

# RESEARCH REPORT

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## THE IMPACT OF FLIPPED LEARNING: A CROSS-COUNTRY ACTION RESEARCH STUDY

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KA201 SCHOOL  
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# FLIPPED IMPACT

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### RESEARCH REPORT

This research paper is a dissemination activity of the Erasmus+ project titled Flipped Impact Project funded by the Turkish National Agency. Grant Number: 2018-1-TR01-KA201 059386



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## **THE IMPACT OF FLIPPED LEARNING: A CROSS-COUNTRY ACTION RESEARCH STUDY**

### **INTRODUCTION**

#### **1. Background to the Study**

The concept of Flipping the Classroom has evolved over the past 15 years, originating in 2007 in Colorado, when two teachers – Jonathan Bergmann and Aaron Sams – started recording their narrated PowerPoint presentations and posted them online for the benefit of students who had missed class. They soon discovered that this approach did not merely serve students that had missed class but also those who wanted to view a class or lecture again, after physically attending class. At about the same time a financial analyst called Salman Khan started recording explanatory video tutorials on different math topics for his nephew. The video tutorials became so popular among other students that Kahn quit his job and founded the now world-famous Khan Academy. Even before the actual “invention” of the Flipped model, the way for an educational paradigm shift was paved by influential educators such as King (1993) and Mazur (1997). The former described the changing role of the teacher and the shift from the “sage on the stage” to the “guide on the side”, while the latter pointed out the importance of peer instruction in the learning process.

Soon the realization came that allowing students to receive instruction *out* of class and *before* class would free time *in* class for other, more meaningful, and application-oriented activities. This meant that within a few years after the first experiments in Colorado, the concept of Flipped Classroom would typically consist of two parts: (1) the video tutorial offering relevant explanation and instruction and (2) the meaningful activity or activities in class. By 2013, Bishop and Verleger attempted to formulate a clear-cut definition of the flipped classroom approach. In their definition, the flipped classroom approach is a technology-supported pedagogy that consists of two components: (1) direct computer-based individual instruction outside the classroom through video lectures and (2) interactive group learning activities inside the classroom. It is noteworthy how their definition is rigorous in

terms of the requirement of using instructional *videos* in the out-of-class learning component.

Over the years, many studies have been carried out to establish the effects of Flipped Learning (Bormann, 2014, Bond, 2020). When comparing the learning outcomes with traditional teaching, most studies suggest that the flipped classroom approach may improve student performance (van Alten et al., 2019) or at worst do no harm to student learning. Only a few studies (e.g., Gundlach et al., 2015) found evidence that students in traditional classrooms performed better than the students in the Flipped Classroom.

Another aspect of Flipped Classroom that has received a lot of attention over the years is improved student engagement. Gross et al. (2015) found a high level of student engagement and course satisfaction in their flipped classroom. Within the scope of this research we will focus on behavioral and emotional engagement or the degree of attention, curiosity, interest, optimism, and passion that students show when they are learning or being taught, which extends to the level of motivation they have to learn and progress in their education (Fredericks et al., 2012).

A number of studies, such as Betihavas et al. (2016), have focused on the challenges involved when opting for the Flipped Classroom approach. The most notable of these challenges is the time consuming nature of the initial creation of the video tutorials and the classroom activity design. Another recurring complaint by teachers is that initially some students do not come to class well-prepared; therefore, they cannot carry out the meaningful classroom activities. However, many studies have demonstrated that students prefer the Flipped Classroom approach, once they have become used to it and have seen its benefits.

In the light of the above mentioned developments, English teachers in four K-12 schools and five teacher training departments in five different European countries hypothesized that the Flipped Classroom approach might be the remedy for relatively unsatisfactory classroom performances of their students in English classes. The K-12 English teachers were less than happy about the linguistic performance of their students, the effectiveness of their classes, and their students' engagement in traditional English language classrooms. In this regard, the perceptions of all stakeholders - including K-12 teachers, pre-service teachers, and teacher educators(academics) - regarding the implementation of flipped

instruction also became the center of attention in the study. In order to facilitate a multinational study, an EU-funding proposal was written in which the problem was described and the research focus was outlined. It was decided that the focus would be on student engagement and satisfaction rather than on improved linguistic performance in an absolute sense, since the multinational character – and the different educational systems and levels in the participating countries- of the research project would render it challenging to compare students’ linguistic performances in valid and measurable terms.

On the other hand, pre-service teacher training departments have been involved in the project for two reasons: (1) student teachers would be the active creators of the online instructional tutorials, thereby alleviating the work-load of the K-12 teachers (2) by involving preservice teachers and teacher educators, they might benefit from the experience and insights gained, as well as disseminating this knowledge in the critical domain of teacher education.

## 2. Literature Review

Flipped Learning (FL, henceforth) or the Flipped Classroom (Furse, 2013; Kim et al., 2014; Lage et al., 2000; McLaughlin et al., 2014) is a twenty-first century pedagogical methodology rooted in some of the experiments and works published by authors such as King (1993), Lage et al. (2000), or Baker (2000) in the past century. It can be defined as the complete inversion of the traditional lecture-model to a more active and participatory classroom with the integration of IT practices. Also known as *backwards classroom*, *reverse instruction*, *flipping the classroom*, *reverse teaching* or *flip teaching*, this pedagogical approach that consists in using time outside the classroom to carry out certain learning processes that are traditionally implemented within the classroom, with the presence, guidance and experience of the teacher. In this regard, time in the classroom is used to enhance and facilitate other procurements in applying concepts and participating creatively in the acquisition of knowledge. (Sánchez-Rodríguez et al., 2017)

Making a diagnosis of the current teaching and learning environment, King (1993) concluded that traditional approaches to the transmission of content were not adequate enough for successful and meaningful learning. Her proposal focused on training students in a more active way which was based on a constructivist view of education. Thus, learning is regarded as an individual experiential process in which students construct their own knowledge (Jones and

Brader-Araje, 2002; Kurt, 2021). However, the flipped learning model goes beyond these initial statements. The individual acquires knowledge in context, as part of a social group and under the guidance or supervision of a facilitator, the role of the teacher applying this approach in the classroom (Jones, 2007).

The constructivist method (Laroche and Bednarz, 1998) in education favours the cognitive growth of students as it allows them to learn at their own pace and according to their own stage of development. It also fosters social learning, learning within a social environment and the development of social skills by collaborative and cooperative actions. Under the big umbrella of exposure to actions and situations, the student gradually builds up his own repertoire of knowledge on the grounds of his prior knowledge. Learning evolves as when you are making a puzzle and the more pieces you fit in the more you can see of the whole image the puzzle represents. The student-centered view of teaching is based on such constructivist theory which explains that learners are active in building knowledge through observation, problem-solving and processing (Cooper, 1993; Ertmer & Newby, 1993) thanks to the information previously obtained.

The FL model can be moulded to the cognitive capacity of individual learners as it discharges the learning process of the cognitive load involved in a traditional lecture session (Abeysekera & Dawson, 2015). In fact, it is the generation of pre-training activities that contributes to this decrease of cognitive load. The FL model is, then, adaptive to the individual experience. These are some of the reasons why it is considered as a student-centered approach. And, as such, it also embraces both active and peer learning.

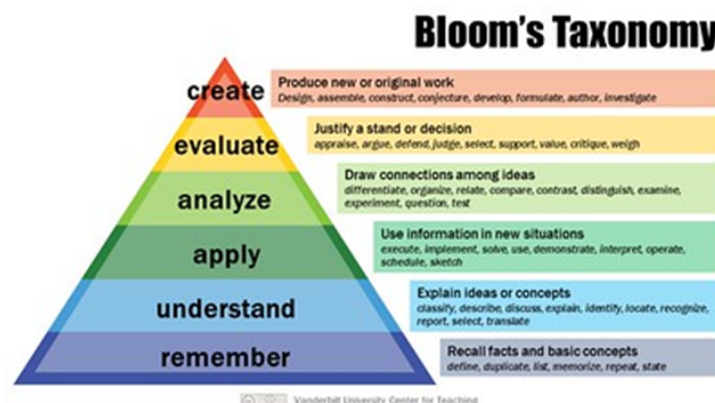
Active learning can be defined as “any instructional method that engages students in the learning process. In short, active learning requires students to do meaningful learning activities and think about what they are doing”. (Prince, 2004: 1). By peer learning, we understand “the acquisition of knowledge and skill through active helping and supporting among status equals or matched companions. It involves people from similar social groupings who are not professional teachers helping each other to learn and learning themselves by so doing.” (Topping, 2005: 631).

Both aspects evoke the implementation of an inclusive methodology in which students with different learning styles, different background knowledge and different capacities can take and retake the lesson comfortably at home. After that they can apply the concepts they have

examined to the different tasks designed by the teacher when performing a mentoring role. Motivation is required by the student's part to this respect, but previous studies have demonstrated that, despite some initial rejection to this exposure to knowledge, students do really feel engaged by the method and are, even, more motivated (Huang and Hong, 2016; Steen-Utheim and Foldness, 2017; Shahnama et al., 2021). Therefore, task design is a fundamental pillar in a flipped context as “meaningful, well-thought and well-planned tasks” are “the crux of an experiential learning paradigm” (Karaaslan & Çelebi, 2020: 646). As these scholars have also pointed out “complexity, difficulty of tasks and the conditions along which tasks are assigned influence content attainment”. (Karaaslan & Çelebi, 2020: 646). Pre-class activities could include readings, videos with tests, online quizzes, games, podcasts (being “a key component to successful blended or flipped classroom practices according to Sweet and Michaelsen, 2012:1) and in-class activities would entail group work, peer learning, problem-based tasks, student-led discussions, role-playing, video-making, presentations and the like.

