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IN THE PURSUIT OF "SUSTAINABLE" CALL VIA THE DEVELOPMENT OF A COMPUTER-ASSISTED LANGUAGE LEARNING COURSE CURRICULUM TO BE OFFERED AT UNDERGRADUATE LEVEL

"SÜRDÜRÜLEBİLİR" BİLGİSAYAR DESTEKLİ DİL ÖĞRENİMİ (BDDÖ) HEDEFİNE ULAŞMA ÇABASINDA LİSANS SEVİYESİNDE VERİLECEK BİR BDDÖ DERS MÜFREDATININ GELİŞTİRİLMESİ

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CALL, Curriculum, Teacher education, Technology integration, TPACK

ABSTRACT

In the pursuit of sustainable Computer-Assisted Language Learning (CALL), this study presents a CALL course curriculum for undergraduate level. Recognizing the indispensable role of technology in education, the curriculum aims to equip future language teachers with the skills and attitudes necessary for integrating technology into their teaching practices effectively and sustainably. The course is split into two halves as theory and practice, which balances theoretical knowledge with practical application. The theoretical first half covers topics such as the link between CALL and learning theories, technology standards for language teachers, digital materials development, and assessment and evaluation. The practice-oriented second half focuses on exploring technologies to present language content as well as evaluate appropriateness of technology to teach language skills in different contexts. Initial iteration of the course revealed the importance of fostering collaboration and critical analysis among participants. Consequently, adjustments are proposed to enhance these aspects, promoting a community culture of continuous pedagogical innovation. Through this curriculum, the study contributes to overcoming barriers to the normalization and sustainability of CALL, ultimately aiming to improve the quality of language education.

ÖZ

"Sürdürülebilir" Bilgisayar Destekli Dil Öğrenimi (BDDÖ) arayışında, bu çalışma, lisans düzeyinde bir BDDÖ ders müfredatı sunmaktadır. Teknolojinin eğitimdeki vazgeçilmez rolüne odaklanan bu müfredat, gelecekteki dil öğretmenlerine teknolojiyi etkili ve sürdürülebilir bir şekilde öğretim uygulamalarına entegre etmeleri için gerekli beceri ve tutumları kazandırmayı amaçlamaktadır. Ders, teorik bilgi ile pratik uygulamayı dengeleyen iki yarıya (teorik ve pratik) ayrılmıştır. Teorik ilk yarıda, BDDÖ ve öğrenme teorileri arasındaki bağlantı, dil öğretmenleri için teknoloji standartları, dijital materyal geliştirme ve değerlendirme gibi konular ele alınmaktadır. Pratiğe yönelik ikinci yarı, yabancı dil içeriğini sunmak için kullanılabilecek teknolojileri keşfetmeye ve farklı bağlamlarda dil becerilerini öğretmek için teknolojinin uygunluğunu değerlendirmeye odaklanmaktadır. Ders müfredatının ilk uygulaması, katılımcılar arasında işbirliği ve eleştirel analizin önemini ortaya koymuştur. Sonuç olarak, bu yönleri geliştirmek ve sürekli pedagojik innovasyon kültürünü teşvik etmek için müfredatta bazı düzenlemeler yapılmıştır. Bu müfredat aracılığıyla, çalışma, BDDÖ'nün normalleşmesi ve sürdürülebilirliği önündeki engellerin aşılmasına katkıda bulunarak dil eğitiminin kalitesini artırmayı hedeflemektedir.

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Introduction

In the 21st century, technology[1] has become a prominent and indispensable part of our lives and the ubiquity of technology has been reflected in educational contexts. Although a number of researchers were sceptic and adopted a critical view of technology and its integration into educational settings (e.g. Oppenheimer, 2003; Selwyn, 2011), the current state in which the use of technology expanded into everyday aspects of our lives indicates that it will continue its presence in our lives. Thus, authorities' focus around the world shifted from questioning whether we should use technology in education or not to ensuring successful integration to increase the quality of teaching/learning processes. During this process, computer-assisted language learning (CALL) has emerged as an area of scientific inquiry (Levy, 1997; Warschauer & Healey, 1998).

Utilizing CALL can increase the quality of language teaching by providing numerous benefits to learners which include; language skills development (e.g. Lin, Warschauer, & Blake, 2016), increased motivation and engagement (e.g. Ushioda, 2013), and access to more flexible (e.g. Zhao, 2003), personalized (e.g. Stockwell, 2007) and collaborative learning experiences (e.g. Kessler, 2013). However, teachers' successful use and integration of technology into their educational practices is the key to ensure that learners can benefit from CALL. In fact, research has underlined that teachers are the most crucial actors of the integration process (e.g. Scherer, Siddiq, & Tondeur, 2019; Tondeur et al., 2017). Therefore, not only teachers' skills in the use of technology but also their attitudes towards it become crucial (e.g. Ertmer et al., 2012; Tondeur et al., 2017). Teachers can develop the attitudes and skills necessary for the integration process via training opportunities. Nonetheless, the rapid pace in which technology changes can render any such training activity obsolete and obstruct the integration process. This suggests that we should continuously train teachers to keep up with technological change. Such an approach, however, is unlikely to be sustainable since training teachers every time a new technology emerges would require a lot of time and/or resources.

Whilst acknowledging the presence of other factors (i.e. logistics and infrastructure; Chambers & Bax, 2006), it is clear that technology integration, normalization and sustainability of CALL mainly depend on the teacher factor. In other words, as Hubbard (2008, p. 176) pointed out the future of CALL, thus its normalization and sustainability, is "closely tied to the future of language teacher education because language teachers are the pivotal players: they select the tools to support their teaching and determine what CALL applications language learners are exposed to and how learners use them". In relation to this, the aim of the present study is to develop a CALL course curriculum that is focused on developing teacher candidates' attitudes towards and skills in using and integrating technology into their teaching practices in a sustainable way. The significance of this study lies in the fact that it offers a means towards overcoming a number of the barriers that impede normalization in CALL (i.e. developing participants' attitudes towards and skills in integrating technology into language teaching/learning processes). Although there are many CALL courses readily available and offered in higher education institutions across the world, most of those courses fail to meet the purposes of sustainability in CALL since they generally either focus on the use of specific technologies (which indicate that the pace of technological change can render those courses obsolete) or they are offered at Masters and/or PhD level (which makes it difficult for most teachers to attend since not all teacher candidates complete a Masters or PhD degree; Son & Windeatt, 2018, p.11). Different from its counterparts, the CALL course syllabus presented in this paper prioritizes pedagogy over technology and is to be offered at Bachelor level.

Sustainability in CALL

The concept of sustainability has gained traction since the publication of the "Report of the World Commission on Environment and Development: Our Common Future", also known as the Brundtland Report (1987). In

[1] The paper adopts the definition of technology as used by the TESOL organization. TESOL defines technology as "the use of systems that rely on computer chips, digital applications, and networks in all of their forms. These systems are not limited to the commonly recognized desktop and laptop computers: almost all electronic devices these days include an embedded computer chip of some sort (DVD players, data projectors, interactive whiteboards, etc.). Mobile devices that employ a computer at their core (cell phones, personal digital assistants [PDAs], MP3 players, etc.) will undoubtedly occupy a more central role in language teaching and learning in the years to come" (Healey et al., 2008, p. 3).

their report, Brundtland (1987) focused on sustainable development and defined it as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (p.41). Although this definition allowed the flexibility necessary to apply it in various areas, a specific definition of sustainability for educational contexts can enable clarity and focus. Thus, for the purposes of the present study sustainability is defined as the sum of educational principles and practices aimed at ecological, effective and efficient use of resources and time to provide learners with social and equitable access to education over a long period of time.

