



Original article

Out-of-Class Learning Experience in Social Studies Course with AGORA Mobile Application

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Abstract

The objective of this study is to evaluate the effect of the out-of-class learning (OCL) experience facilitated by AGORA mobile application—developed specifically for the instruction of historical and touristic sites in the social studies course within the scope of an Erasmus+ project—on the academic achievement of fourth-grade primary school students and to examine the opinions of teachers and students regarding the AGORA platform. The study group comprises 42 teachers involved in the project and 23 students who participated in the experimental intervention. Data were acquired utilizing Social Studies Achievement Test developed by the project team alongside Teacher and Student Questionnaires. Dependent samples t-tests, frequency, and percentage values were employed in the statistical analysis of the data. The results demonstrated that the OCL experience mediated by AGORA mobile application significantly enhanced the academic attainment of the students and that both students and teachers held positive views regarding the OCL experience integrated with AGORA mobile application.

Keywords: Academic Achievement, Erasmus+ Projects, Out-Of-Class Learning (OCL), Mobile-Assisted Learning, Social Studies

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INTRODUCTION

Out-of-school factors play a pivotal role in supporting students within urban educational context, consequently shaping the pedagogical conceptualizations and practices of educators in addressing diverse learner requirements (Milner et al., 2015). A "field" is conceptually delineated as any spatial environment beyond the confines of the traditional classroom that facilitates experiential learning (Bayer & Finley, 2022). Particularly in addressing the exigencies of urban schooling, it is imperative to deploy robust strategies that diversify instructional methodologies. In this regard, out-of-class learning (OCL) emerges as a highly efficacious strategy for the social studies curriculum, specifically for instructing students on the historical and touristic heritage of their immediate topography.

Out-of-class learning is an approach that offers students the opportunity to have concrete experiences to get to know society, nature and the world. While OCL has traditionally been situated within the purview of environmental education, its significance is increasingly recognized in social studies, where the overarching goal is to cultivate active citizenship (Çengelci, 2013). OCL initiatives are structured interventions designed to supplement curricular objectives, predominantly executed outside the institutional boundaries of the school (Karademir, 2013). This multidimensional educational trajectory incorporates systematized learning activities across heterogeneous environments, enabling students to acquire diverse knowledge and skills (Bunting, 2006). Students' inquisitive minds look for logical relationships in real life contexts when learning in the classroom. The OCL process satisfies this curiosity, answers all questions from theory to practice, and provides first-hand experience from the classroom to the field. Furthermore, as OCL environments foster learner autonomy, students benefit from self-regulated learning modalities in a low-stress atmosphere characterized by reduced hierarchical surveillance (Arman, 2022). Dillon et al. (2006) posit that students retain memories of extramural activities far more enduringly than conventional instruction. In this respect, OCL can be considered as a methodology that heightening learner motivation, fostering engagement, and facilitating, encourages them to learn, and provides the opportunity to learn by doing, experiencing and having fun.

OCL can be characterized as a structured learning modality situated within an institutional framework, related to academic endeavors and instrumental in optimizing student outcomes (Arman, 2022). When what is learned in the social studies course is applied in daily life, facilitates the development of socially active individuals. Therefore, it is important to support the social studies course with out-of-class activities. Moreover, with the constructivist approach affecting today's educational practices, the confinement of social studies instruction to the classroom is increasingly viewed as insufficient (Çepni & Aydın, 2015). Therefore, it is important to teach social studies content to students in OCL environments by experiencing through doing and living.

Conventional instructional artifacts, such as textbooks, have experienced a decline in pedagogical resonance in the digital era; hence, students are increasingly gravitating toward interactive and mobile-

optimized learning alternatives (Asmawi, 2024). Moreover, the development of information and communication technology affects the learning methods and environments used (Marini et al., 2022). With technological advancement the integration of mobile applications into education can be considered as an element that will provide innovative transformation in education. Mobile applications, which are more practical than educational applications on computers, can provide a significant advantage especially for OCL. This study delineates the implementation of AGORA mobile application, developed under the auspices of an Erasmus+ project, investigating its impact on academic achievement of the Social Studies course and analyzing teacher and student opinions. By leveraging navigation-based technology, this research endeavors to modernize the instruction of historical and touristic sites within OCL environments. Ultimately, the study seeks to address a critical lacuna in the literature by facilitating effective, engaging, and participatory learning experiences through mobile-assisted OCL.

Erasmus+ Projects and AGORA Mobile Application

The overall objective of the Erasmus+ program is to support lifelong learning and the educational, professional and personal development of individuals within the domains of education, training, youth and sport across Europe and beyond, hereby fostering innovation and strengthening European identity and active citizenship. It serves as a primary tool for establishing a European Education Area that supports the implementation of European strategic cooperation in the field of education and training (Erasmus+ Programme Guide (EPG), 2023).

