



Vol.4 Special Issue No.1 (2021)

Journal of Applied Learning & Teaching

ISSN : 2591-801X

Content Available at : <http://journals.sfu.ca/jalt/index.php/jalt/index>

Evidence from a blended remote learning intervention in Greek small rural primary schools

Lydia Lymperis^A

A

PhD candidate, School of Education, Communication and Language Sciences, Newcastle University, UK

Keywords

Blended remote learning;
Greece;
rural education;
second language development.

Abstract

The present research evaluates the impact of a blended remote learning intervention on the English as a Foreign Language (EFL) attainment of 8-12-year-old children living in rural parts of Greece who, contrary to their urban counterparts, have no access to English language instruction in their schools. Rooted in a sociocultural understanding of development and the idea that subject matter and academic learning cannot be separated from activities such as social identification, co-construction of understanding and identity development, the present intervention was fundamentally centred around three key concepts: collaborative enquiry, authenticity, and self-paced mastery. Drawing on findings from the quantitative strand of an embedded mixed methods intervention design, the study reveals positive benefits from participation in the blended distance learning intervention with respect to children's vocabulary and grammar knowledge as well as their aural comprehension skills. Moreover, findings indicate that, in the case of small multigrade schools in Greece, a blended distance learning approach is likely to be effective at raising EFL attainment at a comparable cost level to that of face-to-face programmes. The study thereby contributes to an emerging body of international research on pedagogically and financially viable implementations of blended distance learning involving primary learners in resource-poor settings.

Article Info

Received 2 February 2021

Received in revised form 8 April 2021

Accepted 17 April 2021

Available online 19 April 2021

DOI: <https://doi.org/10.37074/jalt.2021.4.s1.5>

1. Introduction

Small schools have traditionally been championed for the value they bring to their typically rural communities. Yet pupils in more than 500 small rural primary schools¹ in remote parts of Greece have for decades been excluded from core areas of the national curriculum, including English as a foreign language (EFL), IT/Computing, PE, Music and Art, due to the higher per-pupil costs involved in staffing these schools with qualified teachers (OECD, 2018). The lack of state provision for access to these learning domains effectively means that rural children are unable to compete with their urban counterparts who, by the time they complete compulsory education will have received six years' worth of additional instruction in these subjects. Inequalities are further exacerbated by the fact that rural families who can afford to, seek out private alternatives to compensate for the gap in state provision, whereas those who are less able to afford private tuition are left behind (OECD, 2018).

This research addresses calls in the recent literature to examine the potential of information and communication technologies (ICT) and other forms of ICT-supported learning for expanding educational access and broadening curricula through distance education, thereby alleviating the difficulties faced by remote rural schools in Greece (e.g., see OECD, 2018). The ongoing global pandemic attached a sense of urgency to an already burgeoning field of research into the effectiveness of blended learning (BL) approaches (defined as a combination of face-to-face and asynchronous online learning) in terms of academic achievement. Yet most of the research on blended learning has been carried out in the context of higher education (e.g., Boelens et al., 2018; Medina, 2018; Castro, 2019) and, while there are some studies which have investigated blended approaches in relation to K-12 learning, these have mostly concentrated on secondary education (Barbour, 2014; Waters et al., 2014). As such, much less is known about the practical feasibility and the parameters that might facilitate or impede academic success in a blended learning environment involving primary school children. Furthermore, there has been little systematic attention to the effectiveness of such educational interventions in low-income and resource-scarce settings, not least in the context of Greece (Anastasiou et al., 2015).

There is also a growing body of research into blended language learning which lends support to the argument that hybrid approaches may indeed, under certain circumstances, support second language attainment (e.g., Shih, 2010; Barani, 2011; Adas & Bakir, 2013; Ghazizadeh & Fatemipour, 2017). However, the majority of these studies focus on university students or have been carried out in private language institutes where the majority of learners are adults. It thus becomes apparent that although the demand for BL has increased, our understanding of effective BL implementation that eliminates rather than exacerbates existing inequities, is at present rather fragmented — especially in relation to K-12 settings.

¹ Amounting to 12 per cent of all state-run mainstream primary schools in the country (school year 2018/19).

Yet more recent conceptualisations of blended learning go beyond this notion of accessibility. In addition to flexibility in terms of time and place, BL also affords opportunities to cater to students' individual needs and, thus, achieve a greater degree of personalisation in teaching (Boelens et al., 2018). Speaking to the same idea, Roschelle et al., draw an important distinction between using technology to do conventional things better versus using technology to do better things (cited in Fishman & Dede, 2016, p. 1269; emphasis in the original). The authors argue that we need to move beyond treating technology as a means by which to simply automate conventional models of teaching; the real value in technology lies in its ability to act as a catalyst for a shift towards an "alternative, next-generation educational model" (p. 1271). For Fishman and Dede, this transformation entails swinging the pendulum in the direction of personalised, participatory, collaborative, guided learning, and deeper engagement, amongst others.

This is particularly important for small rural schools operating multigrade classrooms, where two or more grades are taught by a single teacher within the same classroom context. In such learning environments, multigrade teachers are faced with the additional demand of having to simultaneously address the needs of children of different educational levels, ages and interests, while following more than one curriculum within any given period. Indeed, this might be one of the reasons rural schools are often thought to provide a second-class education. Hargreaves et al. (2009, p. 82) consider the view that rural schools' educational provision is "inferior to that provided in larger urban schools where there are more teachers and easier access to resources for teaching and learning" as grounds for pursuing research in rural schools. In the local context, for instance, Year 3 pupils may be taught alongside their Year 4 peers the syllabus of the latter for an entire year. The same pupils would then go on to study the syllabus of Years 3 and 6, respectively, the following year. While exposure to work at different grade levels may benefit some learners by reinforcing and extending their learning opportunities (Berry, 2006), it is nonetheless likely that it will cause undue cognitive strain on others; in other words, what is moderately challenging and motivational for one learner, may be far too difficult for another (Smit & Humpert, 2012).

For all the challenges they bring to learners and teachers alike, multigrade classrooms are at the same time recognised as learning environments that engender developmental opportunities which are unique to these contexts, providing increased opportunities for self-regulation and pupil interaction. Further, educational approaches such as differentiated instruction have recently become interesting options for achieving inclusion and personalisation in environments where learner variance is high, such that all learners are successfully and meaningfully challenged (Smit & Humpert, 2012). Differentiated instruction refers to the proactive modification of curricula, teaching methods, resources, learning activities and student products based on one or more of the student characteristics (readiness, interest, learning profile) to accommodate diversity and individuality, and to minimise the isolation and marginalisation that some learners face in highly heterogeneous classrooms (Tomlinson, 2014). Importantly, in differentiated classrooms, the teacher acknowledges that children find their need

for nourishment, belonging, achievement, contribution, and fulfilment through different paths, and according to different timetables.

The present study is therefore an attempt to contribute to an emerging body of research into blended educational formats that go beyond conventional models of online or hybrid teaching. Rooted in a sociocultural understanding of development and the idea that subject matter and academic learning cannot be separated from activities such as social identification, co-construction of understanding and identity development, the present intervention was fundamentally centred around three key concepts: collaborative enquiry, authenticity, and self-paced mastery.

