Innovating Language Education

An NMC Horizon Project Strategic Brief

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Introduction

Innovating Language Education: An NMC Horizon Project Strategic Brief was commissioned by the newly established Language Flagship Technology Innovation Center (LFTIC) at the University of Hawaiʻi at Mānoa — http://lftic.lll.hawaii.edu. The aim of the report is to inform an unprecedented strategic planning effort to devise technology-supported activities and programs for the center, as well as to aid in decision-making and policymaking across the higher education sector.

The project launched in August 2015 with the goal of providing input to the LFTIC team regarding sustainable technological innovations catalyzed by smart collaborations, research, and forward-thinking pedagogy. In the process, the NMC's research has underscored the need to cultivate a community of language, technology, and private sector professionals that can collectively build upon successful models of technology-enhanced learning while also developing new partnerships to push the frontiers of digitally-mediated learning environments. The ultimate goal is to scale up LFTIC's programs in order for participating students to achieve superior levels of world language proficiency while also becoming more culturally aware, global citizens.

Context and appropriacy are key elements in the study of world language and culture. Leaders must consider factors including issues of pragmatics and prosody; the interface of spoken language and gesture; and the formal register associated with a business meeting and casual and emotive discourse of social media. Language education programs around the world are moving toward creating more dynamic, interactive experiences that expose students to the nuances of languages and cultures. Mobile apps, online platforms, and other emerging technology developments can help enable these opportunities. However, as was suggested in an article in *The Modern Language Journal*, computer-assisted language learning (CALL) is not just about the tools used; it is "a dynamic complex in which technology, theory, and pedagogy are inseparably interwoven."[1]

Achieving the ambitious vision of innovating language education is a long-term and challenging task. This report will showcase a number of overarching pedagogical trends and challenges in higher education that are driving the use of technology and facilitating language learning. Additionally, the NMC surveyed a group of language education leaders from the editorial board for their perspectives on the trajectory, difficulties, and opportunities for innovation in the field. These discussions are referred to throughout the report with specific excerpts shared.

One major trend identified by the NMC and validated by the many editorial board members is that institutions are emphasizing more active, real-world experiences that better equip students for responsible global citizenship and successful participation in professional and interpersonal communicative contexts. Given the rapid social, technological, and linguistic changes of the 21st century, a primary educational outcome is for learners to understand and harness metacognitive strategies that will empower them to accomplish goals they set, even as they study and work abroad. Another trend is the proliferation of open educational resources, which is making high-quality materials increasingly accessible to all. Students can continue learning anytime, anywhere.

These contemporary contexts surrounding technology use in instructed language education settings raise an important challenge for university language programs about how to effectively encourage and recognize informal learning experiences. Language education, by nature, is a multi-year endeavor. It requires dedication from students outside of the classroom to fully realize the unique contexts of specific words, phrases, and semiotic actions in other cultures. However, blending formal and informal learning is a task that language leaders still need to address at the programmatic and curricular levels.

In a similar vein, educators are working toward the development of personalized learning approaches in which all learners, regardless of socio-economic status, have a choice as to the learning strategies, technological solutions, and interventions that align with their goals. While this is a compelling concept, scaling personalized learning in language education remains a difficult task.

This report also describes four developments in technology in view of their capacity to help solve inherent challenges in instructed language education: data-driven technology, online/blended learning, mobile learning, and immersive technology.

Data-driven technology refers to information that can be derived from learning analytics and adaptive learning platforms. The goal is to use this data to illuminate strengths and weaknesses across programs and at the individual student level so instructors can better share with and learn from other programs while also aligning their teaching and subject matter choices with students' needs.

"Language education needs to be function-based. Students need to be able to do pragmatic things, like construct a conversation and understand social [norms and cues.] We know this is highly motivating for learners. They want to fit in. It's not just learning about the language; it's about learning the culture and how all the parts in the system work together."

Julie Sykes
University of Oregon

Entirely online [2] and blended learning approaches extend learning outside of lecture halls and classrooms, allowing students to connect and collaborate more frequently. Platforms that enable students to engage in authentic and meaningful interaction with people in the target language are on the rise.

As students benefit from practicing target languages in real-world situations, mobile devices provide access to apps and speech-to-speech translation tools that support on-the-go learning. Ubiquitous opportunities for learning and engagement are well served by mobile devices.

Immersive technology such as online games, virtual and augmented reality, and telepresence allows students to be transported to settings that simulate situations they may encounter in later professional, academic, interpersonal, and recreational contexts, providing them with realistic opportunities to practice and learn.

This NMC report describes technology developments in each of these areas and includes a number of examples of technologies and strategies in practice that language education leaders can emulate or adapt, along with a list of suggested readings that provide detailed additional information.

Finally, the report culminates in a set of five recommendations that leverage the key pedagogies and innovations discussed in the brief. Proof of concept projects showcase existing models that can serve as concrete examples of how each recommendation could be executed. Based on the findings of this brief, fostering an authentic and lifelong curiosity regarding world languages is an important dimension to the field of language education. For this reason, each recommendation was developed with the aim of both boosting learner engagement in world languages as well as improving learners' cultural awareness throughout their schooling and as they advance in the workforce. LFTIC is well positioned to be an incubator for these innovative approaches and programs.

Trends and Challenges Impacting Language Education

To understand how emerging technologies can enhance language courses and programs, it is important to ground them in the trends that are driving positive changes across all disciplines, along with acknowledging the challenges impeding real transformation. Several language education leaders were interviewed about the major trends and challenges they observe. A common theme emerged among this group: ubiquitous learning is key, whether made possible through mobile devices, virtual environments, or any number of widely accessible digital tools.

These technologies, however, are only as effective as the teaching approaches that incorporate them. Innovative pedagogies are needed that inspire students to want to use the language they are learning. A significant element of successful pedagogy is the act of facilitating real-world experiences that connect lessons to the specific contexts where students can better understand the diverse applications and nuances of a target language.

"We've got the ability to view videos everywhere. We're starting to see our instructors and students want the ability to practice language on their mobile devices. Our instructors are saying they don't want to have to be in the classroom to understand how their class is doing. It's not mobile learning; it's hybrid teaching. It's anytime teaching."

Bryan Blakeley
Boston College

The following trends and challenges are shaping progressive thinking and decision-making across all of higher education. Each has significant implications for language education, and it behooves leaders in the field to familiarize themselves with these topics in order to ensure that new programs and curriculum reflect the needs and expectations of contemporary students.