The qualities highlighted in the definition above (i.e. ecology, longevity, effectiveness, efficiency, and equity) promote use, re-use, and adaptation of technologies and are also closely related to the concept of normalization in CALL as articulated by Bax (2003). Bax (2003, p. 23) defined normalization in CALL as "the stage when technology becomes invisible, embedded in everyday practice … [and] … hardly even recognized as a technology, taken granted in everyday life". In the normalized and integrated CALL that Bax (2003) envisioned, technology is integrated into the syllabus, adapted to learners' needs, and readily available for use by both teachers and students. In spite of overlaps in the definitions of normalization and sustainability, those terms are not synonymous. Instead, the former should be treated as a prerequisite for the latter. This is because sustainability should be based on integrated, efficient and effective use of technology (by both teachers and students) in education and such integration is at the heart of the normalization process. There is no merit in trying to sustain educational practices that do not sufficiently contribute towards achieving the desired outcomes. Once normalization is achieved then efforts should be directed towards sustaining the normalized state over time. Nevertheless, considering the pace of technological change, it is clear that efforts should also be directed towards adapting the use of technology in education to overcome new challenges and/or respond to innovations. This highlights that adaptability is one of the key aspects of sustainability in CALL.

Early CALL research focused on the effectiveness of CALL applications without giving much consideration to sustainability. Bax's (2003) idea of seamless technology integration and normalization was one of the pioneering studies to touch on the idea of integration and use and re-use of technology. In fact, one can argue that Bax's (2003) work laid the groundwork for further exploration of sustainability. Nevertheless, it was not until around 2010s that CALL researchers started to more explicitly touch upon the issue of sustainability in CALL, which eventually led to conferences being organized on the theme of sustainability and CALL (i.e. the 4th WorldCALL Conference held in Glasgow, UK in 2013) as well as publication of books on this matter (i.e. Sustainability and computer-assisted language learning edited by Gimeno-Sanz et al., 2016).

Chambers and Bax (2006) reported a number of factors impeding the process of normalization in CALL; logistics (i.e. infrastructure, classroom layout), stakeholders' conceptions and abilities (i.e. teacher/student attitudes towards CALL, teachers' skills in using technology for language teaching purposes), syllabus and software integration (i.e. development of language teaching materials with the use of technology), and training and support (i.e. teacher professional development in CALL). More recently, Ward (2016) reported similar issues that hindered sustainability in CALL which included; software development issues (i.e. designing software with a focus on learner needs and re-usability), institutional support (i.e. support and encouragement from authorities to use CALL in education), and deployment issues (i.e. considerations of the local context and infrastructure). Different strategies have been proposed to overcome the difficulties encountered in the normalization process towards achieving sustainability. For example, Kennedy and Levy (2009) underlined two crucial factors to the successful maintenance and continuation of CALL practices; 1) institutional support (i.e. funding, infrastructure and technical support) and 2) practitioners' skills and attitudes towards CALL and its integration. In line with the aim presented above, the focus of the present study is the latter.

Teacher education and sustainable CALL

Teacher education in CALL is crucial since we need to prepare teachers for a constantly changing landscape (i.e. technological change). Although the history of CALL can be dated back to as early as 1970s, it was not until 1980s that courses and/or workshops on CALL started to be offered in teacher training programs (Kessler & Hubbard, 2017). Following the foundation of professional organizations such as the Computer Assisted Language Learning Instruction Consortium (CALICO) and postgraduate degrees focusing on CALL (ibid), teacher education in CALL started and still continuous to receive attention in the academia (e.g. Hubbard &

Levy, 2006; Son & Windeatt, 2018). CALL training can help teachers develop the attitudes and skills necessary for integrating technology into their practice. Researchers, nevertheless, are still seeking to find an answer to what the content of a CALL course should be and how it should be delivered (Son, 2018).

In terms of the delivery format, teacher education in CALL was affected by the sociocultural turn in education (Motteram et al., 2013; Schmid, 2017). Likewise, research has underlined the value of language teacher training models that focus on reflection and collaboration and that adopt a hands-on approach to explore and communicate different uses of technology in different environments (Arnold & Ducate, 2015; Guichon & Hauck, 2011). Kessler (2010), for example, reported how the communication opportunities provided to teacher candidates in a CALL program allowed them to overcome their fears related to CALL and have in-depth conversations about the use of technology in language teaching. Murray and McPherson (2005) demonstrated how collaboration among teachers allowed them to share their CALL practices and expand their CALL repertoire. Similarly, Peters (2006) noted that opportunities to experiment with technology increased the chances that teachers would utilize it in their practice. Chao (2015), on the other hand, portrayed how engaging in critical reflections on the use of technology in a CALL course can help teachers transfer the reflection skills to their actual practice. Aiming to encapsulate those qualities that make CALL training efficient and effective, Son (2018) proposed the Exploration, Communication, Collaboration, and Reflection (ECCR) model. According to Son (2018), the elements of the ECCR model are interrelated to one another and allows teachers to develop their skills and expertise as well as build confidence in the use of technology via exploration, collegial and constructive dialogue, teamwork, and critical reflection. Those aspects promote use and re-use of technology in different environments with considerations of the contextual factors and allows the cultivation of a community culture focused on pedagogical innovation and continuous development, which support teachers' development of adaptability skills that is crucial for enabling sustainable teacher development in CALL.

In terms of content, skills of using technology will naturally be a basic part of a training course in CALL. However, knowing how to use a technology does not automatically translate to knowing how to use technology for teaching in general or teaching languages in particular. As such, the importance of grounding CALL training in pedagogy with a focus on second language acquisition (SLA) has been articulated by researchers (e.g. Cesur et al., 2022; Colpaert, 2006; Garrett, 2009; Son & Windeatt, 2018). For successful integration, teachers should be able to recognize both the affordances and constraints of a specific technology for teaching purposes in a given context (Loveless, 2011). Gibson (1977) defined the term affordance as the sum of action possibilities in the environment as perceived by actors (i.e. humans). What is important in the integration process is that teachers realize the affordances (action possibilities) provided by technology and then transform those into educational affordances. Here, the term, educational affordances refer to "the relationships between the properties of an educational intervention and the characteristics of the learner that enable certain kinds of learning to take place" (Lee, 2009, p.151). To provide an example, asynchronous (i.e. posting messages in forums) and synchronous communication (i.e. chatting with individuals in geographically distant parts of the world via video conferencing tools) are affordances provided by technology and a language teacher can transform those into educational affordances by using them to provide learners with language practice (i.e. writing skills practice in a group forum where the teacher asks learners to discuss a particular topic or speaking skills practice via a video conferencing tool where a teacher pairs their students with other students in another country).