2. Literature review

2.1 The rise of blended/hybrid learning

Since the advent of digital technologies and their integration in education, the term 'blended learning' (also 'hybrid learning') has broadly been used to refer to a mix of face-to-face and online learning (Garrison & Vaughan, 2008; Blissit, 2016). Others have defined it as "the integrated combination of traditional learning with web-based on-line approaches" (Oliver & Trigwell, 2005, p. 17) — the former referring to face-to-face instruction and the latter to that part of the course delivered via the Internet, usually through a virtual learning environment (VLE). The term has also been used to describe an instructional model that combines a fully online, distance-based curriculum with required on-site attendance (Watson, 2008), thus suggesting that in contexts where the use of digital technology is widespread, distance learning is understood to be synonymous with online learning. Others yet speak of a mix of synchronous (live or real-time) and asynchronous (e.g., discussion boards where students respond to questions from the instructor or other students) learning environments (Holden & Westfall, 2007).

In this study, the terms 'blended learning' (BL) and 'hybrid learning' (HL) are used interchangeably to describe the amalgamation of synchronous and asynchronous learning modalities in distance education settings, where students are physically co-present in the former but not in the latter. In this sense, the study draws a distinction between second language (L2) learning in blended/hybrid modalities and what is referred to as 'technology-enhanced language learning' (TELL) or 'computer-assisted language learning' (CALL). This differentiation rests on the fact that in the former, technology is thought to be central to both the design and delivery of the curriculum rather than merely a tool to enhance teaching and learning.

But what are the reasons that schools may opt to move from a traditional classroom-based pedagogy to a blend of face-to-face and online learning? First, there are economic reasons for introducing an online component in the delivery of a course (Hobbs, 2004). Although this model has not yet been widely adopted in K-12 education, a rising number of secondary schools around the world are turning to a 'flipped model' whereby at least part of the course may involve teaching assistants supervising students' engagement

with online activities in the classroom. Second, there is a combination of other motives, including preparing digitally competent young people for lifelong learning, and equitable access to resources and educational opportunities where this would otherwise have not been possible, as will be shown in the sections that follow. Let us first consider the evidence around the effectiveness of BL in K-12 learning.

2.2 What impact does BL have on K-12 student achievement?

The effectiveness of hybrid approaches to K-12 learning in developed contexts has relatively recently begun to be documented in the literature — albeit concentrated in secondary education (Barbour, 2014; Waters et al., 2014). An ongoing question is whether students in blended learning environments achieve academically as well as their traditional school counterparts. The findings have been mixed in this regard. Drawing on aggregated data from school performance ratings and report cards, Gulosino and Miron (2017) found that students in full-time blended schools across the US were learning significantly less on average in maths and reading achievement than the national average for all public schools. While highly motivated students may thrive in such environments, the authors argue that the online pivot alone is not enough to reverse the trajectories of those who struggle academically. Nevertheless, they acknowledge other ways in which students may benefit from a BL environment such as more flexible instructional time and greater personalisation (e.g., greater student control over time, place, path and/or pace). Picciano et al. (2012) raise similar concerns, stating that many K-12 students may not have the characteristics to be successful in online learning environments, such as maturity and self-discipline. In a similar line of enquiry, Fainholc (2019) declares that successful distance learning entails perseverance, systematic dedication, capacity for self-direction, and an ability for interdependence and communication in groups, amongst others. This echoes Pulham and Graham's (2018) view that, to a certain degree, success will likely be grounded in the pedagogical practices enabled by several BL teaching competencies such as flexibility and personalisation, mastery-based learning, establishing expectations, and community development through facilitation of effective communication and collaboration; student-centred learning was also established as a key teacher competency in fostering students' self-regulation.

Gulosino and Miron's findings reported above conflict with evidence derived from Spanjers et al.'s (2015) meta-analyses that BL instructional conditions are slightly more effective than more traditional learning. Although K-12 students were underrepresented in the articles included, a follow-up moderator analysis revealed that the inclusion of quizzes, tests or self-assessments was a contributing factor to effectiveness. The authors speculate that the feedback accompanying assessment helps give an image of students' mastery of the content, thus providing them with continuity and a sense of direction. As such, they agree with Gulosino and Miron that not all BL programmes are created equal and reiterate the importance of systematic, careful BL design.

2.3 What impact does BL have on L2 Learning?

Despite a growing body of research into blended language learning, the research findings remain mixed. While some researchers contend that exposure to the BL model can enhance L2 learning, others indicate that there is no significant improvement in comparison with more conventional (face-to-face) means of instruction (see e.g., Tosun, 2015). For instance, Xu et al. (2020) found that blended learning was associated with higher probability of passing an EFL course in a Mexican university by more than 3 percentage points, as well as better course grades by an average of 0.409 points on a 10-point scale; the impact on course grade corresponded to a moderate effect of 0.306 standard deviations. While the study did not provide any insights into attainment by language skill, improved outcomes have previously been recorded in terms of English as a Second/Foreign Language (ESL/EFL) reading comprehension (Ghazizadeh & Fatemipour, 2017), listening skills (Bañados, 2006; Barani, 2011), written performance (Adas & Bakir, 2013), oral skills (Bañados, 2006; Shih, 2010) and pronunciation (Bañados, 2006; Chang et al., 2020), based on experimental and quasi-experimental evidence from classroom studies that compared BL to traditional L2 instruction. Nevertheless, it is worth noting that the above studies have focussed either on university students, or have been carried out in language academies where the majority of learners are adults; as such, very little is known about K-12 students' performance in blended language learning environments. Vahdat and Eidipour (2016) were amongst the few to look at the impact of BL on L2 acquisition in a primary/secondary education setting. In analysing the listening performance of a group of Year 8 students in a high school in Iran, they found that the students who had participated in the computer-assisted L2 listening programme outperformed their peers who had received traditional instruction. Yet one notable difference between the design of this research and that of the above-mentioned studies (as well as the present investigation) is that the participants were not required to work on the technology-based component of the blended course in their own time, as this was done during regular contact time. This had important implications for the amount of technical and linguistic support that was available to them, and the extent to which the learning setup required them to exhibit a capacity to self-regulate. As such, the findings of the study may not be representative of students' level of readiness to work in BL formats which require them to engage with self-study.

Indeed, this is a crucial difference because an important challenge for blended EFL instruction remains the fact that successful learning in this environment requires students to become at least somewhat autonomous, which may be difficult for some, especially if they're coming from K-12 contexts that are mostly characterised by learner passivity and minimal engagement (Kuh, 2009). While a web-based learning platform can afford students flexible opportunities to engage with linguistic input and guided practice at their own pace, Whyte (2011) remarks that successful language learning requires more than that; encouraging effective and sustained use of online content requires 'imagination and effort' so that it becomes an integral part of the course (p. 218).