The flexibility provided for students to get to know the conceptual parts of the topic runs parallel to the better use of time that the teacher can generate in the classroom. Time is not wasted but employed in solving doubts, accompanying students during the learning trip and assessing their evolution more accurately.

From the cognitive point of view, this learning process foregrounds a hierarchical classification of the different levels of thinking included in Bloom's taxonomy and the most recent revised version of it. This ordering should pursue the main educational objectives of any type of instruction. They are represented in Figure 1 below:



**Figure 1.** Bloom's Taxonomy (Amstrong, 2010)



By applying this revised version to a Flipped Classroom, the lower level of cognitive work (remember and understand) are practised by students outside of class. Then, other higher order cognitive skills (apply, analyze, evaluate and create) are practised in class with the support of both peers and instructor (Brame, 2013).

Additionally, the flipped method facilitates the acquisition and improvement of soft and digital skills. When it comes to soft skills we mean active listening, teamwork, resilience, critical thinking, commitment, flexibility, growth mindset, independent and lifelong learning, making decisions supported by data. In sum, it refers to mature learning.

In terms of digital skills, we can include the ability to use devices and applications for communication purposes, to participate in networks and to manage information. The acquisition of all these skills outline the ultimate goal of the process to perform the tasks of global twenty-first century citizens.

A vast array of literature in the last two decades narrating teaching experiences in a flipped context, account for the application of the FL model in various contexts: from elementary and secondary school to Higher Education classrooms in which research studies about students performance have been conducted (Huang and Hong, 2016); One of these studies was published by Segolsson et al. in 2017. They carried out a longitudinal case-study at an elementary school in Sweden and reported positive results for most students (not all of them) in terms of skills development, motivation and understanding their work as meaningful. Alsowat (2016) also noted that the FL model contributes to increase this involvement after investigating it in a second language learning environment. Likewise, it is to be noted that Shanama et al. (2021) have recently conducted a quantitative meta-analysis in the ESL/EFL (English as a Second Language/English as a Foreign Language) context and concluded that the effectiveness of the flipped methodology in students' achievements was statistically significant as their results had proved to be better than in the lecture-based model. These findings are in line with previous research studies such as Steen-Utheim et al. (2018), another quantitative investigation on the level of student engagement at higher education which revealed that students perceived the flipped classroom as more engaging than the traditional one. The authors grouped the results into three dimensions: cognitive, behavioral and affective, being the cognitive and the affective dimensions the most prominent ones. The behavioral dimension refers to conductual manifestations, student participation in class and their degree of supportiveness to their classmates (Latipah et al., 2020). At a cognitive level, the study confirmed that students learned

more working with their peers. Cognitive engagement revolves around student involvement in the very learning process. This dimension entails aspects such as mastering knowledge which is boosted by motivation and self-regulated learning (Nguyen et al., 2016). The affective dimension was clearly manifested through their commitment to their peers, feeling they were learning in a safe environment and being recognised by their job. Affective or emotional in the classroom context involves feelings like interest, boredom, happiness, sadness, anxiety and responsible attitudes towards their peers (Nguyen et al., 2016).

The study on the impact of the FL model on the reading comprehension of Iranian EFL learners by Lofti Sin and Siahpoosh (2020) indicates that the results of the flipped classroom group of students are better than those of the control group at both elementary and intermediate levels. They also observe that there are several factors playing a part in the success of this model, for instance, the teacher's position towards the method or even the skills they may have to produce quality videos or audios, that is, there was a clear concern with the teachers' digital skills.

The exploratory study presented by Kaçar (2020) investigating English as a Foreign Language (EFL) for K-12 Turkish students and preservice teachers in their grammar classes concluded that the experience had been relatively positive for both groups. In the case of K-12 students the study revealed benefits at the three dimensions in order of relevance: cognitive (critical thinking, problem-solving skills, self-regulation skills, independent self-learning), affective (engagement with their peers, commitment to them) and behavioral (enthusiasm within the learning environment). From the preservice teachers' point of view, they confirmed the experience had served to improve their digital skills and to enhance peer support, but they felt it was challenging from a professional perspective as it was time-consuming and not technologically easy.

Concerning the implementation of the FL model, there is an initial attitudinal component on the teacher's part that can exert either a positive or a negative influence on the teaching-learning process. This attitudinal component reflects the degree of commitment to flip the classroom, and, in this sense, there are many conditionings that can influence the situation (the teacher's age, predisposition, initiative, creativity, interest in professional development etc.), in sum, internal or personal conditionings. External facts such as the technical command of ICT (Information and Communication Technologies) are also relevant factors. As a consequence, such implementation might have to face up with organizational challenges as not all teaching staff may agree to shift their pedagogical habits. Even if this obstacle is overcome, other

challenges such as the selection of adequate materials and topics through animations, videos, presentations requiring low order skills and the design of effective in-class activities to stimulate higher order cognitive categories, the lack of technological skills, classroom logistics (space, design resources) or internet connectivity either at school or at home, could act as barriers to prevent the learner-centered methodology from being successful.

As mentioned earlier, many recent studies have and still are demonstrating the effectiveness of the flipped classroom methodology but, up to this point, it is a matter of personal decision to apply it to one's classroom or not. Three are the key issues that current pedagogical theories are emphasizing nowadays: student-centered teaching, active learning and development of soft skills, and the three of them can be found, although not exclusively, in this methodology. According to Pinnelli and Fiorucci (2015), the Flipped Classroom approach is not a well-defined model but an outcome of many types of practices that have redesigned student-centered learning as was first understood by Bloom (1956) and Vygotsky (1978). Other methodologies like peer-assisted learning, collaborative and cooperative learning maximize the class time and student self-regulation. A change in the pedagogical mindset of educational practitioners seems in order. This is an aspect that begins to form part of what governmental educational policies should consider when designing EFL curricula for students but also curricula for preservice teachers so that they had been previously trained in the model and were ready to apply it in their jobs. The three key issues above-mentioned turned into educational goals cannot hinge on personal decisions but on collegiate recommendations for the teaching community of practice.

## **2. Aim and Significance of the Study**

Although the Flipped Classroom has become quite a household word in education, it has not fully penetrated into mainstream K12-teaching in actual practice (Lo and Hu, 2017). One reason is that in the view of many educators and researchers, the self-regulatory skills of 12-14-year-olds have not fully developed for them to be well-equipped to study the instructional materials at home. Other studies have pointed out that the inclusion of right amount scaffolding and gamification may contribute to overcoming the challenges mentioned above (Parra-González et al., 2020)

The ultimate aim of this study, then, was to find out whether and how the Flipped Classroom approach might increase the engagement of 12-14 year-old students in different national and educational settings. For this research the following concrete intellectual outputs have been envisaged:

- aspects or components of Flipped Classroom that work for 12/14-year-olds
- an adapted *Flipped Model* for younger students
- a toolbox or Flipped Kit to afford teachers with practical tools, examples and lesson plans to implement Flipped Learning successfully in their language classroom

To round off this study, these outcomes would be piloted to test their effectiveness as regards student engagement and satisfaction.

The first steps of the study were undertaken in 2019. Little did we know at the time how much more relevant this study would become in the light of the strain put on educators and students as a result of the Covid-19 pandemic. From one day to the next, teachers worldwide had to start teaching online, using tools such as Zoom, Teams or Google Meet. Teachers all over the world were struggling with ways to engage their students without actually being in the same classroom. Teachers worldwide were complaining about talking into a black box and a stunning lack of student participation. The insights gained during this study have proven useful when it comes to designing online instruction on the one hand and meaningful, engaging activities – online or onsite – on the other.

### 3. Research gap

Studies into the effectiveness of the Flipped Classroom and student engagement seem to have focused primarily, if not exclusively, on university and college students (Lo & Hew, 2017). Moreover, the traditional model of integrating one-way instructional videos into flipped instruction has been the starting point in most cases. New, more interactive ways of providing engaging instruction to K-12 students are not typically regarded as instances of the Flipped Classroom. In an extensive study on the effect of the addition of self-regulatory prompts in video tutorials (Moos & Bonde, 2015) have demonstrated the significant enhancement of the efficiency of instructional videos and the stimulation of the participants' self-regulatory processes. In the same vein, Vaezi et al. (2019) have demonstrated that the use of authentic materials in the Flipped language classroom led to significantly better student performance than the use of lesson materials created for pedagogical purposes.

In the Flipped Impact project, it was hypothesized that additional, authentic and new gamified features would necessarily be implemented to effectively address and motivate the intended target group of 12-14 year-old learners. Traditionally, the focus in the Flipped Classroom

research and design has been on the criteria for successful video instruction rather than on the ultimate outcome, which refers to the meaningful in-class activity. In this article, we will explore the nature of “meaningful class-activity” in relation to task clarity, task difficulty and especially task authenticity. In this research task authenticity is defined as: authentic, relevant, real-world tasks that are of interest to the learners. Special attention will be paid to what the intended target group of 12-14 year-olds perceive to be clear, difficult and authentic. For this, activities have been designed and piloted and research data have been collected.

In order to systematically collect data about the points of focus outlined above, a set of research questions and sub-questions have been formulated.

#### **4. Research questions**

- 1) What does flipped classroom mean to the K-12 students?
- 2) What are the essential components of flipped classrooms that promote optimal student engagement based on the perceptions of K-12 students?
- 3) What is the impact of task engagement of the flipped classroom on the cognitive, affective, or behavioral engagement of K-12 students?

