SAMR Model in Action: Effective Technology Integration in LCTL Teaching

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Abstract

The COVID-19 pandemic has dramatically accelerated the use of new technology tools. Effective technology integration, however, as underlined by Tereda (2020), is not about using the trendiest and most expensive technology tool. It is about being aware of the range of options and picking the right technology tool to increase student engagement and learning in class. Before using a certain tool, we should always ask ourselves how students can benefit from using it and how it will enhance their learning. In other words, it is important to be purposeful in our technology integration efforts rather than merely integrating new technologies for technology's sake. In this paper, using the TPACK Model (Mishra & Kohler 2006) and SAMR Model (Puentedura, 2013) as a framework, we analyze, and demonstrate how purposeful technology integration can be accomplished in the context of LCTL teaching.

Keywords: Technology integration, TPACK Model, SAMR Model

Introduction

Technology integration refers to the use of technology resources and tools such as computers, mobile devices, software applications, and educational technology software in instructional practices. Effective use of technology means that technology is integrated in a pedagogically sound way that is in a manner that enhances instruction and student learning. Tereda (2020) points out that teachers seek out new educational technologies because they can have a considerable positive impact on student performance and engagement. As educational practitioners, however, we should always be cognizant that in order to foster a more active and deeper learning, we must integrate technology in an appropriate and meaningful manner rather than merely integrating new tools for technology's sake.

The COVID-19 pandemic pushed language teachers to utilize technology tools in an accelerated way with an abrupt move to online teaching. Teachers that perhaps never used a Learning Management Systems (LMS) before needed to move all their learning material to the available LMS at their institution (e.g., Canvas, Sakai, Blackboard etc.). They needed to quickly acquire new skills to conduct synchronous lessons via Zoom, MS Teams etc. This sudden move to online learning has brought more challenges for LCTL teachers as LCTLs suffer from high-quality online materials that can be integrated

in an online lesson swiftly in a LMS. We all want the COVID-19 pandemic to be over, but it seems like with the new variants that continue to pop up, the pandemic is not over us yet. In this respect, effective technology integration is even more crucial in the context of the LCTL because it can resolve some issues such as lack of high-quality pedagogical resources (Blyth, 2013) so that we can be better prepared for the changes that COVID-19 or another pandemic might bring about.

Taking this into consideration, we will be using two methodological frameworks, namely TPACK Model (Mishra & Kohler 2006) and the SAMR Model (Puendetura, 2013) to evaluate technology integration in an LCTL context in a pseudo post-COVID area where we need to be proactive for different variants and phases of COVID or another pandemic that most scientists dub as an instance of "when" not "if." Here, we are focusing on frameworks in evaluating different tech tools because as Hubbard (2006) notes, methodological frameworks attempt to be largely descriptive rather than judgmental and they link teaching with learning considerations as opposed to other methods of evaluation of technological tools such as checklists.

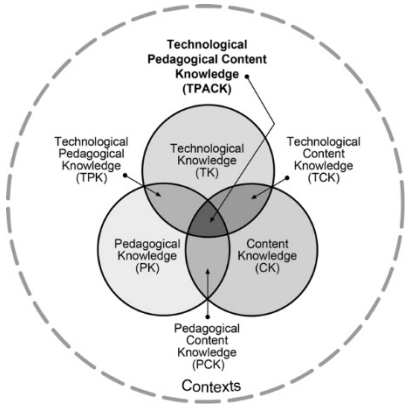
The main argument of this paper is that the two models reviewed in this paper, TPACK Model and SAMR Model, can serve as practical frameworks for evaluating technological tools in LCTLs because they can help teachers and instructional designers assess their technology integration

efforts for different levels (in particular in the case of the SAMR Model) which can be relevant for LCTLs where we see low enrollment and limited resources (Blyth, 2013), and hence potential technology integration at different levels. Additionally, these frameworks can guide us in evaluating how much a technological tool can foster student-centered instruction, learner empowerment, and the facilitation of student-to-student interaction and collaboration as in the case of the SAMR Model, for instance, which explicitly argues that tools used in the redefinition and modification levels support transformative learning. In the next section, we will provide an overview of the TPACK Model and SAMR Model and then discuss how they can be implemented in the context of LCTL languages.