Technological pedagogical content knowledge (TPACK; Mishra & Koehler, 2006) is a framework that can be used to help teachers transform technological affordances into educational ones. TPACK consists of three main components represented as circles in the framework; technology knowledge (TK; knowledge about how to operate certain technologies), pedagogy knowledge (PK; knowledge about how learning occurs) and content knowledge (CK; knowledge about the subject domain; i.e. English as a foreign language –EFL-). The overlaps between those three circles create new knowledge bases; pedagogical content knowledge (PCK; knowledge about how to teach EFL or any other subject area), technological content knowledge (TCK; knowledge about how certain technologies can be used to represent EFL content or any other subject area), technological pedagogical knowledge (TPK; knowledge about how technology can be used for teaching purposes) and -at the centre where all circles overlap- technological pedagogical content knowledge (TPCK; knowledge about how technology can be used to teach EFL or any other subject area; see Figure 1). Although the TPACK framework

is generic and suitable for use in different subject areas, researchers encouraged its adaptation for subject-specific domains to facilitate the understanding of the elements that make up the theory (e.g. Graham, 2011) and there has been a number of attempts to apply the framework into EFL settings (e.g. Bostancioglu and Handley, 2018). Training opportunities focusing on subject-specific TPACK knowledge can support the process of building teacher skills to plan activities that incorporate technology, pedagogy and content as well as to analyse the suitability of using certain technologies in various contexts.

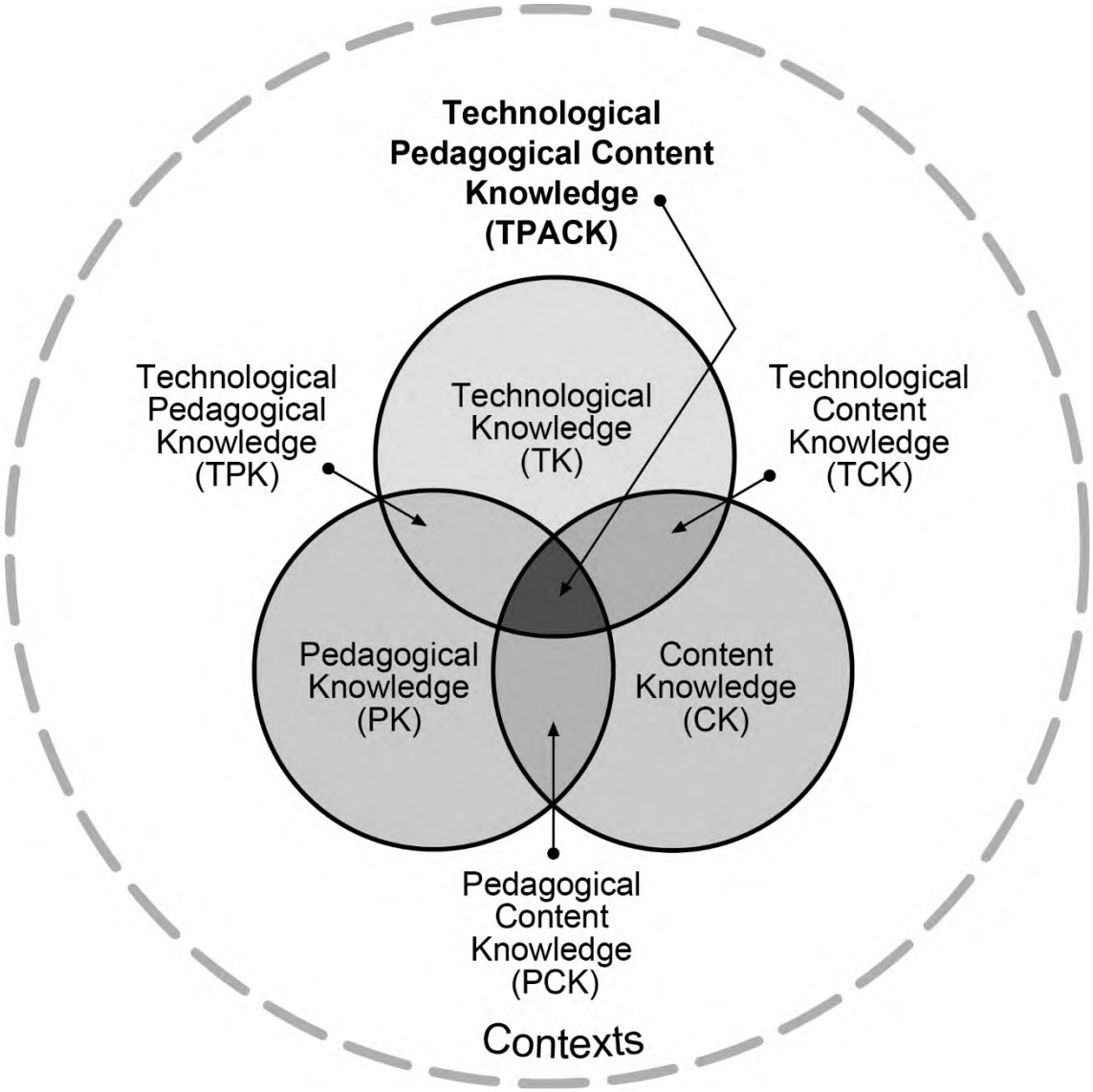

Figure 1. The framework of TPACK (source: http://tpack.org/). Reproduced by permission of the publisher, © 2012 by tpack.org

To summarize prioritizing pedagogy over technology can prepare teachers to ask themselves: "How can I use technology X, Y, and/or Z to support my students and engage them actively in the learning process in my particular teaching context?". Shifting the focus away from technology (especially considering the pace of technological change) is a significant move towards establishing sustainability in CALL teacher education. This is because following an analytical approach that foregrounds pedagogy over technology facilitates adaptability in the sense that it helps teachers recognize that the same tool can be used for different educational purposes and in different ways in different contexts (see for example Hampel & Stickler, 2012) or that different tools can

be used to serve same educational purposes. Such an approach also enables teachers to keep an open-mind about technology and be more prepared for technological change.

The context in which the course curriculum was developed

It was aforementioned that normalization in CALL is a prerequisite of achieving sustainable CALL and the normalization process indicates that all language teachers will integrate technology into their practice. If the goal is to reach all teachers, then CALL training should start to be offered at all levels of teacher training programs (not just at MA or PhD levels but also at undergraduate level). Thus, the CALL course in the present study was developed to be offered in undergraduate English language teacher training programs offered at Turkish higher education institutions. Teacher training programs at Turkish universities last 4 academic years. An academic year in the higher education in Türkiye consists of two semesters and each semester comprises a teaching period of 14 weeks and then an examination period (usually an additional one or two weeks).

The course is planned to be offered during the second term of the third academic year. This means that students who will register to the course will have already taken a number of courses aimed at developing their technology knowledge (i.e. Information and Communication Technologies), pedagogy knowledge (i.e. Introduction to Education, Sociology of Education, Psychology of Education, Philosophy of Education), content knowledge (i.e. Reading Skills, Writing Skills, Listening Skills and Phonology, Oral Communication Skills, Structure of the English Language, English Literature, Linguistics), technological pedagogical knowledge (i.e. Instructional Technologies), and pedagogical content knowledge (i.e. Approaches to English Language Teaching, English Teaching Programs, Language Acquisition, Teaching Foreign Languages to Young Learners, Teaching of Language Skills).

