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# REINVENTING TEACHER EDUCATION DURING THE PANDEMIC

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**Abstract:** During the abrupt transition to virtuality during the pandemic, educators saw the need to change their teaching practices and find innovative ways to promote online meaningful learning. This paper presents the experiences of a group of educators from Universidad de Santiago de Chile who drew on the principles of the Maker Movement (MM) Manifesto originally used in the field of sciences -STEM- to redesign an English Language Teaching Methodology course during COVID-19. Through the creation of "makerspaces" and the implementation of collaborative maker-activities, the course incremented virtual collaboration, collaborative learning, and student attendance and participation through hands-on activities that required *knowledge creation* rather than *knowledge consumption*. This paper offers practical suggestions and reflections, describes the advantages and disadvantages of using the MM in course design and implementation, and finalizes with a call to consider the MM principles to transition back to the old normal.
**Keywords:** ELT methodology; Maker Movement; online course design, maker-activities

## INTRODUCTION

COVID-19 has permeated the fabric of our society at all levels and in various ways. Without a doubt, teachers have seen their lives greatly impacted by the pandemic and experienced the urgent need to develop and update their pedagogical and technological know-how. Consequently, educators around the world have had to debunk their teaching beliefs and modify their pedagogies to continue to promote meaningful learning in a context of mental and physical stress. Moreover, this crisis has also exposed a tremendous gap in education and exacerbated social and digital inequalities between students from high and low socioeconomic backgrounds (United Nations, 2020).

University closures during the pandemic disrupted the work of teachers and students, who had to find creative ways to interact, construct knowledge, and deliver teacher education programs (Carrillo & Flores, 2020). In this paper, we seek to (a) articulate the teaching disruption of an English language teaching (ELT) methodology course to a group of student-teachers from Universidad de Santiago de Chile (USACH), and (b) highlight the innovative classroom (inter)actions that blur the boundaries of teaching and learning and enable co-constructed learning to develop from the hand-in-hand work among teachers and students. Such disruption has resulted from the rapid transition from face-to-face to online teaching and learning, the technological and socioeconomic realities of our students, and the need to cover the program. To address this disruption, we sought to move away from "emergency remote teaching" (Ferri et al., 2020) and towards purposely providing our learners with a meaningful online teacher education experience. With this in mind, we drew on the Maker Movement (MM) (Hatch, 2014) framework for the design, implementation, and development of the course, as well as the virtual interactions with our student-teachers at USACH.

This paper begins with a description of the context, namely an overview of the reality of connectivity in Chile, our ELT methodology course (taught over the course of one year of virtual instruction), and the social and technological realities of our student-teachers. This is followed by a review of the literature on teacher education during the pandemic. We then report how the framework of the MM shaped the design, implementation, and evaluation of the methodology course. Following this, we present our students and our own critical reflections, and conclude this paper with our insights on the use of the MM not only for online teacher education but

also for our future post-pandemic in-person teaching and learning.

## CONNECTIVITY IN CHILE

With COVID-19 the status of connectivity around the world increased in importance owing to its impact in the field of education. Chile is one of the three most connected countries in Latin America (CEPAL, 2016), indicating that the vast majority of people can access the web and be connected to the world. Mobile access and purchase of smartphones are widespread among Chileans, enhanced by a persistent national digital policy agenda that aims to lead the country towards modernization. Smartphones have gained considerable importance, since 94.3% of total internet mobile connections in 2020 took place through those devices (SUBTEL, 2021). However, accessing the internet exclusively through smartphones has some constraints; for example, people have shown diminished digital abilities compared to those who go online through computers (Correa et al, 2018). On this point, Pearce and Rice (2013) state that mobile-only connection represents a digital inclusion barrier since it narrows usage, impeding more diverse uses like work-related activities, information-seeking, and content creation.

Nevertheless, despite being one of the most connected countries in the region with an increase in WiFi connectivity in Chilean homes from 60.4% in 2012 to 87.4% in 2017, the pandemic has evidenced that internet connection is low, weak, and unstable, restricting intensive use of data and allowing the use of approximately one computer per household. On top of this, poor quality hardware has turned connectivity into a major issue for many people, primarily in rural and low-income areas, leading to a negative user experience. Such poor connectivity plus unequal access to technology have undoubtedly negatively impacted education and the way university students and teachers have engaged with virtual learning in our English Teacher Education program at our university.