1. TPACK Model

A good starting point for conceptualizing our use of new technology tools is the Technological Pedagogical Content Knowledge (TPACK) Model (Mishra & Kohler 2006). The focal point of the TPACK model is that technology integration efforts, that is, our *technological knowledge*, should be grounded by what we teach, that is, our *content knowledge*, and how we teach it, that is, our *pedagogical knowledge*. These three knowledge domains (content knowledge, pedagogical knowledge, and technological knowledge) interact with each other and overlap, as shown in the diagram below, in four places:

Figure 1: TPAC Model (Mishra and Kohler, 2006)



The Pedagogical Content Knowledge (PCK) overlap in the diagram above (color-coded green) is where teachers' knowledge of the subject matter they teach (content) and the best ways to teach it (pedagogy) come together. The second overlap, the Technological Pedagogical Knowledge (TPK) overlap in the diagram (color-coded pink) is where teachers' knowledge of different tools (that is, the ability to assess and methodically select tools) merges with their pedagogical knowledge (i.e., what tool would work best to support my chosen way of teaching/pedagogy). The third overlap, the Technological Content Knowledge (TCK) overlap in the diagram (color-coded purple) is where teachers' knowledge of different tools (as discussed above) merges with their subject matter expertise (i.e., what tool would work best to help students learn certain content).

Lastly, the Technological Pedagogical Content Knowledge overlap in the middle of the diagram (color-coded

brown) is where all these three elements coalesce into one coherent whole. What we teach (content), how we choose to teach it (pedagogy) and the tools (technology) that could best support what we teach and how we decide to teach it: that is the technological pedagogical content knowledge (TPACK).

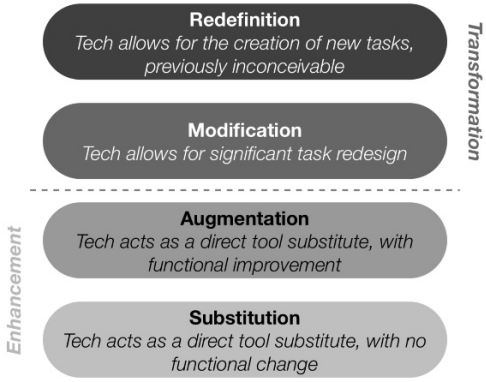
The conceptual TPACK model can work well in tandem with the SAMR model in assessing and selecting different technologies for effective technology integration as they both emphasize the pedagogically sound integration of technological tools. The SAMR model, which is discussed in the next section and is at the core of this paper, can help educational practitioners enhance and hone their technological knowledge, and thus help them make more systematic and informed technology integration decisions in support of the content they teach and the methods by which they choose to teach it.

2. SAMR Model

The SAMR Model (Puentedura, 2013) is a framework for meaningful and effective technology integration. The bottom two levels in the SAMR Model, Substitution and Augmentation levels, are subsumed under the Enhancement category since new technologies/tools in these two levels primarily serve as replacements or enhancements to previously used tools. The top two levels, Modification and Redefinition levels, are subsumed under the Transformation category since new technologies/tools in these two levels

allow teachers to profoundly redesign, or create new, learning experiences.

Figure 2: SAMR Model Layers (Puentedura, 2013)



In the first level, the *Substitution* level, new technologies simply replace prior tools without any underlying change in use and function. Some examples could include electronic forms (e.g., forms created using Google Docs or Office 365) instead of hard copies. Notably, however, in some cases, for instance, when teaching the alphabet of a less commonly taught language, we may not want to replace/substitute handwriting with a new technology.

In the second level, the *Augmentation* level, the primary service provided by new technologies is again to replace previously used tools. However, at this level the direct replacement does offer some improvement or enhancement to our instructional practices and the learning experiences we

facilitate. An example here would be the use of new media formats such as video and audio.

In the third level, the *Modification* level, we are crossing from the enhancement realm of technology integration to the transformation realm. At this level, the integration of new tools no longer merely replaces or enhances prior capabilities and tools but alters aspects of instruction and the student learning experience enhancing student-centered teaching and learner autonomy. A common example is the ability of students and teachers to collaborate online when researching and presenting on a topic. This new capability to share and edit resources in real time (from a simple document to a full presentation) can alter how we teach and how students learn.

In the fourth level, the *Redefinition* level, technology enables us to create and facilitate learning experiences and tasks that would otherwise be impossible. Electronic portfolios, for instance, afford students the opportunity to curate and share multimedia learning artifacts that they simply could not share within a hard copy portfolio empowering our learners in support of student-centered teaching. Similarly, thanks to various new communication technologies, teachers and learners today are no longer bound by the walls of their classroom and school or their location in the globe. They can extend their classroom and learning environment to the real world and not only observe or learn about a certain language and culture, but actually interact with members of that

language and culture. They can enable them to connect with native speakers of the language that they are learning and immerse themselves in the target language and culture.