The above list of courses suggests that although there are many courses aiming to develop teacher candidates' pedagogy knowledge (PK), content knowledge (CK), and pedagogical content knowledge (PCK); there are limited opportunities for developing teacher candidates' knowledge and expertise of utilizing technology in teaching/learning processes [i.e. courses aimed at developing candidates technological pedagogical knowledge (TPK), technological content knowledge (TCK), and technological pedagogical content knowledge (TPCK)]. Furthermore, this also confirms the need to offer a CALL course in undergraduate teacher training programs in Türkiye.

The proposed course is split into two halves with a mid-term exam in the middle. The initial half of the course aims to build a theoretical knowledge foundation (i.e. definition of technology, the use of technology to develop language teaching materials, the use of technology for evaluation and assessment purposes) and the second half aims to allow participants to put the theoretical knowledge they learn about into practice (i.e. experimenting with educational uses of technology in the computer lab). The curriculum presented in this article reflects the changes following the first implementation of the course with 22 pre-service teachers in a medium-size state university in central part of Türkiye (Bostancioglu, 2017). The first version of the curriculum was inspired by the technological pedagogical and content knowledge framework (TPACK; i.e. focus was directed towards pedagogical considerations of utilizing technology) and Colpaert's (2016) educational engineering approach was used to evaluate the first iteration of the course and make amendments in line with the issues observed in the course. For example, following the first iteration, I realized that while I ensured that participants had ample opportunities to experiment with and critically analyse different uses of technology in different contexts, the level of communication among students and their level of team work and collaboration could be increased to allow students exchange ideas, learn from one another, and expand their repertoire of educational technologies. Where possible, I tried to provide details of any changes with the rationale to do so (see the next section). In this sense, I tried to apply the Exploration, Communication, Collaboration, and Reflection (EECR) approach proposed by Son (2018). The ECCCR approach encourages students to develop a mind-set of adaptability which fits well to the overall aim of this course.

Instructional objectives in the developed curriculum

This section presents weekly course content of the proposed CALL course. Instructional objectives for each week (consisting of 3 teaching hours) and the rationale for including those objectives are also reported below (further details such as Learning experiences, Materials, and Evaluation are included in Appendix 1). The course is divided into two halves; the first half is theoretical and the second is focused on providing practical hands-on experiences with technology and its use in language teaching). The course objectives follow the progressive stages in Bloom's taxonomy focusing on understanding initially and then moving to the stages of apply, analyse, evaluate and, finally, create (the final evaluation is based on the creation of a lesson plan that integrates technology into language teaching and doing a micro teaching activity showcasing the use of technology in the lesson plan). One of the assumptions of the present curriculum is that; as digital natives (Prensky, 2001), the students registered to the course would readily possess technology knowledge (TK, knowledge of how to operate technologies). This assumption allows the lecturer to focus on course content in relation to developing learners' technological pedagogical knowledge (TPK), technological content knowledge (TCK), and technological pedagogical content knowledge (TPCK). This approach fits well with the overall content of the teacher training programs considering that teacher candidates studying in Turkish higher education institutions do not have many options of taking courses that focus on TPK, TCK, and TPCK.

Week 1: Warm-up and course outline

Week 1 is an introductory lesson in which the course syllabus is shared with students and expectations from/of teachers and students are deliberated. Afterwards, the term 'technology' in the context of education is explored via questions such as "What is technology?" and "How do you feel about the use of technology in education?". This warm-up session aims to allow students to express their feelings towards technology and build positive attitudes towards CALL. This is because building positive attitudes leads to higher levels of engagement in the course which then contributes to better student performance and learning outcomes (e.g. Arnold & Ducate, 2006; Hubbard & Levy, 2006).

The course then moves to define what technology is and introduces the concept of CALL and associated terms (i.e. Technology Enhanced Language Learning, TELL). To this end, the definition of technology as used by the TESOL organization will be presented to learners. Understanding what technology and CALL are can help teachers distinguish between tools and applications in the field of CALL, thereby, increasing teacher candidates' abilities of recognizing how different technologies can be used to vary language learning experiences for students (Chapelle, 2003). Such understanding can also allow teacher candidates assessment and evaluation skills in deciding what technologies to use in their practice (Hubbard, 2009). Based on this, the instructional objectives specified for Week 1 are as following:

- Understand course requirements and responsibilities
- Express and exchange thoughts on technology and its use for teaching/learning purposes
- Express and exchange feelings about technology and its use in teaching/learning processes
- Define "technology"
- Define "CALL" and related terms (e.g. CELL, TELL, TALL)

Week 2: CALL, learning theories, and stakeholder roles

Course content in Week 2 focuses on establishing the link between CALL and major learning theories (i.e. behaviourism, constructivism) which then links to second language acquisition (SLA) theories. Learning theories and SLA provide a framework and criteria that teachers can utilize to design CALL activities as well as assess their effectiveness, thereby, facilitating the process in which teachers can make informed decisions on the use of technology in language teaching (e.g. Cesur et al., 2022; Egbert et al., 2002; Garrett, 2009; Hubbard, 2009). Week 2 also touches on the roles of different stakeholders (i.e. students, teachers) in the process of technology integration into language teaching. A discussion is led on how integrating different learning theories and/or SLA affect the roles the students, teachers, and technology plays in the classroom. Understanding how the roles that stakeholders play can be affected by different pedagogies can support teachers in designing learning

activities that match the instructional goals and teaching styles (Egbert et al., 2002). Based on this, the instructional objectives specified for Week 2 are as following:

- Make associations between CALL and behaviourism
- Make associations between CALL and constructivism
- Make associations between CALL and sociocultural learning theory
- Make associations between CALL and Second Language Acquisition Theories (SLA)
- Understand the roles technology, teachers, and students play in the integration of technology into language teaching/learning processes
- Understand that the roles stakeholders play in technology integration process can change based on the pedagogical approach that is followed in instruction

Week 3: Technology standards for language teachers

Teacher technology standards are introduced in Week 3. Definition of standard is given at the start of the course and then various technology standards are briefly introduced (i.e. International Society for Technology in Education's, ISTE's National Technology Standards for Teachers, and TESOL's Technology Standards Framework). The focus in this class, nevertheless, shifts towards TESOL's technology standards for language teachers (Healey et al., 2008). The rationale for including this topic in the course is as following; standards provide benchmarks and function as a framework for evaluating and improving technology integration (Ertmer & Ottenbreit-Leftwich, 2010) as well as guiding teachers in the process of developing their skills and expertise in using technology for teaching purposes (Hubbard, 2008; ISTE, 2017). In line with this, the following instructional objectives are specified for Week 3:

- Define "standard"
- Understand that teachers need a certain set of skills to be able to effectively integrate technology
- Understand that teacher development in using technology for instructional purposes is a continuous process
- Understand that technology is a tool to facilitate learning and not an end in itself
- Understand TESOL technology standards for language teachers

Week 4: Language materials development

Week 4 aims to briefly showcase various current technologies and their use in language teaching. Attention is given not only to materials development but also to adaptation of tools and/or activities. Furthermore, various strategies that can be used to evaluate technology-focused language learning materials are introduced and students are presented with tasks in which they have to apply those evaluation criteria. Showcasing current technologies and their use allows teacher candidates to familiarize themselves with educational technologies (Egbert et al., 2002). Understanding the stages of materials development/adaptation, likewise, increases teacher candidates' confidence and willingness to utilize technologies in their practice (Ertmer & Ottenbreit-Leftwich, 2010) and enables them to create more engaging learning experiences (Kessler, 2006). Evaluation of materials, on the other hand, allows the assessment of the developed/adapted tools and activities in terms of educational usability (Egbert, 2005), and ensures those tools/activities will continuously be improved to match learning outcomes (McDonough & Shaw, 2003). The instructional objectives for Week 4 are as following:

