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Broadening Perspectives on CALL Teacher Education: From Technocentrism to Integration

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Abstract

Current research on computer-assisted language learning (CALL) teacher education shows a need to shift the focus away from a technocentric emphasis on specific technologies to strategies for technology integration (Chapelle & Sauro, 2017). The main reason for this is to prepare teachers to be flexible enough to use current and future technologies in different ways across various contexts. Therefore, this conceptual paper addresses this teacher education issue by exploring four strategies that can be used to show teachers broader ways to think about integrating technology. Drawing upon the most recent literature in the field of CALL, this paper describes each strategy and illustrates it with a possible teaching scenario. It also provides the benefits of each strategy use for both teachers and language learners. Finally, this paper offers recommendations for pre- and in-service teachers, as well as teacher educators, to explore the strategies to integrate technology into their pedagogical practices.

***Keywords**: Computer-assisted language learning, teacher education, 21st-century skills, contexts, educational technologies, content curation, educational escape room, flipped learning, informal blended learning*

Designing effective use of technology across contexts

The adage, "Give a man a fish, and you feed him for a day. Teach a man to fish, and you feed him for a lifetime" (Lao-Tzu), which can be applied to most endeavors, is particularly true in the field of education. Computer-assisted language learning (CALL) teacher education can play a vital role in giving CALL educators innovative strategies as "fishing skills" instead of just presenting them with the "fish." In other words, teachers who know current technologies may be ready for today's classrooms, but they may be unprepared even for the near future. To prepare teachers for tomorrow, CALL teacher educators need to focus more on strategies that emphasize language/ content, 21st-century skills, and the ability to use relevant technologies to teach language across contexts and populations (Chapelle & Sauro, 2017).

Moreover, what may help one teacher may not help other teachers. For example, a teacher may attend professional development (PD) and learn about new technologies that allow students to use their smartphones. When the teacher goes back to a classroom environment that prohibits students' use of smartphones, the PD is wasted because it did not help the teacher learn, understand, or apply the technology in ways applicable to that context. However, if the teacher is educated on the processes and possibilities of selecting suitable technologies to meet goals, the teacher may be able to apply these concepts to other technology uses even a long time after the PD session.

To address this issue, this paper proposes that the inclusion of three main goals as the focus of CALL teacher education is vital; these are that classroom teachers are able to: 1) integrate appropriate technology uses into instructional content and processes; 2) support learners' 21st-century thinking skills, and; 3) design effective technology uses across contexts and populations. This means that language teachers must first recognize how to integrate technology with standards, goals, and curricular content while supporting students' language learning. Second, teachers should also be aware of and be able to support decision-making, collaboration, problem-solving, and other critical thinking skills with CALL. Finally, teachers should be able to plan for the application of CALL technologies across various learning contexts and populations so that when their context shifts, they can, too. Because these foci are still not common in CALL teacher education (Chapelle & Sauro, 2017), the purpose of this paper is to suggest strategies that incorporate these ideas so that language teachers can be prepared for now and the future. To meet this purpose, four strategies are described that can be used in CALL teacher education; they are: 1) content curation, 2) educational escape rooms, 3) flipped instruction, and 4) informal blended learning.

The gaps in the literature related to CALL teacher education were identified from Chapelle and Sauro's (2017) *Handbook of Technology and Second Language Teaching and Learning*. Then the authors selected articles based on the potential strategies that could address these missing

pieces. Because these are not yet common strategies in CALL teacher education, articles were culled from books, presentations, and journals both in CALL and in other fields. A total of 40+ articles were reviewed and synthesized for this paper. This article is organized into four sections, each outlining one strategy that integrates the three goals for teacher preparation in CALL.

Content Curation

The internet contains a virtually limitless amount of information, materials, and technologies. Keeping up with them is a massive task for both teacher educators and teachers. In order to manage this unwieldy resource, this section suggests content curation as a strategy for CALL teacher education. Further, this strategy can help meet the needs of language teachers to integrate technology use with content and language, prepare tasks that teach 21st-century skills, and be ready to teach in different contexts. This section includes a description of the content curation strategy, followed by a possible teaching scenario to illustrate how content curation can work in a language classroom. It also states some benefits for both language teachers and learners of understanding and using content curation.

Description

Content curation means gathering relevant information and materials for a particular theme or topic based on learners' needs (Chapelle & Sauro, 2017). For example, a museum curator "selects the best examples, puts them together in an exhibit, provides important context with annotation on the labels, and so on" (Herther, 2012, p.1). The content curator in the language classroom is the teacher, who can follow the same primary sequence to gather relevant information and materials that are most suitable for their teaching context. For instance, if the theme is traveling, the teacher would gather the most relevant information and materials around this theme at the levels of different students in the class and based on different media; in this way, the teacher will be prepared to meet the needs of learners in her class even though they may differ in interests, background knowledge, or proficiency. Relevant resources may be in the form of software applications (apps), pictures, texts, videos, websites, graphics, and more. Then, when the teacher has different students or moves to a new context, she can take this content with her and adapt it, rather than start a search for resources all over again. Technology use can support the teacher in the content curation process; as Flintoff et al. (2014) explained, some platforms, websites, and apps can help "to further filter and refine the collection and to quickly and easily add items to their own collection" (p. 1). Examples of technologies that can support content curation include www.diigo.com, www.flipboard.com, and www.scoop.it.