Consequently, the question has gradually begun to shift towards *how* to design an optimal blended language learning course across different proficiency levels and for diverse populations. Drawing on second language acquisition (SLA) research, Thornbury (2016) proposes a set of principles that can be applied to the selection of the technology-based component of a blended course. Specifically, he argues that the chosen learning tool should provide opportunities for interaction, personalisation and flow, amongst others. While Thornbury's framework is only concerned with the asynchronous part of a BL environment, it serves as a useful reminder that, to the extent that technologies can enhance the learning process, this cannot be done by purely replicating and replacing 'traditional didactic' teaching approaches. Rather, a design is necessary that acknowledges that students bring their own personal history, knowledge, personalities and experiences into a learning encounter. In this regard, the design should enable them to project themselves socially and emotionally, while allowing the teacher to engineer and facilitate cognitive and social processes "for the purpose of realizing personally meaningful... learning outcomes" (Anderson et al., 2001, p. 5).

2.4 Implementation of blended distance learning programmes in low-resource settings

Interest in the development of BL spurred partly in response to a combination of socioeconomic and pedagogical issues is present in both developing and developed countries. These include the perceived poor quality of teaching and chronic shortages of 'excellent' teachers — particularly in remote areas — together with the resultant issues of equity and access to high quality teaching (Mitra et al., 2008; Ratcliffe, 2014; Dwinal, 2015). Furthermore, the increasing heterogeneity and lack of differentiation in the traditional classroom makes it impossible to sufficiently challenge high band students while leaving those in the lower band behind (Ofsted, 2013).

The potential of hybrid K-12 learning programmes for increasing marginalised students' access to high-quality learning in resource-scarce contexts, rests on the proposition that such approaches can substantially reduce the cost of education, while retaining face-to-face learning components to appease the need for feedback, social skills development, and engagement (Picciano et al., 2012; Marrinan et al., 2015). Traditional face-to-face education models also rely heavily on human resources which are often unavailable in settings with large numbers of students or in resource-constrained environments. As such, hybrid and online approaches are often seen as viable alternatives to face-to-face learning, particularly in rural and remote communities constrained by a financial burden as well as physical barriers (Kim & Frick, 2011).

While research into the impact of BL programmes implemented in the context of remote/distance education is still thin on the ground (Stanley, 2019), there is evidence to suggest that distance learning technologies can be just as effective in terms of student performance as traditional classroom instruction. In what follows, two technology-

enabled BL innovations are summarised which were designed to serve poor and hard-to-reach communities in Latin America with no prior access to formal educational inputs. Both of these have been assessed as success stories.

2.4.1 The case of Ceibal en Ingles, Uruguay

Perhaps one of the best-known large-scale initiatives to promote inclusion and equal opportunities in the K-12 context with the help of digital technologies has been the Plan Ceibal project. Launched in 2007 by the Uruguayan government, Plan Ceibal is a nation-wide interinstitutional undertaking whose goal is to implement the One-Laptop-Per-Child model. Since its inception, it has distributed low-cost, low-power XO laptops and Internet connectivity amongst primary school learners and teachers across Uruguay, and developed a wide range of technology-supported educational programmes (Kaiser, 2017).

Given that English was included in the national primary curriculum as a mandatory subject in 2008 (Marconi & Broveto, 2019), there is an acute shortage of qualified teachers, especially in remote and rural parts of the country (Banegas, 2013). For this reason, the Ceibal administration decided in 2012 to introduce Ceibal en Ingles (CEI), a project embedded within the wider initiative which blended remote teaching via videoconferencing, a virtual learning environment, and teacher training, with the aim of reaching the most marginalised children. The programme sought to investigate the effectiveness of an educational model whereby lessons were delivered by virtual teachers through videoconferencing, with support from classroom practitioners with little or no command of English. This was deemed a crucial aspect of the programme, as virtual teachers were experts in the subject matter, but their colleagues on the ground were the ones who knew the context and the learners (Banegas, 2013).

Each week, learners received three hours of instruction, one of which centred around language input and was delivered virtually by a qualified teacher (based in or outside Uruguay), and the other two being led by the classroom teacher. Additionally, a customised online platform was developed with educational resources for practitioners, and a space for course developers and teachers to exchange views and collaborate. Classroom teachers also received in-service training and ongoing support from specialised mentors, together with English language lessons to help them progress alongside their students and eventually qualify to run virtual sessions themselves. Students used their laptops primarily for language practice, such as completing information gap activities, playing online games, and creating their own resources, including flashcards, slides, and digital stories (Banegas, 2013).

Current estimates indicate that 71 per cent of Uruguayan students in Years 4, 5 and 6 learn English in the virtual space (Plan Ceibal, 2017), while the programme has now been extended to secondary schools. Overall, CEI has been evaluated as a success story in the context of technology-supported remote education, with primary school children involved in the project showing comparable progress to

that achieved by their peers in the face-to-face-programme (see Marconi & Broveto, 2019). The success of the initiative is largely due to adopting a nimble approach to scale-up and remaining responsive to feedback, with adjustments continually made to hardware and learning materials, as well as initial teacher training and ongoing mentoring schemes (Hockly, 2017). Indeed, in line with the programme's strong commitment to promoting equality, diversity, and inclusion, much of the teacher training centred around practical strategies for differentiating instruction to cater to mixed-ability classrooms (Kaplan & Broveto, 2019). These included the use of dyslexia-friendly fonts, visual cues to help students with behavioural difficulties to refocus their attention and prepare for the upcoming task, or providing learners with choice in their classroom response format (Rovegno, 2019).

Nevertheless, it is worth noting that an exhaustive programme evaluation of CEI which includes all language skills is yet to be undertaken, and therefore firm conclusions about the initiative's impact at a more holistic level cannot be drawn at this point (Banegas & Broveto, 2020). Another issue has been that programme participation in secondary schools has seen a slow decline since its launch in 2014, which is in no small part due to high demands on classroom teachers' time (Banegas & Broveto, 2020). In investigating learner motivation factors in CEI learning environments, Ramirez (2019) discovered that, while group work, games, videos, music, and inter-cultural activities were all driving forces for learner engagement, oral presentations were a source of anxiety, frustration, and demotivation. Similarly, a lack of social and emotional competency in teachers, externalised by behaviours such as not allowing children sufficient time to think through their answers or work through emerging problems, appeared to have a negative impact amongst learners.

2.4.2 The case of the Amazonas Media Center, Brazil

Remote instruction approaches need not always rely on high-tech solutions. The Amazonas Government's Media Center project in Brazil is another large-scale initiative with an overt social justice agenda based on equity, learning, and low-tech resources. The distance-education programme, which began in 2007, aims to address the disparity in access to education between Amazonas' urban and rural areas (Plata, 2020). Facing a chronic shortage of secondary school teachers for the Amazon's 6,100 riverside communities, together with its concomitant dropout rates (Plata, 2020), the government of Amazonas uses multipoint videoconferencing technology to broadcast lessons in real time via satellite television from a Media Center studio in the state's capital city to up to 1,000 classrooms at a time, with 5 to 25 students each, located throughout rural communities along the Amazon River (Cruz et al., 2016). Each class is mediated by a professional onsite tutor with no specialist expertise in the subject area, who manages the classroom, helps with difficult parts of the classwork, and provides appropriate technical support to ensure that the experience is as interactive as possible (Trucano, 2014). With an emphasis on interactivity, students not only view lectures from the teacher in the studio, but are also able to interact with virtual teachers through the digital platform and have their questions answered in this

way. Just as *Ceibal en Ingles* secondary students are served by a custom-made digital platform with supplementary educational material, so Media Center students are supported by additional educational resources (in both print and digital formats). Lessons follow the state curriculum and are planned by the studio teacher, in consultation with national curriculum and technology experts. This process makes it possible to create localised content that matches the needs of a specific group of learners (Cruz et al., 2016). Studio teachers receive rigorous pre-service and ongoing training in both technical and pedagogical skills. The former cover, for example, aspects of effective behaviours in front of the camera, such as posture, speech, and screenplay.

