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RESEARCH ARTICLE

"Money Makes the World Go 'Round": Digital Stories Telling Depicting the Historical Course of Numismatics from the Tetradrachm to Bitcoin for Vocational Education and Training

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ABSTRACT

The primary research topic of this article is to create and synchronize an updated "digital storytelling" experience using various web-based digital tools in Vocational Education lessons. We organize various digital tools, such as a virtual map-construction of web timelines-virtual exhibition with the "artstep" tool, and a website with the busts of many statues of Piraeus, depicting the evolution of the "numismatics" from Antiquity (from the "Tetradrachm"), until today (to "Bitcoin"). From the point of view of education, the target of this research is supporting teaching and learning for the Sector of "*Financial and Administrative Services*"–B' class, and the four (4) specialties of Vocational Education and Training: *"Administrative and Financial Services Officer", "Warehouse and Supply Systems Clerk", "Marketing and Advertising Officer", and finally "Tourism Business Employee"* C' class. As a method, we used an interdisciplinary approach, the directions of the research concern all levels of education, from primary to secondary and up to Vocational Training Institutes. The interdisciplinarity of the subject involves the areas of History, Geography, Mathematics, Archaeology, Economic Theories, Sociology, Political Economy, and even Web and digital engineers (Engineers for Informatics and Electronic Engineers), from the point of construction view. Digital constructions will offer the educational community not only knowledge but also an occasion for discussion and analysis of the complex correlations that run through the economy of each period. The article as a result outlines the scientific framework of the constructs and concludes with proposed educational scenarios and future work of the working case.

Keywords: Digital map, economy, money, new technologies.

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1. Introduction

Ever since our first steps on the evolutionary path, man learned to trade, first with the exchange of goods and then with the use of metals as a means of exchange. The inclusion of this important section of human history in the material of primary and, above all, secondary education will lead to a more global understanding of how the market and money work, a knowledge that, especially in recent decades, is essential for all, as contemporary currencies such as Bitcoin, inundate the markets with new ways of handling financial affairs.

The use of New Technologies in Education for the better teaching of History and the application of interdisciplinarity in Vocational Education and Training (VET) as well as all levels of education–from primary to secondary and Vocational Training Institutes, can only upgrade the existing educational system. The creation of a digital tool–a "digital storying telling", –a digital map, the virtual exhibition with the "artstep" tool, and the website with the busts of many statues of Piraeus with a monument reference website, (Fig. 1)–overview of a historical panorama, from Antiquity up until today, provide not only knowledge about but also an occasion for discussion and analysis of the complex correlations that run through the economy of each period [1].

The "digital storytelling" depicting the historical course of numismatics from the Tetradrachm to Bitcoin consists of different layers, each one containing the most important

Fig. 1. The web-based digital tools of the research.

Fig. 2. The sections of the paper.

coins and reforms of each era. The study of the literature, as well as the identification of the sites and toponyms of each era with locations of today, will contribute to a more valid recording of the data. The use of coordinates, high-resolution images, and narration will more fully convey the topic under consideration. The knowledge of the history of money and the offering of this knowledge to students in a manner will contribute not only to the analysis and teaching of the subject but also, to the in-depth understanding of the relations between peoples and the commercial, political, and military parameters of these relations.

This article, in addition to this "Introduction", contains five subsequent sections (Fig. 2). The second section entitled "Scientific Questions of the Research" concerns the description of the scientific questions of the research, its central and secondary objectives, and finally, the methodology we followed. This section sets out precisely the goals of interdisciplinary linking of constructions to curricula, and the derealization of courses that correlate with those represented in the article's digital narrative.

The third section titled "Overall Scientific Framework of the Research" concerns the individual classification of scientific fields that affect the objects of the research, its nature, and the approach of its scientific areas.

In the fourth section entitled "The Educational Scenario", a proposed didactic use of online constructions is presented, the didactic application with a delimitation of the scenario's time distribution, considering the laboratory nature of the scenario.