Current research emphasizes the importance of making CALL teacher education more relevant to teachers by reflecting, including, and curating based on their teaching contexts (see Hedayati et al., 2018; Sarhandi et al., 2017; Sulaimani et al., 2017) and shifting the focal point away from specific technologies to an integrated view of learning content and student needs. Content curation is a strategy that can help CALL teacher educators and language teachers to plan according to their contexts. Below are steps that teacher educators could use to prepare teachers to integrate technology into their teaching, or that teachers can follow to meet these recommendations:

1. Reflect on the teaching context: First, teachers should reflect on their teaching contexts, including overall goals, who their students are and could be, and what types of technologies and other resources are accessible to align their content curation with their language teaching contexts.

2. Identify the content: Next, teachers can identify the content they are planning to teach and how technology can support students in understanding it. They can list more specific objectives and the focus of their technology use for each while considering the needs of different students in the class. For example, teachers may start by stating objectives such as, "Students will be able to explain the process of traveling step by step" (i.e., from doing visa interviews to booking a hotel at their destination). Then, reflecting on the different ability levels in class, the teacher can list the types of resources that she wants to find. For lower proficiency students, the teacher might want to find a reading from sources like Time for Kids (http://www.timeforkids.com) or Kids Discover (http://online.kidsdiscover.com), while for higher proficiency, she might want to look for something like a Ted Talk (http://www.ted.com/talks) on the same topic. Further, teachers can consider providing technology support for different roles in the travel project or how technology could facilitate different outcomes such as posters, presentations, or essays.

3. Search and find relevant information and tools: Language teachers, after being taught how to search the internet effectively, can search in engines such as Google and/or Yahoo. Once teachers find some of the materials and tools that may be suitable for their content, they can save them in a Word document or use another app that they know (e.g., Pinterest, bookmarks, Google Drive) that can also be considered content curation tools. After finding the tools, teachers can evaluate the usefulness and effectiveness of the tools based on what technologies the tools require (e.g., projector, smartboard, monitors, etc.), the pre-preparation needed, and how and for whom the resource helps to meet the goals and objectives of the lesson. When the teacher needs the resources, they will be stored in an accessible form that is easy to add to or change.

Critical thinking, creativity, and problem-solving are lifetime skills. Adding these skills to a lesson can help students learn, practice, and apply them in real-life situations. As a step in their content curation, teachers can search for materials, worksheets, and/or projects that promote these skills. Teacher educators can highlight these skills and take teachers through the process of learning /practicing them, identifying the reasons and benefits of them, and learning/applying possible ways to integrate them into their lessons as well as how technology may support these tasks. There are many resources and websites for teacher educators to learn more about these skills and how technology can support, enhance these 21st century skills. One example is Egbert's (2017) *Methods of education technology: Principles, practice, and tools,* in which the author highlights and discusses the principles, practices, and tools for CALL teacher educators and language teachers to use technology for a variety of reasons, including but not limited to: supporting content learning; student communication; creativity; problem-solving, and; critical thinking. The guidelines that are mentioned in the book may be used as a way to introduce 21st-century skills to language teachers as well as allowing them to have a baseline to start their content curation.

Possible Content Curation Scenario

With the previous description in mind, the following is an example of how content curation may work for a specific lesson:

Mr. Mohammad wants to curate materials and tools for his 9th grade ELLs. Before he starts searching for materials and tools, he writes down the broad goals of the unit and what technologies he has in the classroom (e.g., projector, smartboard, and so on). By identifying these components, he can curate materials and tools around the content of the lesson. Mr. Mohammed had attended a professional development workshop on using the Diigo (http://www.diigo.com), and he chose Diigo because it allows him to bookmark webpages, create outlines and annotations for students, and keep all of his materials and tools in one place. He also decides to use Diigo's personal library feature to curate resources for the unit because he knows that he can annotate and share his research with peers who also have Diigo accounts. Then, he uses the Google search engine to search for relevant materials. He decides to save a simple video about traveling from Tony Illustrated English (2019) titled with *Topic 4 – Travel, Elementary Level* in his collection. In addition to videos, he downloads copies of English ESL travel worksheets from Pinterest. He saves all of the resources he finds in his Diigo space. By having all of his student-based resources in one place, he can go back any time to search his catalogs based on the students and goals, available technologies in his classroom, and any other of the many changeable factors that may influence his use of the tools. Mr. Mohammed knows that 21st-century skills can last a lifetime and that including them in his lesson may encourage students to apply them in real situations. He decides to include a final mini project in his lesson and promote his students' creativity by using productivity tools (e.g., iMovie, PowerPoint, PowToon) that he curated for this teaching context.

Benefits of Content Curation to Learners and Language Learning

Content curation helps language teachers to focus on promoting the content, whether specifically about language or based in a discipline, and to curate all materials and information around a theme or topic. Curating materials around content or a theme helps language learners make sense of connections to the content (Labiste, 2019). Also, since all materials and tools are connected to the content and tasks, content curation should decrease distracting and unnecessary materials or tasks during the lesson.

Benefits of Content Curation to Language Teachers and Teaching

For some language teachers, it may be easy to select random resources to use in the classroom. However, it is an essential skill to arrange and gather information and materials around a theme or a topic that can meet the needs of all students. By doing so, teachers are making the information more relevant to their content (Wolff & Mulholland, 2013). Identifying the content and arranging the materials around that content can both support the content focus and also encourage language teachers to use and integrate important 21st-century skills (Egbert, 2017; Schleichen, n.d.). When working with content curation, teacher educators can help teachers to develop tasks that promote these skills. Also, as the curator, language teachers can learn the

skill of selecting suitable tasks for each objective and how to select the right fit of tools to support these skills.