Between 2007 and 2016, the distance learning programme had reached 300,000 students in remote, riverside communities across the Amazonas state. It was subsequently expanded to include youth and adult education, while upscaling efforts led to replication of the model in seven other states with poor and/or difficult-to-reach populations (Cruz et al., 2016). Despite initial Internet connectivity and infrastructure challenges, preliminary results have shown promise — the programme led to a 16 per cent increase in high school progression rates between 2007 and 2011, dropouts in Amazonas state decreased by almost half between 2008 and 2011 (Cruz et al., 2016), and children's learning has steadily improved, as reflected on the Brazilian Education Quality Index (Robinson & Winthrop, 2016).

2.4.3 Barriers to successful BL implementation

These two case studies provide an example of the future development of the use of technology to support learning and expand access to high quality education in resource-constrained settings. However, they also illustrate that the empirical work in the field of blended remote learning in K-12 education is still at a nascent stage. While flexible access to curriculum and instruction serve to provide access to segments of the population that have been underserved in the past, there are also noticeable gaps that could limit the ability of the education innovations to help fuel and sustain educational progress amongst these children. For instance, few efforts prioritise pedagogical uses of technology that increase the depth and pace of learning (Istance & Paniagua, 2019).

Other neglected factors include the way in which the learners' attributes, together with their level of cognitive, social and emotional development, interact with academic achievement in a BL environment. Indeed, expanded access to schooling in recent decades has increased the variability in learners' readiness for classroom instruction (Ganimian et al., 2020). For example, evaluations of the One Laptop Per Child (OLPC) initiative in Haiti, Uruguay, the United States and Paraguay revealed that many children, especially the most marginalised students, were not able to exploit the potential of the laptop on their own, whether using it at school or at home (Warschauer & Ames, 2010). The authors found that more socioeconomically privileged children tended to make use of the laptops in more creative and cognitively challenging ways. Thus, they conclude that independent, unscaffolded laptop use by children might in fact exacerbate

existing inequities, and highlight that failure to recognise variability in students' existing social and human capital as a moderator of academic success 'represents a flaw in the one-sided belief in self-directed constructionism' (p. 44).

Therefore, in seeking to address ways of reducing the English language skills differential between rural and urban students in Greece, this study built on previous international research to examine the efficacy of a blended learning intervention which was delivered remotely to eight small rural schools across the country. Further, it was reasoned that if the study were to provide any actionable insights for policymakers, it would be necessary to acknowledge that an educational programme may indeed be effective in increasing test scores, yet its upscaling ability might be financially implausible for a certain context once it is compared to its alternative. A further aim thus concerned the estimation of the relative cost of the intervention compared to its face-to-face alternative, supposing the latter were available to small rural schools.

3. Method

3.1 Research context and participants

Data obtained for this study came from 47 pupils attending eight different small rural schools across the Greek mainland and the island of Crete (for a more detailed description of the participating schools and the selection criteria that were employed, see Lymperis, 2019). All the schools that received the intervention were mixed gender state primary schools operating with a maximum of two teachers each (including the headteacher, whose professional duties in these schools normally also involve teaching responsibilities). None of these schools had ever had any provision for the teaching of English. There was one computer only in each school, while an overhead projector was available in two school sites. The mean age of the participants was recorded in years and months at the start of the fieldwork testing (M = 10 years 5 months, min. = 8 years 7 months, max. = 12 years 3 months). The participants were in Years 6 (N = 18), 5 (N = 20), 4 (N = 5) and 3 (N = 4) during the fieldwork timeframe (academic year 2018-2019).

3.2 Research procedures

The present scholarship focuses on the quantitative insights that emerged from an embedded mixed-methods intervention design. A pre-test and post-test design was employed to investigate the impact that the BL programme had on children's EFL achievement. Five language measures were administered at the start and end of the fieldwork, each of which was mapped to the Common European Framework of Reference for Languages (CEFR), and was designed to assess five distinct levels (Pre-A1 to A2.2.) on a single, continuous scale which increased in difficulty. The linguistic dimensions assessed were as follows: vocabulary and grammar (each comprising 25 items measuring both implicit and explicit knowledge); aural comprehension (comprising a listen-to-draw task); writing skills (comprising a timed picture description task); and oral fluency (children's pruned speech rate during a personal information monologue of up

to 60 seconds).

Two different types of measurement reliability were assessed for the tests administered in this study: (1) internal consistency was measured through Cronbach's alpha; and (2) interrater reliability was measured through the Kappa statistic test. Reliability coefficients for four out of five outcome measures ranged between 0.82 and 0.92, and were therefore deemed acceptable. An exception to this was the oral fluency measure, which produced changes in scores that had relatively low reliability ($\alpha = 0.59$), possibly as a result of significant data loss that occurred at the post-test phase. This measure was excluded from further inferential analysis. Moreover, individual differences in children's cognitive ability were measured through the Raven's Coloured Progressive Matrices Test (CPM; Styles et al., 1998), while child and parental background data was gathered through two separate surveys prior to the intervention.

3.3 The intervention

The intervention itself was conducted between January – May 2019, and consisted of two main components: a synchronous and an asynchronous learning component, treated for research purposes as a single integrated intervention. Children participated in weekly sessions with a virtual teacher, which lasted approximately 45 minutes and took place via a free videoconferencing platform. For the purposes of the blended intervention, the national curriculum for primary English was organised around collaborative mini projects – usually spanning two sessions each – which permitted differentiation of pupil output in two key ways:

(1) tiered product assignments: each mini project culminated in the creation of a product which allowed pupils to start at a different entry point (e.g., reviewing for some and extending learning for others, or a single assignment addressing multiple curricular components in response to pupils' varied levels of readiness). Open-ended tasks with more than one right answer lend themselves particularly well to personal response. Examples included (Internet-based) collaborative investigations, surveys and extended enquiries (e.g., What makes children happy, and what makes them unhappy?); interdisciplinary mini projects (e.g., involving tasks which required students to identify spatial relationships between objects and grapple with measurement concepts, such as amount, length, distance, size, weight, volume and time through Stellarium, an open-access and user-controlled real-time night sky simulation); and collaborative online game development (e.g., designing and developing gamified song-based learning tasks for the existing online learning community via lyricstraining.com); and

(2) choice of tasks supported the pupils' use of varied modes of expression, resources, and technologies (e.g., product formats that allowed learners to express themselves in ways other than written language alone).