The fifth section entitled "Digital Storytelling" contains working screens and presentations from the individual builds. In this section, the user's "tour" course and their interaction processes with the digital material are commented on.

Finally, the article closes with the section "Conclusions-Evaluation and Next Steps Plans", in which the evaluation of the scenario, the originality and importance of the study and the scenario, the added value, and the proposals for future research.

2. Scientific Questions of the Research

2.1. The Scientific Center of the Teaching Scenario: From Aristoteles to Bitcoin

The first written references to the qualitative and quantitative characteristics of the concept of money belong to the area of "political mathematics" in ancient Greece [2]. The expression "political mathematics" conveys the situation in which public accounts were not only associated with political responsibility but were a symbol or way of expressing political participation and the role of citizens. As Plato mentioned, through Socrates' teaching, a practical mathematician dealing with the city's finances personifies the dangers of misuse of mathematical knowledge [3]. According to Plato, the man who expresses democratic control over the economic actions of the city seems to be the most skilled swindler [4]. Aristotle is the one who formulated the mathematical theory of monetary exchange, where the value of a thing can, in general, be reduced to a number and transactions in arithmetic operations [5]. According to Aristotle, all things that are exchanged must be somehow measurable, and for this reason, money was developed which is in a sense the medium of transactions, it measures all things, and therefore the "*τό νπερβάλλον καί τό λαττον*" (*neither too much nor too little*) of exchanges [6]. For the ancient Greeks his mathematics in the works was only one aspect of the possible political use of mathematics which with various other yesterdays is used to express conflicting positions about the city, man, knowledge, and their interactions [7].

The evolution of the history of coins continued following the evolution of the history of nations, the wars of Alexander the Great, the rise and fall of the Roman Empire, the rise and fall of Byzantium, and the years of expansion of the Ottoman Empire. After the Greek Revolution of 1821, the Greek state printed its coins.

The thread of Aristotle's vast cognitive heritage about the transactional version of money is picked up again by Marx when he captures the laws of transactions in capitalism and, overcoming the theoretical and scientific

obstacles [8] of the liberal economic schools of Smith and Ricardo [9], updates Aristotle's theory of money [10]. In "Capital" Marx defines money as a general equivalent or as a commodity found in the "general form of equivalence" [11]. The ability of money and its role as an active shaper of the productive exchange relationship constitutes its fundamental characteristic, its social function, and its form as a crystallization of exchange value [12]. Another important element about the functions of money in the capitalist economy is added to Marx's theory: money functions as a means of coercion, in the sense that money introduces the first differentiation of the active and passive role that each commodity producer successively adopts, and at the same time it encloses the embryonic forms of coercive subordination and models of hierarchical subordination in society [13]. Money is a social force that measures the social wealth of its owner and its social power [14].

In the 20th century, the Economic and Monetary Union (EMU) of the European Union (EU), to create a single European Monetary System, (EMS) introduced in the 1980s the idea of a single European Monetary Unit (ECU), defined exchange rates between the currencies of EU countries and the expansion of credit mechanisms within the framework of European monetary policy cooperation [15]. It is important to note that the history of the individual European coins (Deutsche Mark, French Franc, Dutch Guilder, Italian Lirete, Belgian Franc, Luxembourg Franc, Danish Krone, Irish Pound, and Greek Drachmas) is a valuable local historical source of knowledge for our subject and an important legacy for the political history of Europe [16]. The main argument for the idea of a single European Monetary Unit was the expectations of the European Council for the convergence of economic development in all European countries. From that period until the predominance of the Euro, we find that within the policies related to the European Monetary Unit, the concept of "money" is associated with economic and political crises and historical failures. Europe and the world have since been met with Left-Keynesian government policies, unequal rates of inflation in the countries of Europe, increasing surpluses with painful remedial interventions of economic measures, the imposition of economic memoranda, and the generalization of austerity policies [17]. Of course, the crisis of economic policies in the EU does not concern the history of its currencies, but they are certainly connected to it [18].