These skills are not tied to only one context (e.g., teaching math or ESL, in Saudi Arabia or China, for online or face-to-face courses), but they are duplicable and adaptable based on the context they are used for/in. That means teachers are taught not to tie themselves to technology but rather to content and tasks. That gives them the knowledge and experience to use this strategy for varied contexts and different purposes, and it can save both time and money as the content is reused.

Overall, content curation may encourage teachers to think about their teaching context, including the tasks they are developing and how technology use can support their outcomes. Knowing how to curate content can help teachers to focus on the content they are teaching, to prepare tasks with a focus on 21st-century skills, and to apply their knowledge across current and future contexts.

Summary

Content curation strategy can be a way to encourage teachers to curate technological tools around the content based on their own teaching contexts. With content curation, teachers focus more on the usefulness of technology to help and support the content they are teaching. By applying this strategy in CALL teacher education, we are encouraging teachers to focus more on their content and help them to curate tools that are more suitable for their goals, objectives, learning outcomes, and their teaching context in general.

Educational Escape Rooms in CALL

In this section, an innovative task-based language teaching (TBLT) tool (Chapelle & Sauro, 2017)—educational escape rooms (EERs)— is presented as a strategy to help language teachers to achieve the three goals described previously. The issue is that teachers may learn about technology resources such as apps and websites through teacher preparation, but they may not know how to use them flexibly. EERs can provide a platform for language teachers to gather and integrate these educational resources so that they can be more dynamic and flexible in their technology use. A brief description of the EER is presented in the following section, including the definition of EER and steps for implementation, and then a teaching scenario and benefits are provided.

Description

According to Nicholson (2015), escape rooms can be defined as "live-action team-based games where players discover clues, solve puzzles, and accomplish tasks in one or more rooms in order to accomplish a specific goal (usually escaping from the room) in a limited amount of time" (as cited in López-Pernas et al., 2019, p.31723). Further, Macías and del Rocío (2017) defined an educational escape room as a creative learning environment that can be established in any educational environment, such as an elementary or secondary school, youth center, university, and any other place involving learning. On the other hand, *educational* ERs are

designed with escape games as the core but include educational elements and are focused on meeting students' interests and needs. Further, Sanchez and Plumettaz-Sieber (2018) described an EER as a method of instruction that requires learners to participate in an exciting activity designed to collaboratively find clues and solve challenging problems related to educational content in order to escape from the physical classroom.

For a language learning EER, the puzzles are usually linear, meaning that students do them one at a time, and each one leads to the next. These puzzles can be designed according to different learning content and goals. In addition, language teachers can design an EER in the form of a series of puzzles with clues in locked boxes at any location in the classroom and not even need a separate room. Therefore, a CALL EER could be defined as:

A task-based language teaching strategy designed based on language learning goals and teaching content, as well as cultural authenticity and technology integration that allows participants to solve educational puzzles and "escape" from the room within a limited time.

There is currently insufficient research showing that EERs are useful for learning, especially in the area of CALL. However, many teachers have designed EERs in the classroom to support student learning, and anecdotal evidence suggests that they are engaging and support student focus on content, such as Escape Kit (https://escape-kit.com/en/escape-room-in-a-school/) which shows teachers' ideas on applying an EER.

The few studies about EERs that exist suggest positive outcomes of their use. For example, Berthod et al. (2019) established an EER based on a combination of simulations and games to create innovative methods of practical teaching methods. Through a pre/post questionnaire of 72 medical learners (29% senior pharmacists, 14% junior pharmacists, and 57% pharmacy technicians), the study affirmed that the use of a pharmaceutical EER had a positive impact on the theoretical content learning of future pharmacists, which improved the students' achievement. These findings demonstrate that an EER can be effectively applied to the acquisition of content-based subject knowledge; the EER might also improve students' language skills based on language-focused puzzles and the social interaction needed to solve them, and it can provide an exciting way to measure or examine students' language skills.

In addition, EERs that use TBLT might promote students' engagement and develop students' problem-solving abilities and creative thinking skills. Anwar and Husniah (2016) concluded that task-based materials are more natural to understand and more interesting for students; using task-based language learning materials to meet the standards of language learning can have a positive impact on language learning. In other words, the combination of task-based activities and CALL in EERs can provide innovative opportunities for English teaching. Further, Lopez-Pernas et al. (2019) indicated that the proper use of EERs had a significant positive impact on student participation and learning in programming courses; they also provided a series of recommendations and suggestions for educators to help them create effective EERs for instructional program design. The current research suggests that an EER, as a task-based innovative instructional platform, might have a positive impact on language learning; the materials used in EERs can be developed to meet language students' needs.

Moreover, EERs might be applied across contexts, which means that EERs can be designed and established in different locations, use different devices, and be developed to suit various levels of the target population. For instance, Jambhekar et al. (2020) supported the use of an EER as an innovative educational platform that had a positive impact on postgraduate medical learning, including promoting student participation through collaboration, creativity, and critical thinking. The authors mention that the EER can be easily adjusted for different knowledge levels, so it can be used cross-subject to promote collaborative practice. This indicates that EERs might be a useful idea to apply in teacher education, used as an innovative educational tool to promote language teachers' engagement in CALL, and meet the goals of CALL teacher education.

Language-focused EERs are designed to integrate technology with language content to help students learn the content and further develop their language skills. There are online digital escape room makers that allow language teachers to build EERs for their students based on different learning objectives, such as Dig-It (https://dig-itgames.com/educational-escape-rooms-in-the-classroom/). They can also create a sample build and use sites like BreakoutEDU (http://www.breakoutedu.com/) that have thousands of puzzles already made. However, face to face language-focused EERs can provide more social interaction and greater opportunity to use higher order thinking skills than digital ones.