The Erasmus program enables individuals from diverse cultural and linguistic backgrounds to interact, thereby contributing to acculturation and intercultural dialogue. This program unites people from various geographical regions on a common ground, enabling participants to acquire knowledge through peer interaction and immersion in the cultural heritage of the host countries. This program is anticipated to yield substantial outcomes, such as the recognition of social and cultural diversity, enhanced linguistic proficiency, entrepreneurship, personal and professional development, the refinement of idiosyncratic skills, and increased competitiveness within the labor market (Hatisaru, 2017). The specific objectives of the Erasmus+ program are delineated below (EPG, 2023):

- Promote cooperation, quality, participation, and equity, excellence, creativity, and innovation, while facilitating the learning mobility of individuals and groups at both organizational and policy levels in the field of education and training;
- Foster non-formal and informal learning mobility and active participation as well as institutional cooperation, quality, participation, creativity and innovation among young people within the youth field,
- Encourage cooperation, quality, participation, creativity, and innovation, alongside the learning mobility of sports personnel at the level of sport organizations and associated policies.

Erasmus+ exchange programs are projects that provide cultural exchange and socio-cultural mobility, offering multifaceted benefits to participants (Başaran et al., 2021). Through the Erasmus program, it is envisaged to increase the significance attributed to international projects, enhance pedagogical quality, expand foreign language practice, and disseminate information regarding educational advancements in EU countries. Furthermore, it aims to contribute to national educational projects, optimize the utilization of accessible educational resources amidst technological developments, strengthen international cooperation in education, and positively impact education, employment, and the economy (Hatisaru, 2017). The Program affords the opportunity to provide education and training at all levels and for all sectors specifically for the pedagogical integration of digital technologies, facilitating the development and implementation of digital transformation plans within educational institutions. The program also supports actions aimed at enhancing digital skills and competences across all societal strata, focusing on the development of advanced digital literacy and proficiency (EPG, 2023).

AGORA Erasmus+ project is a multidisciplinary and multicultural initiative that aims to preserve the cultural heritage of significant European urban centers and provide OCL experiences by designing an innovative and customizable mobile application. With AGORA mobile application developed within the scope of the Erasmus+ project, educators can execute pedagogical activities in an OCL environment leveraging mobile technology focused on historical and touristic sites within social studies and even life science curricula. Consequently, students can emerge as active participants in the learning process, facilitating learning by doing and experiential learning, while contextualizing their knowledge within their immediate environment and benefiting from an interactive and engaging learning opportunity. AGORA mobile application also provides users with the opportunity to discover the characteristics and locations of historical and touristic landmarks and to access authoritative information about those sites. This project is predicated upon four main purposes:

- Facilitating enhanced academic outcomes and increased student achievement within the specified subject areas through the utilization of AGORA mobile application;
- Encouraging a greater proportion of educators to integrate outdoor teaching and learning outside the classroom into their instructional methodologies.
- Increasing the number of practitioners who incorporate mobile applications into their teaching practice;
- Enhancing student satisfaction by fostering more active participation in the learning process.

AGORA is an Erasmus+ project that aims to determine the effectiveness of the application developed to support primary school teachers in conducting instructional sessions outside the classroom, with a particular focus on students' understanding of historical tourist attractions. Teachers and students from Türkiye, Serbia, and Slovenia worked collaboratively and were involved in the diverse stages of the project.

Significance of the Research

In the contemporary era, where human activity is deeply intertwined with technology, pedagogical approaches should be augmented by innovative applications. Mobile application technology facilitates direct engagement with artifacts and objects in situated environments, thereby fostering enduring learning experiences. OCL mediated by mobile applications represents an effective framework for promoting students' active participation and experiential learning. Instructional experiences indicate that students learn more efficiently when utilizing digital materials and tools. This study aims to elucidate the implications of mobile applications integrated with OCL within the context of urban education.