## OUR COURSE

The ELT Methodology course is part of the Initial English Teacher Training Programme at the state-funded Universidad de Santiago de Chile (USACH). Before the pandemic, the course was delivered in a face-to-face format and ran for sixteen weeks. Each week there were two ninety-minute lessons and a focus on providing third-year student-teachers with theoretical and practical insights that would allow them to reflect on and teach English as a foreign language effectively at primary and secondary school levels. Moreover, the course included a range of teaching resources, such as PowerPoint presentations prepared by the instructors, readings (books and articles), worksheets, videos, flashcards, the use of the whiteboard and markers; and activities such as small group discussions and individual microteaching sessions. However, when the pandemic broke out, the course had to be delivered, for the first time, entirely online, involving the adaptation of teaching, activities, and assessment procedures to virtuality with very little preparation time. As part of the emergency remote teaching strategy, our university authorities prepared online teaching protocols adhered to by teachers, academics, and students. This included (a) use of platforms and software for online synchronous and asynchronous activities, such as Zoom, and the institutional platform called "Campus Virtual"; (b) reduction of length of synchronous sessions from ninety to sixty minutes; (c) recording of all online classes to be shared with students for future reference; and (d) summative assessment including asynchronous tasks only.

As part of their teacher education program, our student-teachers were enrolled in approximately 6 to 8 courses during 2020. This made their workload hectic, with high levels of stress, uncertainty, and concern due to the large number of hours they spent connected in front of the computer. Hence it was crucial for us to structure a course that would allow the student-teachers to create rather than digest content in an online space that offered them interaction, collective teamwork, and also time to study the material and content and reflect on their learnings in their own time and at their own pace. With this in mind, we opted for a modular course organization (i.e., four to five modules developed in four to five weeks of instruction). Every week there was a one-hour Zoom session for discussion and content consolidation, and a one-hour asynchronous session for the development of group activities and autonomous work that involved studying the course content, readings, and the development of collaborative activities that were shared online. Some of the module topics were Planning and Teaching the Receptive and Productive Skills; Teaching Lexico-Grammar and Error Management; Classroom Management Techniques and Distance/Online Learning. The aims of the course revolved around the development of diverse teaching skills or competencies for: (a) teaching English as a foreign language based on the foundations and theories of second language learning; (b) developing reflective practices and collaborative work; (c) designing teaching and learning experiences for primary and secondary school levels that consider appropriate methodological procedures, the national curriculum, and the diverse use of materials and ICT resources; (d) developing logical, critical and creative thinking in students; and (e) developing the integration and learning of the four language skills.

In order to address the challenges of the abrupt transition to virtual learning, we opted to incorporate the principles of the Maker Movement (MM) into our teaching and learning activities. Details of how the MM was implemented are presented below.

## OUR STUDENT-TEACHERS

Forty-nine students were registered in the course, of whom 68% were female and 32% were male. Most students were of Chilean descent, came from mid-low socioeconomic backgrounds, and lived in Santiago, the capital city - 85,6% resided in the urban areas and 14,4% in the outskirts. It is interesting to point out that 52% of our student-teachers were the first generation in their families to pursue a university degree. As regards access to technology, 90% had access to a personal computer and 98% to the internet. Although these figures look promising, the students' quality of connectivity was reported as substandard, matching the national reality in Chile.

## LANGUAGE TEACHER EDUCATION DURING THE PANDEMIC

School and university closures forced teachers to transform all forms of face-to-face teaching into a format that was new and unfamiliar, presenting the immediate challenge of adjusting their classroom practice, content, activities, and instructional materials. Even teachers with previous online teaching experience were impacted by COVID-19 as the worldwide emergency exposed a range of difficulties, such as the accessibility of different tools and the constant concern for their learners' changing needs in this unusual context (Bozkurt & Sharma, 2020). Bozkurt & Sharma (2020) make an important distinction between *distance education* or distance learning, and *emergency remote teaching*.

Distance education has been the solution for those non-traditional students such as full-time workers, overseas students, or learners in remote places, who cannot be present in the actual classroom for their lessons (Simonson & Berg, 2016), and it has proved to be a successful response to different learning needs: it has progressed steadily through time, representing an interdisciplinary field, and directing open educational practices. Therefore, distance - in time and space - education emphasizes interactions between different parties and through different channels to favor learner engagement with the learning process (Moore, 1989; Riggs, 2020).

Conversely, emergency remote teaching is understood as a reaction to an unexpected situation or a limited answer to an urgent problem (Golden, 2020) which provides virtual temporary solutions. As such, during COVID-19, numerous digital and technological devices have supported emergency remote teaching, making the continuity of lessons possible while lessening the negative educational impact of the worldwide lockdown's distance period. One critical tool in virtual education has been Zoom. According to Dean (2021), Zoom has become the answer to virtual teaching and learning, teleconferencing, telecommuting, and social relations, showing a rise in meeting participants from 10 million daily participants in 2019 to 300 million in 2021.