To help language teachers get started with any type of EER, steps and guidance for using EERs can be provided by CALL teacher educators. Based on the theoretical framework for EERs created by Clarke et al. (2017), the steps for designing an EER could be categorized into participants, objectives, themes, puzzles, equipment, and evaluation. More specifically, the steps include:

1. The teacher determines the theme and location/scenario of the EER based on the language learning content;

2. The teacher designs puzzles with different degrees of difficulty according to the language learning content and goals;

3. The teacher chooses appropriate technologies, such as augmented reality (AR), virtual reality (VR), and/or various apps and websites to design puzzles that provide students with multimodal experiences; they can also find puzzles online;

4. The teacher provides students with an environment to stimulate students' engagement with the language and each other through the arrangement of the puzzles and the decoration of the scene;

5. The teacher adjusts the EER according to the language outcome (e.g., pre/post-tests) and the performance of students participating in the EER.

Possible EER Scenario

To illustrate more clearly how to implement the steps for EER development and implementation, this scenario explains how Ms. Yu, a third-grade teacher, develops an EER to support English-learning in a Chinese classroom.

First, Ms. Yu determines a theme of food to focus on; Ms. Yu wants the students to learn some common food vocabulary (for example, broccoli, carrots, turnips, celery, green onions, ginger, garlic, onions, and potatoes), including the appearance of the food and information about the food. Based on this learning content, she decorates the EER (a part of her classroom) very simply as a vegetable market. Second, she assesses her students' current knowledge with an informal pre-test so she can design puzzles about vegetable vocabulary with different difficulty and logic (from easy to difficult). For example, students are very familiar with potatoes and carrots; these two words can be the focus of the first puzzle in the EER. However, turnips and celery are difficult words for the students, so Ms. Yu decides to put these two vocabulary words in a later puzzle. Then, Ms. Yu integrates appropriate technologies into EER puzzles to help students understand the learning content. For instance, Ms. Yu uses the augmented reality (AR) application Metaverse (https://studio.gometa.io/discover/me), creating an AR animation of the focal foods, inserting questions in the animation, and including additional information about the food. Students can observe each vegetable in three dimensions and understand their nutrition and growth environment. In her EER, the clues and passwords of each puzzle link to the next one, which serves as an instant assessment for the students. For instance, Ms. Yu marked pictures of 4 different foods on the vegetable basket. When the word of the food can be spelled correctly, the password to unlock the next puzzle lockbox is obtained according to how many letters are in the word (shown in Figure 1). As a final puzzle, Ms. Yu evaluates the students through an interactive video she has added questions to in Playposit (http://go.playposit.com/) to verify the students' knowledge of the target vocabulary.

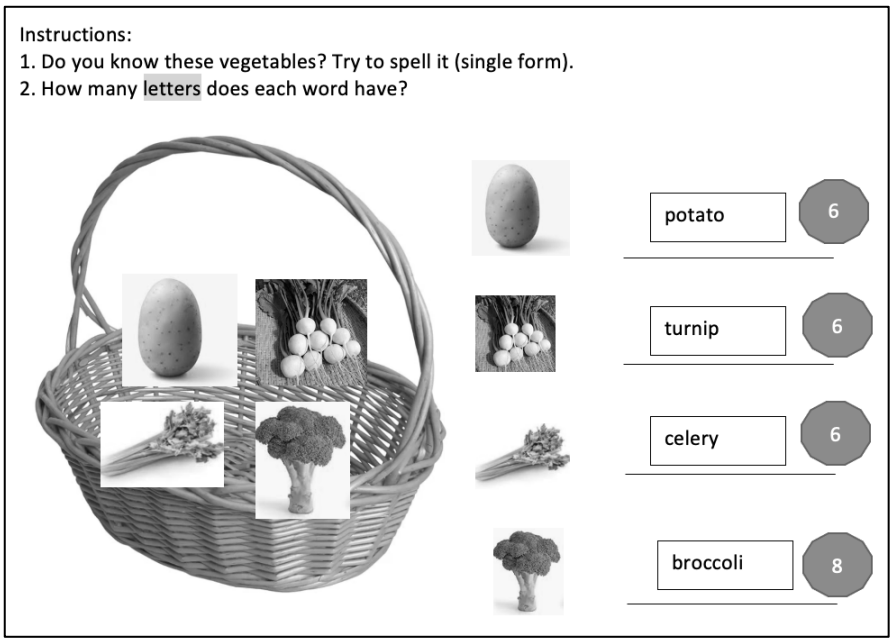

Figure 1. Task Card for Vocabulary Assessment Under Theme Setting.

Providing a scene like buying food and arranging elements such as locks and passwords to decrypt by using language can deeply engage students in the learning content.

Benefits to Language Learners and Learning

Based on the review of the existing EER literature, it is likely that EER use can have some benefits for language learners. For example, learners can obtain multiple inputs via these CALL environments through the integration of language learning content and relevant technologies. Because of this, learners may be more engaged in the learning content. Also, they can get instant feedback on their responses and work with their peers to negotiate meaning. In addition, the EER's logical design and the different challenge levels of the puzzles can develop students' problem-solving and thinking skills; further, language learners can also be deeply involved with language and thinking while they develop their own puzzles or rooms for their peers to use.

Benefits to Language Teachers and Teaching

For language teachers, EERs can provide a platform that can employ a wide range of technological tools and skills to support students' language learning, and EER use can enable language teachers to provide various ways to engage students in language learning deeply. As an approach to TBLT, CALL teacher educators can help language teachers to understand how language learning can be supported in EERs based on their understanding of disciplines, language goals, standards, and content.