A comprehensive review of the extant literature on OCL and mobile applications reveals several significant contributions. Kandriasari (2023) conducted a study aiming to develop mobile learning environments as a form of digital literacy to improve students' vocational skills. Arman (2022) investigated the characteristics, effectiveness, and challenges of OCL among higher education students. Mertha and Mahfud (2022) evaluated the validity of the Wordwall web application in history learning among 10th-grade students and determined the effect of this tool on learning outcomes. Güneş et al. (2025) investigated the effects of out-of-classroom learning environments on students' academic achievement in science, their motivation, and their attitudes toward the discipline. Solodka et al. (2022) examined the impact of mobile-assisted language learning (MALL) at the higher education level and students' opinions of this intervention. Kurata (2024) investigated the relationship between out-of-classroom language learning and in-classroom learning among Chinese and Japanese university students in Australia. Lazarinis et al. (2022) aimed to present an adaptive game engine used for an interactive educational environment focusing on cultural heritage. In this application, students earn grades, badges and certificates as they engage with the material and complete assessments. Marini et al. (2022) examined the effect of a mobile augmented reality learning environment with metadata on learning in science courses. Asmawi et al. (2023) also developed and implemented an educational mobile application focusing on blockchain technology within the scope of their project. Yavrutürk and İlhan (2022) examined the attainments of students participating in the Erasmus+ student exchange program, while Başaran et al. (2021) examined the impact of Erasmus+ projects on schools through the lens of teachers' views. Research on OCL (Çepni & Aydın, 2015; Çengelci, 2013) has demonstrated that educators perceive the content of the social studies course as highly compatible with OCL and that utilizing out-of-class environments increases knowledge retention and contributes to kinesthetic learning. Furthermore, in cities of significant historical and touristic prominence, culturally and historically important sites may yield greater pedagogical benefits through the active participation of students in extramural settings.

The conceptualization of urban education is intrinsically linked to the physical and social context (Milner, 2012). By integrating mobile applications into social studies education, it is possible to augment

student and teacher motivation by providing an interactive learning experience compatible with contemporary technology, thereby fostering innovation and facilitating active learning. In this study, it is aimed that students benefit from the pedagogical, ludic, and engaging aspects of AGORA mobile application developed for social studies education within the scope of the Erasmus+ project. This application aims to enhance the digital literacy and intellectual curiosity of students and teachers by providing comprehensive information about prominent historical and touristic places within the social studies curriculum, fostering group interaction and extramural experience. In summary, this study aims to determine the effects of an OCL intervention on students' social studies achievement and to analyze participant opinions regarding AGORA mobile application, which was developed by utilizing navigation technology tailored to social studies course content. It is posited that the results of this research will be instrumental for mobile application developers, researchers, project designers, practicing teachers, and individuals visiting historical/touristic sites. The purpose of this study is to evaluate the effect of the OCL experience with AGORA mobile application on students' achievement in the social studies course and on teacher and student opinions. Within the framework of this general purpose, the following sub-objectives are examined:

1. Does the OCL experience with AGORA mobile application affect students' achievement in the social studies course?
2. What are the teachers' opinions regarding the OCL experience with the AGORA mobile application?
3. What are the opinions of students concerning the OCL experience with the AGORA mobile application?

METHODS and MATERIALS

Research Design

In this study, a single-group pretest-posttest design, categorized as a quasi-experimental approach, was employed to determine the effect of AGORA mobile application on students' academic achievement in social studies. In this specific framework, the subjects' measurements regarding the independent variable are obtained as a pretest prior to the intervention and as a posttest subsequent to it, utilizing the same subjects and identical measurement instruments. Within this design, the statistical significance of the difference between the pretest and posttest values of a single group is evaluated (Büyüköztürk et al., 2008). Furthermore, a survey was administered to students and teachers following the implementation of AGORA mobile application to quantitatively ascertain their opinions concerning the application.

Participants

The partners for this Erasmus+ includes primary schools from Türkiye, Slovenia, and Serbia, alongside an organization from Serbia. The primary stakeholders consist of nine teachers and three

coordinators from partner schools, supplemented by five coordinators from scientific organizations comprising IT experts and educators. On the other hand, this project successfully engaged hundreds of students utilizing AGORA mobile application in extramural settings.

In this study, utilizing a convenience sampling strategy, 23 fourth-grade students—for whom parental informed consent form was secured—from the project partner school in Türkiye participated in the experimental intervention. In addition, 42 primary school teachers who engaged with AGORA mobile application were surveyed to elicit their perspectives regarding the mobile application. Detailed information concerning the teachers and students from whom the data for the present study were obtained is presented in Table 1:

Table 1. Demographic Characteristics of Participating Teachers and Students

Participant	Variable		F	%
Student	Grade level	4 th grade	23	100
	Age	10	23	100
	Gender	Girl	14	60.87
		Son	9	39.13
Total			23	100
Primary school teacher	Gender	Woman	36	85.71
		Man	6	14.29
	Age	24-30	5	11.9
		31-40	13	30.95
		41-50	16	38.09
		50 and above	8	19.05
	Professional seniority	1-10 yıl	5	11.9
		11-20	18	42.86
		21 and above	14	33.33
	Graduate status	Bachelor' degree	36	85.71
Masters' degree		5	11.9	
Doctoral degree		1	2.38	
Total			42	100

As illustrated in Table 1, it is observed that all participating fourth-grade students are 10 years old, with a predominant female representation. Furthermore, the table indicates that a majority of the participating primary school teachers are female, predominantly within the 41-50 age bracket. Most of these teachers possess professional seniority ranging between 11-20 years and hold a bachelor's degree.