## **METHOD**

### **Research Design**

The study adopted a participatory mixed methods action research. In participatory action research practitioners “make use of all available data (both quantitative and qualitative) in order to build a rigorous, cohesive set of conclusions” (James et al., 2008, p. 81). Action research is regarded as a “form of mixed methods research” as both have adopted the same philosophical, methodological, and design principles as the mixed methods research (Christ, 2009, p.293). Action research combines outsider-insider perspectives via its collaborative and participatory nature (Herr & Anderson, 2005). It has a cyclical nature. “Each cycle increases the researcher’s knowledge of the original question, puzzle or a research problem” (Herr & Anderson, 2005, p.5). The practical focus of action research entails a dialectical approach to effective solutions which is reflected through the research cycles such as reflecting, planning, acting and observing (Lewin, 1984).

Action research can be defined as “a form of self-reflective enquiry undertaken by participants in order to improve the rationality and justice of their own practices, their understanding of these practices and the situations and the situations in which the practices are carried out” (Carr & Kemmins, 1986, p. 162). Action research is designed and implemented systematically through a series of procedures such as the identification of the research problem, a focus area of one’s practice that poses a problem or a ‘puzzle’, planning strategies to improve the existing situation, collecting data about the focused area, analyzing, interpreting, and reflecting on the collected data and taking further action to change or ameliorate the situation (Burns, 2009). The basic stages of action research can, hence, be summarized as a “cycle of planning, action, observation and reflection” (Kemmins & McTaggart, 1986, pp.11-14).

### The Mixed Methods Methodological Framework for Action Research

In line with the mixed methods methodological framework for action research (Ivankova, 2014) during the *diagnosis phase*, when the practitioners-researchers diagnose a problem, the mixed methods research can facilitate the conceptualization of the problem and its investigation via quantitative and qualitative methods. The *reconnaissance* or the *fact-finding phase* is concerned with the development of an action plan/intervention. In this phase, the quantitative and qualitative analyses of the data collected in the study are conducted and the results are interpreted by the practitioner-researchers. During the *planning phase*, the practitioner-researchers reflect on the results critically and start planning the action objectives and the anticipated outcomes as well as designing and intervention based on the reflections. The following step in the action cycle is called the *acting phase*, which is concerned with the implementation of the action plan that was decided in the planning phase and was informed by the mixed methods research principles. The next phase, the *evaluation phase*, involves the collection and the analysis of the qualitative and quantitative data collected in the study and their interpretations. During the *monitoring phase*, the researchers decide on whether to revise the existing planned action/intervention plan or to revise or refine it, depending on the outcomes of the mixed methods evaluation of the intervention outcomes.

## Action Research Cycles in the Study

The research conducted by the project team members in their own local contexts in the pre-COVID-19 period constitutes the first action research cycle in the study. On the other hand, the research conducted during the first online LTT organized by the Dutch team between 1 and 5 March 2021 and the second online LTT organized by the Spanish team between 27 September and 1 October 2021 constitute the second action research cycle in the study.

The research conducted before the COVID-19 period constituted the first cycle. It was the pilot phase of the project between September 2019 and January 2020 that lasted only one semester. During the pilot phase, each partner conducted the research in their own local context through flipped materials/lesson preparation and implementation. Project partners discussed the findings of the research they conducted in their local contexts during the LTT meeting conducted face to face in Turkey. Therefore, the findings related to the first phase are presented very briefly in the research paper. Due to the COVID-19 outbreak in early 2020, the project activities came to a halt in the spring semester of the academic year 2020 and resumed in September 2020. Hence, the second action research cycle started in September 2020 and continued until September 2021. The second cycle involved two online LTT activities, which constituted the main data collection instruments for the current study. Hence, the findings of the second cycle will be presented in line with the research questions.

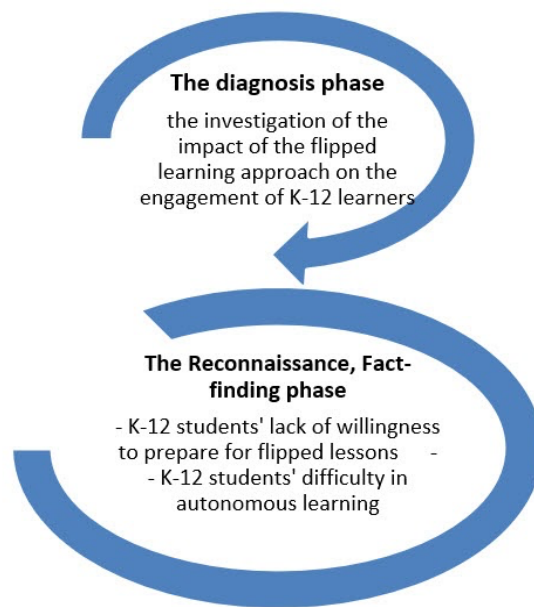
## Action Research Cycle 1:

### 1. The Diagnosis Phase

The issue of language skills as key competencies for internalisation and lifelong learning are considered two of the main policy concerns of the European Union. In fact, the lack of language competencies constitutes one of the principal barriers to participation in European education. Therefore, innovative methods of teaching and learning languages are needed to promote the teaching and learning of languages and to promote the linguistic diversity and intercultural awareness.

The Flipped Impact project aimed to investigate the impact of the flipped learning approach on the engagement of K-12 learners in their English language learning process and their 21st century skills in a technology-mediated learning environment via collaboration between K-12 schools and universities. It also aimed to promote the intercultural competence of the K-12 learners in the project. Figure 2. illustrates the first cycle in the study.





**Figure 2.** Cycle 1 in the Study

## **2. The Reconnaissance, Fact-finding, Phase**

In line with the project plan, the partners would prepare and implement flipped teaching materials in their local contexts and evaluate the impact of these materials on their students' engagement in the learning process. Twice a year, through the face-to-face /Teaching/Tranining (LTT) activities, all the partners were expected to convene and discuss the outcomes of their research in their local context, critically analyze their teaching materials and make modifications in them for improvement in line with the suggestions of the partners.

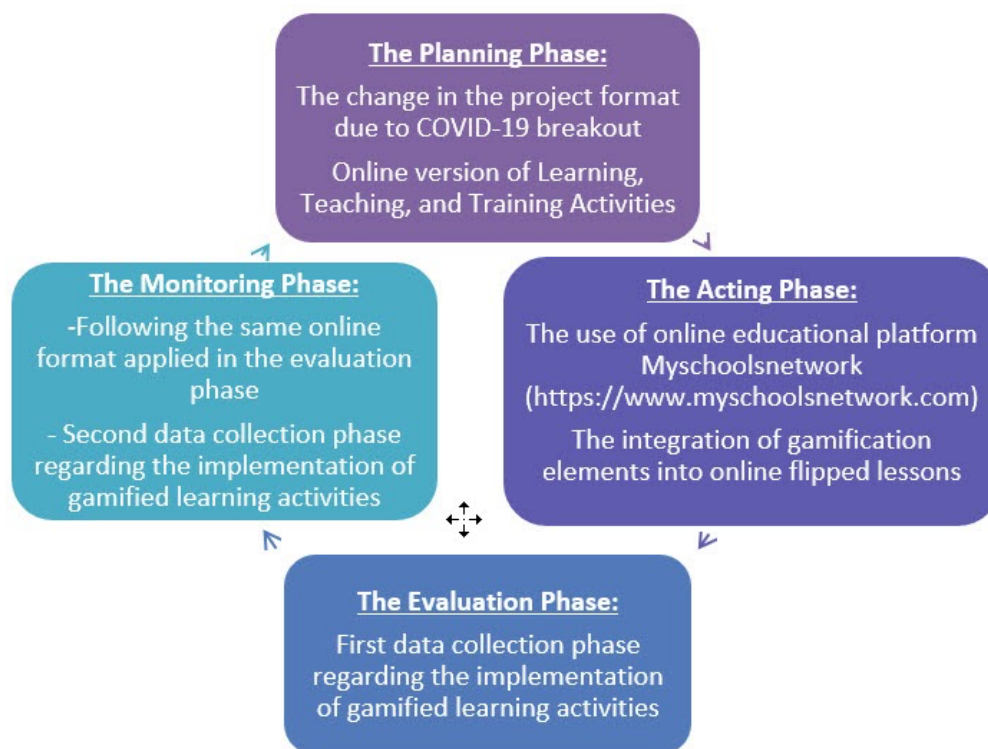
During the preliminary phase of the project between September 2019 and January 2020 that lasted only one semester the partners were engaged in the flipped materials design process and the flipped lesson implementations in their own local teaching contexts. In line with the initial project plan, the two face-to-face LTTs were held in this preliminary phase of the project (before the COVID-19 period). The first LTT was conducted in May 2019 and the second one was held in December 2019. During the first and second face-to-face LTTs, it became apparent that some students were undergoing certain cognitive and behavioral engagement issues. Due to the exam oriented system of education and the students' traditional education backgrounds, they found it hard to become cognitively engaged with the flipped learning approach. Some students failed to do the prerequisite preliminary work via technology-mediated, interactive teaching materials (e.g., via interactive videos, video lectures), before they moved on to the in-class activities in class as they were not used to assuming responsibility for their own learning



process. They reported having some problems with autonomous learning. Some admitted finding it difficult to go on without any guidance from the teacher or any instant feedback in the pre-class phase. Regarding their affective engagement, they expressed their relative lack of interest in the pre-class activities or in-class activities which are conducted on an individual basis. The K-12 students reported that their engagement in the flipped class materials/lessons did not affect their participation in classes to the extent they expected. Hence, the research in the early face-to-face phases of the project indicated the K-12 students' lack of willingness to prepare for and participate in or the insufficient preparation for the flipped lessons/courses.