In the 21st century, Bitcoin appeared as a digital currency, which functions as an alternative form of money and can be used to exchange value in general, having some distinct properties compared to traditional money [19]. Bitcoin is a cryptocurrency or digital currency created in 2009 by an anonymous person or group of people using the pseudonym "Satoshi Nakamoto". Compared to traditional money, such as coins and paper money that we usually use daily, Bitcoin is digital and there is no physical form of it [20]. Bitcoin's relationship to money has to do with the way it functions as a medium of exchange and store of value, like traditional currency. Like currencies, Bitcoin can be used to buy goods and services, as well as to transfer money from one "entity" to another [21]. Application examples go beyond human transactions and extend to transactions between machines, energy storage, and other energy resources, and more generally any form of bartering that requires capture of value. Specific applications with Bitcoin concern the design of mechanism operation in smart cities, industrial facilities, and even the design of transport chains [22]. Completely epigrammatically, and without going beyond the educational and pedagogical determinations of this article, we must note that there are some important differences between Bitcoin and traditional money, and they concern digitality, decentralized technology, and supply limits. Bitcoin is a digital asset stored in digital wallets, while traditional money exists in physical form [23]. Bitcoin works using blockchain technology, which allows for decentralized transactions and verification of transactions by users of the network. This means that there is no central authority that controls Bitcoin, as is the case with traditional money issued by central banks [24]. Finally, the number of Bitcoins is limited, specifically, there is a maximum limit of 21 million Bitcoins that can ever be created. This makes it different from traditional money that can be issued in unlimited quantities by central banks [25].

2.2. The Nature of the Research, the Pedagogical Approach, and the Individual Interdisciplinary Categories

This article was specially designed and organized for the sector of "Financial and Administrative Services", [26], and the four specialties of VET, –"Administrative and Financial Services Officer", "Warehouse and Supply Systems Clerk", "Marketing and Advertising Officer", and "Tourism Business Employee"–but the main ideas are at the service of lifelong learning. For students of VET the concept of "money" is described in detail in the course "Principles of Economics", of the first class of Vocational High Schools, but it is also mentioned in more detail in the laboratory hours of the following grades. According to the curriculum of the Economics sector in the second class of a Vocational High School, out of the eighteen (18) hours that students are taught specialty courses, seven (7) hours are laboratory hours. In the third class in the four specialties out of the twenty (20) hours of specialty courses, eight (8) are in the laboratory. With these conditions of teaching and learning, and with these parameters of the laboratory learning process, reports, and cognitive experiences about how money transactions and money as a concept in the economy have an important place [27].

Also, primary education, at the dawn of the 21st century, faces the challenge of incorporating aspects of technology in everyday practice and implementing experiential learning. The children born from 2005 onwards, being exposed to a plethora of stimuli, are equipping, and developing their perception at a rapid pace. Consequently, the process of educating children and adolescents in the present day requires stimuli and practices that meet the ever-growing needs of particularly technology-literate generations. These practices can be found in the world of technology, which is rapidly embracing all the sciences. From the learning of the alphabet to the analysis of terms and practices in economics, technology can, with the multimedia and tools it has developed and is developing every day, provide a canvas for designing the educational process.

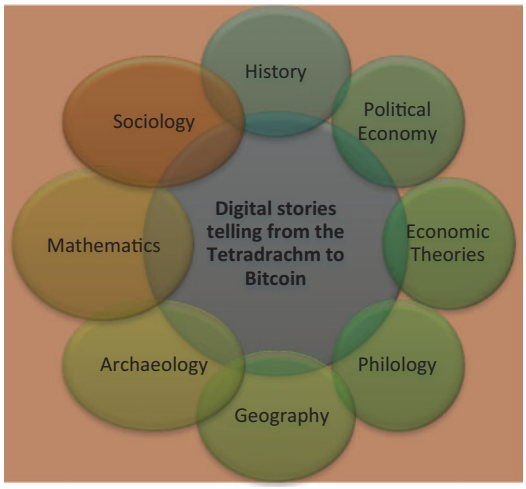


Fig. 3. The interdisciplinarity of the subject.