As noted earlier, the notion of differentiating product assignments as a way of calibrating challenge to the particular needs of a learner is of particular relevance to small schools operating multigrade classrooms, where the circumstances mandate that multiple curriculum areas and proficiency levels be addressed in a simultaneous mode. Further, a great deal of thought was put into how meaningfulness could be preserved during the intervention; therefore, all content was sourced from authentic resources, while tasks and topics were selected such as to encourage the learners to draw linkages between the ideas and skills they study in school and the ways in which these can be used "out there in the real world"².

As a way of providing input to the learners, along with opportunities for guided and controlled practice of the target language in children's own time, an asynchronous online learning component was designed to complement the live sessions. This made it possible to obtain comparable results in terms of the participants' learning outcomes, whilst compensating for a lack of textbooks in the participating schools. The study adopted a microlearning app, EdApp, as the e-learning platform. Even though EdApp has been designed and marketed as a corporate training tool, it was judged that it could also lend itself particularly well to language learning within the context of mainstream education due to a number of reasons. First, it combined a plethora of compelling features, such as mobile and web-based learning and mastery-based instructional design options (e.g., the possibility of configuring conditions for learners' progression through the material). It also offered a wide array of interactive tasks and games that enabled participative design, templates for introducing new content in an engaging way, and an intuitive cloud-based course authoring tool. Moreover, the platform has been designed and developed based on a user-friendly interface where navigation is easy and reliable. Finally, it allowed content delivery in a microlearning format, which enabled the breaking down of information into topical, bite-sized chunks.

Additional affordances which acted as key contributing factors to the selection were the following: gamified formative assessment; the possibility to capture digital data from the learners' online activity, together with user, group, and level metrics on performance and engagement; offline mode, thus making it possible for learners to complete lessons when Internet connection was poor or non-existent by pre-downloading materials; and finally, affordability. As a low-cost intervention, sustainability was a key factor that informed design decisions (the *EdApp* mobile learning platform now provides free access to its course authoring tool and hosting services).

² The phrase is borrowed from one of the child participants who used it to describe what he perceived as a disconnect between his textbooks and 'the real world'.

4. Results

4.1 Changes in EFL achievement

Paired-samples t-tests were conducted to evaluate the extent of improvement in students' EFL achievement. Mean gain scores, t-statistics with their corresponding levels of significance, and effect sizes are reported in Table 1. All measures demonstrated statistically significant increase between pre- and post-test scores ($p < 0.01$). In terms of the amount of variation in scores between pre- and post-tests, analyses demonstrated that effect sizes were positive and large for all four linguistic constructs.

Table 1. Mean improvement from pre-test to post-test (%) and effect sizes, by measure of attainment

L2 measure	N	Mean Learning Gain	<i>t</i>	<i>d</i>
Vocabulary	46	13.48 (9.20)	9.933**	1.47
Grammar	41	15.66 (13.49)	7.432**	1.16
Aural Comprehension	40	26.60 (22.38)	7.517**	1.19
Writing Skills	43	15.35 (16.23)	6.200**	0.95

Note. Standard deviations in parentheses.
** $p < 0.01$

4.2 Impact of the intervention on EFL achievement

Ordinary least squares regressions were used next to examine the strength of association between the intervention and students' academic achievement at post-test whilst controlling for prior attainment; time spent on the asynchronous component of the intervention (*asynchronous*) and in sessions during the intervention (*synchronous*); English proficiency level (*level*); amount of English language learning taking place outside school (*tutoring*; in hours/week); and pre-test scores (*pretest*)³.

Table 2 provides an overview of the results of the analyses across the four language domains. Overall, it was found that the amount of time spent on the online learning platform, *EdApp*, used as a proxy for the asynchronous component of the intervention, was a strong predictor of mean EFL achievement at post-test. Separate analyses for each outcome measure uphold this finding, with the exception of writing skills, in which case time spent online could not be established as a significant predictor. With the effects of the other four factors held constant, for every approximate three hours or more spent on the self-paced online course, an extra 8.0, 5.0 and 4.7 percentage points were achieved on the aural comprehension, vocabulary and grammar assessment at post-test, respectively. Conversely, the amount of live contact was not found to have a significant direct effect on post-test performance in any of the four linguistic domains examined⁴.

3 The analysis was only run on measures which had previously indicated a significant change from pre- to post-test.

Table 2. Multiple regression on post-test achievement

	Vocabulary Knowledge	Grammar Knowledge	Aural Comprehension	Writing Skills
	β	β	β	β
Asynchronous	.216**	.198*	.294*	.025
Synchronous	-.074	-.103	-.022	.034
Level	.172	.398***	.586***	.140
Tutoring	-.050	-.143	.020	-.066
Pretest	.713***	.541***	.242	.771***
Adjusted R ²	.855***	.833***	.690***	.660***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.3 Cost analysis of the blended intervention

To identify and estimate the total resource cost for the intervention, this analysis uses the Cost-Procedure-Process-Outcome Analysis (CPPOA) Model (Yates, 1999, 2009) and the ingredients model (Levin & McEwan, 2001). The CPPOA model provides a useful framework for measuring:

- resources (what makes a programme possible),
- procedures (what a programme does with participants),
- processes (what a programme changes in its participants), and
- outcomes for an intervention (what a programme achieves with and for participants)⁵.

The ingredients model is a systematic approach to cost estimation of an intervention (Levin, 1983), and entails three phases: '(a) identification of ingredients [i.e. programme resources]; (b) determination of the value or cost of the ingredients; and (c) an analysis of the costs in an appropriate decision-oriented framework' (Levin et al., 2012, p. 9). Finally, the focus of this analysis was on the incremental costs of delivery, above and beyond existing costs of regular school programming in each of the participating schools.

The first step was to organise all the resources used for the implementation of the programme into the following cost categories:

Personnel

An annual personnel cost was established based on teacher base salary data obtained from the Ministry of Economic Affairs. The estimated salary cost was inclusive of time needed for preparation, teaching, marking and administrative duties.

4 Although not discussed here in detail, it is noteworthy that further analysis using structural equation modelling procedures revealed there to be small but significant indirect effects of live contact on vocabulary, grammar and aural comprehension attainment ($p = 0.019, 0.023$ and 0.004 , respectively); these were all mediated by the amount of students' engagement with the learning platform.

5 Only (a) and (b) were taken into consideration for the purposes of the present cost estimation analysis.

No adaptation was made for the number of teaching hours per week, as the estimation was carried out on the premise that one English language teacher would teach in more than one school until they reached a full-time workweek (i.e. 24 hours/week).

Facilities

Even though the use of facilities was identified as a resource, this category was not included in the cost estimation analysis. The reason for this was due to the fact that the school space used as part of the programme did not incur any incremental costs for the district as the classrooms were already being used for the purposes of regular school programming.

Materials

The materials resource did not include the cost of computers, as all the schools were already equipped with at least one desktop or laptop computer (whether in use or not), however, it did include the cost of an overhead projector and a screen for groups with a number of students larger than five. Pricing was based on a mid-range projection kit of a similar standard to what was being used by schools throughout the intervention, with an assumed life cycle of four years, which probably constitutes a rather conservative estimation. It also included e-learning content and training materials development costs, which would, nevertheless, be incurred during the first year of programme implementation only.