### Action Research Cycle 2:

The phases with regard to the second cycle are demonstrated in Figure 2 below.



**Figure 3.** Cycle 2 in the Study

### 3. The Planning Phase

After the second LTT in Lithuania, the COVID-19 breakout and the progressive lockdown state prevalent in all the partner countries altered the trajectory of the project immensely. The emergency remote teaching procedures had to be adapted immediately by all the partner countries following the announcement of the total lockdown state due to the pandemic. These unprecedented developments necessitated the partners' reflecting on the project procedures and negotiating on a change of direction in the project. Hence, the partners decided to turn the project format into an online version. This meant that the K-12 students and other partners in the Flipped Impact project would be unable to hold any face-to-face LTTs, which would severely disrupt their exchanges and their academic sharings of their flipped materials and experiences.

### 4. The Acting Phase

In line with this unanimous agreement to conduct the project online, the project team started to design both LTTs, 2020 LTT in the Netherlands and the 2021 LTT in Spain, in an online format. Arrangements were made to promote the linguistic and intercultural affordances of the project in the online format. During the design phase of the online version, motivational and commitment-related issues that were highlighted in the face-to-face version of the project were taken into consideration, which was of particular importance to ensure the sustained motivation of the K-12 learners who would be prepared for the activities on their own in their home environments. Hence, the secure online educational platform of our Dutch partners from NHL Stenden University, Myschoolsnetwork (<https://www.myschoolsnetwork.com>) was used as the platform for the online LTTs. It was an international platform aiming to connect a variety of K-12 students, schools, universities worldwide and to facilitate the student-teachers' online innovative materials design. In line with the previous literature on flipped learning (e.g., Hamari et al., 2014; Hew et al., 2016; Gündüz & Akkoyunlu, 2020; Parra-Gonzales et al., 2020), gamification elements and teacher scaffolding were added to promote student motivation for learning in flipped lessons. The rewards, competitive and collaborative activities were also incorporated to the task design, which were indicated to enhance task motivation (Hung, 2018; Leung et al., 2014; Landers & Callan, 2011; Parra-Gonzales et al., 2020, Zainuddin, 2018).

## 5. The Evaluation Phase

Within the scope of the evaluation phase, in line with pre-class activities, K12 students of four nationalities introduced themselves via Teams, moderated by preservice students and played the guessing games using vocabulary items and grammatical structures studied in the flipped course. Then they went on a treasure hunt, working in mixed groups. Preservice students acted as hosts in pairs. The team that won all 11 crosses and found the treasure was the winning team. In this regard, students applied everything they learnt in the first and second stages of this flipped learning arrangement.

The analysis of the quantitative survey data collected during the first online LTT organized by the Dutch team (See Table 1 in Appendix A for the qualitative results in Appendix A) indicated that the online format appealed to the K-12 participants.

## 6. The Monitoring Phase

In the light of the project team members' reflections on the relatively successful outcomes of the first online LTT, the project team decided to follow the same online format for the second online LTT organized by the Spanish partners (See Table 2 in Appendix B for the quantitative results pertinent to the second online LTT). To that end, K12 students of four nationalities played a new guessing game featuring the future tense as studied via the flipped courses created by the international team of preservice students. The session was moderated by preservice teachers. K12 students were informed that they would play an online escape room. They needed to study the flipped course about the past tense, historical persons, places and objects from five different countries in order to be successful.

K12 students played the online escape room in which the written history of the four participating was hacked. They had to beat the hacker by applying the knowledge from the flipped course, by collaborating and applying problem solving skills. The team that cracked the code first was the winner.

## The Theoretical Framework

The study adopted the classroom engagement framework was adopted in the study (Wang et al., 2014). The core components of this framework are cognitive, affective and behavioral dimensions (Fredricks et al., 2004). The cognitive processes deals with the processes such as “meaningful processing, strategy use, concentration and metacognition” (Ayçicek & Yanpar-Yelken, 2018, p. 387). In a recent review study by Bond (2000), “positive self-perceptions” and self-efficacy”, “self-regulation”, ”understanding”, “learning from peers”, were also identified as cognitive engagement indicators (p.13). The affective dimension is related to the “positive feelings of students such as interest, excitement, and amusement” (Ayçicek & Yanpar-Yelken, 2018, p. 387). Apart from these aforementioned indicators, “positive interactions with peers” and “positive interactions with teachers” and “enthusiasm” were also included in the affective engagement indicators The behavioral dimension addresses “the observable behaviors such as being active in a teamwork and completing tasks without delay” ‘Skinner et al., as cited in Ayçicek and Yanpar-Yelken, 2018, p.387). Two other indicators of behavioral dimension mentioned in literature are listed as” Increased interaction with peers“, “confidence”, “learning from peers” “study habits/assuming responsibility”(Bond, 2020, p. 13). The K-12 participants’ different types of engagement in the project were analyzed via the engagement framework.

## Participants

The participants in the action research study were selected via purposeful sampling procedures. The K-12 learners who participated in the study were determined by the K-12 partner schools in the project (Patton, 2002). It was a sampling strategy used for the identification and selection of information-rich cases to utilize the existing resources effectively (Patton, 2002). The project participants were chosen from the voluntary K-12 students with an A2 level of proficiency and above (according to the CEFR level) who can use the digital platforms easily. They were willing to participate in the project. In this action research study, following the preliminary face-to-face phase of the project, the two online LTTs were held, with the participation of K-12 learners from four partner countries: the Netherlands, Spain, Turkey and Lithuania.

As to the first online LTT organized by the Dutch team, 48 K-12 learners from the partner countries participated in the LTT. Thirty-four percent of the participants were Dutch, 23.4% Spanish, 17% Turkish, and 25.5% Lithuanian. Regarding the age range of the participants, it varied between 12 and 15. 36.2% of the participants were between 12 and 13, while 34 % of them were between 14 and 15. 21.3% were between 15 and 16.

Regarding the second online LTT organized by the Spanish team, 48 K-12 learners participated in the LTT activities. 28.26% of the participants were Dutch, 23.91% Spanish, 21.73% Turkish, and 28.26% Lithuanian. The age range of the participants in the second LTT was as follows: 2.1% were 11, 43% between 14 and 15, 2.1% between 15 and 16, 28.26% between 12 and 13; 23.91% between 16 and 17.

### **Data collection instruments**

The data in the second cycle of the action research study were collected online via a focus group interview with K-12 participants in the project and a survey. The K-12 participants were asked in the mini survey whether they found them exciting, difficult, useful and fun on a 5-point Likert-scale. In addition, they were also asked to mark a score ranging from one to ten to express their opinion of the entire day and left comments if they had any. The quantitative survey data was used to complement the qualitative data obtained from the qualitative data from the focus group interviews for triangulation purposes in the study. The focus group interview was composed of open-ended questions aiming to collect data regarding the K-12 learners' perceptions on flipped learning, the components of flipped learning. Six K-12 learners on the project team from each K-12 partner institution who participated in the online LTTs were selected for the interviews. Focus group interviews, a common data collection technique in qualitative research, are considered a useful attempt to gather participants with common experiences together to explore a particular subject of interest, and it is regarded as an effective way to collect knowledge from all kinds of people ranging from children to elderly adults (Lune & Berg, 2017). The focus group interviews were conducted online via Zoom at the end of the second online LTT in Spain. The interview questions can be seen in Table 3 in Appendix C.,

### **LTT Tasks**

Due to the COVID-19 outbreak, the 2020 LTT in the Netherlands and the 2021 LTT in Spain were designed to fit an online format. In line with the aims of the project, the online LTT tasks incorporated both linguistic and intercultural learning outcomes. Due to accessibility and security issues, the tasks were uploaded to Myschoolsnetwork, (<https://www.myschoolsnetwork.com>), an international online educational platform developed by NHL Stenden that connects schools worldwide and where student teachers can develop innovative and interactive instructional materials. The tasks were designed in line with the Bloom's taxonomy, ranging from the stages geared towards lower-order thinking skills (i.e., remembering and understanding, and applying) in the flipped course activities and the higher

order thinking skills (analyze, evaluate, and create) during the online LTTs. The K-12 participants were engaged in differentiated assignments individually at home for the flipped course while they were engaged in interactive group assignments incorporating gamification elements in their flipped learning experiences during both LTTs. In the design phase of the tasks, Neuner's exercise typology, which involves a progression from receptive to productive assignments, was also considered (Brans, 2019). In both LTTs, the K-12 learners commenced with a baseline test through which they assessed their entry-level knowledge about the topic and identified their challenges. They were also provided with some recommendations regarding the assignments in the Flipped Course they need to complete in order to be well prepared for the final assignment.