The economic developments and fluctuations of our days have elevated money as a regulator of life and everyday life. From the interdisciplinary point of view (Fig. 3), knowledge of the history and evolutionary course of coin and economy offers valuable lessons that can provide students with the necessary stimuli and skills to navigate financial issues for the rest of their lives. The science of numismatics, along with the science of economics, offers a timeless window of understanding of the relationships between individuals, peoples, and states.

Beyond education, the states and empires that developed prospered, and eventually perished over the centuries left their mark on the geographical area in which they operated. It is this mark that the science of archaeology is called upon to discover and bring to light, and through the material remains it is called upon to interpret past eras and to answer research questions that concern both the public and scientists. The research of archaeologists can be facilitated by many other scientific fields, the most important of which are History and Philology, which study the text material sources, and Geography, which can provide a definitive context for the areas where societies of the past have carried out their daily activities. The alignment, to a large extent, of Geography with technology can provide the basis for visualizing the results of Archaeology, as well as for the study and analysis of the interactions of people, states, and other entities, as it facilitates the presentation of the most basic parts of the material in a particularly engaging and user-friendly manner.

The research approach to the subject and its assembly can be carried out correctly, if the data of Archaeology are first recorded, the findings of History and numismatic research are applied to them, and, finally, all these are placed on the map's levels. To record the History of Coinage on a digital map, a thorough study of the literature and the selection of the most important milestones in the evolutionary course of coinage is essential. Detailed reference should also be made to how transactions were conducted before the emergence of currency. Furthermore, to present the subject totally and to underline the continuity of this evolutionary course, the emergence and evolution of modern methods of payment, and of course bitcoin, which is gaining ground at a gallop and holds many surprises for the future of those who use and observe it, must be identified on the world map.

Apart from the textbooks and studies on Monetary Studies for the various periods, the findings of the Archaeological excavations are equally important. Coin mints, coin hoards, and other material remains highlight the importance of a region and, through the findings of research on the objects, it is possible to understand whether they represent a new change or a reform. It is worth noting that the wider area of the Balkans and Central Europe is particularly rich in such finds. To identify and match an area of antiquity with what we see today, it is necessary to study the relevant sources and maps, either of the period or of contemporary researchers, to assign the correct name and the correct geographical area. With the right approach and synthesis of information, the result will be complete and comprehensive.

The content of digital storytelling is gradually organized and developed by similar information, as the audience of this digital tool is not experts on the subject, but students of primary and secondary school. The language is easy to understand, therefore expert terms have been simplified. High-resolution images from museum and gallery websites worldwide will accompany the entries, with some of them featuring a detailed analysis of the iconography when it represents a cross-section of the stages of numismatics.

Incorporating digital maps into education has become increasingly prevalent in recent years due to advancements in technology, as digital maps offer a wide range of benefits for educators, especially when teaching complex historical topics like the history of money and coins [28]. One of the topics of this research is to examine utilizing digital maps in the context of teaching the evolution of money and coinage while presenting archaeological artifacts and historical information from the late Bronze Age to the invention of Bitcoin. In the quest to make archaeology and history more public and accessible, digital maps serve as extremely useful tools to aid students in understanding the complex relations between states, peoples, and markets throughout human history [29].

2.3. The Primary Aim of "Digital Storying Telling"

The basic tools for the construction of our "digital storying telling" are:

- ➤ a virtual map-construction (web timelines) [30];
- ➤ a virtual exhibition with the "artstep" tool [31];
- ➤ a website with the busts of many statues of Piraeus to convey the history of coins [32].

Our target is the students of primary and secondary education students, and the students of Vocational Training Institutes. Through navigating the different map layers, the user can interact with the digital interface and acquire a diachronic knowledge of the history of money and the economy. Thus, by examining the levels of the map either in school classrooms or by themselves, students and teachers alike will be able to observe the details of the artifacts related to coinage. The provided information is presented in simple and "humorous" language, which can help the students get more engaged in the activity and enhance their knowledge. The pictures on every map entry work

complementarily, making the information more visual and giving chances for discussion or comparison between two or more entries.