Even though technology has become a powerful tool to support and promote learning in the current pandemic scenario, providing handy solutions, it is important for teachers to reflect upon and see beyond emergency remote teaching. Once the health crisis is over, it is crucial to consider that teaching and learning need to use ICTs as much more than a complement to traditional teaching (Bozkurt & Sharma, 2020).

## FROM STEM TO LANGUAGE TEACHER EDUCATION

A unique feature of the ELT Methodology course delivered before the pandemic was ongoing interaction between student-teachers and instructors, open discussions on issues in ELT, and participation in individual and group microteaching activities and presentations. For us, it was paramount to offer the same kind of personal interaction that results in rich co-construction of knowledge. Indeed, our utmost goal was to transform the face-to-face course into a valuable online learning experience which offered learners "agency, responsibility, flexibility, and choice" (Bozkurt & Sharma, 2020, p. ii), while avoiding the temptation to simply upload a lot of course materials. To achieve this, we drew on the theoretical approach of the Maker Movement (MM) (Hatch, 2014) for course design, implementation, teamwork and interactions with and among our student-teachers. Figure 1 below showcases the most significant principles of the MM which inspired the design of our course.

### THE MAKER MOVEMENT

The Maker Movement (MM) is primarily associated with the fields of science, technology, engineering, and mathematics (STEM); but more recently, MM has reached out to other areas, such as general education (Martin, 2015). The most important principles sustaining the MM are that "learning is making" (Halveson & Sheridan, 2014, p. 498), and "making is a fundamental human activity" (Sang & Simpson, 2019, p. 66). As such, making implies creativity, innovation, development and expression of ideas, sharing, and "engaging in collective action" (Sang & Simpson, 2019, p. 66-67) and conceptualizes learners as producers rather than mere consumers of content. Through making, the line between formal teacher-controlled (e.g.,

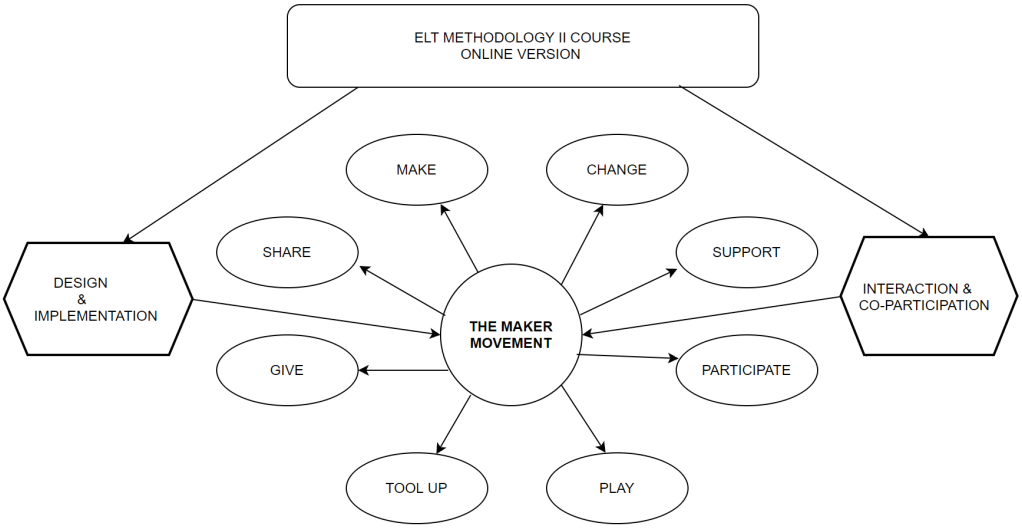


Figure 1: Theoretical framework for an online course design

school and university classroom settings) and informal open learning (e.g., libraries, museums, field trips) becomes blurred, primarily because learning can happen in any space. Therefore, educators should "think more expansively about where and how learning happens" (Halveson & Sheridan, 2014, p. 498). In such *makerspaces* for learning, students tinker and play with "various forms of exploration, experimentation and engagement" (Wong, 2013, p. 35) while fostering collective interactions, interests, innovations, and teamwork to solve problems through digital fabrication (Hughes, 2017).

With this in mind, we envisioned a course that would allow student-teachers to conceptualize learning as an integrated phenomenon; that is, an online makerspace that considered the students' interests, provided opportunities for engagement and collaboration, and enabled them to work in groups and acquire knowledge by making things with the course contents (West-Pucket, 2014). In order to operationalize the concepts of the MM, we drew on Hatch's (2014) MM manifesto. Of particular relevance to our course design were Hatch's nine principles for the creation of a makerspace: make, share, give, learn, tool up, play, participate, support, and change. These principles were woven into our course design and implementation of the program, as described below.