Shift to Deeper Learning Approaches | *Trend*

Overview
There is a growing emphasis in higher education on deeper learning approaches, defined by the William and Flora Hewlett Foundation as the mastery of content that engages students in critical thinking, problem-solving, collaboration, and self-directed learning.[3] In order to remain motivated, students need to be able to make clear connections between the curriculum and the real world, and understand how the new knowledge and skills will impact them. Project-based learning (PBL),[4] challenge-based learning,[5] and similar approaches foster these kinds of deeper, more active learning experiences. As the enabling role of technologies for learning crystalizes, instructors are leveraging these tools to relate materials and assignments with real-world applications. These approaches are decidedly more student-centered, allowing learners to take control of how they engage with a subject, including brainstorming solutions to pressing social problems and beginning to implement them in their communities.

Implications for World Language Education
A primary goal of language education is to equip learners with the skills they need to be successful in the workforce and culture associated with their target languages. Acquiring this knowledge is an ongoing process and students must be motivated to continuously pursue learning experiences. As such, the trend of deeper learning has garnered support in world language programs at universities worldwide and is enhancing self-directed learning.[6] Researchers at National Research Tomsk State University led a PBL pilot for first- and fifth-year EFL students and found that it enabled students to "learn how to manage, control, and organize their activities and promotes a

development of their personal competences related to motivational-axiological, volitional, pragmatist and reflexive spheres of activities."[7] While this PBL pilot showed promising results, its large-scale application in world language curricula has lagged behind other disciplines, because instructors do not have concrete models to leverage. The University of Hawai'i at Mānoa launched a repository of project-based language learning (PBLL) units, which contains a selection of PBLL prototypes that instructors can implement and continue to refine. When educators use the repository to adapt the existing prototypes to their courses, they create new instances that better match their particular instructional context to ultimately guide other instructors in similar circumstances. [8]

Proliferation of Open Educational Resources | *Trend*

Overview
According to UNESCO, open educational resources (OER) are "teaching, learning, and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions."[9] The use of OER is underlined by the belief that knowledge is a public good, and that everyone should have the opportunity to share, use, and re-use it freely.[10] For years, popular media have been moving away from print materials and exclusive TV broadcasts toward building an online presence that includes free YouTube channels, podcasts, and more. This has enabled faculty to integrate language-specific materials in their lessons and has provided students with instant access to an abundance of information. OER has been gaining ground at campuses all over the world, including prestigious universities such as MIT, Carnegie Mellon University, and Harvard University, which have launched their own open learning initiatives. The Defense Language Institute Foreign Language Center, the largest language facility in the United States, is now making a range of online language learning tools such as Global Language Online Support System and Online Diagnostic Assessment available to all.[11] A 2014 Babson Research Survey Group study of 2,144 faculty members in the US found that more than three-quarters expect to use OER in the future.[12] However, a barrier to adoption for faculty members is the sheer quantity of resources and the difficulty in assessing quality in a timely manner. Peer-reviewed OER repositories have emerged as one potential solution.

Implications for World Language Education
Dedicated OER initiatives that support world language instruction are just beginning to take root. In language education, this trend has cultivated a variety of programs that produce and disseminate OER for language learning. The Center for Open Educational Resources and Language Learning (COERLL) at the University of Texas at Austin (UT) is one of 16 National Foreign Language Resource Centers funded by the US Department of Education.[13] Since 2010, COERLL has been producing OER and engaging directly with UT language instructors as they implement these open access learning materials.[14] Last year the European Commission funded a three-year OER project called LangOER that focuses on developing OER and open educational practice in learning institutions throughout the EU. Composed of a global network of stakeholders, LangOER aims to support the instruction of less used languages and to support policies and initiatives that overcome the barriers to OER uptake.[15] Additionally, Multimedia Education Resource for Learning and Online Teaching (MERLOT) has a large collection of free and open teaching and learning materials that are contributed and used internationally.[16]

Blending Formal and Informal Learning | *Challenge*

Overview
As the Internet has brought the ability to learn something about almost anything to the palm of one's hand, there is an increasing interest in the kinds of self-directed, discovery-based learning

that have long been common in museums, science centers, and personal learning networks.[17] These, along with life experience and other more serendipitous forms of learning, fall under the banner of informal learning, and serve to enhance student engagement by encouraging them to follow their interests. Informal learning can take place in virtual environments in which learners interact with native speakers such as web-based simulations, games, social media, and casual gatherings that are conducted in the target language, as well as other unofficial activities that provoke authentic learning. The overarching goal is to cultivate the pursuit of lifelong learning in all students, cultivating more autonomy and self-direction. Informal learning is supported by models such as Community of Inquiry[18] and connectivism.[19] However, the lack of mechanisms to formally acknowledge and reward skills mastered outside of the classroom is compounding this challenge.[20] Higher education institutions have not yet been able to incorporate such experiences across their courses and programs at scale. Universities must establish best practices for formalizing and recognizing informal experiences so that a person's accomplishments are presented in a credible, comprehensive manner. Open digital badges — mechanisms to award incentives, progress indicators, and micro-credits — have emerged as one technological solution to validating and displaying informal learning experiences to the greater education community.[21]

Implications for World Language Education

For language learners, informal experience in the target language has the potential to be highly valuable, especially when combined with experience gained in the classroom. In fact, interactions that inspire spontaneous production and authentic comprehension often take place outside of the classroom. The University of Otago, for example, offers university staff a wealth of resources to learn Māori including Café Reo, a regular informal gathering that occurs over lunch, allowing learners to practice Māori more authentically in a friendly, small group setting. Supported by formal coursework and weeklong immersion experiences, Café Reo composes an essential practical element of the comprehensive language instruction curriculum. [22] Researchers from the National Kaohsiung University of Applied Sciences in Taiwan found that informal language learning experiences can be simulated in virtual environments, specifically web-based, role-playing simulations; their results indicate that learners believe it is an effective method of interacting with native speakers and that it improves their motivation to learn the target language.[23] Recently, the Language Centre at the University of Warwick has integrated Mozilla's Open Badge infrastructure for their Online Intercultural Exchange in order to recognize the skill sets required to collaborate effectively online with international peers.[24] An article published by MIT Press, "Documenting and Assessing Learning in Informal and Media-Rich Environments" proposes a model of "Outcomes-by-Levels" for informal learning, which could be helpful to evaluate students' language learning in informal online settings. This model assesses analysis outcomes such as social-emotional-identity and cognitive academic levels.[25]

> *"Students live on Instagram and other social media; they play [massively multiplayer online games.] How can they take those activities that they love and continue developing their third, fourth, and fifth languages in these contexts? It's about learning in the wild. We need to incentivize and structure language learning in these environments and amplify possible learning outcomes through their formal integration into classrooms."*
>
> Steve Thorne
> Portland State University