3. Overall Scientific Framework of the Research

3.1. The Individual Classification of Scientific Fields that Affect the Objects of the Research

Over the past decade, studies have consistently demonstrated the positive impact of digital maps on assisting the learning process for schoolchildren. These interactive and visually stimulating tools captivate young minds and promote active learning. By incorporating digital maps, educators can seize the attention of students, leading to increased engagement and a deeper understanding of historical concepts [33].

Archaeology and History are vital fields that provide insights into our collective past. However, to make them more relevant and accessible, they need to reach beyond the confines of academia [34]. Digital maps transcend traditional textbooks by offering dynamic visualizations of historical narratives [35]. As students explore maps that encompass artifacts and information from the late Bronze Age to the invention of Bitcoin, abstract concepts can become tangible and comprehensible [36]. This visual engagement enables students to form connections between historical events and geographic locations, making the study of history more relatable and meaningful. By employing digital maps in the classroom, educators can facilitate public engagement and demystify these disciplines for young learners. The integration of archaeological artifacts onto digital maps creates an interactive and engaging platform that fosters curiosity, prompting students to become more invested in understanding the past [37].

The history of money and coinage is intricately woven with the development of states, the interactions between different peoples, and the evolution of markets. This complexity can be daunting for young learners [38]. However, digital maps provide a multidimensional representation of historical data, enabling students to explore the interconnections between various civilizations and the impact of economic systems on societies. This comprehensive approach encourages critical thinking and analytical skills, equipping students to comprehend the intricate web of human history. Thus, digital maps facilitate spatial understanding by visually presenting the geographic spread of different monetary systems and trade routes. Students can explore how currencies evolved across diverse cultures, promoting a global perspective that fosters cross-cultural awareness and understanding [39].

3.2. Digital Map as a Teaching Tool

The interactive nature of digital maps empowers students to control their learning experience. They can zoom in on specific regions, click on artifacts for additional information, and engage with real-time updates and new archaeological findings. This dynamic approach keeps the learning material current and relevant. It goes without saying that while integrating digital maps, educators should strive for inclusivity by considering alternative teaching methods to accommodate students with visual or auditory impairments. Additionally, schools should address potential challenges concerning technology access [40], and availability to ensure equitable opportunities for all students [41]. As various researchers have pointed out digital maps in educational settings have proved to be an invaluable source of information [42] and motivation for students [43]. The use of technology seems to offer virtually endless possibilities, as the introduction of more interactive courses seems to engage the students and make the material more comprehensible. Both dimensions are discussed for the importance of usability in the classroom, which is exactly the reason we have opted for a simple and user-friendly approach [44], showing that digital maps can match and even enhance the positive influence of printed maps during the teaching process.

In conclusion, digital maps represent a powerful tool for teaching the history of money and coinage to primary and secondary education students. The amalgamation of archaeology and history in these interactive platforms fosters public engagement and stimulates students' curiosity. This innovative approach enables young learners to understand complex relations between states, peoples, and markets throughout human history, promoting critical thinking and global awareness. As educators, it is our responsibility to harness the potential of digital maps while making history and archaeology more accessible to the public, ensuring that our students are equipped with a deep appreciation for their heritage and a profound understanding of the world's rich historical tapestry.

3.3. Methodology Evaluation: Suggested Teaching Scenario

From the point of view of pedagogical methodology, we organized the didactic scenario based on the exploratory learning approach for VET's laboratories. According to exploratory learning, the learning process is divided into smaller, logically connected phases, which are intended to draw their attention to trainees in important characteristics of the scientific way of thinking. Through the application of the scenario, we involved the students in an interdisciplinary process of discovery. However in some phases of the scenario, the "cycle" of the investigation appears as a sequence of phases, and the final part summarizes the most important features of the subject.