Data Collection Instruments

In this research, for data collection a Teacher and Student Questionnaires developed by all Erasmus+ project partners was utilized, alongside a Social Studies Achievement Test constructed by the Turkish partners

Social Studies Achievement Test

To determine the impact of AGORA mobile applications on students' academic achievement, a Social Studies Achievement Test was prepared by Turkish partners. This instrument was prepared to determine the achievement level of students within the thematic framework of "Historical Beauties" contained in the "Life in Our Country" unit of the Primary School Social Studies textbook (Tüysüz, 2020). The test was constructed based on the end-of-topic assessment questions in the relevant textbook and refined according to expert opinions. It consists of 20 items, including multiple-choice and true-false questions aligned with the "Historical Beauties" theme. The preliminary version of the questions was administered to a pilot group of 250 fourth-grade students.

To establish the psychometric properties of Social Studies Achievement Test employed in this research, reliability and item analyses were conducted. The Cronbach's alpha coefficient, calculated to assess the internal consistency of the test, was 0.83, indicating that the test items measure the same construct and exhibit a high level of internal consistency. The KR-20 and KR-21 reliability coefficients, which are appropriate for dichotomously scored knowledge tests, were both determined to be 0.83, reflecting consistency with the Cronbach's alpha coefficient. In addition, the correlation coefficient derived from the split-half analysis yielded 0.72, and the Spearman-Brown correction coefficient based on this value was calculated at 0.84. These findings demonstrate that the test provides consistent measurement across different segments.

Psychometric analyses at the item level revealed that the item difficulty indices ranged from 0.45 to 0.77, indicating that the test is generally of moderate difficulty. The majority of item discrimination indices were above 0.40, with select items reaching 0.70 and above. Table 2 presents the item difficulty and discrimination values for the instrument.

Table 2. Reliability Coefficients, Item Difficulty, and Discrimination Values of the Social Studies Achievement Test

Question	Difficulty of Matter (p)	The discriminatory power of matter (r)	Article evaluation based on discrimination power	Item difficulty and discrimination assessment
Q1	0,697	0,588	A very good substance - High discriminatory power.	A typical good substance
Q2	0,628	0,636	A very good substance - High discriminatory power.	A typical good substance
Q3	0,727	0,364	Quite a good substance	A typical good substance
Q4	0,644	0,364	Quite a good substance	A typical good substance
Q5	0,632	0,398	Quite a good substance	A typical good substance
Q6	0,727	0,727	A very good substance - High discriminatory power.	A typical good substance
Q7	0,698	0,511	A very good substance - High discriminatory power.	A typical good substance
Q8	0,591	0,654	A very good substance - High discriminatory power.	A difficult but discriminatory substance
Q9	0,628	0,636	A very good substance - High discriminatory power.	A typical good substance
Q0	0,674	0,533	A very good substance - High discriminatory power.	A typical good substance
Q11	0,636	0,545	A very good substance - High discriminatory power.	A typical good substance
Q12	0,727	0,545	A very good substance - High discriminatory power.	A typical good substance
Q13	0,773	0,636	A very good substance - High discriminatory power.	A typical good substance
Q14	0,455	0,545	A very good substance - High discriminatory power.	A difficult but discriminatory substance
Q15	0,591	0,818	A very good substance - High discriminatory power.	A difficult but discriminatory substance
Q16	0,587	0,636	A very good substance - High discriminatory power.	A difficult but discriminatory substance
Q17	0,677	0,541	A very good substance - High discriminatory power.	A typical good substance
Q18	0,706	0,364	A very good substance - High discriminatory power.	A typical good substance
Q19	0,682	0,636	A very good substance - High discriminatory power.	A typical good substance
Q20	0,636	0,727	A very good substance - High discriminatory power.	A typical good substance

Table 2 demonstrates that the items effectively differentiate between students with high and low achievement levels. When the findings regarding item difficulty and discrimination are synthesized, it is concluded that all items in the test are congruent with the measurement objectives and that no item deletion is required. These findings substantiate that the Social Studies Achievement Test serves as a valid and reliable measurement instrument.