Personalizing Learning | *Challenge*

Overview

Personalized learning refers to the range of educational programs, learning experiences, instructional approaches, and academic support strategies intended to address the specific learning needs, interests, aspirations, or cultural backgrounds of individual students.[26] While there is demand for personalized learning, it is not adequately supported by current technology or

practices — especially at scale. The increasing focus on customizing instruction to meet students' unique needs is driving the development of new technologies, especially in the form of learning analytics and adaptive technologies. Advancements in these online, personalized, and adaptive learning environments are making it more possible to support learners' individual learning paths. A major barrier, however, is that scientific, data-driven approaches to effectively facilitate personalization have only recently begun to emerge; tracking learner behavior and performance with the goal to adapt language learning, for example, is still evolving and gaining traction within higher education. Making the challenge more difficult is the notion that technology is not the whole solution — personalized learning efforts must incorporate effective pedagogy and include faculty in the development process.[27]

Implications for World Language Education

The applications of personalization for language education are scarce in documentation and examples, partly due to the complexity of the subject matter. However, there have been promising outcomes for other disciplines such as biology and finance. Currently, learning environments such as ALEKS, Acrobatiq, Knewton, and Smart Sparrow tailor content based on a student's level of understanding and personal interests. Through an automated process, the software adapts to a student's progress and preferred method of learning, resulting in deeper engagement with the course material.[28] McGraw-Hill's Connect LMS, for example, provides personalized learning for world language students through adaptive quizzes and assignments, and the administrative tools were developed to manage large enrollments with multiple instructors.[29] What makes implementing personalized learning challenging is that technology developments in the area are outpacing the number of large-scale implementations. [30] The University of Maine at Presque Isle can be viewed as an exemplar; their proficiency-based learning approach allows students to choose how they learn best and progress at their own speed, demonstrating their knowledge regardless of whether the learning takes place online, in the classroom, or through an internship.[31] While the standard of education remains the same, the methods and practices are tailored to meet individual needs with the idea that students who are self-motivated to learn can push the boundaries of their education further than ever before.[32] An important consideration for personalized learning is how it impacts the role of instructors and faculty; rather than being lecturers, they become facilitators, guiding students through various learning pathways.

"Done well, personalized learning can serve to celebrate and validate what heritage speakers already know, which can increase their academic confidence and foster a willingness to spend more time on what needs improvement. Adopting a curriculum that adapts to these learners' needs means that they are not sitting idly by while their classmates struggle with vocabulary and pronunciation that the heritage speakers learned growing up; they can focus on honing the language skills they will need to be successful in academic and professional settings."

Angela Felix
Rio Salado College

Developments in Technology for Language Education

As technology continues to evolve, so does its role in advancing learner-centered pedagogies and new ways of active learning. While tools alone cannot transform world language education, if leveraged effectively, they can expand access to learning opportunities, help students and instructors to communicate with each other on a deeper level, and enable the consumption, creation, and sharing of rich media. A growing host of devices, apps, online services, and software is pushing the boundaries of how students learn world languages and how in-service educators receive ongoing professional development.[33] Language education leaders must be cognizant of these technological developments in order to curate the most impactful tools for contemporary and future learners. The following developments in technology are gaining traction in language education, and present opportunities to improve language-focused courses and programs that bolster learner engagement, language proficiency and cultural context, and global citizenship.

Data-Driven Technology

Over the past decade, companies such as Google, Amazon, Netflix, and Facebook have been tracking user/consumer behavior through data mining activities to better tailor advertisements and recommendations to each individual.[34] Data including what products or links people view, what they purchase, and with whom they interact has enabled these companies to improve the design of and experience on their platforms. These same strategies, when applied to the education sector, can provide instructors and institutions with valuable insights into how well students are grasping and engaging with the learning material at hand. When taken a step further, this data can be used to adapt the learning environment and content in real time to better address individual student needs.

Learning Analytics

Learning analytics is an educational application of web analytics aimed at learner profiling, which is the process of gathering and analyzing massive amounts of detail about user interactions in online learning activities.[35] Universities are taking advantage of these data-driven solutions to build better pedagogies, empower students to take an active role in their learning, target at-risk student populations, and assess factors affecting completion and student success.[36] Researchers at the University of British Columbia have been tracking student interactions with an intelligent

"Students are learning at different rates. When you can provide the right amount of practice for mastering a specific concept, even low-level grammar, moving people through structured pathways allows them to build on the skills they are gaining."

Bryan Blakeley
Boston College

language tutor "Chatbot" named Lucy, in order to identify the most common errors made at the individual and class levels.[37] This outcome exemplifies the ways in which analytics can help in the development of more effective learning technologies in language education. Further, while data can be used to profile and provide timely interventions to individual students, taking a data-driven approach is particularly pertinent for refining pedagogical practice; faculty can gain a better understanding of the common hang-ups of language learners and develop instructional methods to address these issues.

Adaptive Learning Technology

The latest incarnation of learning analytics, and perhaps what is most compelling right now, is adaptive learning technology — software and online platforms that adjust to individual students' needs as they learn, delivering tailored content within the platform.[38] There are two levels to adaptive learning technology — the first platform reacts to individual user data and adapts instructional material accordingly, while the second leverages aggregated data across a large sample of users for insights into the design and adaptation of curricula. There have been promising applications of adaptive learning technology for language education. For example, Busuu is an online platform that can customize language courses to individuals.[39] The basis of this

personalization is 1) establishing the current level of the student; 2) understanding the student's objective for learning the language; 3) getting to know the student's personal interests; 4) tracking the student's actual performance and usage; and 5) adapting to the student's normal study time with reminders that build good habits. Busuu is explored later in this report in the context of how enhanced user experience can bolster language proficiency. While current adaptive learning systems mostly consist of adaptive quizzes to deliver the most appropriate learning materials, future compelling applications of this technology could include systems that can assess not only learners' language proficiency, but also evaluate their pragmatic competence and track their online learning behavior.

Data-Driven Technology in Practice

A number of existing projects and programs at universities demonstrate the power of data-driven technology to provide a more personalized experience for students while equipping instructors with a better sense of how students are responding to the materials and pedagogies at hand. While not all of these examples have been deployed explicitly for language education, they can serve as relevant models.