4. The Educational Scenario

4.1. Pedagogical Approach and Strategies

The educational scenario adopts the collaborative learning approach (Fig. 4) and is based on:

a) the investigation of the history of money;

b) discussing, and sharing ideas and research findings in the group;

c) experimenting with the map and with new research techniques.

The role of the teacher is to mediate and support. The teacher guides the exploratory actions and the collaboration of the students and creates situations of cognitive

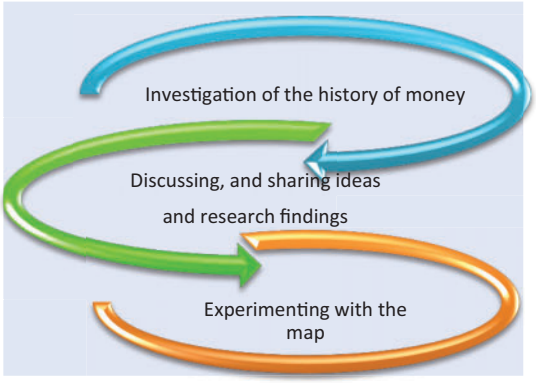


Fig. 4. Collaborative learning approach.

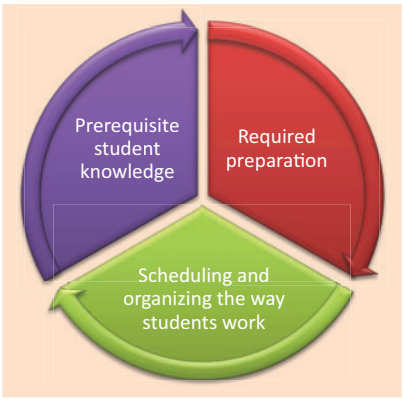


Fig. 5. Implementation requirements of the scenario.

conflict to "build" effective representations of the critical points of the scenario.

The requirements of the scenario implementation (Fig. 5) are:

1) Prerequisite student knowledge: To teach this learning scenario students must already have basic knowledge of computer usage. The most important knowledge that the students must have is the methodology of scientific research and the power to cooperate.

2) Required preparation: At the technical-organizational level: resources and tools that will be used for the seamless implementation of the training scenario are the digital map and websites suitable for the research that will follow.

3) Scheduling and organizing the way students work: The teacher must be ready to cope with the expected difficulties of the students and be ready to propose effective ways of dealing with them. Design of learning guidance and student support (scaffolding).

4.2. The Expected Learning Outcomes

After the completion of the educational scenario (Fig. 6), the students should be able to:

➤ know the basic sections of money history;
➤ understand the characteristics that have been preserved through the centuries;
➤ know how to use a digital map and, maybe, be able to make a simple one.

The application flow and the teaching process (Fig. 7) include:

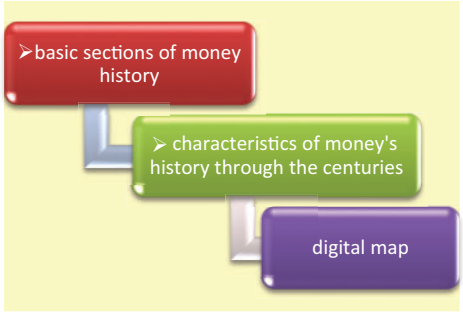


Fig. 6. The expected learning outcomes of the scenario.

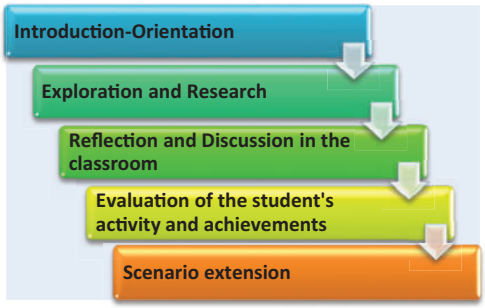


Fig. 7. The application flow and the teaching process of the scenario.