For the LTT in the Netherlands, during the flipped course, the K-12 learners were engaged in practising asking questions in English during the preparation phase, which enabled them to ask more questions during the guessing game and fostered their interactive activity participation. During the interactive *Guessing Game* activity, K-12 learners of four nationalities played a guessing game (with a language focus on the future tense) designed and facilitated by the international team of pre-service teachers. The learners were asked to think of a famous person or cultural object and other group members were supposed to guess that object via asking closed-ended questions (<https://www.myschoolsnetwork.com/projects/guess-who-or-what-ltt>). Subsequently, the K-12 learners were involved in a second interactive activity, a digital scavenger hunt called *Let's go on a treasure hunt!* along the eleven cities of Friesland in groups of international students from four participant countries, guided by the student teachers. In this digital hunt, the K-12 participants were expected to apply what they learned in the previous tasks. This interactive task gave them an opportunity to improve their linguistic competence and to enhance their intercultural knowledge. All the tasks in the Dutch LTT were focused on the social interactions in the English language at the A2 level in accordance with the Common European Framework (CEFR). The language focus was the Simple Present Tense.

Regarding the LTT in Spain, the same format in the Dutch LTT was adopted in the Spanish LTT. The language focus of this LTT was the Simple Past Tense. The students were assigned the task to escape from an online escape room (<https://www.myschoolsnetwork.com/projects/escape-room>). The task revolved around a story of a hacker who had stolen the history of the four participating countries in the Flipped Impact project and the United Kingdom. The hacker encrypted the historical facts. The K-12 learners were asked to combine the historical knowledge of four different countries to defeat

the hacker. As the escape room task is concerned with history, K-12 learners needed to use sentences and words in the past tense, as well as the knowledge they learned and practised in the Flipped Course. In each of the 10 encryptions, learners were expected to fill in the information gap related to important historical events and solve a puzzle. With each completed encryption of the escape room, the learners could discover a part of the code. This code was composed of numbers; when they managed to find all numbers, they converted them into letters. When they combined the letters to form a correct word, they could inform the teacher and they could beat the hacker. Afterwards, they could escape the escape room. (<https://www.myschoolsnetwork.com/projects/escape-room.>)

### **Data collection procedures**

The focus group interviews in the study were conducted online via Zoom the last day of the online LTT organized by the Dutch team and the second online LTT organized by the Spanish team to gain insights into the K-12 participants' perceptions of their flipped learning experiences. Six K-12 learners from each of the four partner K-12 schools in the project were interviewed online via a focus group interview. The members of the project coordinating team from Middle East Technical University conducted the interviews. The interviews were recorded online with the permission of the participants. Moreover, the survey was administered to the K-12 LTT participants online at the end of the LTT activities on both online LTTs. Ethical permission was obtained for the administration of the surveys in advance.

### **Data Analysis**

The recorded interviews were sent to a company specialized for video transcriptions to be transcribed. The transcribed qualitative data were analyzed thematically via inductive content analysis (Creswell, 2009). The members of the project coordinating team were involved in the inductive data analysis. The team members read the data set in an iterative fashion through the constant comparative method and assigned codes to the chunks of data (the open coding stage). Later on, they grouped the codes into categories and refined the overlapping categories (the axial coding stage). Next, they focused on the core categories and formed the main themes and the sub-themes in the study (the selective coding phase). They repeated the above mentioned cycle until they reached data saturation. In cases where the team members failed to agree on a particular code or category, they revisited the data set and negotiated until they reached an agreement. The main and sub-themes from the focus group interviews can be seen in Table 1



in Appendix A and Table 2 in Appendix B. The interrater reliability was calculated to be 95%. The qualitative data obtained from the focus group were triangulated with the quantitative data obtained from the survey. With respect to the analysis of the quantitative data from the survey, the survey data were analyzed via descriptive statistics. The survey results can be seen in Table 1 in Appendix A (the first online LTT organized by the Netherlands) and Table 2 (the second online LTT organized by Spain) in Appendix B.

## Findings

Regarding the findings related to the first cycle of the action research, during the face-to-face period of flipped materials design process and the flipped lesson implementations, it became apparent that some students were undergoing certain cognitive, affective and behavioral engagement issues. Due to the exam oriented system of education and the students' traditional education backgrounds, they found it hard to become cognitively engaged with the flipped learning approach. Some students failed to do the prerequisite preliminary work via technology-mediated, interactive teaching materials (e.g., via (interactive) videos, video lectures), before they moved on to the in-class activities in class as they were not used to assuming responsibility for their own learning process. Regarding their affective engagement, they expressed their relative lack of interest in the pre-class activities or in-class activities which are conducted on an individual basis. The K-12 students reported that their engagement in the flipped activities did not affect their participation in classes much. As to behavioral engagement of the K-12 learners, they reported having some problems with autonomous learning. Some admitted finding it difficult to go on without any guidance from the teacher or any instant feedback in the pre-class phase. Hence, the research in the early face-to-face phases of the project indicated the K-12 students' lack of willingness to prepare for and the participation in or the insufficient preparation for the flipped lessons/courses and the lack of autonomous learner behavior. The findings pertinent to the second action research cycle (i.e., the two online LTTs) are presented below:

### RQ 1: What does the flipped classroom mean to the participants?

As to the findings related to the second action research cycle in the study, the data from the semi-structured interviews were triangulated with those from the survey data. With respect to the associations the participants had with flipped learning, they highlighted the following concepts: *interactivity, communication, interculturality, collaboration, innovative teaching approach, differentiated learning, fun, and motivating language learning experiences*. The



following quotes from the participants during the semi-structured interviews are quite revealing in this respect:

I think it was a great experience to learn and practice English and get to know other people from other countries. (P1 from Spain)

I think the first thing that comes to my mind is collaboration, and talking with, sharing with our peers from different countries (P18 from Turkey).

The K-12 participants conceptualized the flipped learning approach as an innovative approach based on an active learning methodology that promoted differentiation in terms of task types and learning environments. They associated the flipped learning experience with fun and excitement. They indicated that their flipped learning experience was characterized by interactivity, collaboration, and gamification, and enhanced via peer learning opportunities. The K-12 learners also viewed their flipped learning experiences in the project from an intercultural perspective, placing their learning experience in an intercultural learning environment.

The enthusiasm of the learners communicating in a multicultural learning environment situated in the same group space who were engaged in active collaborative and interactive learning motivates learners to think critically about the cultures of their peers. The learners' engagement of critical thinking in an intercultural learning environment during the LLTs provided them with an opportunity to activate their higher-order thinking skills to facilitate their intercultural awareness. Their engagement in critically thinking about their peers' cultures seemed to facilitate the K-12 students' critical analysis of one's own culture (Jensen, 2019), fostering their cross-cultural awareness as well.

The autonomy the learners were given through the above-mentioned active, interactive, and collaborative learning experience motivated their task engagement and commitment (Little, et al., 2017).

## RQ 2: What are the essential components of the flipped classroom that promote optimal student engagement?

As far as the flipped learning components that promote optimal student engagement are concerned, the following themes emerged from the K-12 participants' responses. The main and sub-themes can be seen in Table 3 (Appendix C). The interactivity was identified as the first main theme. The K-12 students in the semi-structured interview viewed the interactive dimension as the one of the features indispensable for student engagement. This echoes the previous studies in literature highlighting the positive and increased interactions with peers in flipped classrooms (Akçayır & Akçayır, 2018; Clark 2015; Lo & Hew, 2017; Lo et al., 2017; Lundin et al., 2018; Schultz et al. 2014; Tütüncü & Aksu, 2018). The K-12 students emphasized that the interactive nature of flipped lessons provided them with a myriad of practice opportunities to improve their speaking skills in an intercultural learning environment; thereby, promoting their oral fluency, enabling them to enjoy a communicative language learning experience. These sentiments are reflected concisely in the following extracts by one participant (P2 from Spain) during the semi-structured interviews:

If we are learning to speak and communicate with other people from other countries, then the flipped classroom is definitely better because you are learning to use the English language. You are going to speak with other people, so it's better to learn that now than later.

In addition to the abovementioned quotes from the interviews, one participant expressed his views about the importance of the interactive dimension of the flipped lessons for the promotion of intercultural competence in the survey in the following way: "Thank you for bringing all four different countries together and fusing us with a language that is actually no one's mother tongue (P. 3From Turkey)

The quote above is also revealing in that the participants seemed to raise their awareness towards the use of English as a lingua franca in intercultural communication through their engagement in the flipped lessons. The participants' growing awareness towards linguistic and cultural diversity through their enhanced intercultural sensitivity through the online flipped lessons underlined the role of language skills as key competencies for internalisation, which are among the central policy concerns of the European Union.

Closely connected to the interactive dimension of the online flipped lessons, *collaboration* emerged as the second theme related to RQ 2. The K-12 participants regarded the collaborative

dimension as one of the main factors promoting their engagement in the lessons. In fact, one Dutch participant from the Netherlands (P5) indicated that the collaborative task design was what promoted her engagement most in flipped lessons:

I like activities where we were put into groups and had to collaborate with my groupmates to finish the tasks, just as we did while doing Camino de Santiago or Guess Who.

In fact, the crucial role of peers and collaboration in fostering engagement was cited in previous literature on flipped learning (Jong, 2017). Collaboration and peer learning opportunities might be promoted via the flipped learning approach as it tended to foster student motivation and enjoyment (Bond, 2020).