Summary

By presenting the existing research, examples of EER use, and steps that can be taken to help teachers implement EER use, this section offers CALL teacher educators and language teachers a pedagogical strategy that can meet the proposed goals of teacher preparation. First, EER use can integrate strategies for language learning content through technology; second, EER use can effectively enhance teacher's knowledge of and students' practice with 21st-century abilities such as problem-solving, critical thinking, creative thinking; similarly, because EER use is not limited to the size of the geographic location, teachers can learn to apply it across ages, contexts, and a wide range of technologies.

Flipped Learning

Teaching languages face-to-face is the tradition in a majority of schooling contexts, and integrating a flipped learning (FL) approach may improve this teaching practice in language classrooms. FL is a current trend in CALL that enables efficient and constructive incorporation of digital technologies into educational content; a flipped classroom strategy can also integrate EERs and content curation. This part of the paper defines FL, describes the essential skills that can be covered in applying FL, provides a possible flipped scenario, and then discusses the benefits of using this strategy in CALL teacher education.

Description

According to Ng (2015), unlike the traditional classroom where the teacher leads the class and delivers homework for knowledge reinforcement and support, the flipped model entails providing the direct teaching of content as homework (usually posted online) and then supporting active learning opportunities in the classroom. Recently, FL was defined by Kostka and Marshall (2018) as "an educational approach in which content that is traditionally presented in class is learned at home, and work that is traditionally completed as homework is done in class" (p. 224). In other words, FL is an approach that creates a way for teachers and students to interact in/outside of a class. Egbert et al. (2015) clarify the goal of using technology in flipped language learning as giving teachers and students opportunities to engage and collaborate. Based on the definition and purpose, FL can be seen as a supportive strategy that language teachers can employ to support students' engagement in using and practicing the language.

Language teachers should understand the four pillars of FL in order to implement it effectively; these are: 1) flexible environment, 2) learning culture, 3) intentional content, and 4) professional educator (Kostka & Marshall, 2018). First, language teachers should recognize the need to provide a flexible environment that is convenient and accessible to students regarding place and time (Ozdamli & Asiksoy, 2016). This indicates that teachers need to be able to integrate technologies that all students can access and learn from. Second, FL requires that teachers shift from a teacher-centered to a student-centered approach where students are responsible for their knowledge acquisition progress; teachers who do not have experience with this type of pedagogy may need time and guidance to learn it. Third, as Ozdamli and Asiksoy (2016) suggest, an intentional content element means that "educators both think about how education is used to provide fluency and how they can develop a cognitive understanding of students" (p. 100). In other words, content must be chosen with learners in mind. Finally, FL use means that teachers must be able to observe students' progress during the course and integrate additional/replacement technology and content where needed. Overall, the ideas of flexibility, learning culture, intentionality in content, and professionalism highlight the importance of FL as a strategy that can prepare teachers for both the present and the future.

Kawinkoonlasate (2019) noted that language teachers focus on creating classroom activities based on appropriate knowledge and skills for both in and outside of the language classroom under the FL approach. Kostka and Marshall (2018) summarized the elements that creating an interactive learning environment requires: First, teachers should be able to implement materials that are readymade, such as TED Talks, YouTube videos, and other materials related to students' texts and goals. Second, teachers need skills so that they can add, record, and create more related materials for students to achieve lesson objectives. Finally, teachers should ensure that students have easy access to the materials; this means that they are familiar both with what students can access and with tools that can provide that access. Examples of online spaces in which teachers can post all of the materials together in organized and accessible ways are websites made with simple website creators such as Wix (https://www.wix.com/) or SITE123 (https://www.site123.com/), and learning management systems (LMSs) such as Google Classroom (https://classroom.google.com/), Canvas (https://community.canvaslms.com/), or BlackBoard (https://www.blackboard.com). Tools that can be used to create engaging tasks and

be integrated into the chosen LMS include interactive videos to engage students visually by such as EdPuzzle (https://edpuzzle.com/), PlayPosit (https://go.playposit.com/), and other online tools.

Creating different types of interactive and engaging learning environments that flipped language learning requires can support language teachers' knowledge and practice in CALL. Designing these environments occurs in part by following the four steps that Unser-Schutz (2018) proposes: planning, creating, providing, and integrating. These steps overlap with those for content curation and EERs and can support language teacher understandings of these essential instructional steps. The steps are outlined below:

1. Planning: The most critical step in planning is to understand students' skills, abilities, needs, and interests. This information can be gained through interviews, needs assessments, observations, tests, and many other activities using tools such as Kahoot, Quizlet, Survey Planet, or Google Forms. Once teachers understand their students, they need to choose one or more platforms that may engage learners while matching their needs.

2. Creating lessons: Language teachers create suitable learning materials for all objectives to be used by students in and outside the classroom. For instance, teachers can create a virtual lesson page and upload presentations, readings, sounds, videos, or pictures for students to learn from. O'Flaherty and Phillips (2015) note that methods such as "pre-readings, automated tutoring systems and study guides, interactive videos…case-based presentations and simulations" (p. 87) are also crucial for teachers to learn about and consider applying in their flip. At the same time, teachers create a range of activities to be applied in the classroom for interaction, engagement, and assessment.

3. Providing lessons: The importance of this stage is to help teachers to organize lesson materials clearly, including any navigation or icons necessary and using principles of instructional design as they apply. Again, teachers should know if their students can access the online materials and distinguish whether they can use the materials and tools easily.

4. Integrating classroom activities: Teachers lead interactive, practical, and formative activities for students to complete face-to-face to support lesson objectives. When students come to the physical classroom, they should also expect their teachers to check their online learning.