Following the creation of a list of basic resources, the next step was to identify relevant activities/procedures which were involved in the implementation of the learning programme. These included: (a) teacher training, and (b) delivery of the EFL curriculum.

Table 3 shows a breakdown of the costs of resources by activity, along with a total yearly cost for the implementation of the BL programme across 522 small rural/peri-urban schools, assuming a mean class size equal to that of the intervention. A total cost for a four-year implementation period was also estimated as it would provide a more representative picture of the spread of costs across a period of time matching long-term government budget planning. Teacher training was calculated on the basis of providing a two-week training at the beginning of the first year of implementation, with subsequent two-day training events repeated annually for the next three years for a total of 131 teachers.

A total cost for the implementation of the blended learning programme for Year 1 was estimated at €1,886,543. Due to startup costs, Year 1 would be expected to be the costliest, with an average yearly cost across a four-year implementation period estimated at €1,761,316, compared to €1,960,632 in the regular programme.

Costs were then compared by school, with the yearly cost per student varying from €281.18 to €1124.72 (M = 790.43, SD = 308.80), depending on class size (M = 5.2, SD =

Table 3. Comparative cost analysis of the blended learning programme versus regular programming, in 2020 euros

	Blended Learning Programme		Regular Programme	
	Teacher training	Delivery of the EFL curriculum	Teacher training	Delivery of the EFL curriculum
Teachers	€71,253	€1,710,072	€0	€1,960,632 ⁶
EdApp access	€0	€0	€0	€0
Overhead projector & screen	€0	€65,250	€0	€0
Content development	€0	€19,984	€0	€0
Teacher training materials	€19,984	€0	€0	€0
Total for Year 1	€1,886,543		€1,960,632	
Total for 4 years	€7,045,260		€7,842,528	

3.0). Additionally, the average yearly costs of programme resources were compared, with teachers being the costliest resource (€1,735,011, or 98.5% of the marginal resource cost). Finally, the average costs by activity/procedure were estimated, with delivery of the EFL curriculum found to be the costlier of the two (€1,731,381, or 98.3% of the activities; teacher training was calculated at an average yearly cost of 29,935).

5. Discussion

The present research indicated positive benefits from participation in the blended distance learning intervention with respect to children's L2 vocabulary and grammar knowledge as well as their aural comprehension skills, contributing to a divided and weak discourse on the efficacy of blended L2 learning in low-resource K-12 settings. However, it is important to recognise that there was a high level of variability in the learning gains made by the children on the L2 assessments overall (MVocab = 13.48, SD = 9.20; MGram = 15.66, SD = 13.49; MAural = 26.60, SD = 22.38; MWrit = 15.35, SD = 16.23). In light of this, it seems pertinent to propose that how to systematically support students' capacity for self-regulation in a self-paced online environment in a developmentally appropriate way (e.g., setting goals and self-organising; using performance feedback for self-reflection, including making attributions about their success or failure to meet goals and recalibrating; developing a growth mindset) should be addressed in professional training of teachers so they are equipped to meet the needs of all learners. This includes self-reliance when it comes to making use of the technology at school as well as at home, as a way of counteracting the effect of varying home support.

⁶ Inclusive of base salary (€13,104 p.a.), Difficult Access Area Allowance (€100/month), and mileage costs (local fuel rate valid as of September 2020), assuming one teacher would teach in four different schools located in neighbouring towns or villages to reach a full-time workweek. As there is no provision for English instruction in small schools, the amount of contact time in each was extrapolated from the stipulated number of contact hours in urban schools, adjusted for class size.

The present research also indicated that, overall, delivering the blended EFL learning programme in the 522 multigrade schools operating with either one or two generalist teachers across the Greek mainland and islands would incur approximately 90 per cent of the incremental costs that were estimated for the education-as-usual format of the course. Costs remained lower even after taking into account initial teacher training and yearly CPD costs. While the latter were calculated on the basis of two-day training events per year — a relatively limited amount of in-service training compared to similar provision in other developed nations — it's worth noting that this study is taking a pragmatic approach, whereby it considers the contextual limitations surrounding these schools and what can be realistically expected in the short to medium term given the realities of the wider socioeconomic context within which they operate. If due consideration is given to the ways in which to optimise training, then even a relatively limited CPD provision is highly likely to constitute a significant improvement on the status quo.

Teacher costs seemed to drive the total cost for both approaches, similarly to other studies (McEwan, 2012). While per-pupil cost was much higher in single teacher schools with few students per teacher, it was found that the BL programme would be able to retain its relative advantage over the face-to-face format provided it was permitted to benefit from economies of scale by being implemented across multiple school units — in this case a total of 522 were included in the estimation. Thus, when designing a blended learning programme, it appears pertinent to consider not only what aspect of learning is being changed, but how many people the change will influence (Maloney et al., 2015).

The absence of a comparison group in this intervention, together with a complete lack of national achievement data at the primary level, made it impossible to determine which of the two approaches provides educational effectiveness at least cost. While it is true that geographical constraints deprive some of these settings of the luxury of choice, identifying the most cost-effective options available to these locales would arguably provide a fuller picture of how to allocate scarce resources across a range of competing approaches. Nonetheless, the present evaluation provides an indicative cost description of offering a BL course in these — and potentially similar — primary school settings, including all inputs needed to start-up and run the courses, as opposed to just actual purchases by a specific project. Therefore, it can be used as preliminary data on cost structures related to designing and implementing BL in teaching English to primary students attending small multigrade schools across the Greek territory — a kind of provision which is currently not available to these populations.

6. Conclusion

This study is, to the best of the author's knowledge, the first attempt to systematically investigate the efficacy of blended remote learning in low-resource K-12 settings in Greece. The present research has demonstrated that the blended remote approach holds promise for improving academic

attainment in EFL learning, especially amongst primary children attending the hundreds of small multigrade schools across the country that continue to this day to face systemic exclusion from this area of the national curriculum. What is more, it has provided an indication that it can do so at a comparable cost level to that of face-to-face programmes. The findings of the current study provide a basis for the further development of the field, by scaling up the BL approach to determine whether these positive findings can be replicated in other small multigrade schools operating in remote parts of the country and suffering from long-standing systemic marginalisation. Further, the promising outcomes obtained from this intervention suggest that there is much still to be discovered that can inform our understanding of how blended learning approaches that are centred on principles such as collaborative enquiry, authenticity, and self-paced mastery can promote deeper forms of engagement amongst primary learners.

Acknowledgements

This doctoral research was supported by grants from the Research Excellence Academy at Newcastle University and the A.G. Leventis Foundation. The author is deeply grateful to all the headteachers, parents and children who have not only made this study possible, but have also actively encouraged it, despite all the difficulties.