ALMAP. The Bill & Melinda Gates Foundation's Adaptive Learning Market Acceleration Grant Program (ALMAP) provides grants to colleges and universities to study adaptive learning platforms in over 20 courses through different pedagogical approaches.[40]

Asi se dice. McGraw-Hill and Cerego collaborated to launch Asi se dice, a new initiative that integrates adaptive learning technology into Spanish courses to track progress. The self-paced program is constructed of various lesson plans and ensures mastery of a subject before advancement.[41]

Data Wise Online Leadership Institute. This Harvard University program engages teams of educators and administrators in an evidence-based instructional improvement process. The weeklong online workshop integrates the flexibility of online learning with the power of co-located teams and the structure of a professional development workshop.[42]

The E-Tutor. Researchers at Simon Fraser University have been tracking online interactions of German learners with The E-Tutor, an Intelligent Language Tutoring System. They have gained insights into learner interactions with such systems, learner feedback and error patterns, as well as techniques of learner modeling.[43]

iLime. At Universidad Internacional de La Rioja (UNIR), an adaptive learning system called iLime factors in students' interactions in both formal and informal settings. iLime leverages mentoring and evaluation features and has successfully generated personalized guidance for each student.[44]

> *"We need dynamic systems that allow for individualized learning and incorporate the use of data for learning all the time, everywhere. The result of that will be a learning system that is effective, interactive, and engaging."*
>
> Julie Sykes
> University of Oregon

MyLab. Pearson teamed up with Knewton to provide thousands of students at Arizona State University with access to MyLab, adaptive services that detect patterns of students' successes and failures with the course material and provide them with guidance accordingly. The data collected depicts the amount of time students spend on specific elements of an online resource, in correlation with their exam performances. After discerning patterns in student behavior, MyLab recommends to each student tailored content that will further their knowledge of the subject.[45]

Partnership of the Center for Advanced Study of Language (CASL). At the University of Maryland, the CASL has partnered with technology company Voxy to conduct an empirical study that will identify which teaching methods will lead to the highest proficiency gains for each student.[46]

Technology Assisted Language Learning (TALL). The Global Educational Technology Systems (GETS) e-learning modules uses TALL, a tool created by Brigham Young University that delivers real-time, customized feedback to their students through a patented computer tracking program.[47]

WIZARD Adaptive Learning Course. WIZARD, an established company in language teaching and learning, partnered with Knewton to launch the WIZARD Plus App for Brazilian language students. As students progress through the course, anonymized data are analyzed to determine what each student knows and then make recommendations on what each should study.[48]

Recommended Readings

The following readings are suggested materials for gaining a deeper understanding of data-driven technology and its implications for language education:

Learning to Adapt
go.nmc.org/learni

> (Paul Fain, *Inside Higher Ed*, 13 June 2014.) With many large institutions experimenting with adaptive learning, the author explores different conceptions of the term, from personalized learning to data-driven courseware.

Leveraging Analytics in Community Colleges
go.nmc.org/commcoll

> (Treca Stark, *EDUCAUSE Review*, 14 September 2015.) Higher education institutions are leveraging analytics to help both students and administrators make better, more informed decisions. This article highlights three examples.

Rethinking Higher Ed: A Case for Adaptive Learning
go.nmc.org/rethi

> (Tim Zimmer, *Forbes*, 22 October 2014.) A recent Gallup and *Inside Higher Ed* survey revealed that two out of three college and university presidents believe adaptive learning would positively impact higher education.

"Adaptive technologies have such great potential for language learning, especially if the system is able to autonomously adapt its behavior to the changing learning environment. One of the challenges, however, is to accurately interpret and assess the learner's working behavior and subject knowledge of something as complex as language."

Trude Heift
Simon Fraser University

Tales From the Frontline of Adaptive Learning
go.nmc.org/frontline

> (David Raths, *Campus Technology*, 23 September 2015.) Although implementation requires much time and energy, adaptive learning is beginning to be incorporated into many institutions' course reconstruction plans, as the benefits recorded often outweigh the costs.

What Do Students Want from a Learning Analytics App?
go.nmc.org/anapp

> (Niall Sclater, *Learning Innovation*, 29 April 2015.) University of Lincoln students recently generated ideas on capabilities they would like to see in a learning analytics app, including notifications on grades and progress toward objectives; the ability to give immediate

feedback to lecturers and professors in order to improve the course; and reading list functionality that presents metrics on how students engage with the texts.

Online/Blended Learning

Perceptions of online learning have been shifting in its favor as more learners and educators see it as a supplement or replacement to some forms of face-to-face learning. Drawing from best practices in online and face-to-face methods, blended learning is on the rise at universities and colleges.[49] The affordances of online and blended learning are now well understood, and the flexibility, ease of access, and integration of sophisticated multimedia and technologies are high among the list of appealing features. The University of Central Florida examined face-to-face, blended, and fully online models and found that blended approaches were most successful in "unbundling" the classroom — students felt that instructors were more accessible when learning materials and discussion forums were placed online and there was altogether more persistent communication through the use of virtual learning environments. When assessing the quality of online and blended courses, researchers pinpointed clarity, authenticity, depth, sensitivity, and precision as among the ultimate benchmarks.[50] While efficacy varies from course to course, there is a clear demand from students for more accessible learning opportunities, and blended learning is being explored by many language departments. The flipped classroom, in particular, is one blended model that has been leveraged in a number of language programs. Online and blended learning have also become instrumental in delivering professional development for language instructors.

The digital age has signaled a massive transformation for language instruction, and many universities are incorporating online learning components and web-based tools to support teaching and learning. As part of their language lab redesign, Boston College recently completed several pilots of a new language application, Digital Language Lab (DiLL). The response has been positive as DiLL is providing students with frequent opportunities to practice speaking and writing in their target language. Instructors are now able to easily record language exams for later grading. At Brigham Young University, one German language instructor implemented a flipped classroom method to deliver grammar lessons with online video tutorials in order to use class time more effectively. Based on survey results from students, the instructor found that the flipped classroom model led to positive outcomes such as improved student engagement and more time spent on language production.[51]

Online/Blended Learning in Practice

A number of existing projects and programs at universities and government learning institutions demonstrate the power of online and blended learning models to support language learning and increase student engagement.

COERLL's Methods. At the University of Texas at Austin, the Center for Open Educational Resources for Language Learning has designed professional development modules for language instructors at the high school and college levels. The online resource can be integrated into a classroom methods course or as a self-paced course for autonomous learners.[52]

ECampus. Oregon State University offers students the ability to complete an online bachelor's degree in German through their OSU ECampus platform. OSU prides its program on facilitating more teacher-student interaction than traditional classes by incorporating weekly 20-30 minute one-on-one video chats.[53]

"English as Foreign Language" MOOC. The University of Oregon has partnered with the US State Department on a two-part series of online learning modules for free MOOC provider, Coursera. The courses allow educators to learn English-teaching strategies from recognized leaders in the field and participate in a multimedia-rich, collaborative environment.[54]

Global Online Support System (GLOSS). Designed by the Defense Language Institute Foreign Language Center (DLIFLC), GLOSS is a robust online bank of more than 7,000 learning objects, or 90-minute reading and listening activities in 40 languages.

Headstart2. A program stemming from DLIFLC, Headstart2 is an online language-learning platform that consists of 35 languages, each with interactive tasks for both verbal and writing practice. While its intended target audience is military personnel facing deployment, educators can model similar technology-enhanced learning opportunities for their students to promote more autonomous, student-centered learning. [55]

i2istudy System. Russian researchers explored the educational benefits of a web-based application, the i2istudy System, for practicing language skills with native speakers. An in-depth review of the system explores interactions of more than 40,000 users over six months, gamification as part of user retention, and effective system design in a blended infrastructure.[56]

Online Diagnostic Assessment (ODA). Created by DLIFLC and available in 18 languages, ODA is an online support tool that provides an estimated level of proficiency and a personalized learning profile to highlight the learner's strengths and weaknesses.