Teacher and Student Questionnaires

The student questionnaire was employed to identify the opinions of the students participating in the experimental intervention regarding AGORA mobile application. The teacher questionnaire was utilized to determine the views of the educators involved in the AGORA initiative. The first dimension of the questionnaire encompassed questions pertaining to mobile applications, while the second dimension addressed concepts related to ambient learning.

Developed through international collaboration, these instruments were initially subjected to a pilot study. The questionnaire text was designed in English and subsequently translated into three additional languages (Serbian, Turkish, and Slovak). Rigorous attention was paid to the linguistic formulation to ensure translational equivalence across the participating countries. The questionnaire comprises aiming to collect information regarding teachers' professional experiences, practices, and their evaluations of AGORA platform intended to augment their pedagogical practice.

Data Collection Procedure

This study was produced from a project, which was supported within the scope of Erasmus+ KA2-Cooperation for Innovation and the Exchange of Good Practices. As part of the project, international participants first received online training to develop AGORA mobile application. Subsequently, a mobile application incorporating selected historical sites from each partner country. The impact of this application on teachers and students was examined. In the study, 23 fourth-grade primary school students were administered the Social Studies Achievement Test as a pretest and the same instrument was administered as a posttest following their engagement with AGORA mobile application. In addition, after experiencing AGORA mobile application, 42 primary school teachers and 23 students were administered a questionnaire regarding their mobile application experience. The steps followed in the data collection process throughout the project are delineated below:

- Preliminary arrangements for teaching and learning training with partners (involving the development of materials, presentations, videos, and Skype meetings). Virtual collaboration with partners focused on preparing students for assessments and analyzing their performance,
- Coordination with partner schools regarding the compilation of material (text, images, quizzes, and geolocation) for AGORA application. It was agreed that five historical

artifacts, which provide unique information about the religions and cultures of past civilizations, would be integrated into the mobile platform from each participating country,

- Coordination and communication regarding the integration and dissemination of selected materials into AGORA mobil application. Five structures located on the historic peninsula, known for its global cultural heritage importance, among the historical monuments in Istanbul, Türkiye (the Blue Mosque, Hagia Sophia, Topkapi Palace, Istanbul Archaeology Museum, and Museum of Turkish and Islamic Arts) have been included in the application,



Picture 1. Interface screenshots of AGORA mobile application

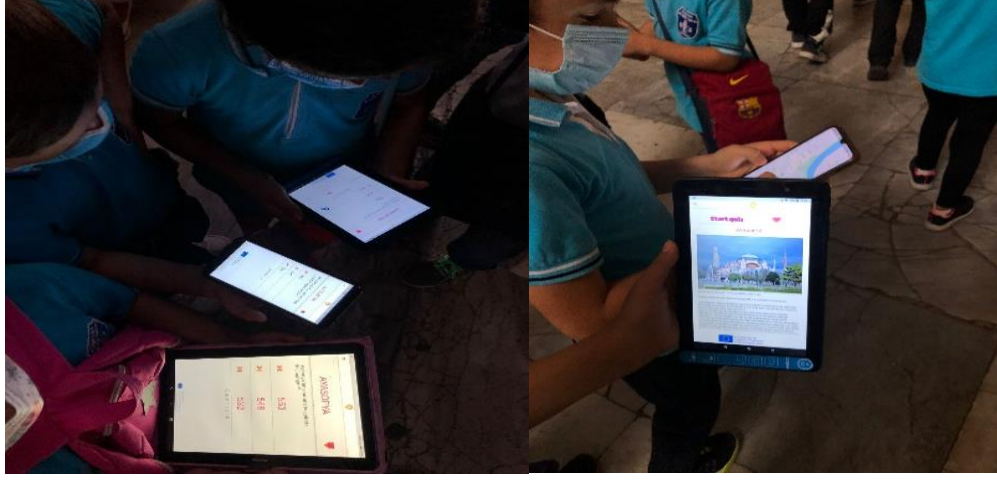
- Coordination of dissemination initiatives across Serbia, Türkiye, and Slovenia, alongside the systematic field-testing of the application by project partners within the Istanbul context,



Picture 2. Visual evidence of AGORA mobile application field-testing

The data collection process involved the implementation as pre-testing of the achievement tests with students, followed by the execution of AGORA application sessions with student cohorts within

these respective regions. This study included the active engagement of 23 students in extramural learning activities in Türkiye utilizing AGORA mobile application, which was conducted subsequent to securing parental informed consent,



Picture 3. Visual evidence of the students engaging in out-of-classroom learning (OCL) activities via AGORA mobile application

- Implementation and evaluation of post-tests to students across all partner countries,
- Implementation and assessment of questionnaires for teachers and students in partner countries to elicit their perspectives on the mobile application, reporting of the findings.