When this instructional strategy is used in CALL teacher education, language teachers can reach not only the goals of the flip but understand deeply the reasons and ways to do it themselves. In addition, "Flipped instruction can promote task engagement because students have opportunities to receive more help from teachers and peers than in traditional teacher-centered classrooms and to focus on authentic tasks" (Egbert et al., 2014); this applies to teacher education classrooms, too.

Possible FL Teaching Scenario

The following scenario provides an example showing how language teachers can implement FL.

Mr. Rajeh wants to use flipped instruction with his 4th grade language learners. He decides to teach a listening and speaking unit online first to see how it works for his students. The main goal of this lesson is that students will be able to take organized notes and create a presentation for the class. For the first step, he explores LMSs like Google Classroom (https://classroom.google.com/), Canvas (https://community.canvaslms.com/), and Black-Board (https://www.blackboard.com/). He decides that the platform that his learners would understand most easily is Google Classroom; Mr. Rajeh knows that his students are familiar with Google products, and they all have Google accounts that they use at school. Another reason that led him to choose Google Classroom is that it allows him to upload as many videos and other materials as he needs, and it provides the opportunity to integrate many other apps such as Playposit for quizzes and formative assessments. Besides, Mr. Rajeh learned about and practiced with Google Classroom in a workshop, so he feels that he knows it well enough to use it to teach.

After he chooses his platform, Mr. Rajeh searches for and uploads materials to use for the flip. He submits a link about "Listening Note Taking Strategies" and the same information at two other reading levels. He also includes a TEDTalk video, "8 Secrets of Success" (St. John, 2005) in the LMS. In class, the teacher explains the website, The Corpus of Contemporary American English (https://www.english-corpora.org/coca/), so students could use it at home. This allows students to understand a word's meaning, sound, part of speech, and use in different contexts. The teacher also adds stories to the LMS about Steve Jobs and Bill Gates, describing how they succeeded. After posting the materials, Mr. Rajeh creates steps to help his students meet the lesson objectives. First, all students must do an online formative assessment after they study the uploaded materials about note-taking strategies. He mentions that students could read and look for new vocabulary in the TED Talks' transcript. Students work toward the lesson objectives online from their homes with these uploaded materials. In the classroom, students will use the readings as examples and use their notes to present and talk about a successful person in groups. Moreover, students will practice what they have acquired at home by doing group projects, presentations, and other student-centered activities to reinforce the objectives in the online materials. Finally, these classroom activities will help Mr. Rajeh to assess his students and give them supportive feedback.

Benefits of FL to Language Learners and Learning

FL in language classes allows language students to practice what they study at home before they come to the class. Language learners' interactions with other students and the teacher through the chosen resources while at home can have a positive impact on their language acquisition and engagement; because they work with direct instruction and drills at home, authentic, engaging language use is the focus of the class. In this way, the use of multimedia technologies can help language learners avoid time and space limitations for language use that is common in traditional classrooms (Hwang et al., 2015). Further, Ozdamli and Asiksoy

(2016) stated that FL in language classes can increase students' interaction time in class with their teachers and with their peers in group work, besides giving learners the freedom to choose their place, time, and materials to learn. Ali and Säberg (2016) concluded that utilizing FL can support teachers to have more time in assisting students in class independently to support individual needs; moreover, FL can create an engaging environment and support communicative activities that facilitate in-class practice. Further, FL gives learners more responsibility for knowledge acquisition and supports it by extending opportunities for content preview and review (Hwang et al., 2015).

In addition, learners can learn about and practice critical thinking skills in FL because it enables students to reflectively reason and skillfully judge information to check for its reliability in aiding problem-solving (Kong, 2015). Kong (2015) also noted that flipped lessons can include the high-order thinking capacities of deduction, induction, hypothesis identification, explanation, and evaluation, particularly if EER puzzles or other gamification strategies are used in the flip. Because the development and use of critical thinking skills require time that may not be available in the physical class, a flipped strategy can be a suitable solution for both teachers and students to have time to think before they come to class. During class, teachers can learn and use techniques that Styers et al. (2018) say can improve critical thinking skills in classrooms, such as case-based, problem-centered, and peer-led collaborative learning. Overall, the literature indicates that FL can support not only teacher learning but also the effective learning of content, language, and thinking of language students.

Benefits to Language Teachers and Teaching

Language teachers cannot only improve their students' achievement and output by utilizing FL, but this strategy can support their class objectives and help them to conduct summative and formative assessments. In addition, by using a flip, teachers may have more time to provide students with effective feedback on their oral and written skills because students have more "talk time" in class. Also, if students practice how to pronounce a word at home before they get into the class, this oral skill might be easier for them to integrate into a conversation, and the teacher can grade by observing rather than giving a test. Further, for written language, students can have the opportunity to think about and summarize the main ideas of a topic to be ready to discuss them in class with their peers and teacher, potentially avoiding problems with a quiet classroom. These are only a few of the benefits of this strategy for teaching.

While teaching about how to flip, CALL teacher educators can help language teachers to understand technologies for effective flipped instruction, especially for content delivery. Teachers learn about and incorporate various technologies to deliver content to students; resources that they can learn about during the process can include recorded instructional videos, audio, annotated notes, screencasts, and the process of uploading and broadcasting through the internet (Ng, 2015; O'Flaherty & Phillips, 2015). Flipping with technology can make it easier for language teachers to save content and revise it when they need to, as a type of content curation. Teachers can also learn about issues with technology use for language learning; they will learn that most problems that teachers face in using FL are technical (Unser-Schutz, 2018). Therefore, using this strategy in CALL teacher education can show teachers how and why to create, practice, and test technologies for effective technology-enhanced language lessons.