**MAKE**

Making is inherently a human activity. Hence, in order to develop, individuals "must make, create, and express ourselves to feel whole" (Hatch, 2014, p. 1). As a result, all small or big things we make are "little pieces of us and seem to embody portions of our soul" (p. 1). Making unfolded in two ways in our program. First, as a team we were aware of our students' online course load, their technological realities, and the need to keep the nature of the ELT methodology course practical. To customize our course, we decided to avoid the consumption of theoretical knowledge (Sang & Simpson, 2019) by keeping the components straightforward and asynchronous. Indeed, one-third of the whole course was devoted to theory, and was accessible via recorded PowerPoints posted on our online course on the university's virtual platform, "Campus Virtual". Moreover, our student-teachers, aware of the multiple forms of knowledge construction, used the content

information to design teaching activities, write reflections, make presentations, and make online visual materials (e.g., timelines, mind maps, infographics, videos) while making connections to the Chilean language classroom reality and context.

**SHARE**

Making cannot be detached from sharing. Indeed, "we make to share" (Hatch, 2014, p. 15) with others the process and results of our creations. In fact, "messing up, going back, figuring out, and sharing with others" (Sang & Simpson, 2019, p. 74) are essential educational components in makerspaces. Sharing can be understood from two dimensions: (a) collegial contributions and making work open to the community, enhancing positive peer encouragement and feedback and producing a sense of achievement (Hatch, 2014); and (b) community engagement fosters collective co-construction of knowledge through sharing know-how, skills, thinking, help, constructive criticism, and guidance (Hatch, 2014; Hughes, 2017). The most apparent manifestation of sharing in our course happened through open discussions with and among our students on our views and beliefs about ELT in Chile in connection to the content of the course, and their feelings and experiences about ELT at school and during their university program. This helped them understand real-life teaching situations and the complexity of ELT in various learning environments. Furthermore, to enhance knowledge construction, sharing happened through various open-access repositories: (a) the university's official Moodle platform, "Campus Virtual", was used by the instructors to organize the course's weekly contents, share the course materials (video and audio recorded PowerPoints, reading assignments, videos, podcasts, links to newspaper news, activities), and design forum activities; and (b) Google Docs was used for collective activity work. Folders were created for each module of the course with weekly documents that the student-teachers used to do the activities. Some activities required individual groups to do certain tasks (e.g., jigsaw reading, written summary, and group reporting during the Zoom meetings, answering reflection questions, creating visual representations of the weekly contents such as infographics and concept maps), or collective whole-group activities (e.g., video input plus table completion, academic reading plus collective brainstorming of key issues presented in the papers).

**GIVE**

A key principle of the maker movement is carrying out the "selfless and satisfying" act of "giving away something that you have made" (Hatch, 2014, p. 18). Giving can be expressed by giving away ideas (Hatch, 2014), advice, evaluations, freedom, and choices (Sang & Simpson, 2019), or attention to students' needs, support, and problems to solve (Lock et al., 2020). In our course, student-teachers were regularly given choices, such as choosing the session they deemed more convenient for synchronous or asynchronous work, the design and delivery of maker activities and maker assignments, or input from the English language curriculum from the Chilean Ministry of Education to plan lessons. This was complemented with the systematic practice of giving (peer) feedback. The instructors gave weekly feedback on the maker activities designed for each module and the students gave constructive feedback to their peers. All feedback was open access and available for all the student-teachers to examine.

**LEARN**

For Hatch (2014), "learning is fundamental to making" (p. 21); therefore "making brings about a natural interest in learning" (p. 20) which is achieved through observation, examination, questioning, and problem-solving, fostering active student participation and engagement. When we designed the course, it was paramount that the student-teachers expanded their notions of learning and conceptualized the learning act not as something that is achieved after receiving input from instructors, but rather as the result of multiple modes of access to information, multiple modes of interaction, and multiple ways of working together. In this multidimensional learning process, the student-teachers reported learning from each other, from the instructors, the course content, and the teaching material (videos, websites, course readings), and primarily from the collaboration process needed for the makings of the EFL methodology course.