Project Gateway. Developed by the DLIFLC, Project Gateway is an online, self-paced learning platform for language students interested in learning Swahili. The interactive course provides videos and other multimedia activities that help with traveling or studying abroad.[57]

Rapport. Available in 18 languages, Rapport is a language intensive program that immerses students into six to eight hour video-based lectures. Within each target language are modules covering both language and cultural aspects aimed to enhance learner progress towards language proficiency. [58]

Recommended Readings

The following readings are suggested materials for gaining a deeper understanding of online/blended learning and the implications for language education:

Blended Learning Essentials: Getting Started
go.nmc.org/getstarted
> (FutureLearn, accessed 27 January 2016.) The University of Leeds offers a blended learning essentials course through FutureLearn that guides educators in the effective use of free and affordable technologies and resources in blended learning practices.

Blended Learning Innovations: Leadership and Change in One Australian Institution
go.nmc.org/blendin
> (Negin Mirriahi et al., *International Journal of Education and Development using ICT*, 2015.) An Australian university redesigned three professional development programs to be delivered in blended and online formats, allowing professors to experience blended learning themselves in order to effectively take advantage of the teaching style.

Can Foreign Language Immersion Be Taught Effectively Online?
go.nmc.org/canfo
> (Katrina Schwartz, *Mind/Shift*, April 2015.) A new pedagogy from Middlebury Interactive Languages uses videos of real conversations with people from all over the world to demonstrate that language and culture are inseparable. These real-world interactions are the basis of their online learning program.

Successfully Flipping the ESL Classroom for Learner Autonomy (PDF)
go.nmc.org/succe

(Yu Jung Han, *NYS TESOL Journal*, January 2015.) An ESL instructor designed an innovative methodology that uses the flipped classroom approach to encourage learner training and autonomy. They measured the impact of the novel pedagogy on a group of adult learners during a five-week summer intensive language course and found it to be a compelling model for language learning.

UCF's Blended Learning Toolkit
go.nmc.org/ucf

(Blended Learning Toolkit, accessed 5 January 2016.) Student evaluations have shown that University of Central Florida's blended courses consistently rank higher than both face-to-face and purely online courses. To document their success and assist others in developing blended courses, UCF has released an open repository of information.

Mobile Learning

As smartphones and tablets become more capable and user interfaces more natural, old methods of computing seem place-bound and much less intuitive. People increasingly anticipate being connected to the Internet and the rich tapestry of knowledge it contains wherever they go. The unprecedented evolution of these devices and the apps that run on them has opened the door to myriad uses for education. With 86% of undergraduate students owning a smartphone or tablet,[59] today's students expect to be able to use whatever devices they choose to access learning content, take notes, gather data, and communicate frequently with their peers and instructors. Learning institutions all over the world are adopting apps into their curricula and modifying websites, educational materials, resources, and tools so they are optimized for mobile devices. A study conducted by McGraw-Hill Education and Hanover Research reported that 81% of surveyed students use their own mobile devices to study.[60] Mobile-assisted language learning (MALL) devices have the potential to facilitate almost any educational experience, allowing learners to organize virtual video meetings with peers all over the world, use specialized software and tools, and collaborate on shared documents or projects in the cloud, among many other activities.

Research conducted by London Metropolitan University's Centre for Languages and Linguistics & Area Studies on MALL found that collaborative and social learning, learner empowerment, and personalized learning are critical outcomes of mobile device usage.[61] In a world where interactions are increasingly virtual and digital resources are on the rise, mobiles are an extremely effective way to consistently engage in language education. For most students, learning new languages is not the sole purpose of enrolling in higher education; they are often science, engineering, and humanities majors who recognize that becoming fluent in critical languages paves the way for more opportunities in the global workforce. Researchers at University of Hradec Kralove in the Czech Republic conducted a study on MALL for engineering students and found that they preferred mobile learning to online learning, because of the ease of access that portables afford. The majority of these students specifically rely on their smartphones, and nearly all agreed that mobile devices and apps are extremely beneficial for engineering activities performed in world languages, including creating animations, simulations, modeling, and videoconferencing.[62]

"Mobile is huge. It is the latest big leap that characterizes the 'punctuated equilibrium' of technology development. There is potential for just-in-time language learning to fill learners' wasted moments, like standing in lines. It opens up possibilities for place-based activities."

Scott Payne
McGraw-Hill Education

Mobile Learning in Practice

There are already a number of research initiatives underway at universities to investigate the specific ways in which mobile technology can improve language fluency, in addition to mobile applications in development. The following projects represent a subset:

Collaborative Faculty E-Textbook Authoring. At University of Southern California, the French department piloted a new model of e-textbooks collaboratively created by faculty, which standardized the content and delivery between courses and allowed students to access important handouts and exercises from any connected mobile device.[63]

Institution Wide Language Program. The majority of students studying Italian in the Institution Wide Language Program at Coventry University use their smartphones to accelerate language learning both formally and informally, especially in areas such as translation, spelling, and meaning.[64]

MASELTOV: Mobile Assistance for Social Inclusion and Empowerment of Immigrants with Persuasive Learning Technologies and Social Network Services. This multi-partner European project was completed in May 2015; it explored the potential of mobile services for promoting integration and cultural diversity in Europe. The partnership developed prototypes and models for innovative anytime, anywhere support and social computing services on smartphones for immigrants from outside the EU, including assistance with language learning.[65]

Mobile Assisted Language Learning (MALL) at University of Akron. As pressure for students to understand a basic knowledge of the English language is rising in China, so is research to develop mobile apps that facilitate more productive and efficient learning. A Chinese researcher at the University of Akron tested his newly developed vocabulary app on his students and reported a significant improvement in the vocabulary of students using the app versus those who did not.[66]

Mobile Learning from a Pedagogical Perspective. In Sweden, Dalarna University is developing a language application for their Russian for Beginners course that will be accessible to all students, regardless of which mobile device they choose. Their goal is to scale the model they create to other language courses and university programs.[67]

Recommended Readings

The following readings are suggested materials for gaining a deeper understanding of mobile learning and its implications for language education:

Best Apps to Learn Foreign Language
go.nmc.org/besta
> (Ted Ranosa, *Tech Times*, 14 May 2015.) With the rise of mobile phone apps, learning a language has never been so accessible or entertaining. From Duolingo's gamified language learning style to the social networking app Busuu, and everything in between, language learners have their pick of language and learning styles to choose from.