Data Analysis

In this study, a paired-samples t-test was employed to analyze the results of the Social Studies Achievement Test. The paired-samples t-test is a statistical procedure utilized to test whether the difference between the means of two related samples is statistically significant (Büyüköztürk, 2017). Specifically, this analysis was conducted to determine whether there was a significant difference in the mean scores of the student group on the Social Studies Achievement Test across two distinct time intervals. Additionally, frequency (f) and percentage (%) calculations were utilized to analyze the responses elicited from the Student and Teacher Questionnaires.

RESULTS

In this section, the findings obtained from Social Studies Achievement Test, as well as the Student and Teacher Questionnaires, are presented.

Results Regarding to Social Studies Achievement Test

Table 3 presents the results of the paired-samples t-test for Social Studies Achievement Test administered to participating students as both a pre-test and a post-test:

Table 3. Findings Regarding the Pre-Test and Post-Test Achievement Scores of the Student Group

Measurement	n	Mean	SS	t	p	Cohen's d	%95 GA (d)
Pre-test	23	12,49	3,75	8,90	<0,001	1,86	[1,16 – 2,55]
Post-test	23	18,21	2,10				

Accordingly to Table 3, the mean pre-test achievement score of the students was 12.49 ± 3.75 , whereas this value significantly increased to 18.21 ± 2.10 following the intervention. Analysis via a paired-samples t-test revealed that the difference between pre-test and post-test achievement scores was statistically significant ($t(22) = 8.90$; $p < 0.001$). Furthermore, an examination of the effect size yielded a Cohen's d value of 1.86, with a 95% confidence interval ranging from 1.16 to 2.55. This finding demonstrates that the intervention exerted a substantial effect on the academic achievement of the students. Consequently, the evidence suggests that AGORA application serves as a robust factor in enhancing student performance regarding the comprehension of historical and cultural sites.

Results Regarding to the Student Questionnaire

The responses elicited from the questionnaire administered to the students participating in AGORA mobile application are summarized below:

Table 4. Distribution of Responses Provided by Participating Students to the Questionnaire

Questions	Answers	f	%
Q1 Did you enjoy using the mobile application?	Yes	23	100
	No	0	0
Q2 Was using a mobile application helpful for your learning?	Yes	23	100
	No	0	0
Q3 What are your suggestions for improving the mobile application?	The app can voice historical artifacts. When the application is closed, it should not return to the beginning, when you switch to another page from the mobile device, the application should not return to the beginning, and the training tour should continue where it left off. Application can be done faster. It can be opened not only at one point but when approaching the historical artifact. Explanations and questions can be projected on the screen.		

According to Table 4, every student who participated in the survey reported that they enjoyed using the mobile application. Furthermore, all 23 respondents confirmed that the mobile application facilitated their learning process. As a consequence, the participating students articulated highly positive opinions regarding the application, noting that it provided a novel course experience and a distinctive instructional application. The implementation of AGORA application ensured the delivery of an engaging and interactive lesson that promoted active student participation and enhanced digital literacy, diverging significantly from conventional pedagogical methods. In addition to expressing their appreciation, the students offered various suggestions aimed at further optimizing the application.

Results Regarding to the Teacher Questionnaire

The data representing the responses of the participating primary school teachers to the questionnaire are presented in Table 5:

Table 5. Participating teachers' answers to the Questionnaire

I. Questionnaire Mobile Applications		F	%
Q1	Do you know any mobile application that is used for teaching?	Yes	28 66.67
		No	14 33.33
Q2	Have you used any mobile application for teaching in the last two years?	Yes	27 64.28
		No	14 33.33
		-	1 2.38
II. Questionnaire Ambient Learning			
Q1	Have you taught a class in different outdoor locations in your town in the last two years? (e.g. a square, a museum, a park)	Yes	15 35.72
		No	27 64.28
Q2	Do you think that learning can be better with the use of mobile applications in teaching?	Yes	38 90.48
		No	3 7.14
		-	1 2.38
Q3	Do you think learning can be better with OCL?	Yes	40 95.24
		No	2 4.76
Q4	Do you think it would be better to learn outside the classroom using a mobile application?	Yes	25 59.52
		No	15 40.48
		-	2 4.76

According to Table 5, the vast majority of teachers (66.67%) are familiar with mobile applications designed for pedagogical purposes. Furthermore, it is observed that a significant proportion of teachers (64.28%) have integrated mobile applications into their teaching practice within the last two years. In contrast, the majority of the teachers (64.28%, n=27) did not conduct lessons in diverse outdoor environments during the same period. Notably, almost all of the participating teachers (90.48%, n=38) postulate that the integration of mobile applications into the instructional process would enhance learning outcomes. Similarly, almost all respondents (95.24%) believe that outdoor learning environments facilitate superior educational experiences. Finally, more than half of the teachers (59.52%, n=25) conclude that optimal learning is achieved by utilizing mobile applications during out-of-classroom instructional sessions.