**TOOL UP**

Tools and materials are critical in the development of a makerspace. Indeed, the selection and use of the right tools and supplies make it "easier for students to create multimodal, multimedia content. Importantly, this positions students as producers rather than just consumers" (Hughes, 2017, p. 2). The great advantage today is that tools and digital tools are cheap, accessible, user-friendly, and diverse, allowing "makers [to] come out to live, work, and play" (Hatch, 2014, p. 23). As such, the objective of the makerspace will determine what tools are needed for students to share, fabricate, and collaborate (Lock et al., 2020; Hughes, 2017). To select the appropriate tools for our program, we took into consideration the socio-economic background of our student-teachers and the online fatigue they were experiencing owing to the large number of courses they were taking as part of their teacher education program. Hence, we selected a series of free and appealing apps, materials, readings, and videos that would motivate the student-teachers to engage in the course and create ELT teaching materials and activities based on the course content. Throughout the course we used online tools such as Moodle, Google Docs, Padlet, Canva, Menti, YouTube videos, Screen-cast-o-matic, Kahoot, PowToon, the British Council website, teaching resources from the Chilean Ministry of Education, online newspaper articles and open-access academic papers, among others.

**PLAY**

Playful makerspaces foster discovery and promote curiosity, collaboration, investigation, and creativity (Sang & Simpson, 2019; Honey & Kanter, 2013). In fact, productive environments are characterized by humor, laughter, and playful ideas, making participants of such makerspaces "surprised, excited and proud" (Hatch, 2014, p. 26) by and of the things that they do and discover. By putting play at the center of our course, we wanted to move away from the structure of a formal classroom learning environment and develop a relaxed online learning atmosphere that would allow our student-teachers to cope with the stress experienced during the pandemic. Humour was key and was manifested in relaxed conversation time planned at the beginning of each lesson, use of toys and realia to exemplify concepts and teaching techniques, incorporation of cartoons to illustrate the course content on the university platform, online games to check learning, and the creation of assignments using videos, infographics or other visual representations chosen by the student-teachers.

**PARTICIPATE**

Learning is a social activity enhanced through participation in communities and makerspaces (Hatch, 2014). Such social experiences allow makers to share their work, expertise, and build relationships with others (Dougherty, 2013) while "discovering the joy of making" (Hatch, 2014, p. 28). Indeed, it is crucial to put student participation at the center of the makerspace through the design and implementation of activities that involve "problem-solving, investigation, explanation, and argumentation" (Quinn & Bell, 2013, p. 23). Some examples of participation can be carried out through teamwork, presentations, participation in seminars, or social activities such as parties or clubs (Hatch, 2014). One of the main challenges of online teaching during the pandemic has been maintaining student motivation and participation (Ferri et al., 2020). In order to increase participation, our course took different forms and was understood from a different perspective: participation was no longer something static occurring in the classroom context and at a certain time in the students' schedule, but rather was perceived as a versatile act that was manifested in different timeframes (whenever the student-teachers had the time to engage) and through different synchronous and asynchronous activities, such as online chat, polls, discussion forums, collective activities completed in Google Docs, quick surveys, presentations, or attending seminars.

**SUPPORT**

One of the main goals of maker pedagogies is to support student learning through the creation of objects. However, for this process to occur, it is paramount that students and teachers shift their traditional learning mindsets to a *maker mindset* (Hughes, 2017; Lock et al., 2020). This cannot happen overnight, and requires that "educators not only need to embrace a maker mindset, they also need to model and create conditions to support students in developing such a mindset" (Lock et al., 2020, p. 5) through projects that go beyond making trivial "stuff" and "move toward learning that is more meaningful and contextualized" (Hughes, 2017, p. 2). Support extends teachers' maker-doings and classroom activities and manifests in "emotional, intellectual, financial, political and institutional support" (Hatch, 2014, p. 2).

Support was a dominant characteristic of our ELT methodology course. To us, the transition from face-to-face to online teaching during the pandemic required a lot of *moral* support enacted by (a) always being available when the students needed assistance; (b) keeping an open dialogue and specific communication channel (special virtual office hours upon student request and arranged at their convenience and email correspondence); (c) reducing the activity workload and the number of hours of solo online work; (d) being flexible with deadlines; and (e) starting each lesson with a five-minute small-talk activity to converse about how they, their families and friends were doing during the lockdowns, movies they had watched, books they had read, new activities they had done, etc. We also sought to extend the unidirectionality of support provided by us. The students themselves formed small groups that worked together and in collaboration with other groups to complete the course assignments and activities, providing peer support.