Apart from interaction and collaboration, the participants also pointed out that the *gamification element* in the flipped lessons, which constitutes the third main theme, fostered their engagement into the tasks during the LTT. They reported that the game-like nature of the activities was what helped them sustain their motivation for involvement throughout the LTT. One participant indicated that thanks to the game-like nature of the activities, she was able to “pick up English faster than she “would in her regular classes” (P3 from Turkey). The practice opportunities to use English for communication during the activities seemed to enable them to internalize the grammar rules. The student-centered environment during the LTTs provided K-12 learners with problem-based learning activities and promoted student motivation (Boyle et al., 2011). They felt a sense of success when they saw themselves putting their knowledge of English grammar into action when they were doing the activities. The gamified task design adopted in the LTT enabled them to use English for communicative purposes, raising their motivation for task engagement. The majority of the participants (70%) in the first LTT organized by the Netherlands found the activities exciting. (M=4.11, the Dutch LTT; M=4.36) Also, they concurred that the activities were fun (74.5%) (M=4.15). Similarly, in the second online LTT organized by Spain, 75% of the participants found the flipped activities exciting (M=4.36) and 80% fun (M=4.32). The incorporation of gamified elements in online learning environments was found to promote student motivation and participation by offering students a flexible student-centered environment with cooperative, problem-based learning opportunities (Boyle et al., 2011; Jo et al., 2018; Tsay et al., 2018).

*Differentiation* constituted the fourth main theme regarding the second RQ. The participants highlighted the triggering motivational impact of the differentiated tasks in the

LTTs on their task engagement ( $M=4.11$  for the LTT in the Netherlands and  $M=4.36$  for the LTT in Spain) (See Table 1 in Appendix A. and Table 2 in Appendix B.). The goal-oriented tiered tasks in the study moved from the receptive tasks focusing on lower order thinking skills (i.e., the tasks on the flipped courses) to the productive tasks with a focus on the higher order thinking skills (i.e., the interactive collaborative tasks). Starting with a baseline test for diagnostic purposes and guiding students step by step on the flipped course towards tasks with different levels of challenge in a goal-directed manner enabled K-12 learners to develop a sense of self-efficacy for their final interactive task performance and to taste a sense of success on task completion. The K-12 learners during the interview revealed their satisfaction with the differentiated tasks in the LTTs in the following way:

The materials are not very difficult but they're not very easy (P4 from the Netherlands)

The flipped lessons result in better learning experiences (P5 from the Netherlands)

Also, the majority of the students reported that they enjoyed performing a variety of tasks ranging from individual to collaborative ones in an interactive online learning environment during the LTTs.. The following quote is quite revealing in terms of the impact task variety and collaborative task design had on the participants:

Unlike traditional lectures, flipped classrooms include more interesting topics and varied activities" (P5 from the Netherlands).

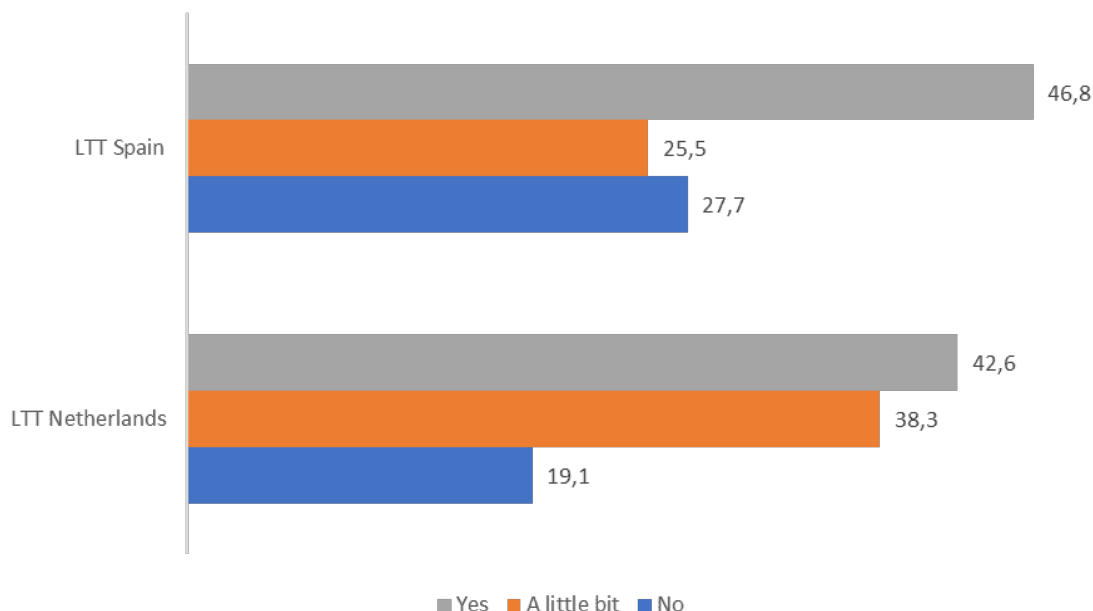
The Guessing Game was an individual activity while the Escape Room was a collaborative one. Both were useful in different ways (P6 from Spain)

The motivational impact of the task variety in the LTTs was also pointed out in the previous research literature as well. The variety of activities in the LTTs were indicated to increase students' interest in the content (Lee, 2018; Pengfei & Mingxuan, 2016; Song & Kapur, 2017). Also, the game-based nature of the tasks was found to contribute to the students' engagement (Jo et al., 2018; Tao, Huang, & Tsai, 2017; Ye, Hsiao, & Sun, 2018)

### RQ 3: What is the impact of the flipped classroom on the K-12 students' cognitive, affective and behavioral engagement?

Regarding the third research question (R.Q3), the impact of flipped instruction on cognitive, affective and behavioral engagement, the participants focused on different degrees of engagement throughout the LTT activities.

As to the cognitive engagement, several themes emerged during the semi-structured interviews with the K-12 participants. (See Table 4 in Appendix D for the main and sub-themes related to R.Q. 3). *Perceived task usefulness* was the first main theme in terms of cognitive engagement. Although the K-12 learners regarded the tasks in the LTTs as quite motivating, the learners found the LTT tasks moderately useful in general. (M=3.88 for the LTT in the Netherlands and M= 3.81 for the LTT in Spain).. Some learners expressed favorable perceptions of their flipped class experiences in terms of more effective conceptual learning (P6 from the Netherlands) during the interviews. They seemed to view the flipped pre-work activities (the flipped courses) as useful and facilitative of their learning process. In fact, as Figure 3 indicates, the majority of the participants in both LTTs indicated they studied the flipped courses to prepare for the interactive tasks during LTTs.



**Figure 4.** Preparation Before Tasks (%)

In addition, they regarded the interactive activities during the LTTs as a worthwhile and useful learning experience for them despite the slightly more workload in the flipped courses:

Being involved in flipped lessons results in better learning experiences but it does involve a higher workload (P3 from Turkey)

The aforementioned findings concerning the cognitive engagement of the K-12 learners in the study are in line with the previous research.

Some participants' responses during the semi-structured interviews also pointed out the *deep learning experience* that flipped lessons provided for the LTT participants, which emerged as the second main theme regarding cognitive engagement.. The participants seemed to be quite content that the goal-oriented approach adopted in the task design that are based on the learning objectives, the sequencing of the activities in different learning modes (ranging from individual to the collaborative modes) and the incorporation of multimodal means of representation as well as the opportunities for personalization contributed to the learners' deep learning experiences in the LTT activities. One participant (P9 from Turkey) expressed his deep learning experience succinctly: "the flipped tasks mean more work but I think you learn more from it". Performing the goal-oriented tiered tasks in both LTT activities starting with the receptive tasks emphasizing lower order thinking skills and progressing towards the productive ones with an emphasis on higher order thinking skills might have contributed to the favorable K-12 student perceptions of the flipped approach.

*The authentic task design* emerged as the third main theme related to cognitive engagement in the study. The integration of tasks into the LTTs that appeared to be a close approximation of real life situations which involve an information gap, seemed to contribute to the K-12 students' task engagement. The participants reported that they gained a lot of insights into the history and geography of different countries and that they raised their intercultural awareness and sensitivity through their engagement in LTT activities. In fact, one participant (P3 from Spain) regarded the flipped lesson as quite different from a traditional lesson: "This is richer than a lesson". This finding reinforced that of Mason et al. (2013), pointing out the importance of the authentic and intrinsically rewarding nature of flipped tasks to apply what they learned in the pre-work activity.

As to the impact of the flipped lessons on the affective engagement of the K-12 learners, the participants (76.6%) underscored the motivating nature of the flipped activities during the LTTs (M=4.15 in the Dutch LTT and M=4.32 in the Spanish LTT). The participants pointed out

during the interviews that the interactive and collaborative task design features in the LTT activities and the task variety had enhanced the motivation level of students. Apart from the aforementioned features of flipped learning, the intercultural aspects of the tasks were found to further promote learner motivation. The following quotes from the participants during the interviews are representative:

Flipped lessons are motivating because most of the exercises you do in flipped lessons are interactive and nice to do (P8 from the Netherlands).

My motivation increased a lot because we are doing fun and interactive activities. Also, doing activities with my international group mates increased my motivation (P12 from Turkey).

I think we worked hard but at the same time we had fun and we were entertained (P15 from Lithuania).

Flipped lessons increases my motivation for the subject, so I like it better than regular classes- (P9 Spain)

The participants indicated during the semi-structured interviews that the emphasis on authentic communication was what made flipped tasks more motivating than the traditional classroom-based tasks. This might be closely linked to the common focus of the both LTT activities on social interactions. Incorporating authentic tasks where learners are provided with opportunities to apply their knowledge and skills to real life situations and authentic performance-based assessment might have fostered their affective task engagement. They indicated that the traditional textbook materials prepared them for the test and the emphasis on these materials was on memorization. On the other hand, the flipped materials helped them practise their language skills in an authentic context resembling real life situations. They promoted the participants to be engaged in active learning as opposed to rote memorization.