- Understand the various manners in which technology-enhanced materials can be used in language learning (i.e. prepare in advance, extend classroom activity, bringing the outside into the classroom)
- Recognize the wide range of technologies available to use in educational settings
- Recognize the wide range of frameworks available to evaluate developed/adapted technology-enhanced language learning materials

- Apply steps of ADDIE (Analyse, Design, Develop, Implement, Evaluate) in a given scenario to evaluate goodness of fit of technology-enhanced language learning materials

Week 5&6: Assessment and evaluation

The evaluation aspect covered in Week 4 is related to materials development and the content in Week 5 and 6 approaches evaluation from a multi-dimensional perspective. It focuses on showcasing student teachers that the evaluation process should take into account various factors such as the learner, tools/activities, teacher, classroom context, and learning outcomes. Understanding the complex nature of the evaluation process can help student teachers realize that the evaluation criteria can change based on the aim of the evaluation they want to conduct. This course also focuses on establishing differences among concepts such as feedback (peer/ teacher feedback), evaluation (peer/ self), and assessment (formative/summative).

The discussion then shifts onto assessment and how technology can be used to assess language skills. In doing so, student teachers are introduced to the concept of educational affordances. Students are shown that recent technologies (unlike in the past) has allowed assessment activities to go beyond receptive skills (i.e. reading and listening) and can be used to assess productive skills such as writing (e.g. Steiss et al., 2024) and speaking (e.g. Handley & Wang, 2023). Developing student teachers' skills of using technology for assessment and evaluation are crucial since such practices allow teachers to observe the fit between curriculum objectives and the utilized tools/activities (Chapelle & Jamieson, 2008; Reinders & White, 2010) as well as provide more personalized learning experiences for learners (Levy & Stockwell, 2006). Assessment and evaluation practices, in general, also support the process of reflective learning, thereby, contributing to teachers' professional development (Hubbard & Levy, 2006). In line with this, the following instructional objectives are specified for Week 5 and 6:

- Understand evaluation in CALL is a multifaceted concept that includes various factors (i.e. learner, tool, interactions, learning outcomes)
- Understand evaluation criteria can change based on the aim of the evaluation (i.e. software evaluation, CALL activity evaluation, learner performance evaluation)
- Select evaluation criteria in line with the aim of the evaluation (i.e. learner fit, authenticity, meaning focus, practicality)
- Understand the difference between feedback and evaluation
- Understand concepts of peer- and self-evaluation and how technology can support those processes for language learning/teaching purposes
- Apply steps of ADDIE to conduct a CALL evaluation (i.e. software evaluation)
- Understand how technology can be used for language skills assessment/testing purposes
- Select (a) tool(s) for assessing specific language skills considering its/their (educational) affordances
- Critically evaluate (educational) affordances of different technologies in making informed decisions regarding their use in educational processes

Week 7: Limitations of technology

Content of Week 7 focuses on demonstrating that technology, itself, is not a panacea to the problems of education. As discussed earlier in the paper, integrating technology into educational processes in pedagogically sound ways can support teachers in increasing the effectiveness of their tuition and help them overcome a number of problems they encounter in their practice. Whilst solving problems, nevertheless, the use of technology might create new problems. In some cases, not using technology can make a better impact on reaching educational goals than using it. This indicates that teachers should keep a critical stance towards the use of technology and weigh the advantages and disadvantages of integrating it into educational processes whilst planning. Such an approach can help teachers set up realistic expectations of technology integration and keep a balanced approach (Murray & Barnes, 1998). The instructional objectives specified for Week 7 are as following:

- Understand that technology can help overcome a number of limitations in language learning/teaching processes
- Understand that technology can create a number of limitations in language learning/teaching processes
- Compare and contrast between the affordances and limitations technology in a given scenario
- Critically evaluate the affordances and limitations of technology to make informed decisions about its use for educational purposes

Week 8&9: CALL for teaching vocabulary and grammar

Week 8 marks the start of the second part of the course in which the course aims to provide student teachers with hands on activities of utilizing technology for teaching/learning purposes (Son, 2018). Here, the central idea is to allow students to explore technologies that can be used to present language content and then collaborate with one another in planning and evaluating technology-enhanced teaching/learning activities (i.e. classroom environment, student levels, learning outcomes). Those aspects are inspired by the Exploration, Communication, Collaboration and Reflection (ECCR) approach proposed by Son (2018). The goal in the second part of the course is to develop student teachers' technological content knowledge (TCK) and technological pedagogical content knowledge (TPCK).

In line with this, Week 8 and 9 focused on technologies for teaching vocabulary and grammar. At the end of Week 7, students are asked to prepare for Week 8 by searching for technologies that they can use to design vocabulary and grammar activities. During class time, in Week 8, students are asked to talk about the technologies they searched and learned about and explain how the specific technologies they talk about can be used to present language content (in this case vocabulary and grammar). Since the classes in the second half are held in computer laboratories, student teachers are able to check and experiment with the technologies that their colleagues present about. At the end of Week 8 students are put into teams of 2-3 to design an activity in which they utilize technology for teaching grammar or vocabulary. Students are asked to specify a classroom context (i.e. description of the physical capacity and technology infrastructure of the class), a grade (i.e. 5th grade) and language level (i.e. beginner, pre-intermediate), and (a) learning outcome(s). The groups then do mini presentations about how they would use the technology in the context they specify and a whole-group discussion is led around those mini presentations (i.e. colleagues critically evaluate each other's' use of technology considering the context they specified). Based on the above, the instructional objectives for Week and 9 are as following:

- Understand various technologies can be used to present grammar and vocabulary
- Discuss affordances and limitations of various technologies to present grammar and vocabulary
- Consider various factors (i.e. learner levels, classroom environment) in designing grammar and vocabulary teaching activities (including assessment)
- Critically evaluate the use of technology for teaching grammar and vocabulary in a given context for a given instructional objective

Week 10&11: CALL for teaching reading and writing

In Week 10, student teachers -who are asked a week before to search for technologies that can be used for presenting reading and writing content- share the technologies they found about with their colleagues. In doing so, they explain their rationale for using that particular technology for teaching and/or assessing reading/writing skills. In the meantime, the lecturer takes notes and makes a list of the technologies students present in the classroom as a hand out. At the end of Week 10, the lecturer creates groups of 2-3 people and asks them to prepare a technology-enhanced activity for teaching reading and/or writing skills. The groups created in Week 10 are different than those created in Week 8 (for grammar and vocabulary teaching), this is done to encourage the exchange of ideas and experiences. In Week 11, groups do their mini presentations explaining the context and how they plan to use technology to realize an instructional objective related to writing and/or reading skills.