DISCUSSION and CONCLUSION

The findings of this research demonstrate that AGORA mobile application, developed within the framework of the Erasmus+ project, yielded a statistically significant positive impact on students' academic achievement in social studies. Furthermore, the study revealed that both students and teachers harbored highly favorable opinions regarding the utility of the mobile application. A comprehensive

synthesis of the responses provided by participating teachers indicates that a vast majority perceive mobile applications as instrumental assets in education. There is a consensus among educators that outdoor instructional sessions substantially enhance pedagogical quality, and that augmenting these outdoor lessons with mobile applications provides a significant contribution to the overall efficacy of the educational process. These results underscore the importance of integrating AGORA mobile application, as an Erasmus+ project output, into extramural educational settings.

Participating students also articulated highly positive opinions regarding Agora mobile application, emphasizing that the instructional sessions facilitated by this mobile platform offered a novel and distinct educational experience. The deployment of AGORA mobile application, diverging from conventional pedagogical approaches in social studies, fostered an engaging environment that promoted active student participation while concurrently enhancing their digital competencies. While the students expressed significant appreciation for the application, they also proposed several technical and functional refinements. To optimize the user experience, students suggested integrating audio-guided narrations for historical artifacts and incorporating a session-save feature to prevent the application from resetting when closed or when the user navigates to other interfaces. Furthermore, they recommended that the educational tours should allow for seamless resumption from the point of interruption. Additional suggestions included increasing the processing speed of the application and implementing proximity-based triggers to display explanations and questions upon approaching a historical monument, rather than being confined to a single fixed point. Similarly, Solodka et al. (2022) concluded that Mobile-assisted Language Learning (MALL) designs within higher education foster interaction, communication, and resource accessibility, thereby encouraging students to participate in active collaborative learning.

Yavrutürk and İlhan (2022) determine that students participating in Erasmus+ exchange programs acquired diverse competencies, including intercultural experience, proficient use of digital skills, enhanced communication abilities, project-based methodologies, intercultural interaction, foreign language proficiency, and cultural sensitivity. Similarly, Başaran et al. (2021) revealed that participation in MoNE Erasmus+ projects yielded significant contributions to both academic and personal development while fostering the integration of technology within educational settings; notably, all participants expressed a strong inclination to engage in future projects under appropriate conditions. Furthermore, Çimşir (2024) indicated that teachers perceive Erasmus+ participation as a pivotal contributor to the cultural development of students. These findings are highly congruent with the results of the present study. Additionally, Susan et al. (2023) utilized Erasmus+ project data to establish that teachers valued guidance on children's motor needs and video-based resources in physical education as instrumental tools for promoting inclusion across European primary schools. When evaluated alongside the positive results observed in the present study regarding social studies instruction, it can be argued that practices implemented within the framework of Erasmus+ projects exert a profoundly positive

impact on students. The high levels of student and teacher satisfaction documented in this study may be attributed to associated with a participation international project. Specifically, the transition from conventional pedagogy to the utilization of a mobile application for Social Studies instruction may have influenced for the positive survey results.

Furthermore, Chaipidech and Srisawasdi (2023) focused on developing a 360-degree virtual learning environment and designing its subsequent pedagogical application. Their study, involving 29 pre-service science teachers, administered a opinion questionnaire following engagement with the virtual environment and an extramural inquiry activity. The results of their research align with the present study regarding the efficacy and application of different learning environments in education.

Mertha and Mahfud (2022) determined that the use of a learning tool utilizing the Wordwall web application for history education significantly augmented learning outcomes among 10th-grade students. Similarly, Lazarinis et al. (2022) developed an interactive game engine focused on cultural heritage, wherein students earned grades, badges, and certificates upon reviewing material and completing assessments. Their results indicated that the application was perceived as exceptionally positive and supportive by both students and teachers. Furthermore, Tan et al. (2023) developed a mobile application called MENTOR to facilitate distance peer tutoring among university students. By mediating student-student and student-tool-resource interactions, the MENTOR application yielded positive results during field trials. These results also reinforce the findings of the present research.