The findings of the study related to the favorable impact of flipped lessons on the K-12 learners' motivation echoed the previous studies in literature, indicating the favorable role of game-based tasks in promoting the student engagement in flipped learning (Jo et al., 2018) and the importance of experiential learning activities in groups in the motivation and interest of the students (Rontogiannis, 2014) (See also Bond, 2020).

On the other hand, some others indicated affective disengagement with the flipped learning approach during the LTT activities. They reported feeling dissatisfied when engaged in the

flipped learning environment as opposed to a traditional one. They remarked that they felt insecure when they were left to their own devices to discover new concepts during the online flipped course. They also indicated a sense of anxiety when they went out of their comfort zone of their regular classroom, with the group space transformed into a dynamic, interactive learning environment. In addition, the pre-class activities appeared to pose a challenge for the affective engagement of some students who felt insecure at the prospect of risk-taking in the language learning process: “I want someone to explain to me the rules before I start to experiment with them” (P1 from the Netherlands). The learners’ abovementioned perceptions regarding their affective disengagement might be attributed to their traditional educational background (Lo & Hew, 2017; Lundin et al., 2018) and their relative unfamiliarity with the approach (Lo et al., 2017; Tütüncü & Aksu, 2018).

As far as the impact of the flipped lessons on the behavioral engagement of the K-12 learners is concerned, *the active learning opportunities* embedded in the flipped activities were the first theme that emerged in the data. Some participants (e.g., P10 from Spain) indicated that the LTT activities provided them with multiple opportunities to use their English for communicative purposes through interactive and collaborative tasks. During the LTTs, the students were engaged in interactive information gap activities to complete the tasks. This “increased interaction with peers” in the study was referred to as one of the indicators of engagement in flipped learning literature (Bond, 2020, p. 13).

The participants emphasized that the interactive dimension of the flipped lessons acted as a catalyst for the improvement of their communicative competence in the English language. Hence, their engagement in flipped activities during the LTTs helped them improve their pronunciation skills, oral fluency, and linguistic competence. One participant from the Netherlands (P5) remarked “because of the flipped lessons, I know how to say things in English better than I would have without the flipped lessons”. Some participants also mentioned benefitting from the affordances of the collaborative task design in terms of the aforementioned linguistic gains: “I improved my language skills by working in a team” (P16 from Lithuania). The K-12 learners were happy to be engaged in collaborative knowledge construction and sharing during their involvement in both LTTs, which is characterized as one of the 21st century skills. Some participants also reported encountering a communicative challenge in terms of understanding the way some of their peers spoke in English in the collaborative activities. This challenge might be attributed to the teacher-centered exam-oriented educational background,



which was likely to have a limiting impact on the available active learning opportunities for the K-12 participants.

The K-12 students' participation in the flipped lessons in a technology-mediated intercultural learning environment seemed to contribute to their intercultural awareness and sensitivity, which was one of the main aims pursued in the Flipped Impact project. The information gap feature embedded in the interactive tasks such as the digital scavenger hunt in the Dutch LTT and the escape room in the Spanish LTT required the participants to exchange intercultural knowledge, providing them with an opportunity to promote their intercultural competence. Some participants found it motivating to become part of a goal-oriented online interactive learning environment during the LTT activities. Their favorable perceptions of online interactivity might have fostered their behavioral engagement in the LTT activities.

The findings in the study reinforced the previous literature revealing an increase in the amount of active learning time in flipped lessons. (Gough, et al., 2017, Lo & Hew, 2017; Tütüncü & Aksu, 2018). In fact, the adoption of a flipped learning approach in the study seemed to promote more active learning (participation/involvement) in the study. The interactive and intercultural exchange opportunities built into the LTT activities in the project enabled the participants to enjoy an active and experiential learning experience,

The findings indicated that their *level of participation* in the flipped activities showed some variation. In fact, the level of K-12 learners' participation in flipped activities emerged as the second main theme regarding behavioral engagement. Although the majority of the K-12 learners reported an increase in their level of participation in the activities, there were some others who reported the same or similar level of participation in the activities. Those who participated in the activities more frequently attributed the change in their participation pattern to the interactive, communicative, and collaborative features of the activities. The study indicated that the incorporation of gamified elements into online activities were likely to promote student participation (de Rocha Seixas, et al., 2016). The feature of task interdependence embedded in the collaborative tasks seemed to foster the interaction among the team members during the group tasks as well. The following quotes are quite representative in this respect:

I had to communicate more in this project. We needed to know the people better we were working with and we needed to get to know each other to complete the task but in normal classrooms we usually know our classmates (P10 from Spain).

I had to get involved. We had to get to know each other in our group to be able to work together so I think I spoke more in this project but also during the treasure hunt or Guess Who or Guessing game (P19 from Turkey)

The K-12 participants did not seem to perceive the workload as a factor affecting their behavioral engagement. Some of them thought the workload in flipped lessons appeared to be similar to the one in traditional classes. To illustrate, one participant from Spain (P22) during the interviews remarked the following: “it was the same amount of workload”.

Some others, on the other hand, opined that although the workload in flipped activities in the flipped courses (the pre-work phase -before their interactive task engagement) seemed to be a lot more than that in traditional classroom activities, they considered the flipped lessons a worthwhile and useful learning experience for them: Being involved in flipped lessons results in better learning experiences but it does involve a higher workload (P3 from Turkey)

There were still a minority of participants who reported that their level of participation during the LTT activities decreased for affective reasons. They reported some degree of behavioral disengagement due to a lack of self-confidence in their oral fluency or a sense of insecurity for self-expression arising from their relatively limited language proficiency in English. Thus, they tended to be somewhat reluctant to participate in the flipped activities than in their regular English classes at school:

My participation in flipped lessons was more or less the same. I participated in the lessons when I was confident that I had the answer (P20 from Spain).

*Learner autonomy* was the third main theme related to behavioral engagement. The following quotes from the participants highlighted this favorable impact of LTT activities on learners’ perceptions of task engagement:

I really like figuring out things by myself. I don’t like someone else to tell me what to do (P14 from the Netherlands).

I like flipped learning as I like to be by myself throughout the learning process  
(P3 from Turkey)

Learner autonomy was identified as the main theme in the study associated with behavioral engagement. Not all participants had the same perceptions regarding the autonomy-inducing nature of the flipped tasks. Some K-12 students expressed favorable views in terms of the impact of their flipped task engagement on their learner autonomy development. The following quotes from the participants regarding the second LTT highlight this favorable impact:

I really like figuring out things by myself. I don't like someone else to tell me what to do (P14 from the Netherlands).

I like flipped learning as I like to be by myself throughout the learning process  
(P3 from Turkey).

The K-12 students reported willingness to assume responsibility for their own learning process throughout their LTT engagement.during the pre-work activities, but the interactive and motivating nature of online flipped courses led them to view the concept of pre-work in a new light:

I think in flipped lessons we have responsibilities but it is easier. Because of the interactive activities and online games, it gives us some motivation to take that responsibility, something that we do not want to do in our regular classes (P18 from Turkey).

In contrast, some other K-12 learners indicated difficulties adopting a self-directed approach towards their learning in online flipped learning environments. They reported a behavioral challenge they encountered : taking control of their own learning process at the prospect of dealing with the new content outside the safe zone of the classroom (Leo, 2017). The students' lack of familiarity with the approach and their teacher-centered educational background might account for this challenge. As the participants in the study were not exposed to a flipped learning environment prior to their study involvement and they were not used to the discovery learning approach in their regular classes, they were likely to have difficulty in the goal-directed flipped course activities. Since they were used to their teachers' organizing their learning process, they might not have developed an initiative to organize their own learning process.

Better learner focus/concentration, the fourth main theme related to behavioral engagement, was reported by some LTT participants (e.g. P3 from Turkey).The self-paced learning

opportunities might play a role in enhanced student concentration. As the K/12 learners were able to watch the videos in an uninterrupted way and as many times as they wished, they seemed to be able to focus on their learning process more effectively (See Muir, 2016):

I liked the flipped classes because in the classroom I cannot always concentrate in regular classes. The flipped lessons enabled me to follow my own progress (P3 from Turkey).

Some participants emphasized that the self-paced nature of the flipped course material, contributed to their behavioral engagement in the following way:

Flipped course materials can be effective because you have to prepare by yourself and you can repeat it whenever you need it. It is accessible and at your disposal (P2 from Spain)

The favorable student perceptions regarding the self-paced learning aspect of the flipped approach, as pointed out by P2 above, also corroborated with some of the previous studies (Vaughan, 2014), indicating the promotion of student engagement in flipped learning. However, the study findings were not in line with some other studies in literature addressing the self-paced learning aspect of the flipped learning approach. Unlike the 7th grade students who were found to be overwhelmed and anxious with the amount of pre-work they needed to complete in a given period of time (Moran, 2018), the students in the study enjoyed the opportunity to work at their own pace (Sharpe, 2016) and to be able to revise the pre-work materials such as videos as often as they needed (Abdul et al., 2017)

Unlike K-12 learners with a better focus via their flipped task engagement, there were a minority of the learners who reported suffering from concentration issues in online flipped learning environments. They pointed out the challenge of participating in the LTT activities online for a long period of time. They reported feeling challenged due to doing all the flipped activities online during the interviews. The interview findings were aligned with the survey results in relation to the task difficulty ( $M=2.15$  in the Dutch LTT and  $M=2.20$  in the Spanish LTT). This might be due to the participants' lack of familiarity with the online flipped approach. They might find it hard to sustain their motivation to participate in the online flipped tasks. The following quote by one participant (P3 from Spain) is quite revealing in this respect:

For me the most difficult part was working online. When we are in our classroom we have a book ready or something like that. You need to write things down, but here it was done online and you could search up everything in Google or something else (P2 from Spain).