A discussion is then held with the whole cohort and students evaluate and provide feedback to their colleagues' proposed activity plans. The instructional objectives for Week 10 and 11 are as following:

- Understand various technologies can be used to present reading and writing content
- Discuss affordances and limitations of various technologies to present reading and writing content
- Consider various factors (i.e. learner levels, classroom environment) in designing teaching activities (including assessment) for reading and writing skills
- Critically evaluate the use of technology for teaching reading and writing in a given context for a given instructional objective

Week 12&13: CALL for teaching speaking and listening

Week 12 and 13 follows the same approach utilized in the second half of the course and focuses on the use of technology for teaching speaking (including pronunciation) and listening skills. In Week 12, students introduce the technologies they explore and find about for presenting listening and speaking content. Then, in Week 13, mini group presentations are held in which student teachers demonstrate how they would use certain technologies in a specified context for teaching listening and/or speaking skills. A discussion is then initiated to allow students evaluate each other's ideas and provide peer-feedback. The instructional objectives for Week 12 and 13 are as following:

- Understand various technologies can be used to present listening and speaking content
- Discuss affordances and limitations of various technologies to present listening and speaking content
- Consider various factors (i.e. learner levels, classroom environment) in designing teaching activities (including assessment) for listening and speaking skills
- Critically evaluate the use of technology for teaching listening and speaking in a given context for a given instructional objective

Week 14: Sustainability in CALL and communities of practice

In the final week, the focus of the lesson is sustainability. Class time is used to discuss the concept of sustainability in the context of computer-assisted language learning. The pace of technological change and how it impacts on educational processes are an integral part of discussion in this week. Students are particularly reminded that they should continuously update their knowledge and skills of utilizing technology for educational purposes and be ready to adapt (Hubbard & Levy, 2006). To this end, the concept of communities of practice (Wenger, 1998; Wenger, White, & Smith, 2009) is introduced to student teachers and they are encouraged to become members of teaching-oriented communities in which they can ask questions about as well as share their knowledge and expertise with others. Students are also informed about professional organizations such as Teaching English to Speakers of Other Languages (TESOL), International Association of Teachers of English as a Foreign Language (IATEFL), special interest groups within such communities (i.e. Learning Technologies SIG, Teacher Training and Education SIG), and their digital community spaces. In line with this, the instructional objectives for Week 14 are as following:

- Articulate the concept of sustainability and its relevance in the context of computer-assisted language learning (CALL)
- Analyse how the rapid pace of technological change affects language teaching/learning processes
- Understand the concept of communities of practice (CoPs) and the benefits of participating in CoPs
- Demonstrate an understanding of the necessity for continuous development, particularly in terms of CALL

Discussion and conclusion

The present research aims to contribute to the process of reaching technology integration sustainability in the field of computer-assisted language learning (CALL) via the presentation of a new CALL course curriculum targeted at developing a mind-set of adaptability and continuous development among student teachers. Although there are various factors (i.e. institutional support, technological infrastructure of classrooms) that affect the technology integration and sustainability process, teachers are deemed to be the most crucial players of those processes. This is because they are the ones to select, design and implement technology-enhanced activities in the classroom (Hubbard, 2008). Likewise, developing positive attitudes towards the use of technology in language learning and increasing pre-service language teachers' knowledge and skills of using technology for educational purposes increases the chances that they would integrate technology in their practice (Ertmer & Ottenbreit-Leftwich, 2010; Peters, 2006).

The CALL course in the present study is designed considering two important questions (what should the content of a CALL course be and how it should be delivered?). Technological pedagogical and content knowledge (TPACK; Mishra & Koehler 2006) framework guides the content of the course which focuses on developing student teachers' technological content knowledge (TCK), technological pedagogical knowledge (TPK), and technological pedagogical content knowledge (TPCK). In doing so, the course introduces affordances theory and focuses on educational affordances that utilizing technology can provide. Teaching student teachers about educational affordances is crucial since understanding this concept can help teacher candidates adopt a critical stance towards the use of technology in education and prevent them from using technology for the sake of technology (which may not necessarily result in educational gains for students). In this sense, the CALL course presented here prioritizes pedagogy over technology and facilitates the process in which teacher candidates evaluate technology(ies) taking the learning context (i.e. classroom environment, level of learners) and instructional goals into account (Hampel & Stickler, 2012).

The delivery of the course, on the other hand, is inspired by Son's (2018) Exploration, Communication, Collaboration, and Reflection (ECCR) model. The first half of the course (Week 1-7) is theory-oriented and attempts to create discussion opportunities among participants to allow them communicate and collaborate with one another. The second half of the course (Week 8-13) is practice-oriented, it encourages participants to explore technologies that can be used to teach language, do group work to collaboratively design language teaching activities, and critically evaluate and reflect on each other's ideas of teaching language skills with technology under certain circumstances. In line with this, course activities include lecturer-led presentations and discussions (question-answer), group work, demonstrations (students demonstrating the use of various technologies for language teaching purposes), and analysis and evaluation of sample teaching scenarios (prepared by both the lecturer and students). As part of creating a community of learners and familiarizing participants with the idea of communities of practice, a group can be created online (preferably on a social media platform students are comfortable with using) and all lesson materials and homework can be shared in that group. The group also serves as a platform in which participants can post their questions about the course.

In terms of assessment, only mid-term and final exams are summative, the remainder of course activities are focused on enabling formative assessment where the lecturer provides feedback or student teachers provide peer-feedback to one another. The mid-term exam includes open-ended (to encourage discussion and evaluation skills development of participants) and close-ended (i.e. multiple choice) questions. For the final assessment, participants have to prepare a lesson plan and do a micro teaching activity that includes the use of technology. Prior to conducting the micro teaching activity, each participant explains the proposed teaching context (i.e. classroom infrastructure, student level) and, after each presentation, the presenter is given feedback (both by peers and the lecturer). The participants have a day to amend their lesson plans based on the feedback (if necessary) and they have to submit by the end of the next day after the presentation. The rationale here is to encourage as much collaboration and idea sharing as possible and develop participants' critical stance towards educational uses of technology.

As discussed before, technology is not a panacea to the problems of education and has its limitations. Likewise, the CALL course presented here does not provide a cure by itself to ensure technology integration and sustainability in language teaching. Although we prepare (both skills and attitude development) student teachers to teach languages with technology, this does not mean that they would be integrating it into their teaching.

Factors such as the technological infrastructure of the classroom and institutional support (Hubbard, 2008; Ward, 2016) can prevent a teacher from utilizing technology in their practice regardless of their enthusiasm or skills. Although this course offers a breadth of topics related to CALL, the limited time of the term (14 weeks) prevents lecturer from going to the depths of each topic. To allow more depth, the course can be split into two sequential courses. Such an approach would also allow to increase the breadth of topics covered and include topics such as use of learning management systems, mobile learning, virtual worlds, augmented reality, digital gaming, and online/hybrid/flipped learning. In spite of these limitations, nevertheless, the course presented in this research moves us a step forward towards reaching integration and ensuring sustainability in the field of CALL. Unlike most other CALL courses offered at post-graduate level (Son & Windeatt, 2018), this course is planned for delivery at undergraduate level, which is crucial if our ultimate goal is reaching all language teachers and preparing them for educational settings in which technology constantly changes.