**CHANGE**

Embarking on a "maker journey" (Hatch, 2014, p. 2) unavoidably involves change. Change involves shifting from a traditional learning mindset to the maker mindset, or a "growth mindset that encourages students to believe they can learn to do anything"

(Dougherty, 2013, p. 10). Indeed, a decisive question students and educators should ask themselves is "what can you do with what you know?" (p. 10). Moreover, change is attitudinal and related to dispositions and beliefs about learning through participation in a community. As such, interaction in a community becomes versatile and intertwines with knowledge, tools, materials, and other members (Martin, 2015). Our first approximation of change was primarily personal, through rethinking and questioning teaching beliefs and practices. We were well aware that our past in-person teaching would have to be debunked and reset to make the online ELT methodology course meaningful to our student-teachers. One exercise we did was to list our beliefs about our face-to-face teaching and learning experiences. We first did this on our own and then we compared and discussed our ideas. Three central ideas coincided: *affect* (i.e. face-to-face teaching is an *affective* process; rapport is critical for learning); *emotions* (i.e. students' emotions and emotional responses and reactions perceived in face-to-face learning environments are important sources of feedback for course adaptation and improvement); and *collaboration* (i.e. ELT methodology is about analyzing, adapting, modifying, and implementing language teaching strategies and tools that require observing others, modeling, and giving-receiving constructive feedback). This simple exercise helped us reflect on and analyze how to bring these three elements to our online classroom.

Pertaining to affect and emotions, we noticed that the student-teachers were experiencing *technical anxiety* due to poor internet connection and lack of appropriate technological devices (e.g. cameras, laptops, PCs); *on-screen fatigue* caused by the large number of courses they had to take and the heavy online workload this implied, with numerous hours in front of a computer, or phones when there was just one computer available for all the family members; and *dwarfed motivation* exacerbated by university teaching practices that replicated in-person teaching without suitable modifications for virtuality and the complexity to develop online learning skills. In concrete terms, we dealt with these challenges by (a) making on-the-go modifications to the syllabus; and (b) increasing *making with content* rather than *studying content*. To enhance collaboration, we asked the students to form working groups with members chosen by them to complete the weekly maker-activities. Assignments went through a change process. Before the pandemic, the student-teachers were individually assessed on two microteachings which were video-recorded and metacognitively analyzed by the students using a self-assessment rubric, plus they received feedback from the instructors and peer feedback from classmates; and on an oral examination of three questions selected from a pool of topics, based on the content of the ELT methodology course. Based on the MM, online assessment entailed working in groups and constructing visual representations of the content such as mind maps, infographics, video presentations, five-minute teaching capsules, lesson plans, and worksheets, and included sections on peer assessment and written reflections based on the student-teachers' experience making the assignments and the feedback from their peers. As such, the maker-assignments became more detailed and reflective, and were the result of collaboration rather than individual work.

## MAKER MOVEMENT IMPLEMENTATION: CRITICAL REFLECTIONS

In this section, we present our critical reflections and complement them with comments that we received from our student-teachers when we evaluated the ELT Methodology course.

### HIGHLIGHTS OF THE MM IMPLEMENTATION

After adopting the MM for the design of the ELT methodology course, we believe that the model was useful for transitioning from face-to-face to online language teacher education, as it allowed us to move away from emergency remote teaching to online teaching and learning. Indeed, the MM helped us to look at teacher training from a different and more versatile perspective, and to diversify our online classroom teaching practices while giving us a toolkit of options for targeting traditional classroom dynamics.

Interestingly, the co-constructed knowledge developed in our ELT methodology online community destabilized the notion of the "expert" educator so common in university settings. Rather, we had to be open to learning from ourselves and our student-teachers, who provided feedback throughout the process. For example, one student commented: "I feel the methodology classes are more dynamic than the other courses [in the program]. The best part is the activities. They are active and effective". We also acknowledged our weaknesses and saw ourselves as teachers, like many others around the world during the pandemic, who quickly had to adapt to change, were ignorant of the many options that online teaching offers, and took baby steps to transition to virtual teaching. About this, a student noted: "under the current circumstances [the pandemic], the teachers have been flexible with the contents and have adapted the assessment to make it meaningful and helpful". In fact, there were many moments when we had to push ourselves outside of our comfort zones and were forced to question what we knew about teacher education, how to make teaching meaningful in virtuality, how to read what our student-teachers were feeling during the pandemic, how this affected their teaching and learning process, and how to increase their motivation and participation.

From a teaching perspective, the implementation of the MM significantly increased students' participation in the asynchronous weekly maker activities (100% of work completion by 90% of students) and the synchronous Zoom sessions (80% attendance). This was also noted by the students, who reflected on their commitment to the course. For instance, one student said: "the activities proposed in the course are quite dynamic and require joint work, in small groups or as a whole. This has helped us all to commit to the course and to make this [learning] process livelier".

