students still enjoyed many aspects of MIL, but just felt overwhelmed by the extended amount of computer time--in part a consequence of the double clock configuration. That being said, based on the findings, many students expressed favorable views, especially when classroom and virtual instruction were more or less equally shared.

The majority of case-study students were taking Spanish "to get the language credits out of the way." Initial interest in the language was low but many students admitted to feeling "more into it" as the course went on. Aside from their increased interest in learning the language, their interest in Hispanic culture was certainly peaked. Many students liked the videos and felt a sense of accomplishment as they started to comprehend the native speakers. Students, in general, liked being in control of their own learning and the pacing, although at times they expressed feeling behind and too overwhelmed to focus on comprehending. The sequencing and predictability of the course structure was comforting, as was being able to record and practice speaking with the computer. Overall, the students felt confident in how much they were learning and how well they were learning, particularly in terms of developing "authentic" accents.

3. *Student success.* The overall opinion from the case-study teachers and students is that Middlebury Interactive courses are very successful in promoting cultural awareness and appreciation and growing language proficiency. Many of the highest ratings from the survey surrounded MIL's ability to enhance levels of appreciation of different cultures and encourage a positive attitude toward target language cultures and those speaking the target language. Respondents also indicated students showing appropriate levels of mastery within both the competency and fluency courses and advancing along to language proficiency at an appropriate pace.

We did examine student grades and results from the STAMP™ Assessment, a web-based test used to determine proficiency in multiple domains and languages. However, given there was no proper control group and the short duration of the MIL implementation—less than one year—discernible impacts on achievement were not expected. In terms of the STAMP Assessment, it is interesting to note that the scores for the second semester students were significantly higher than both the first semester scores, as well as higher than the one non-MIL class where Spanish I/II was taught over the entire school year. When asked about a possible explanation for the lower scores in the first semester, the teacher responded,

The decision to use MIL/access to MIL happened the week before school started so as a teacher I wasn't as prepared going in as I would have liked to have been. Then, technical issues faced the school and delayed the start by as much as a week plus the compound problem of adapting to two class periods back to back. Spring students were more mentally

prepared for what was coming and some sought me out to ask questions about the upcoming semester in advance.

Regardless of semester differences, in the 2012–2013 school year, an average STAMP score of 2 was considered passing, and this was easily surpassed by most.

In summary, the findings from both the online survey and from the case study point to an extremely well-received and effective program. As Middlebury Interactive eliminates content and technical glitches and strengthens the training program, it will only grow stronger and more effective. It is already regarded as an innovative and successful program, but its emphasis on continuous improvement—as evidenced by its flexibility, desire for feedback, and willingness to evolve—will translate into an even more powerful tool for supporting teachers and students in their world language learning journey.

19.2. Evaluating Technology Impacts

In a recent paper, Ross and Morrison (2014) examined traditional practices in evaluating technology, which have frequently varied between two extremes. At one level are low-rigor descriptive studies focusing on self-reported participant attitudes and experiences in using the programs. At the other are highly rigorous experimental studies focusing on the “effects” of technology in enhancing learning. In searching for a “happy medium,” Ross and Morrison (2014) proposed that, with the extensive present and future proliferation of educational technology products (due to ever-changing curricula, performance standards, and technology innovations), a different framework is needed to inform instructional practices and technology product acquisitions. While the framework is oriented to more rigorous, efficacy-level research designs than the present case-study review, its universal tenet, based on Richard Clark’s (1983, 1985) classic writings, is that “technology” is a means of delivering instruction, not a “treatment” that directly affects learning.

In the present study, MIL was examined as a means of integrating technology with classroom-based, teacher-led instructional strategies, including coaching, direct instruction, and independent practice. This type of instruction is generically referred to today, and also by MIL in their program descriptions, as “blended learning.” In the present study, the newness of the program implementation and the case-study design employed obviously precluded evaluating program impacts on student achievement. For such purposes, a control-group comparison would be needed. But even if achievement outcomes were similar in the MIL and control classes, the present results showing positive reactions to the MIL program by teachers and students, and its strong potential efficacy for supporting blended learning, would still seem quite supportive. As Lemons, Fuchs, Gilbert, and Fuchs (2014) indicated in a recent paper on using counterfactuals (control groups) in education research:

Consider a situation in which children in experimental and control groups make equally impressive gain. But instruction in the experimental condition takes less time to conduct, or teachers view it as simpler and more satisfying to deliver, or it is less expensive to buy. Program efficiency, popularity, and costs can affect its sustainability. So, if experimentals and controls perform equally well on desired academic outcomes, but the experimental treatment is more likely to sustain, then the researcher-developer has a leg up on her competition. (p. 250)

From this perspective, the present results suggest that the MIL program uses technology for world language instruction in an effective way, which merits consideration by practitioners as an instructional option and further study by evaluators of its implementation and educational outcomes.

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