The Impact of Mobiles on Language Learning on the Part of EFL University Students
go.nmc.org/theim
> (Azad Ali Muhammed, *Procedia - Social and Behavioral Sciences, Vol. 136*, 9 July 2014.) An increasing number of university students are using mobile apps to help them learn languages. Studies indicate that students attempting to learn another language can advance their skills in key areas including speaking, grammar, and reading — from any Internet-connected mobile.

Learning the Duolingo: How One App Speaks Volumes for Language Learning
go.nmc.org/duoli

(Shane Hickey, *The Guardian*, 8 March 2015.) Duolingo is setting the stage for educational mobile phone apps by combining language learning with gamification and easy access. Although its intended outcome is not to create 100% proficiency, it engages a wide variety of people looking to supplement formal learning with entertainment for free.

Mobile Learning in Higher Education: Mobilizing Staff to Use Technologies in their Teaching
go.nmc.org/pedagogicalframe

(Sandy Schuck, *eLearn Magazine*, March 2015.) The University of Technology, Sydney formed a professional learning community of faculty and staff to develop and implement a Mobile Pedagogical Framework, which considers the characteristics of mobiles and how they can be used for effective teaching.

Immersive Technology

Traditionally, educators have relied heavily on lectures to explain a concept and illustrate its applications in real-world situations. The growing use of immersive technologies such as online games and simulations, virtual reality (VR), augmented reality (AR), and telepresence is enabling educators to expose students to concrete applications of the subject matter.[68] The integration of gaming elements and mechanics into learning environments supports deeper engagement and increased motivation from students.[69] VR refers to computer-generated environments that simulate the physical presence of people and objects to generate realistic sensory experiences. Similarly, applications of AR, which is the layering of data over 3D spaces to produce a new experience of the world, sometimes referred to as "blended reality," amplify access to information and are opening up new opportunities for engagement, comprehension, and practice. One of the latest terms, "mixed reality," was introduced by Microsoft to describe their Hololens product.[70] Telepresence and video conferencing technologies are also powerful ways for learners to collaborate with peers in "face-to-face" meetings, regardless of their physical proximity.[71] The latest research indicates that these kinds of immersive learning environments bolster student engagement and accelerate knowledge and skill acquisition.[72] In recent years, gamification, virtual and augmented realities, and telepresence have circumvented the physical limitations of classrooms to connect students with the target language in ways never seen before.

Immersive technologies can help higher education institutions overcome economic and geographical restrictions that keep students from participating in authentic language learning situations.[73] To achieve native-like fluency, along with a deep cultural understanding, students must be exposed to the native language and a wide range of real-life contexts.[74] The University of Colorado, Boulder has developed a "Virtual Immersion Experience" (VIE) in which French students research all the essentials for a trip using French apps. Research demonstrates that students both enjoy the VIE and display an increase in vocabulary recognition and production.[75] An abundance of resources have been allocated towards advancing virtual world technology platforms, including but not limited to Facebook's recent acquisition of the Oculus Rift Headset and Microsoft's investment in Hololens; these investments forecast future expansion of this technology. Gamification is another way in which immersive technology is gaining traction in university classrooms and programs. Positive feedback from students in the form of enthusiasm, engagement, and deeper learning indicates significant possibilities for gamified learning in language education.

Immersive Technology in Practice

There are now a host of technologies that allow students to have exchanges with native speakers in authentic settings or learn key concepts in a more immersive manner. Just a few examples are described below. Additionally, as the use of immersive technologies is still relatively nascent in

language education, some compelling examples from other disciplines are noted that could be applied to the field.

360º Spherical Video. Educators, researchers, and design teams at North Carolina State University are using interactive 360º video capture and virtual reality technologies such as Google Cardboard to better support lab-based and field-based instruction in online learning environments. [76]

AR for Vocabulary. Researchers investigated the effects of incorporating AR elements into an English language course at Amasya University in Turkey and found that the AR materials helped students learn vocabulary, particularly for words with non-phonetic pronunciation. Students also reported increased motivation, improved confidence in their skills, and higher satisfaction with the language course.[77]

Explorez. Educators at the University of Victoria have begun research on the effectiveness of their game, Explorez, a platform in which students are immersed into an augmented reality where they can advance by utilizing their knowledge of French, both written and orally. Positive feedback from students in both enjoyment and practicality shows possibilities for more gamified learning in the future.[78]

GhostHands. The Knowledge Media Institute at The Open University created a tele-tutoring application using AR technology to film what the learner sees and transmit it online to a remote tutor. The tutor then leverages 3D hand-scanning to transmit hand movement back to the learner, manipulating a 3D finger puppet model while also providing audio instruction.[79]

Learn Immersive. The goal of Learn Immersive is to use virtual reality headsets to transport people into regions in which their target language is primarily spoken. Students attend 3D virtual field trips to listen to native conversations about the scenes they are watching. Currently, this technology is not used in schools but shows promise for educational purposes.[80]

The Metaverse Assembled. Second Life, a popular virtual world platform, is already being used to facilitate sections of an introductory Chinese class at Monash University. Researchers are interested in the prevalence of language anxiety within classrooms and conclude that students experience lower levels of stress overall in virtual worlds than traditional classrooms.[81]

Recommended Readings

The following readings are suggested materials for gaining a deeper understanding of immersive technology and its implications for language education:

Games in Language Learning: Opportunities and Challenges (PDF)
go.nmc.org/emermsu
> (Robert Godwin-Jones, *Language Learning & Technology 18(2),* June 2014.) With the rise in popularity of educational gaming, teachers need to be aware of the possibilities games can bring to language learning and how these games can promote self-initiated learning opportunities from students.

How Virtual Reality Can Close Learning Gaps in Your Classroom
go.nmc.org/howvirt
> (Casey Sapp, *EdSurge*, 7 September 2015.) The author argues that virtual reality technology has the potential to keep students engaged through simulations and contribute to pedagogy that encourages discovery and organic exploration.

Michigan State Tests Telepresence Robots for Online Students
go.nmc.org/msubot

(Leila Meyer, *Campus Technology*, 24 February 2015.) By freeing online students from a fixed viewpoint in the classroom, Michigan State University's telepresence robots empower those students to interact and participate equally with those physically present.

Technology Provides Foreign-Language Immersion at a Distance
go.nmc.org/langimm

(Danya Perez-Hernandez, *The Chronicle of Higher Education*, 5 May 2014.) Professors at Virginia Commonwealth University are bringing world languages to life in their classrooms through teletandem, a technique that immerses students into a realistic speaking environment by connecting them with native speakers and fostering conversations that would otherwise be impossible.

Recommendations

The LFTIC at the University of Hawai'i at Mānoa embarked on this partnership with the NMC to research innovation in language education with the goal of identifying promising developments that could be applied to language courses and programs across the United States. Of particular interest were successful models in practice that could serve as proofs of concept, as well as new ideas that could further boost the nation's global competitiveness in this area. What follows are five recommendations that address the need to bolster learners' continued interest in world languages and foster proficiency that goes deeper than surface-level grammar applications to include context, appropriacy, cultural understanding, and responsible global citizenship.