Moreover, peer learning, peer support, and peer feedback were deemed valuable by the student-teachers as a result of shared solo and group reflection opportunities and maker-activity collaboration. Indeed, making joint teaching products such as mind maps, videos, infographics etc. was well-received by the students because the content became clearer and the diverse means of content presentation and knowledge development were new to them. Finally, feedback as part of the course assessment process was critical. The instructors provided weekly written feedback during the asynchronous portion of the course and oral feedback during the synchronous sessions. At the same time, the student-teachers received detailed comments on their assignments, always highlighting positive aspects of their work and areas for improvement. Feedback also originated from

the student-teachers themselves. They were asked to examine the work of others and provide written constructive feedback. The students found this relevant as they reported that few opportunities were offered in the other online courses on their program. On this point, one student noted: "the highlights of this course are collaboration and peer feedback. This has become one of the main focuses of the course. It's important to consider our own views as well as the views of our classmates to work collaboratively and effectively".

## CHALLENGES IN MM IMPLEMENTATION

Looking back, the implementation of the MM was not free of challenges. Maker-lesson planning and lesson preparation were time-consuming, especially the design of weekly asynchronous maker activities that would correlate with the principles of the MM. As such, providing weekly feedback to all the groups was an extensive process, yet, considering how valuable it was for the student-teachers, it was worthwhile. For example, a student asserted: "we've had to do research, discuss, and reach consensus in our group. The [course] activities and the constant feedback that we receive from all the members of the class promote reflection and learning".

Another important challenge related to the "tool up" principle. Finding online apps that were free, accessible, and user-friendly involved a lot of online surfing time, research, and trial and error. Moreover, asking the student-teachers to carry out their maker activities, group discussions and reflections evidenced inequality in access to connectivity and technology. Most student-teachers counted on modest technological devices at home, namely old laptops, no cameras, weak audio devices, unstable WiFi etc., making the development of some activities difficult to complete. On this issue, a student indicated: "personally, I've lost many classes due to technological problems. This has affected my learning and I'm not a [tech] self-taught person". On top of this, some of our student-teachers faced the problem of poor facilities and environmental home distractions. One student eloquently described this issue thus: "on the one hand, my WiFi is very unstable. It's a bother because sometimes Zoom doesn't work. On the other hand, I get easily distracted at home and I don't feel I'm studying for a university career. I prefer face-to-face classes because the distractions are less and it's much easier to interact with the teacher". Additionally, the selection of apps had to be well thought-out given that not all online resources have strong educational value.

An interesting point - which turned into a challenge - was that when we introduced the course, we didn't explicitly present the MM to the student-teachers. Instead, we exposed them to the maker-activities and made adjustments on the go. This did not match the expectations some of our students had of the course, as they felt they had to rush through the content without the depth and pace they needed for their learning process. For example, one student said: "I think the content is interesting but unfortunately it's been covered too lightly, as if we are constantly in a rush". Moreover, despite trying to create active makerspaces with varied practical maker activities, we were unable to fully replicate what students experience in a live classroom, especially when they do microteaching or presentations in front of their classmates. On this issue, one student asserted: "I think in terms of theory the course was very good. However, this course has a strong practical component inside the classroom that unfortunately was lost".

In sum, the course designed based on the MM was deemed positive by the students and by us. It provided us with a new perspective and

format for thinking about ELT methodology teaching in times of change and uncertainty.

## CONCLUSIONS

This paper outlines the design and implementation of an ELT Methodology course taught virtually to a group of student-teachers from a public university in Chile, inspired by the MM orientation, which emphasizes learning by making and in collaboration. We adopted this approach with the belief that the abrupt transition from in-person teaching to a virtual classroom can be a meaningful learning experience for future teachers who most certainly will experience virtual education. Connecting the course with the principles of the MM allowed us to (a) challenge the wise-university-teacher notion to a new way of teaching, in which knowledge is co-constructed in collaboration with and among students and enhanced by its open access; (b) uncover the teaching disruption of the ELT methodology course during the transition to virtual education; (c) organize the resources we had into the MM's principles of meaningful and creative learning; and (d) recognize the blurred boundaries between teaching and learning developed from the hand-in-hand work and participation in maker-activities, makerspaces, and maker-assessments. What is more, during the course we noticed an increase in participation, reflection, student collaboration and creativity, and the tremendous value of feedback as a tool to promote virtual learning.

We are aware that we are not revolutionizing teacher education and that the MM is not free of challenges, such as the extended time devoted to lesson planning, maker-activity design, and ongoing feedback. However, we believe that a model originating from pure sciences such as STEM, and language teacher education, can enable these different disciplines to complement each other. As such, the MM helped us meet the needs of our students in a time of stress and worldwide uncertainty. Now that schools and universities are starting to reopen and teachers and students are going back to their classrooms, a future step for us is to continue improving our teaching practices and use the MM in a face-to-face teaching environment. We hope this experience will motivate others to challenge their classroom practices through making.