Another important reason to employ flipped learning in CALL teacher education and other diverse teaching environments is to understand and take advantage of a learner-centered paradigm. In addition, Hwang et al. (2015) note that, with a flip, teachers can review the curriculum and consistently improve teaching content and use student progress tracking. In addition, flipped language instruction can lead to better teacher-student and peer interactions and the development of high-order critical thinking skills. Such facets highlight the importance of using flipped classroom strategies across learning contexts.

Summary

Flipping instruction can be a way to move from in-class direct instruction to in-class effective engagement and assessment. With a flip, students spend their time more usefully to learn and acquire language while teachers have more in-class time to assess and support student authentic practice. Teaching language teachers to apply a flipped learning strategy can help teachers manage their time differently, increase students' output, help students use 21st century thinking skills, and integrate technology in dynamic and principled ways.

Informal Blended Learning

This section of the paper presents informal blended learning as another strategy that teachers can use to be prepared for their current and future endeavors. An informal blended learning strategy can be utilized by language teachers to incorporate technology-enhanced instruction focused on language, content, and 21st-century skills across contexts to reach out to diverse learner populations such as immigrants and other transnational learners. Many of these individuals have little or no formal education in the target language and may need additional tutoring, or they might not have access to a structured course. Therefore, addressing their language requirements calls for an approach that includes but goes beyond the classroom environment (Chapelle & Sauro, 2017; Dressman, 2020; Kukulska-Hulme & Lee, 2020). Implementing an informal blended learning strategy can meet the needs of a great variety of language learners, primarily due to its flexibility and adaptability, because learners do not need to be "formally" in a classroom to acquire language. This section of the paper begins with a brief description of blended and informal learning and their combination to produce an informal blended learning strategy. This is followed by simple steps to implement an informal blended learning model, a possible teaching scenario, and benefits to learners and teachers.

Description

Blended learning, also called hybrid learning, does not have a unique definition that researchers and practitioners agree upon. One simple way of defining it could be as an approach that involves a combination of traditional face-to-face (F2F) learning with the use of digital technologies (Grgurović, 2017). Content curation can be used in blended learning, and EERs and flipped instruction can be seen as instances of it.

Many teachers have adapted and used a blended learning strategy, which is based on the requirements of the course and the needs of the learners (Kukulska-Hulme & Lee, 2020). As Horn and Fischer (2017) noted, "blended learning is still in flux" (p. 63), and while some

models support classroom cohorts, others are beginning to address learners outside the traditional classroom. In other words, blended learning can be used in formal, non-formal, and informal instructional contexts. According to Dressman (2020), formal instruction is organized and structured by a teacher; while non-formal learning is more of a hybrid mode, where there is a blend of an organized and programmed instruction (e.g., Duolingo) while, at the same time, the students have the freedom to learn at their own pace. Informal learning, on the other hand, refers to language activities that occur beyond the language classroom, and they are mainly used to complement formal instruction. Dressman adds that, although informal tasks may be "instructionally planned by others, how they are used remains almost completely within the control of the learner" (p. 4). Integrating the flexibility of blended learning with the learner-controlled activities that create an informal language learning approach can create an informal blended strategy that might cater to the needs of the diverse populations that teachers should be prepared to address.

One way to visualize an informal blended approach is by imagining a community-based English as a second language (ESL) class, where the F2F portion happens in a café and the online portion occurs when learners choose to watch an English language video of their choice. The conversations taking place in the café and the video activities are based on the preferences of the learners, and the "teacher" serves only as a facilitator. Strategically speaking, the language teacher/facilitator plans and creates the semi-structured informal course grounded in the personal goals of the learners and the technology they are comfortable using. This means that the teacher could integrate technology based on the learners' video choices and their preferred mode of viewing the video (e.g., computer, DVD, phone). However, to be able to do so, the teacher may need to develop these skills during CALL teacher education.

Due to the flexibility and adaptability of blended learning, it has been successfully implemented formally in countless language classrooms (Horn & Fisher, 2017; Kukulska-Hulme, 2020), while informal language learning is typically used in an unstructured manner by learners or to supplement formal education. Because informal blended learning is a relatively new concept, there are not many studies about it. One recent study related to the use of blended learning in informal environments is Pooley et al. (2019), who explored the possibilities of using mobile technologies and in-person communication to learn a language without formal instruction. Participants were 20 visiting language instructors who went to Korea to teach English and 60 international students from English-speaking countries. Participants did not have formal instruction in the Korean language. However, learners came up with creative solutions to use the resources that were available in their environment (e.g., mobile chat, face-to-face interactions in cafes and restaurants) to develop cross-cultural communication with peers from Korea. This implies that an informal blended learning approach might address the needs of a diverse population that does not have access to formal instruction for one reason or another.

Another study by Perry and Moses (2020) offers more insights on how immigrants use media and technology for their informal language learning and basic needs in their everyday lives. According to the authors, immigrants and other transnational learners use older media like television and radio to learn aspects of the host language and culture, and they use newer technologies like computers and smartphones, when available, to stay connected and

communicate with their heritage and first cultures. As a result, these digital tools might be good resources for informal language learning in a blended environment.

One potential way of integrating an informal blended learning approach into teacher preparation is the creation of a teacher and student informal collaborative learning community, where students can help the teachers to develop instructional plans based on the students' language needs, and in turn, the students have access to instruction that is tailored to their requirements. Establishing a language learning community to participate in informal blended learning can be done by following these steps:

1. The teacher/facilitator meets with the learners (F2F and/or online) to assess their language needs. A pre-designed survey can be used to ask participants about their language proficiency, daily activities, interests, and technologies they use.