Recommendation 1: Integrate Design Thinking into Curricula

The Importance
Design thinking challenges learners to engage in critical reflection processes in order to develop human-centered solutions for global issues such as sustainability, healthcare, and public safety among other considerations.[82] For world language educators, this teaching strategy offers an avenue for nurturing deeper engagement by prompting students to work together in the target language toward concrete goals. The design thinking approach imparts to students a new understanding about their personal way of thinking and compels them to analyze their own ideas, reinforcing their language comprehension and involvement in the learning process.[83]

Proof of Concept
In 2004, Stanford University founded the d.school, a program that trains graduates to confront current global challenges, and then formulate and implement solutions based on authentic experiences. The curriculum of the d.school pushes students to think past their natural biases in order to effectively solve problems with a team of diverse collaborators — a valuable skill that employers seek in new hires. Student innovators that have mastered the d.school's design thinking approach have founded Embrace, a social enterprise that provides low-cost infant warmers to vulnerable children, and SwipeSense, a venture company that promotes physician's hand hygiene.[84]

Though still relatively new to the world language field, the first endeavors to bring design thinking into language instruction are compelling. The Ecopod program at the University of Oregon is facilitating collaborative problem-solving activities that are making students more deeply acquainted with the cultures and pressing needs associated with the societies of their target languages. Participating students enroll in a yearlong course to explore multilingualism in a local, national, and international context; in an augmented reality game, they assume responsibility for the health of their residence hall, also known as a pod.[85] Online modules require students to use both language and content expertise to solve problems, find collaborators, and build communities. For example, they work together to select proper resources to survive a pandemic, save a region's population from genocide, and ensure maximum sustainability in their community.

Call to Action
As the foundation of language curricula, design thinking brings together learners on matters of real consequence while strengthening their capacities to collaborate and critically reflect on ideas, no matter what language they are using. Language education programs should draw on social, economic, and political issues rooted in the culture of the target language to help students forge deeper connections that go beyond grammar, vocabulary, and syntax. An innovative curriculum will incorporate design thinking practices and tools that are currently in use at institutions all over the world and adapt them for language-learning classrooms and programs.[86]

Recommendation 2: Build Smart Partnerships

The Importance

Advancing the field of language education and improving the scope of proficiency is a larger task than a single institution can accomplish alone. There is need for government, administration, and practitioners from different institutions to work together to advance positive education trends. Focused collaborations have the potential to drive innovation in how world language is taught. An intersecting trend is business's growing expectations that students will enter the workforce with real-world skills. A 2015 study conducted by the Association of American Colleges and Universities revealed employers' beliefs that the recent graduates they encountered have not been adequately prepared for the workforce.[87] To bridge this gap, companies are partnering with education institutions to impart in-demand skills.

Proof of Concept

International partnerships between institutions are enabling valuable peer-to-peer learning opportunities. At Levinsky College of Education in Israel, native Hebrew-speaking pre-service teachers are being paired with undergraduate Hebrew language students at universities in the US, Poland, China, and Australia in an e-mentoring program. This initiative is promoting better conversational skills for the students in addition to refining the pedagogies of the pre-service teachers. Another critical goal of the program is to nurture multicultural sensitivity and contextual awareness among participants. Research indicates that 95% of the e-mentors believe they developed a better understanding of and sensitivity to the needs of learners from other cultures.[88]

Companies are realizing that their collaboration with the education sector can help students gain vital skills for the workforce.[89] In response to the urgent need for qualified interpreters in healthcare settings, Phoenix Children's Hospital partnered with Rio Salado College to offer an online version of their Spanish for Medical Interpreting curriculum. Content from the two resulting online courses has earned national accreditation from the Certification Commission for Healthcare Interpreters. Students who complete these courses can apply for a 40-hour externship, which provides them with real-life interpreting experiences at hospitals, clinics, and organizations.[90]

World language instructors also require ongoing support to design innovative curricula. Teaching language and cultural material should not be solely relegated to language courses, but instead integrated throughout various disciplines because global citizenship is a key skill for all learners; creating global professionals is a goal of the Language Flagship program. NOBLE is a virtual network that brings together K-16 educators around the globe to integrate the study of language and culture across various disciplines, with a special emphasis on business and professional education. Educators and industry professionals help create interdisciplinary initiatives that promote real-world connections in the classroom and prepare students for a global workplace.[91]

Finally, there is also a need for the federal government to prioritize language education. STARTALK is a seasoned joint initiative of the University of Maryland's National Foreign Language Center and the National Security Agency to improve the quality of instruction and provide innovative learning experiences for K-12 students in critical languages including Arabic, Chinese, and Persian Farsi through a standards-based and thematically organized curriculum in which teachers act as partners with students in a learner-centered classroom.[92]

Call to Action

Leaders in government, academia, and business must work together to foster marked progress in language education. Smart partnerships can promote the integration of emerging tools that increase content availability, learner engagement, and opportunities to connect with authentic learning experiences. Beyond generating better performance in language proficiency, high-profile partnerships, such as those described above, make a powerful statement to the public that language education is a major national priority worthy of both institutions' and students' focus.

Recommendation 3: Enhance the User Experience

The Importance
While user experience (UX) as it applies to technology encompasses many features, scholars agree that it focuses on one main outcome: ease of human interaction with technology.[93] Clean, engaging web designs have proven to be useful in educational contexts. Mobile apps in the private sector offer valuable insights for designing effective online learning environments, especially when looking at their gamified and collaborative features that stimulate progress and interaction with other learners.

Proof of Concept
Popular, mobile-centric, free language apps such as Duolingo and Busuu have raised the bar for user interfaces. The impact of these tools is evident in the droves of people that have signed up voluntarily to use them; combined, the apps count more than 150 million registered users.[94] [95] Web testers have touted the usability and visual appeal of Duolingo with its minimalist design peppered with colorful icons, including its trademark — a bright-eyed green bird. The gamified platform has also been highlighted as a motivational feature. The interface tracks learning streaks with small flame icons that accumulate with each day of sequential use, giving users a sense of satisfaction that carries over to the next level.[96]

Research shows that this enhanced engagement has a positive impact on learning outcomes; an early independent study by New York University revealed that 34 hours of working through Duolingo's bite-sized lessons — exercises that include listening, speaking, translation, multiple choice challenges — was equivalent to a semester of world language instruction at a university.[97] The Busuu app is also based on an inherently interactive feature — a robust social network similar to Facebook in which language learners can connect with peers to exchange messages and feedback in the target language.[98] The accessibility of Busuu has led to its uptake in emerging markets such as China, Turkey, and Colombia, where people are learning languages to get better jobs and improve their financial situation.[99]

"Social media and online games provide opportunities for engaged expression. Classroom activities can be limited in this sense. There's a need for more authentic communication opportunities and mediated interaction through the Internet can provide these, but they need to be relevant to students' lives."