Statement on ethics

All research was conducted according to the British Educational Research Association Ethical Guidelines for Educational Research (BERA, 2018) as well as the Newcastle University Code of Good Practice in Research (Newcastle University, 2018), and gained the approval of the Faculty of Humanities and Social Sciences Research Ethics Committee at Newcastle University. Measures were taken to ensure that participants knew exactly what the research involved before consenting. Information sheets were translated into Greek and were provided and discussed with all the headteachers, parents and children, ensuring they had the opportunity to ask questions, that they knew they could withdraw at any time and that their anonymity would be protected. The children who received the intervention would not otherwise have been attending any English classes in their schools, and therefore the intervention did not introduce learning risks that might have arisen in the case of deviation from normal school practice.

References

- Adas, D., & Bakir, A. (2013). Writing difficulties and new solutions: Blended learning as an approach to improve writing abilities. *International journal of humanities and social science*, 3(9), 254-266.
- Anastasiou, A., Androutsou D., & Georgalas P. (2015) Η δυνατότητα αξιοποίησης των ΤΠΕ για τη συμπληρωματική εξ αποστάσεως ηλεκτρονική διδασκαλία θεμάτων της αγγλικής γραμματικής στην πρωτοβάθμια εκπαίδευση [The potential of educational technology for the supplementary online distance teaching of English grammar in primary education]. *Journal for Open and Distance Education and Educational Technology*, 11(1), 106-123. <https://doi.org/10.12681/jode.9823>.
- Anderson, T., Liam, R., Garrison, D. R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. *Journal of Asynchronous Learning Networks*, 5(2). <https://auspace.athabasca.ca/handle/2149/725>
- Bañados, E. (2006). A blended-learning pedagogical model for teaching and learning efl successfully through an online interactive multimedia environment. *CALICO Journal*, 23(3), 533-550.
- Banegas, D. L. (2013). ELT through videoconferencing in primary schools in Uruguay: First steps. *Innovation in Language Learning and Teaching*, 7(2), 179-188.
- Banegas, D., & Brovotto, C. (2020). Ceibal en Inglés: ELT through videoconferencing in Uruguay. *MEXTESOL Journal*, 44(1), 1-7.
- Barani, G. (2011). The relationship between computer assisted language learning (CALL) and listening skill of Iranian EFL learners. *Procedia-Social and Behavioral Sciences*, 15, 4059-4063.
- Barbour, M. K. (2014). *A history of international K-12 online and blended instruction*. Isabelle Farrington College of Education, Sacred Heart University. https://digitalcommons.sacredheart.edu/cgi/viewcontent.cgi?referer=https://scholar.google.com/&httpsredir=1&article=1202&context=ced_fac
- Berry, C. (2006) Learning opportunities for all: Pedagogy in multigrade and monograde classrooms in the Turks and Caicos Islands In A. W. Little (Ed.), *Education for all and multigrade teaching* (pp. 27-46). Springer.
- Blissitt, A. M. (2016). Blended learning versus traditional lecture in introductory nursing pathophysiology courses. *Journal of Nursing Education*, 55(4), 227-230.
- Boelens, R., Voet, M., & De Wever, B. (2018). The design of blended learning in response to student diversity in higher education: Instructors' views and use of differentiated instruction in blended learning. *Computers & Education*, 120, 197-212.
- British Educational Research Association [BERA]. (2018). *Ethical guidelines for educational research*, (4th ed). <https://www.bera.ac.uk/researchers-resources/publications/ethical-guidelines-for-educational-research-2018>
- Castro, R. (2019). Blended learning in higher education: Trends and capabilities. *Education and Information Technologies*, 24(4), 2523-2546.
- Chang, S. L., Gregory, N. A., & Shak, P. (2020). An experimental study on using instructional pronunciation video to improve students' pronunciation. *GSTF Journal on Education (JEd)*, 4(2), 1-9.
- Cruz, P., Goulart, F., Kwauk, C., & Perlman R. J. (2016). *Media center: Innovating with distance learning in Amazonas, Brazil*. Center for Universal Education at the Brookings Institution.
- Dwinal, M. (2015). *Solving the nation's teacher shortage. How online learning can fix the broken teacher labor market*. Clayton Christensen Institute.
- Fainholc, B. (2019). Distance education in Latin America In M.G. Moore & W. C. Diehl (Eds.), *Handbook of distance education* (pp. 543-556). Routledge.
- Fishman, B., & Dede, C. (2016). Teaching and technology: New tools for new times In D. Gitomer & C. Bell (Eds.), *Handbook of research on teaching* (pp. 1269-1334). American Educational Research Association.
- Ganimian, A. J., Vegas, E., & Hess, F. M. (2020). *Realizing the promise: How can education technology improve learning for all?* Brookings Institution.
- Garrison, D. R., & Vaughan, N. (2008). *Blended learning in higher education: Framework, principles and guidelines*. Jossey-Bass.
- Ghazizadeh, T., & Fatemipour, H. (2017). The effect of blended learning on EFL learners' reading proficiency. *Journal of Language Teaching and Research*, 8(3), 606-614.
- Gulosino, C., & Miron, G. (2017). Growth and performance of fully online and blended K-12 public schools. *Education Policy Analysis Archives*, 25, 1-42.
- Hargreaves, L., Kvalsund, R., & Galton, M. (2009). Reviews of research on rural schools and their communities in British and Nordic countries: Analytical perspectives and cultural meaning. *International Journal of Educational Research*, 48(2), 80-88.
- Hobbs, V. (2004). *The promise and the power of distance learning in rural education*. Policy Brief. Rural School and Community Trust.
- Hockly, N. (2017). One-to-one computer initiatives. *ELT Journal*, 71(1), 80-86.
- Holden, J. T., & Westfall, P. J. L. (2007). *An instructional media selection guide for distance learning*. United States Distance Learning Association.
- Istance, D., & Paniagua, A. (2019). *Learning to leapfrog:*