3. Implementation of the SAMR Model in the Context of LCTL

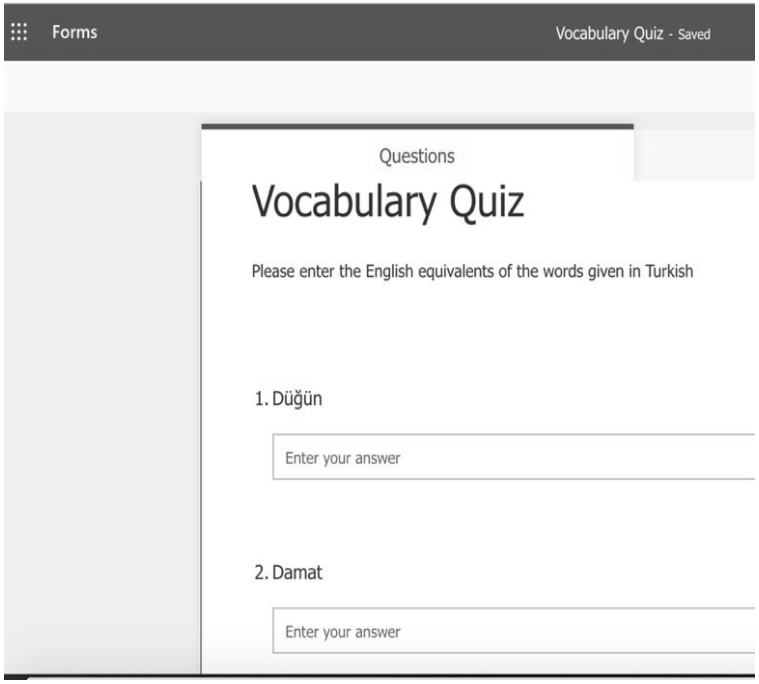
As noted earlier, the sudden move to online teaching during the pandemic brought about unique (albeit not new) challenges for LCTL teachers. High-quality resources for LCTLs are typically scarce as producing high quality interactive instructional content for distance LCTL teaching is not a commercial priority. Furthermore, as Godwin-Jones (2013) points out, due to low-enrollment and limited funding, LCTL teaching positions tend to be part-time positions that might be filled with native speakers with little to no training or experience in language instruction or technology integration. In light of this, utilizing TPACK and SAMR models, LCTL teachers can leverage their pedagogical and content knowledge to create engaging, student-centered materials that are at different levels of effort in integrating technologies, depending on their technology expertise as illustrated below.

3. a. Substitution Level: e-Forms

At the first level, where new technologies replace prior tools without much change in function or use, one example of a substitution tool is Microsoft Office Forms or Google Forms. Online forms could be used to replace hard copy worksheets in both in-class and remote/hybrid learning environments. An

LCTL teacher could, for example, create a simple warm-up or end-of-lesson practice vocabulary quiz to replace a traditional pen-and-paper practice activity without significant change in function.

Figure 3: Vocabulary Quiz created with Microsoft Office Forms



The figure above illustrates an example of a practice vocabulary quiz in Microsoft Office Forms. In this example, Turkish learners are asked to provide the English equivalent of a list of vocabulary items in Turkish. This is a good illustration of a substitution tool since the quiz above, created by Microsoft Office Forms, presents the vocabulary items only in text format and supports only one-way interaction (the learner responding to quiz prompts). Both Google Forms and

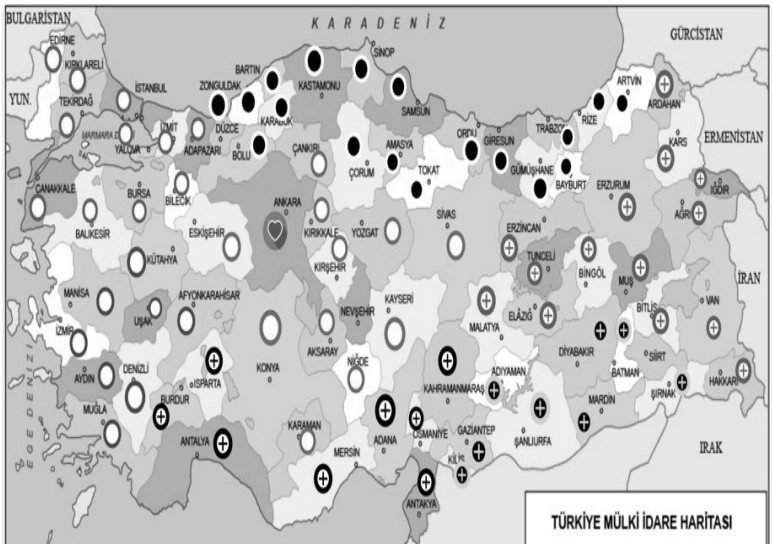
Microsoft Forms work quite similarly, and both offer LCTL teachers a simple yet effective platform for creating online worksheets (or a practice quiz as in the example above). A tutorial on how to create quizzes by using Microsoft Office Forms is available from the link: https://www.youtube.com/watch?v=W31JF7pQtgo and on how to create a quiz by using Google Forms is available from the link: https://www.youtube.com/watch?v=Pdt8Vv7-3Xk