Steve Thorne
Portland State University

Higher education institutions are increasingly developing their own digital platforms for language learning, with a focus on seamless user experience. Through the mapping project at San Diego State University's Language Acquisition Resource Center (LARC), students can post photos, videos, and descriptions and instantly see them populate into a story map. This project has been particularly useful for study abroad students, helping them highlight the cultural insights gained during their experiences. All story maps are easily accessible through the ArcGIS platform.[100] Similarly, the Center for Applied Second Language Studies at University of Oregon built PEBLL, a curated database of place-based experiences that features high-quality projects from all over the world that helps educators expand learning outside of the classroom. Each project is geo-tagged and categorized by language, level, and content area so that instructors can find existing programs and services for immediate classroom use or for adoption to their own local contexts.[101]

Call to Action
Educators and developers should design digital tools for world language instruction with UX as a key consideration; educational web applications should be inviting and responsive, with features that motivate through gaming elements or social networks. The next generation of language education tools should cater to learners who are accustomed to learning via their mobile devices and integrate virtual reality to authentically simulate real-world environments.

Recommendation 4: Foster More Authentic Exchanges Through Collaborative Tools

The Importance
More than ever, it is clear that language learners benefit from authentic interactions in the target language in natural settings.[102] With immersive technologies on the rise, these situations are easier to simulate and customize for any world language. The key is to design educational experiences that mimic real-world situations using state-of-the-art technologies and tools to engage native speakers and instructors from around the globe, or within a classroom or program.

Proof of Concept
George Mason University and three other public universities in Virginia are using telepresence technology to facilitate global courses for other universities. Collaborating through the V4 Consortium, professors from George Mason are teaching Korean, Chinese, and Persian language courses to students at James Madison University.[103] Students participating in the shared courses reported that the interactions between participants on the screen and those in the classroom are nearly seamless; it is possible to see and hear everything in the shared environments.[104]

A collaboration between the Department of Linguistics and the Beinecke Rare Book and Manuscript Library at Yale University is allowing aspiring professional linguists to conduct fieldwork with native speakers using authentic cultural materials. Equipped with historical texts ranging from grocery lists to family histories, students are using Skype to connect with native Cherokee speakers to learn nuances of the language not typically covered in standard grammar books. Learners revealed that the use of the authentic materials, coupled with personal anecdotes, has led to the discovery of cultural information that has enriched their language comprehension. The long-term project has included the launch of a website, Transcribe Cherokee, that allows any member of Yale's academic community to transcribe collection materials online.[105]

At Dickinson College, students taking Spanish, Japanese, German, and French courses participate in Mixxer language exchange events. Using the Mixxer website, native speakers of the target languages that are learning English are invited to speak with Dickinson students during their lab hour. Students prepare by writing questions on any topics of interest. During the lab hour, students speak with their partner in the target language and then in English via Skype. Afterward, they write a reflection on their dialog.[106] Similarly, São Paulo State University created Teletandem, a digital application with text, voice, and webcam features that enable pairs of students who speak different languages to help each other learn their target languages. Students engage in 30-minute conversations that are subsequently mediated by the instructors.[107]

For institutions without the infrastructure to develop their own technology, the company TalkAbroad developed a website to provide one-on-one conversation practice for students with native speakers of the target language. TalkAbroad specializes in the scalability and reliability of language and culture exchange, and it can be easily integrated into existing course curriculum.[108]

Call to Action
An innovative language program should close physical distances between language learners and the cultural experiences they need to master a world language. Ideally, students would be able to study abroad in order to complete tangible goals such as finding their way around a new city, communicating their needs over the phone, and fulfilling the appropriate social conventions in the target language. Today's technologies have the ability to bring the study abroad experience into the classroom, but the key is to make interactions with native or near-native speakers a critical element of these educational encounters. An effective instructional model will simulate the study abroad experience by connecting with native or near-native speakers on topics and materials that are rooted in the target culture and have real-world applications for learners.

Recommendation 5: Adopt Data-Driven Approaches

The Importance

Tests and papers are no longer the sole means for understanding a student's subject comprehension. Thanks to rapid advancements in technology and the emergence of big data and data mining tools, universities can accrue vast amounts of data, enabling the development of analytics that may provide valuable insights about how to improve personalized learning for students.[109] In a data-driven approach, the aim is for institutions to make critical realizations about what instructional approaches and content are effective — or ineffective. Institutions and faculty can then make decisions about how to best calibrate pedagogies toward student needs, design curricula and projects that enable students to direct their learning, and discern which students may require extra support along the way.

Proof of Concept

University of Wisconsin–Milwaukee's U-Pace system is founded on mastery-based learning and amplified assistance in an online learning environment that ensures students do not proceed beyond a lesson without mastering the content. Recorded information, such as test scores, attempts at quizzes, and elapsed time between each attempt, signals to teachers the students who are in need of further assistance and in what areas. Both the content mastery and amplified assistance features leverage recorded data for each student to support personalized learning approaches that give students greater control of their learning and provide individual feedback to help them advance.[110]

The Iowa Community College Online Consortium's eAnalytics system is also using data analytics to provide key information to educators about their students in hopes of increasing retention and mastery of content rates. eAnalytics uses data, including late submissions, delayed online activity, and grade summaries that enable instructors to identify at-risk students and provide support to improve their performance. Results show a significant increase in the retention and mastery of content in several pilot courses for low-income students, an indicator of success for the new program.[111]

> *"We need to think about the ways activity monitors have changed personal health; what applications are there for language learning? How can we set goals and track progress?"*
>
> Scott Payne
> McGraw-Hill

iSpraak, available as a Google Chrome web application, was designed at Saint Louis University to integrate a formative assessment tool with emergent speech recognition and speech synthesis technologies. When doing language activities online, students can now receive immediate visual feedback about the intelligibility of their output, and iSpraak aggregates student mistakes made across an entire course so faculty can discern and analyze patterns. One instructor at Saint Louis University has found that creating speech activities from authentic target language clips prior to exploring new topics has bolstered comprehension and comfort in discussing new content.[112]

Call to Action

Language builds upon itself gradually over time, and technology can now track multiple sources of data, including test scores, online behaviors, discussion forum interactions, and delayed responses. These data can help educators better understand student needs and areas where instruction should be improved. While data-driven approaches can help an educator get a better sense of a class's knowledge comprehension and language proficiency, institutional leaders must strategize about how entire language departments can make use of data mining and analysis technologies. In order to effect change on a larger scale, there is also a need for subsequent collaborations between US universities where insights about the data are shared so that more tailored, effective language courses and programs can be developed across the country, with measures of success standardized on a national level.

End Notes

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