- Innovative pedagogies to transform education. Center for Universal Education at The Brookings Institution.
- Kaiser, D. J. (2017). English language teaching in Uruguay. *World Englishes*, 36(4), 744-759.
- Kaplan, G., & Brovotto, C. (2019). Ceibal en Inglés: Innovation, teamwork and technology In G. Stanley (Ed.), *Innovations in education: Remote teaching* (pp. 28-35). British Council.
- Kim, K. J., & Frick, T. W. (2011). Changes in student motivation during online learning. *Journal of Educational Computing Research*, 44(1), 1-23.
- Kuh, G. D. (2009). The national survey of student engagement: Conceptual and empirical foundations. *New Directions for Institutional Research*, 2009(141), 5-20.
- Levin, H. (Ed.) (1983). *Cost-effectiveness: A primer* (Vol. 4). Sage Publications.
- Levin, H. & McEwan, P. (2001). *Cost-effectiveness analysis: Methods and applications*. (2nd ed.). Sage Publications.
- Levin, H. M., Belfield, C., Hollands, F., Bowden, A. B., Cheng, H., Shand, R., Yilin, P., & Hanisch-Cerda, B. (2012). *Cost-effectiveness analysis of interventions that improve high school completion*. Teachers College, Columbia University.
- Lymperis, L. (2019). Self-organised learning: Empowering the most marginalised schools of rural Greece?. *Journal of Applied Learning and Teaching*, 2(2), 9-16.
- Maloney, S., Nicklen, P., Rivers, G., Foo, J., Ooi, Y. Y., Reeves, S., Walsh, K., & Ilic, D. (2015). A cost-effectiveness analysis of blended versus face-to-face delivery of evidence-based medicine to medical students. *Journal of medical Internet research*, 17(7), e182.
- Marconi, C., & Brovotto, C. (2019). How evaluation and assessment are intrinsic to Ceibal en Inglés In G. Stanley (Ed.), *Innovations in education: Remote teaching* (pp. 105-113). British Council.
- Marrinan, H., Firth, S., Hipgrave, D., & Jimenez-Soto, E. (2015). Let's take it to the clouds: the potential of educational innovations, including blended learning, for capacity building in developing countries. *International journal of health policy and management*, 4(9), 571-573.
- McEwan, P. J. (2012). Cost-effectiveness analysis of education and health interventions in developing countries. *Journal of Development Effectiveness*, 4(2), 189-213.
- Medina, L. C. (2018). Blended learning: Deficits and prospects in higher education. *Australasian Journal of Educational Technology*, 34(1), 42-56.
- Mitra, S., Dangwal, R., & Thadani, L. (2008). Effects of remoteness on the quality of education: A case study from North Indian schools. *Australasian Journal of Educational Technology*, 24(2), 168-180.
- Newcastle University. (2018). *Code of good practice in research*. <https://www.ncl.ac.uk/research/researchgovernance/goodpractice/>
- OECD. (2018). *Education for a bright future in Greece: Reviews of national policies for education*. OECD Publishing. <https://www.oecd.org/education/education-for-a-bright-future-in-greece-9789264298750-en.htm>
- Ofsted. (2013, June 12). *Too many bright children let down in the state system* [Press release]. <https://www.gov.uk/government/news/too-many-bright-children-let-down-in-the-state-system>
- Oliver, M., & Trigwell, K. (2005). Can "blended learning" be redeemed?. *E-learning and Digital Media*, 2(1), 17-26.
- Picciano, A., Seaman, J., Shea, P., & Swan, K. (2012). Examining the extent and nature of online learning in American K-12 Education: The research initiatives of the Alfred P. Sloan Foundation. *The Internet and Higher Education*, 15(2), 127-135.
- Plan Ceibal (2017). *10 years of plan ceibal: We made history building future*. www.ceibal.edu.uy/storage/app/media/documentos/ceibal-10-2.pdf
- Plata, G. (2020). *Teaching via TV in the Amazon*. Inter-American Development Bank. <https://www.iadb.org/en/improvinglives/teaching-tv-amazon>
- Pulham, E., & Graham, C. R. (2018). Comparing K-12 online and blended teaching competencies: A literature review. *Distance Education*, 39(3), 411-432.
- Ramirez, R. (2019). La Motivación En Las Clases De Inglés [Motivation in English Classes] In G. Kaplan (Ed.), *Ceibal en inglés: La voz docente* [Ceibal en inglés: The teaching voice] (pp. 79-84). <https://ingles.ceibal.edu.uy/storage/app/uploads/public/5e5/7ca/a46/5e57caa46ae47794499388.pdf>
- Ratcliffe, R. (2014, June 30). We need more teachers, and we need them now. *The Guardian*. <https://www.theguardian.com/education/2014/jun/30/teacher-shortage-in-2020s>.
- Robinson, P. J., & Winthrop, R. (2016). *Millions learning: Scaling up quality education in developing countries*. Center for Universal Education at The Brookings Institution.
- Rovegno, S. (2019). Inclusive practices in Ceibal en Inglés In G. Stanley (Ed.), *Innovations in education: Remote teaching* (pp. 119-132). British Council.
- Sammons, P., & Anders, Y. (2015). Researching Equity and Effectiveness in Education: Examples from the UK and Germany In P. Smeyers, D. Bridges, N.C. Burbules, & M. Griffiths (Eds.), *International handbook of interpretation in educational research* (pp.1289-1320). Springer.
- Shih, R. C. (2010). Blended learning using video-based blogs: Public speaking for English as a second language students. *Australasian Journal of Educational Technology*, 26(6), 883-897.

- Smit, R., & Humpert, W. (2012). Differentiated instruction in small schools. *Teaching and Teacher Education, 28*(8), 1152-1162.
- Spanjers, I. A., Könings, K. D., Leppink, J., Verstegen, D. M., de Jong, N., Czabanowska, K., & van Merriënboer, J. J. (2015). The promised land of blended learning: Quizzes as a moderator. *Educational Research Review, 15*, 59-74.
- Stanley, G. (2019). Introduction to remote language teaching In G. Stanley (Ed.), *Innovations in education: Remote teaching* (pp. 28-35). British Council.
- Styles, I., Raven, M., & Raven, J. C. (1998). *Raven's progressive matrices: CPM parallel sets A, Ab, B*. Oxford Psychologists Press.
- Thornbury, S. (2016). Educational technology: assessing its fitness for purpose In M. McCarthy (Ed.), *The Cambridge guide to blended learning for language teaching* (pp. 25-35). Cambridge University Press.
- Tomlinson, C. A. (2014). *The differentiated classroom: Responding to the needs of all learners*. ASCD.
- Tosun, S. (2015). The effects of blended learning on EFL students' vocabulary enhancement. *Procedia-Social and Behavioral Sciences, 199*(1), 641-647.
- Trucano, M. (2014, February 12). Interactive educational television in the Amazon. *World Bank blogs*. <https://blogs.worldbank.org/edutech/interactive-educational-television-amazon>
- Vahdat, S., & Eidipour, M. (2016). Adopting CALL to improve listening comprehension of Iranian junior high school students. *Theory and Practice in Language Studies, 6*(8), 1609-1617.
- Warschauer, M., & Ames, M. (2010). Can one laptop per child save the world's poor?. *Journal of international affairs, 64*, 33-51.
- Waters, L. H., Barbour, M. K., & Menchaca, M. P. (2014). The nature of online charter schools: Evolution and emerging concerns. *Educational Technology & Society, 17*(4), 379-389.
- Watson, J. (2008) *Blended learning: The convergence of online and face-to-face education. promising practices in online learning*. North American Council for Online Learning. <https://files.eric.ed.gov/fulltext/ED509636.pdf>
- Whyte, S. (2011). Learning theory and technology in university foreign language education. The case of French universities. *Arts and Humanities in Higher Education, 10*(2), 213-234.
- Xu, D., Glick, D., Rodriguez, F., Cung, B., Li, Q., & Warschauer, M. (2020). Does blended instruction enhance English language learning in developing countries? Evidence from Mexico. *British Journal of Educational Technology, 51*(1), 211-227.
- Yates, B. T. (1999). *Measuring and improving cost, cost-effectiveness, and cost-benefit for substance abuse treatment programs: A manual*. National Institute on Drug Abuse.
- Yates, B. T. (2009). Cost-inclusive evaluation: A banquet of approaches for including costs, benefits, and cost-effectiveness and cost-benefit analyses in your next evaluation. *Evaluation and Program Planning, 32*(1), 52-54.