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Appendices

Appendix 1. CALL course instructional objectives, materials, and evaluation/assessment matrix

Week	Content	Instructional objectives	Essential questions	Learning experiences	Evaluation/ Assessment	Material
1	• Outline of the course • Expectations (of/from teachers/students) • Technology and language teaching • Key terms	• Understand course requirements and responsibilities • Express and exchange thoughts on technology and its use for teaching/learning purposes • Express and exchange feelings about technology and its use in teaching/learning processes • Define "technology" • Define "CALL" and related terms (e.g. CELL, TELL, TALL)	• What is technology? • Can we use technology in education? If "yes", how? If "no" why not? • What is technology? • How do you feel about the use of technology in education? • What is CALL/CELL/TELL/TALL?	Presentation, Q& A, Whole class discussions	Achievement Test (AT)	PowerPoint Presentation
2	• Overview of CALL in line with major learning theories and SLA theories • Technology, teacher, and student roles in the implementation of CALL	• Make associations between CALL and behaviourism • Make associations between CALL and constructivism • Make associations between CALL and sociocultural learning theory • Make associations between CALL and Second Language Acquisition Theories (SLA) • Understand the role technology, teachers, and students play in the integration of technology into language teaching/learning processes • Understand that the roles stakeholders play in technology integration process can change based on the pedagogy that is followed in instruction	• Is CALL independent of or bound to learning theories? • What is the association between CALL and (SLA) learning theories? • What role(s) teachers/ students/ the technology play(s) in various CALL implementations/ecosystems? • How does following a certain learning theory in CALL affect the roles teachers and learners play in the teaching/learning process?	Presentation, Group work (Analysis of sample technology integration scenarios), Whole class discussions	AT, Peer feedback, Teacher feedback	PowerPoint Presentation Worksheet

Week	Content	Instructional objectives	Essential questions	Learning experiences	Evaluation/ Assessment	Material
3	Technology standards for language teachers	• Define "standard" • Understand that teachers need a certain set of skills to be able to effectively integrate technology • Understand that teacher development in using technology for instructional purposes is a continuous process • Understand that technology is a tool to facilitate learning and not an end in itself • Understand TESOL technology standards for language teachers	• What is "standard"? • What knowledge and/or skills do language teachers need to effectively integrate technology in their tuition? • How do teachers keep up with technology? • What are TESOL technology standards for language teachers?	Presentation, Q&A, Whole group discussion	AT, Teacher feedback	PowerPoint Presentation
4	Digital language learning materials development	• Understand the various manners in which technology-enhanced materials can be used in language learning (i.e. prepare in advance, extend classroom activity, bringing the outside into the classroom) • Recognize the wide range of technologies available to use in educational settings • Recognize the wide range of frameworks available to evaluate developed/adapted technology-enhanced language learning materials • Apply steps of ADDIE (Analyse, Design, Develop, Implement, Evaluate) in a given scenario to evaluate goodness of fit of technology-enhanced language learning materials	• What technologies are available to use in language teaching/learning processes? • What steps can teachers follow in developing/ adapting technology-focused language learning materials? • Why should teachers evaluate technologies in language teaching/learning processes?	Presentation, Group work (Apply stages of ADDIE in a given scenario), Whole group discussion	AT, Teacher feedback, Peer feedback	PowerPoint Presentation, Worksheet
5&6	Assessment and evaluation in CALL	• Understand evaluation in CALL is a multifaceted concept that includes various factors (i.e. learner, tool, interactions, learning outcomes)	• What is the importance of assessment and evaluation in CALL? • How can we use CALL to assess language skills?	Presentation, Group work (Conduct evaluation of technology	AT, Teacher feedback,	PowerPoint Presentation, Worksheet

Week	Content	Instructional objectives	Essential questions	Learning experiences	Evaluation/ Assessment	Material
		• Understand evaluation criteria can change based on the aim of the evaluation (i.e. software evaluation, CALL activity evaluation, learner performance evaluation) • Select evaluation criteria in line with the aim of the evaluation (i.e. learner fit, authenticity, meaning focus, practicality …) • Understand the difference between feedback and evaluation • Understand concepts of peer- and self-evaluation and how technology can support those processes for language learning/teaching purposes • Apply steps of ADDIE to conduct a CALL evaluation (i.e. software evaluation) • Understand how technology can be used for language skills assessment/testing purposes • Select (a) tool(s) for assessing specific language skills considering its/their (educational) affordances • Critically evaluate (educational) affordances of different technologies in making informed decisions regarding their use in educational processes	• What criteria can be used to conduct a CALL evaluation? • What is the difference between feedback and evaluation?	use in a given scenario), Whole group discussion	Peer feedback	
7	Limitations of CALL	• Understand that technology can help overcome a number of limitations in language learning/teaching processes • Understand that technology can create a number of limitations in language learning/teaching processes	• Can technology solve the problems of education? • What limitations do the use of technology create in educational contexts? • What are the affordances of utilizing technology in educational contexts?	Presentation, Group work (Conduct analysis of technology affordances/ limitations in	AT, Teacher feedback, Peer feedback	PowerPoint Presentation, Worksheet

Week	Content	Instructional objectives	Essential questions	Learning experiences	Evaluation/ Assessment	Material
		• Compare and contrast between the affordances and limitations technology in a given scenario • Critically evaluate the affordances and limitations of technology to make informed decisions about its use for educational purposes		a given scenario), Whole group discussion		
8&9	CALL for teaching vocabulary and grammar	• Understand various technologies can be used to present grammar and vocabulary • Discuss affordances and limitations of various technologies to present grammar and vocabulary • Consider various factors (i.e. learner levels, classroom environment) in designing grammar and vocabulary teaching activities (including assessment) • Critically evaluate the use of technology for teaching grammar and vocabulary in a given context for a given instructional objective	• What technologies can be used to present grammar and/or vocabulary? • How can technology be used to teach grammar and/or vocabulary in different teaching contexts?	Computer Lab (to explore use of technology) Whole group discussion (around group presentations)	Teacher feedback, Peer feedback	Group Presentations
10&11	CALL for teaching reading and writing skills	• Understand various technologies can be used to present reading and writing content • Discuss affordances and limitations of various technologies to present reading and writing content • Consider various factors (i.e. learner levels, classroom environment) in designing teaching activities (including assessment) for reading and writing skills • Critically evaluate the use of technology for teaching reading and writing in a given context for a given instructional objective	• What technologies can be used to present reading and/or writing content? • How can technology be used to teach reading and/or writing skills in different teaching contexts?	Computer Lab (to explore use of technology) Whole group discussion (around group presentations)	Teacher feedback, Peer feedback	Group Presentations