3. b. Augmentation Level: ThingLink

At the second level of the SAMR model, new technologies replace prior tools while improving or enhancing instructional practices and learning experiences in support of student-centered teaching. A good example of an augmentation tool is ThingLink. ThingLink can provide LCTL teachers and curriculum developers with the opportunity to create different types of interactive content replacing pen-and-paper activities with more engaging electronic ones. ThingLink, however, does not merely substitute hard-copy-based class activities but also affords teachers and students the ability to integrate text, images and video. By using ThingLink, LCTL teachers can easily integrate high-quality authentic text or images into their lesson. Please note that although ThingLink is not a tool that can be used only by LCTL teachers, it is a particularly beneficial tool in a LCTL teaching context where high-quality online interactive activities might not be available and developing interactive class activities might not be feasible due to limited

resources. Now, let us look at some examples of how ThingLink can provide a variety of options for introducing interactivity for a LCTL:

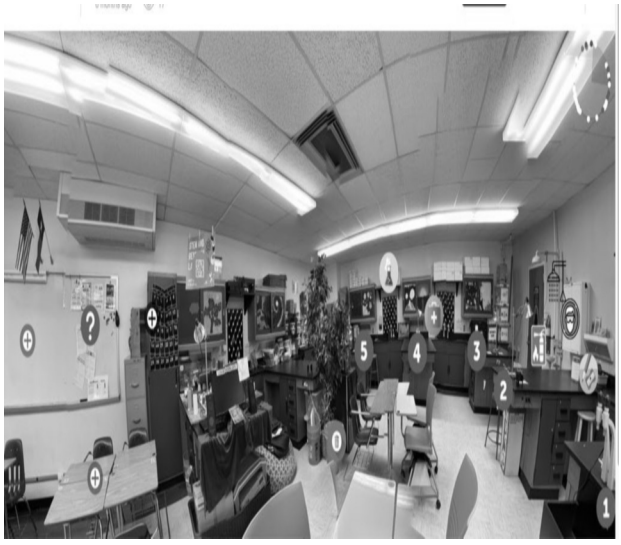
Figure 4: ThingLink used to familiarize learners with different cities in Turkey



The figure above illustrates the use of ThingLink to create an interactive map of Turkey with embedded video links for different cities in Turkey. The interactive map can be accessed from: https://www.thinglink.com/scene/1033471746373582851. Such interactive maps could be used to introduce learners to different countries or serve as a resource for collaborative assignments such as preparing an itinerary for a trip by using the target language. Notably, the only thing students need in order to access any interactive ThingLink image is an internet connection and a teacher-provided link to that image. Students do not need to download and install any software or create a

ThingLink account in order to view and interact with the teacher-shared content. LCTL teachers would also be able to find an array of free 360^0 ThingLink images that they can adopt for their class needs.

Figure 5: A ThingLink interactive 360^0 class image



The figure above is a screenshot of a ThingLink interactive 360^0 image (located at https://www.thinglink.com/video/1340606031054503939) that was created by a non-language teacher. The original interactive image with all its unique 'tags' at different classroom locations could, then, be easily accessed and 'cloned,' in ThingLink terms by an LCTL teacher, and transformed into an interactive vocabulary practice activity. A tutorial explaining how to create dynamic and interactive

content with ThingLink is available
https://www.youtube.com/watch?v=iaZZfECX4p0

3. c. Modification Level: Padlet

At the third level, where new technologies change aspects of instruction and the learning experience, one example of a modification tool is Padlet. Padlet, a virtual bulletin board that allows teachers and students to interact online in real time, and enables teachers, and students, to present and share content by using text, images and audio. It affords teachers and learners the opportunity to create and share content as well as to collaborate and engage with others through built-in voting and commenting features enhancing learner empowerment and student-to-student interaction. Padlet could, thus, serve as a great tool for LCTL teachers aiming to facilitate engaging pair activities or group work activities in both face-to-face and virtual environments. Another useful feature of Padlet is the ability to create 'private' virtual bulletin boards if teachers want to protect the privacy of their students or simply create information gap activities.