In a related study, Kandriasari (2023) aimed to develop mobile learning environments designed to improve American-style service and organization skills among 30 Food Services students. The findings from one-on-one, small-group, and field trials demonstrated that the utilization of mobile applications to foster digital literacy is feasible and yields positive educational outcomes. Moreover, Marini et al. (2022) examined the effectiveness of a mobile augmented reality (AR) learning environment containing metadata to enhance learning outcomes in Science courses. Conducting single-group pretest-posttest experimental research with 92 primary school students, including 75 fifth-graders, the study revealed that leveraging Metaverse applications exerts a positive influence on student learning outcomes. The data suggested that students exhibited heightened engagement, easily comprehended new information, and perceived the learning process as more enjoyable through the use of mobile AR. Additionally, Asmawi et al. (2023) sought to develop an educational mobile application focusing on blockchain technology. Through interactive learning experiences and accessible content, the project aimed to enhance individuals understanding of blockchain while contributing to a more technologically proficient society, ultimately achieving favorable results.

Conversely, Zhao and Hoge (2005) highlighted that primary school students often harbor negative attitudes toward social studies, frequently failing to grasp its significance or its relevance to their lives. Given the paramount importance of cultivating positive perceptions in a course intended to foster active

citizenship, the current research is particularly noteworthy. It facilitates the instruction of social studies in an engaging manner by integrating 21st-century skills, digital literacy, and project-based technology. Furthermore, the extant literature on the pedagogical use of historical sites and museums in social studies, which is closely aligned with OCL (Gökkaya & Yeşilbursa, 2009; Güleç & Alkış, 2003), further validates the mobile application-based intervention documented in the present study.

Admittedly, the implementation of OCL and mobile applications may not be feasible across every school level or urban context. Çengelci (2013) observed that teachers in high-socioeconomic status schools typically conceptualize outdoor learning as experiential learning conducted outside the classroom through site visits. In contrast, teachers in middle-socioeconomic status schools primarily define it as learning via travel and observation, while those in low-socioeconomic status schools tend to prioritize learning within the family and immediate environment, utilizing the internet, media, and local trips. Çengelci (2013) also determined that teachers expressed the OCL activities carried out in the social studies course as trips within/outside the province, going to the cinema, meeting with experts, and inviting resource persons to the school.

In a departure from the present study, Güneş et al. (2025) found that out-of-classroom learning environments did not yield a statistically significant effect on 8th-grade students' academic achievement or attitudes toward science; however, they did observe a significant increase in science learning motivation in favor of the experimental group. This difference may stem from inherent curricular differences between science and social studies. Nevertheless, it can be inferred that out-of-classroom learning environments generally exert a positive influence on students.

Arman (2022) determined that OCL is less stressful and more beneficial for higher education students, noting a lack of psychological pressure. Yet, the author also cautioned that OCL is often an informal, unstructured learning environment, which may hinder the effectiveness of learning relative to expectations. In this respect, it is important to evaluate outdoor learning through various evaluation tools such as tests and observations. Çepni and Aydın (2015) also determined that social studies teachers believe outdoor learning contributes positively to the instructional process, stating that these environments facilitate learning by doing, increase information retention, and concretize abstract knowledge. These results align closely with the findings of the current study that teachers' opinions are positive.

Suggestions for Future Research

The result that the participating teachers in this study seldom utilize OCL, and specifically have no prior experience with mobile-integrated instruction, highlights the contribution of this research to the extant literature. It appears that the participants recognized the pedagogical value and engagement provided by the application, suggesting that such digital initiatives offer significant opportunities for both teachers and students to acquire 21st-century skills. Based on this, it may be recommended to

encourage the use of mobile applications in education. Furthermore, it may be recommended to provide institutional support and incentives for teacher and student participation in international projects. In the context of urban education, it can be suggested to practitioners should prefer active, out-of-class learning experiences.

In this study, the unanimous satisfaction reported by students is particularly noteworthy; however, it remains to be elucidated whether this stems specifically from the mobile application itself or the novelty of the out-of-classroom environment. Therefore, a more comprehensive study incorporating qualitative observations may be suggested to further explore these dynamics. As the current study's data is constrained to quantitative metrics derived from achievement tests and questionnaires, future researchers can be advised to strengthen their findings using multiple data collection tools, such as interview and observations.

Additional Declaration

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Author Contributions

In this study, the data collection tools for this study were developed with the contributions of the project partners, but the author independently carried out all processes of literature review, data analysis, article writing, and preparation.

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Responsible Artificial Intelligence Statement

In this study, an artificial intelligence tool was used solely to correct language errors. I declare that, as the author, take full responsibility for the problems that may arise from the content produced by artificial intelligence.

Conflicts of Interest

The author declares that there are no conflicts of interest related to the publication of this study.

Ethics Approval

In all processes of this study, the principles of Pen Academic Publishing Research Ethics Policy were followed.

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