Week	Content	Instructional objectives	Essential questions	Learning experiences	Evaluation/ Assessment	Material
12&13	CALL for teaching listening and speaking skills	• Understand various technologies can be used to present listening and speaking content • Discuss affordances and limitations of various technologies to present listening and speaking content • Consider various factors (i.e. learner levels, classroom environment) in designing teaching activities (including assessment) for listening and speaking skills • Critically evaluate the use of technology for teaching listening and speaking in a given context for a given instructional objective	• What technologies can be used to present listening and/or speaking content? • How can technology be used to teach listening and/or speaking skills in different teaching contexts?	Computer Lab (to explore use of technology) Whole group discussion (around group presentations)	Teacher feedback, Peer feedback	Group Presentations
14	Sustainability in CALL and communities of practice (CoPs)	• Articulate the concept of sustainability and its relevance in the context of computer-assisted language learning (CALL) • Analyse how the rapid pace of technological change affects language teaching/learning processes • Understand the concept of communities of practice (CoPs) the benefits of participating in CoPs • Demonstrate an understanding of the necessity for continuous development, particularly in terms of CALL	• What is the importance of sustainability in CALL? • How does technological change affect technology integration in CALL? • How can online communities of practice support teacher professional development? • Which online communities of practice are there that language teachers can benefit from?	Presentation, Q& A, Whole class discussions	Teacher feedback, Peer feedback	PowerPoint Presentation
Finals	Mid-term Exam & Final Exam	Mid-term exam is summative (sit-down) and includes questions on course content from Week 1 to 7 (the theoretical part of the course). The final exam is also summative. However, it aims to provide ample feedback and information exchange opportunities to students. Students have to prepare a lesson plan that integrates technology into teaching activities in a context that students specify. Students, then, do a micro teaching activity (from the plan) in the classroom and receive critical feedback from colleagues and teachers. Afterwards, students have 24 hours to revise their lesson plans and submit them for assessment.				
Notes: Achievement Test (AT) indicates that there will be questions in the mid-term exam regarding the content in the specified week.						

GENİŞLETİLMİŞ ÖZET

Bu çalışma Bilgisayar Destekli Dil Öğrenimi (BDDÖ) sürdürülebilirliğinin sağlanması amacıyla geliştirilen bir BDDÖ ders müfredatının oluşturulmasını ele almaktadır. Ders pedagojik ilkeler ile teknolojik uygulamaları dengeleyerek dil eğitiminde uzun vadeli etkinlik ve uyum sağlamak üzerine odaklanmıştır. Yükseköğretimdeki BDDÖ dersleri, hızlı teknolojik değişiklikler nedeniyle genellikle demode hale gelmekte veya lisansüstü seviyelerde sunulduğu için birçok öğretmen tarafından erişilemez olmaktadır. Bu sorunları ele almak amacıyla önerilen BDDÖ müfredatı, teknolojiden ziyade pedagojiye öncelik vermekte ve Türkiye'deki lisans öğretmen yetiştirme programları için tasarlanmaktadır.

Brundtland Raporu (1987) tarafından tanımlanan sürdürülebilirlik kavramı, mevcut ihtiyaçları karşılayan ancak gelecek nesillerin kendi ihtiyaçlarını karşılayabilme yeteneklerini tehlikeye atmayan bir gelişimi vurgular. Eğitimde sürdürülebilirlik, kaynakların verimli ve adil bir şekilde kullanılarak uzun vadeli öğrenme erişimi sağlamayı içerir. BDDÖ'de sürdürülebilirlik, teknolojinin günlük öğretim uygulamalarına sorunsuz ve görünmez bir şekilde entegre olduğu normalleşme kavramı ile yakından ilişkilidir (Bax, 2003). Sürdürülebilirliğin sağlanması, sadece teknolojinin entegrasyonunu değil, aynı zamanda yeni zorluklara ve yeniliklere sürekli uyum sağlamayı da gerektirir.

Erken dönem BDDÖ araştırmaları öncelikle BDDÖ uygulamalarının etkinliğine odaklanmıştır. Ancak, sürdürülebilirlik kavramı 2010'larda önem kazanmış ve bu tema üzerine konferanslar ve yayınlar yapılmıştır. BDDÖ'de normalleşme ve sürdürülebilirlik önündeki engeller arasında lojistik sorunlar, öğretmen tutumları, müfredat entegrasyonu ve kurumsal destek bulunmaktadır. Bu engellerin aşılabilmesi için, kurumsal destek ve BDDÖ'ye yönelik uygulayıcıların beceri ve tutumlarının geliştirilmesine ihtiyaç vardır.

Öğretmen eğitimi, sürdürülebilir BDDÖ için hayati öneme sahiptir çünkü eğitimcileri sürekli değişen teknolojik ortam için hazırlar. 1980'lerden bu yana, BDDÖ eğitimi öğretmen yetiştirme programlarına entegre edilmiştir ve öğretmenlerin etkili teknoloji entegrasyonu için gerekli beceri ve tutumları geliştirmelerine yardımcı olmuştur. Etkili BDDÖ eğitim modelleri, yansıtma, işbirliği ve uygulamalı deneyimlere vurgu yapar, öğretmenlerin teknolojiyi farklı şekillerde kullanmalarını keşfetmelerine ve paylaşmalarına olanak tanır. Son (2018) tarafından önerilen Keşif, İletişim, İşbirliği ve Yansıtma(KİİY) modeli, bu unsurları kapsayarak sürekli pedagojik yenilik ve uyum sağlamaya odaklanan bir topluluk kültürünü teşvik eder.

Teknolojiden ziyade pedagojiye odaklanmak, öğretmenlerin çeşitli araçların farklı eğitim amaçları için potansiyelini fark etmelerini sağlar ve onları teknolojik değişimlere hazırlar. Bu yaklaşım, BDDÖ'de sürdürülebilir öğretmen gelişimi için kritik olan uyum yeteneğini teşvik eder. Önerilen BDDÖ dersi, Türk üniversitelerindeki dört akademik yıl süren lisans İngilizce öğretmen yetiştirme programları için tasarlanmıştır. Ders, öğrencilerin teknoloji, pedagoji ve içerik bilgisi konusunda temel dersleri tamamladıkları üçüncü akademik yılın ikinci döneminde planlanmaktadır.

Ders, teorik bilgi ile pratik uygulamayı dengeleyen iki yarıya ayrılmıştır: ilk yarı, dil öğretmenleri için teknoloji standartları ve dijital materyal geliştirme gibi konuları kapsayan teorik bilgiye odaklanırken; ikinci yarı, öğrencilerin bir bilgisayar laboratuvarında eğitim teknolojilerini deneyimlemelerine olanak tanıyan pratik uygulamaya vurgu yapar. Dersin 22 İngilizce öğretmen adayı ile gerçekleştirilen ilk uygulaması, katılımcılar arasında işbirliği ve eleştirel yaklaşımın yeterince sağlanmadığını göstermiştir. Colpaert'in (2016) eğitim mühendisliği yaklaşımını izleyerek gözlemlenen sorunlar temelinde müfredat ve iyileştirme çalışmaları yapılmıştır. Müfredat, teknoloji, pedagoji ve içerik bilgisini bütünleştiren Teknolojik Pedagojik Alan Bilgisi (TPAB) çerçevesinden esinlenmiştir. TPAB çerçevesi, öğretmenlerin teknoloji, pedagoji ve ders içeriğini bir araya getiren etkinliklerin planlanmasına ve belirli teknolojilerin çeşitli bağlamlarda kullanımının uygunluğunu analiz edilmesine yardımcı olur.

Sonuç olarak teknolojiden ziyade pedagojiyi önceliklendirerek, önerilen bu BDDÖ müfredatı, öğretmenlerin teknolojiyi öğretim uygulamalarına etkili bir şekilde entegre etmelerine ve uyum sağlamalarına hazırlar. Çalışma, gelecekteki dil öğretmenleri ve öğrencilerinin ihtiyaçlarını karşılayan kapsamlı ve uyumlu bir müfredat sunarak sürdürülebilir BDDÖ'ye erişilmesine yönelik engellerin aşılmasına katkıda bulunmaktadır.