## REFERENCES


Bozkurt, A. & Sharma, R. (2020). Emergency Remote Teaching in a Time of Global Crisis Due to CoronaVirus Pandemic. *Asian Journal of Distance Education*, 15(1), i-vi.

Carrillo, C. & Flores, M. (2020) COVID-19 and teacher education: a literature review of online teaching and learning practices. *European Journal of Teacher Education*, 43(4), 466-487.

CEPAL. (2016). Estado de la banda ancha en América Latina y el Caribe. *Naciones Unidas*. Retrieved November 1, 2021, from https://www.cepal.org/es/publicaciones/40528-estado-la-banda-ancha-america-latina-caribe-2016

Correa, T.; Pavez, I. & Contreras, J. (2020). Digital inclusion through mobile phones? A Comparison between mobile-only and computer users in internet access, skills and use. *Information, Communication & Society*, 23(7), 1074-1091.

Dean, B. (2021, October 27). Zoom user stats: How many people use Zoom in 2021? Retrieved November 3, 2021, from https://backlinko.com/zoom-users

Dougherty, D. (2013). The maker mindset. In M. Honey & D. Kanter (Eds.) *Design, make, play. Growing the next generation of STEM innovators.* Routledge.

Ferri, F.; Grifoni, P. & Guzzo T. (2020). Online learning and emergency remote teaching: Opportunities and challenges in emergency situations. *Societies,* 10(86), 1-18.

Golden, C. (2020, March 23). Remote teaching: The glass half-full. EDUCAUSE Review. Retrieved October 23, 2021, from https://er.educause.edu/blogs/2020/3/remote-teaching-the-glass-half-full

Hatch, M. (2014). *The Maker Movement Manifesto.* McGraw Hill Education.

Honey, M. & Kanter, D. (2013). Introduction. In M. Honey & D. Kanter (Eds.) *Design, make, play. Growing the next generation of STEM innovators.* Routledge.

Hughes, J. (2017). Meaningful making: Establishing a Makerspace in your school or classroom. Retrieved October 12, 2021, from http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/meaningful_making_en.pdf

Lock, J., Gill, D., Kennedy, T., Piper, S. & Powell, A. (2020). Fostering learning through Making: Perspectives from the International Maker Education Network. *International Journal of E-learning and Distance Education, 35*(1), 1-26.

Martin, L. (2015). The Promise of the Maker Movement for Education. *Journal of Pre-College Engineering Education Research (J-PEER)*, 5(1), 30-39.

Moore, G. (1989). Editorial: Three types of interaction. *American Journal of Distance Education,* 3(2), 1-7.

Pearce, K. & Rice, R. (2013). Digital divides from access to activities: Comparing mobile and personal computer internet users. *Journal of Communication,* 63(4), 721-744.

Quinn, H. & Bell, P. (2013). How designing, making, and playing relate to the learning goals of K-12 Science education. In M. Honey & D. Kanter (Eds.) *Design, make, play. Growing the next generation of STEM innovators.* Routledge.

Riggs, S. (2020, April 5). Student-centered remote teaching: Lessons learned from online education. EDUCAUSE Review. Retrieved October 27, 2021, from https://er.educause.edu/blogs/2020/4/student-centered-remote-teaching-lessons-learned-from-online-education.

Sang, W. & Simpson, A. (2019). The Maker Movement: A global movement for educational change. *International Journal of Science and Mathematics Education,* 17(1), 65–83.

Simonson, M. & Berg, G. (2016). Distance learning education. Encyclopedia Britannica. Retrieved November 4, 2021, from https://www.britannica.com/topic/distance-learning

SUBTEL (2021). Conexiones móviles alcanzan los 19,8 millones e internet fijo crece cerca del 8% a septiembre de 2020. Retrieved October 27, 2021, from https://www.subtel.gob.cl/conexiones-moviles-alcanzan-los-198-millones-e-internet-fijo-crece-cerca-del-8-a-septiembre-de-2020/

United Nations (2020). Policy Brief: Education during COVID-19 and beyond. Retrieved November 3, 2021, from https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/08/sg_policy_brief_covid-19_and_education_august_2020.pdf

West-Puckett, S. (2014). Remaking education: Designing classroom makerspaces for transformative learning. *Edutopia*. Retrieved November 1, 2021, from https://www.edutopia.org/blog/classroom-makerspaces-transformative-learning-stephanie-west-puckett