2. If possible, the teacher collaborates with other educators in the community to create language tasks by integrating one or two daily activities with the language content needed to perform the activities. The technologies that the learners are accustomed to using are integrated to facilitate their learning.

3. The teacher can facilitate tasks by introducing them in the F2F environment, reviewing and using the language with the learners in authentic ways. The teacher and peers can evaluate the outcomes with peers and learners.

4. The teacher adjusts the plans as necessary, based on learning goals and students' needs.

To understand how to address these steps and the diverse populations that teachers may encounter, they can be taught and experience informal blended learning during their CALL teacher education.

Possible Informal Blended Learning Scenario

The scenario below illustrates how teachers could use the steps to create an informal blended language learning community.

Ms. Smith would like to create a collaborative language learning community for immigrant women in her local area, whom she knows cannot attend regular classes but would like to participate in informal learning when they can. She knows of at least ten adult learners from different backgrounds and different levels of English education and knowledge who have voiced their willingness to participate. After Ms. Smith contacts the women by mail and email, she decides to do a pre-survey with each student to get to know more about their daily activities and the technologies that they know to use. She discovers that many of the women only know basic words in English, they usually have to go to the market on the weekends, and they all have and know how to use the basic functions of a smartphone. Ms. Smith selects, based on suggestions from other teachers and her own experience, an online platform (e.g., Quizlet) to create a multimodal (e.g., text, image, and voice/sound) vocabulary list that the learners can access with their smartphone. Then, she proceeds to design a task that will be completed at the

market, which is buying vegetables in English. Ms. Smith sends out a link to the vocabulary list and a video of someone buying vegetables a few days in advance, so the women can learn the necessary words and phrases before going to the market. Ms. Smith will meet the "class" at the market, and, at the market, she will model by ordering vegetables first and then help learners to do the same. At the same time, Ms. Smith will evaluate how well the learners performed the tasks: Did they learn the vocabulary? Can they order the vegetables they need? If they did not, was there a problem with the technologies used? Was there an issue with the task, modeling, vocabulary, and/or pronunciation? At this point, Ms. Smith can meet or schedule a meeting with the learners to listen to their progress/struggles, provide feedback, and use the information she gained (e.g., they did not have enough time or support to learn the vocabulary) to create the next task. With the women's differences in the available time, needs, knowledge of English, and the local culture, there is not a specific formula for her to follow, but Ms. Smith can make changes along the way. The use of technology in this informal setting allows the learners to be at different points in their learning and for Ms. Smith to provide personalized tasks as needed.

Benefits of Informal Blended Learning to Language Learners and Learning

Many immigrants could benefit from using an informal blended strategy to learn the target language at their own pace and with individualized lessons tailored to their needs (Kukulska-Hulme, 2020). Chapelle and Sauro (2017) note that the everyday uses of technology by unexplored/under-addressed learner populations afford authentic opportunities to address whatever their needs are for language, content, and thinking skills. By taking advantage of the flexibility that blended learning offers, teachers can include technology-enhanced instruction based on the digital tools immigrants and transnational learners already use to provide authentic, useful, and effective learning that takes place when, where, and with the support that it needs to. This means that learners' lives might be easier, they may have better employment or educational opportunities or the skills to help their children with their homework, or they may benefit just by being part of a community of learners.

Benefits to Language Teachers and Teaching

Archambault and colleagues (2016) point out that "qualified teachers who are skilled and adept at creating conducive learning environments are essential components to the quality of instruction" (Archambault et al., 2016, p. 304). Being able to deliver effective language instruction means that educators are prepared to teach in the present and future by being able to effectively integrate technology and 21st-century skills across diverse learning environments. Understanding informal blended learning can help teachers to build their expertise in online and F2F environments, and at the same time, learn how to prepare lessons that are created with the collaboration of students and other teachers that are part of the learning community. Informal blended learning provides the flexibility for teachers to create learning for anywhere/any time and use learners' background knowledge to figure out how to make tasks engaging for non-traditional learners. CALL teacher education can use this strategy to prepare teachers who are ready for almost anything.

Summary

Language teachers can use informal blended learning to integrate technology use focused on language, content, and 21st-century skills to reach out to immigrants and other transnational learners. Given that lessons are planned collaboratively between learners and teachers, students benefit from the instruction being tailored to their individual needs (e.g., goals, language levels, digital tools they know to use) and working at their own pace. In turn, teachers have the advantage of using a strategy that offers effective instruction based on the requirements needed to respond to the learning needs of diverse populations. Because this strategy can be integrated with content curation, EERs, and flipped instruction, it can be used in CALL teacher education to reinforce the ideas common to these strategies.

Conclusion

This paper provides four strategies –content curation, educational escape rooms, flipped learning, and informal blended learning—for CALL teacher education that can help prepare language teachers for rapid changes in education technologies and contexts. While other useful strategies exist, those emphasized in this paper focus on the goals for teachers to be able to gather relevant information, materials, and tools, combine different technology uses, address learners of different ages and language levels, and develop students' 21st-century skills. Further, they all support teachers to engage students and assess them effectively. These strategies depart from the typical technocentricism in CALL teacher education by integrating technology uses with language, content, and 21st-century skills across contexts. CALL teacher education is an ongoing process, and instead of giving "fish" to teachers, CALL teacher education can teach teachers "fishing skills" like those suggested here in order to be able to use, integrate, and apply technology in their current teaching contexts and to be ready for future ones.

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