Figure 6: Padlet used in a Turkish lesson

In the example above, learners are asked to watch a video about different attractions in Istanbul, discuss these places with their peers on Padlet, and post more information (text, images, videos, and links) about places that they would like to visit in Istanbul. Thus, learners are afforded the opportunity to work together online, present their ideas, and receive feedback from their peers and teachers both synchronously and asynchronously. Enabling multiple students and teachers to simultaneously work together in such an egalitarian online environment can foster student engagement and learner autonomy. A video tutorial on how to use Padlet is available https://www.youtube.com/watch?v=UkBnwPqaIjA.

3. d. Redefinition Level: Google Sites

At the fourth level, new technologies afford teachers and students an opportunity to take part in learning experiences that would otherwise be impossible. One example

of a redefinition tool is Google Sites. Google Sites is a free e-Portfolio tool, which offers an array of features that are controlled and maintained by the learners themselves, thus, empowering learners to self-direct and monitor their learning and progress.

While it is all too easy to 'dump' endless content into any electronic repository, it is crucial to remember that "an electronic portfolio is not a haphazard collection of artifacts… but rather a reflective tool that demonstrates growth over time" (Barrett, 2000, p. 15). Thus, in order to truly harness the value and benefits of electronic portfolios, educators should initially guide and help learners in mindfully aggregating and showcasing their learning projects with the aim of making them more involved in monitoring their progress and taking ownership of their learning, and hence fostering learner empowerment. Having learners also review and comment on each other's e-Portfolios can help build a learner community which could include not only course peers but also previous students, and fellow language learners beyond that specific course.

Figure 7: A Hebrew course class site via Google Sites

Such notions of community learning can further be leveraged with e-Portfolios by tasking learners to create not only individual-personal sites but also to jointly create and maintain a class site or virtual hub (as illustrated in the image above). In such class sites, all learners have equal control as well as content-upload responsibilities, thus further fostering student-centered instruction, learner engagement, collaboration, and learner empowerment. The e-Portfolio examples below highlight some of the major projects that learners created in a Hebrew course: Translating songs and writing short stories (row 1), an array of research and present projects (row 2) and comparing key aspects of Israeli and

American culture such as the declaration of independence of Israel and the US (row 3):

Figure 8: E-Portfolio examples of Hebrew students

When working on such multimedia projects, learners worked individually or together with an array of free web 2.0 applications and thus, engaged in what Lam and McNaught (2006) call "constructive reflection," which is a critical element of deep learning. As learners gain confidence with online interaction in the target language through their work on their e-Portfolios they can 'graduate' into online engagement, in the target language, with native speakers of that language and members of that culture. Learners can, for instance, create original Wikipedia entries in their target language or contribute to existing ones (an exercise that may require extensive online interaction with native speakers of that language), and participate in online discussion forums or simply comment on

online news articles (talkbacks) as illustrated in the examples below:

Figure 9: Online engagement via Wikipedia and Talkbacks entries

At this level of learning and technology integration, learners are transformed from mere observers of the culture-language they are learning 'about' to active participants in that culture-language, a capability that was previously inconceivable for language learners in a remote country. At this level, we are also truly moving away from technology as an instructional tool used by teachers for transmitting knowledge to technology as a learning tool used by learners for expanding their cognition (Duffy and Cunningham, 1996).

Conclusion

In this paper, we offered a framework for effective technology integration by using TPACK and the SAMR models and provided examples of technology tools that can be easily used with various LCTLs. We underscored the importance of purposeful technology integration and highlighted notions of student-centered instruction, learner empowerment, and the facilitation of student-to-student interaction and collaboration (in particular with the transformation level of the SAMR model).

Taking into consideration the limited resources available for LCTLs, we believe that integrating some of the technology tools presented herein could help LCTL teachers develop engaging instructional content, and facilitate meaningful and effective learning experiences. Lastly, we highlighted the idea that the tools and models discussed throughout this paper could be utilized by LCTL practitioners both in face-to-face and virtual learning environments in order to create more engaging, collaborative and effective learning experiences for their learners.

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