Apart from the challenge of working online, some participants also indicated that they found it hard to understand the way some of their peers spoke in English in the collaborative activities, which might be attributed to the teacher-centered exam-oriented educational background.

*The leadership in collaborative activities* emerged as the final main theme as to the behavioral engagement of the K-12 learners. The K-12 learners who were between 16 and 17 years old during the second LTT indicated that as they were slightly older than the rest of their group members, they assumed the role of team leaders. The team leaders provided scaffolding for their peers who had difficulty understanding and getting involved in the activities. This suggested that the LTT activities also provided affordances in terms of peer learning, peer feedback and scaffolding. The following remarks by one participant from Lithuania (P21) constitute a representative example: “Because we were older, we had kind of the leading role to lead everyone and to start conversations”.

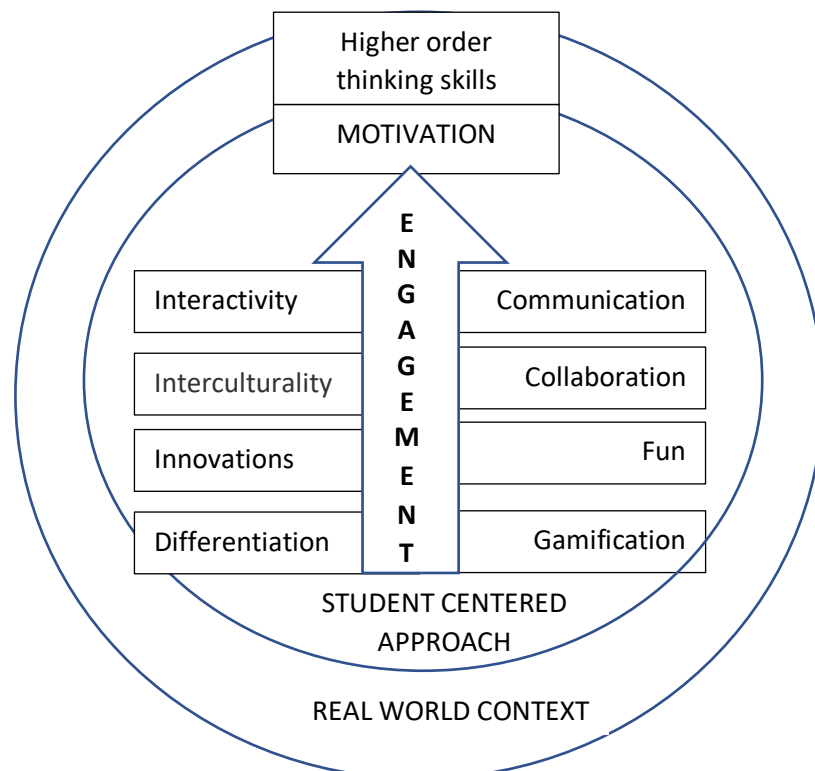
## Dicussion and Conclusions

Analyzing the FL method in the context of constructivism, it becomes clear that the engagement of pupils, cooperation, the variety of activities increase motivation and help to develop higher level thinking abilities. As a result, new knowledge, understanding and later the ability to apply them in different situations and create them are formed (Cooper, 1993; Ertmer & Newby, 1993, Nguyen et al., 2016). In addition, learning to learn competence, self-regulated learning is developed.

The results of the study revealed that students recognize and evaluate FL during teaching through interactivity, communication, interculturality, collaboration, innovative teaching approach, differentiated learning, fun, and motivating language learning experiences, as also emphasized by researchers in their works (Alsowat, 2016, Nguyen et al., 2016). One of the important tasks of education is to strive for the acquisition not only of knowledge and understanding, but also of the importance of developing higher thinking abilities. Study results show that teaching gives better outcomes by organizing not teacher-centered approach, but student-centered approach (Pinnelli & Fiorucci, 2015).

Using the FL method, K-12 students inevitably come into contact with technology, indirectly learn to apply the specified tools in the educational process, develop their digital skills. The more diverse the supply, the more pupils, the counter-fighters of the modern generation, get involved. What empirical tim has also revealed: students say that the tasks were not difficult, but encouraging to get involved and act. In some ways, this is a challenge for the teacher – to prepare various, suitable for content, engaging activities that would suit and please students. Only properly prepared tasks, played can increase motivation for students, experience the teaching process not as hard, difficult work, but as fun activities.

Communication competence is important in English language teaching, but after the first stage, the sharing of experiences and learning becomes crucial after the application of FL. The ability to communicate also makes a significant contribution to increasing K-12 studets' engagement.



**Figure 5.** Flipped Learning impact on learning

Summarizing the results of theoretical analysis and the action research, it can be said that another important aspect has become apparent – the connection with the real world, which is interesting to children. If training is linked to a relevant context, the results of the training are clearly better. The links between the results of all theoretical and empirical studies are given in Figure 5.

Applying Flipped Learning principles in teaching, in parallel student-centered approach is used taking into consideration the real-world context. The process must involve pupils, using innovation, technology, gamification, interactivity. FL's application improves communication, collaboration, intercultural, digital competencies, and as a result is increasing motivation and evolving higher order thinking abilities. The activities of this project clearly demonstrated the benefits and importance of FL's application in teaching a foreign language. The principles of activities applied in this project could also be tested in the training of other subjects.

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## Appendix A.

**Table 1.**

Evaluation of LTT in the Netherlands

	<i>N</i>	<i>M</i>	<i>SD</i>	<b>Lithuania</b> <i>M</i>	<b>Spain</b> <i>M</i>	<b>Netherlands</b> <i>M</i>	<b>Turkey</b> <i>M</i>
I thought it was exciting.	48	4.11	.91	4.08	4.00	4.00	4.50
I thought it was difficult.	48	2.15	1.10	1.50	2.09	2.53	2.37
I thought it was useful.	48	3.88	1.09	3.83	3.27	3.82	4.87
I thought it was fun.	48	4.15	.94	4.08	3.72	4.23	4.62

## Appendix B.

**Table 3.**

Evaluation of LTT in Spain

	<i>N</i>	<i>M</i>	<i>SD</i>	<b>Lithuania</b>	<b>Spain</b>	<b>Netherlands</b>	<b>Turkey</b>
				<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
I thought it was exciting.	48	4.36	1.03	4.6	4.4	4.25	4.10
I thought it was difficult.	48	2.20	1.17	1.6	2.45	3.1	1.6
I thought it was useful.	48	3.81	1.17	3.7	4.1	3.4	4.1
I thought it was fun.	48	4.32	1.02	4.6	4.4	4.1	4.1

## Appendix C

**Table 3.**

Focus group interview questions with K-12 students in the project

- 1. What comes to your mind when you think of flipped classroom?**
- 2. How were the flipped lessons different from the other lessons you had in terms of the following?**
  - a) Participation / Interaction
  - b) Motivation
  - c) Engagement
  - d) Workload/Responsibilities
- 3. What do you think about your flipped class experiences during the LTTs**
  - a) Effective aspects
  - b) Challenges
- 4. What do you like most about the flipped activities during theLTTs?**
- 5. What do you think about the materials and activities used in flipped courses before the LTTs and during the LTTs?**

## Appendix D.

**Table 4.**

The essential components of flipped classrooms promoting optimal K-12 student engagement

Main themes	Sub-themes
<b>I. Interactivity</b>	a) The promotion of intercultural competence
	b) The improvement of communicative competence
<b>II. Collaboration</b>	
<b>III. Gamification</b>	a) The promotion of sustained student motivation
	b) The promotion of practice opportunities to use English
	c) The provision of opportunities to internalize the grammar rules
	d) A growing sense of language learning achievement for students
	e) The promotion of student task engagement
<b>IV. Differentiation</b>	The motivational impact of task variety on students' learning



## Appendix E

**Table 5.**

The impact of flipped instruction on the cognitive, affective and behavioral engagement of K-12 students

Main themes	Sub-themes
I. Cognitive engagement	
A. Perceived usefulness	a)Enhanced conceptual learning
	b)Flipped activities' facilitating students' learning process
B. A deep learning experience	a) The goal-oriented approach
	b) Different learning mode
	c)Opportunities for personalization
	d)Tiered tasks
C. Authentic task design	a) The provision of intercultural learning/communication opportunities
	b) Enhanced intercultural awareness and sensitivity
II. Affective engagement	
A. Enhanced K-12 student motivation	a) Interactive task design
	b) Collaborative task design
B. Task authenticity	a) Authentic communication opportunities

	b) Information gap
	c) Social interaction
C. Affective disengagement	a) Feelings of anxiety and insecurity
	b) Being out of one's comfort zone
	c) Traditional teacher-centered background of K-12 students
III. Behavioral engagement	
A. Active learning opportunities	a) K-12 students' oral fluency, pronunciation, and speaking skills development
	b) The development of K-12 students' communicative competence
	c) Collaborative learning
	d) Intercultural competence development
B. K-12 students' level of participation	a) The task interdependence feature collaborative tasks
	b) An increase in interaction opportunities
	c) The gamification elements in the tasks (Gamified activities)
C. Learner autonomy	a) Lack of self-directed learning habits

	b) Lack of familiarity with the flipped learning approach
D. Better learner concentration/focus	Self-paced learning opportunities
E. The K-12 student leadership during the LTT activities	a) The K-12 student leadership during the LTT activities
	b) The provision of peer scaffolding and peer feedback