1) Introduction-Orientation: In this part of the lesson the teacher tries to engage the students' interest in coin and money history. The teacher tries to familiarize the students with the evolution of coinage and how it affects all of us today.

2) Exploration and Research: The students are divided into groups, and each one explores a different layer. After that, each group does research about the layer's information and records the findings.

3) Reflection and Discussion in the classroom: The students discuss in class the characteristics, the common elements, and the differences of each section. They list the findings and discuss the ways of dealing with them.

4) Evaluation of the student's activity and achievements: The students present and discuss in class the results from their research. The assessment of the learning outcomes can be done in various ways (e.g., self-assessment, peer assessment, response to an assessment sheet, or assessment rubric).

5) Scenario extension: The teacher instructs the students on how to create a simple digital map with their findings.

4.3. Classroom/Teaching Organization/Roles of Students and Teachers

The use of conceptual tools and digital representations for teaching and learning (Fig. 8) is considered one of the most widespread international strategies for education [45]. Schematic representations and the possibilities of visualizing one or a category of objects, a process, or an idea, so that the information is immediately perceptible, are part of effective learning tools [46].

In this teaching scenario, the basic functions of conceptual mapping digital (map–digital museum–the website) are used, to be used as a tool for effective learning, cultivating critical thinking, cooperative learning, cultivating online search, and solving problems through digital

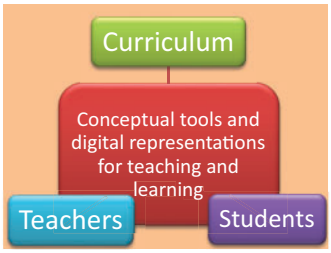


Fig. 8. Course arrangement in laboratory areas for the scenario.

skills [47]. The present teaching scenario focuses on the subject matter of the sector of "Financial and Administrative Services" and tries to cover the subject of the scenario based on teamwork practices, interdisciplinary and IT tools. In these ways, the effective use and inclusion of the newest online tools in capturing cognitive representations is promoted.

Students are introduced to the environment of digital objects: digital maps, exhibitions of coins, and webpages. They explore the map in pairs per workstation in the computer lab or in groups in the classroom using porle devices. The teacher will assign the students to groups. Each group can explore and conduct further research in a different layer, and then discuss and compare the research outcome. The students analyze and discuss in their group the research findings. They explore and experiment with the given map. The teacher considers the pre-existing knowledge and experiences of students, and supports and guides students, creating situations of cognitive conflict and exploratory learning. In the last teaching hour, the teacher can encourage the groups to create new, smaller maps with the findings from their research.

5. Digital Storytelling

5.1. *Digital Map*

The organization of the map will be carried out on a timeline axis.

The digital platform on which it will be hosted is Google Maps. Each layer will include points in the areas where the finds indicate notable activity. The levels of organization of the map are as follows in Table I. Each user can access the map (Figs. 9–12). After entering the map, the user may choose the desirable layer and click the pins with the cursor. The information will pop up, alongside the pictures that complement them.

The map was created in Google Maps. The data were collected and divided into categories, according to the map organization. A suitable image for every spot was chosen and placed above them. Each layer is independent.

Also, the last, yet very important, section of the economic history, the story of Bitcoin, must be taught to these students (Fig. 10). they must learn about this new currency and how powerful it can become. The last layer on the map, about credit cards and Bitcoin, can allow the teachers to discuss with the students and further research, revealing a new world. As current research shows, Bitcoin and the blockchain technology, which allows for privacy, and fast decentralization of funds but has also been extensively used for illegal money transfers, have essentially transformed the financial landscape, and are expected to also have a great impact on the international stock market, maybe far greater even than what one would have dared to imagine [48]. Therefore, it is of vital importance that students in school or VET settings find the resources needed for a simple but thorough introduction to this economic phenomenon.

TABLE I: Digital Map Layers

1st Layer	Barter, talents (before coin-shaped currency).
2nd Layer	The emergence of the coin-shaped currency-Ancient Greece (Presentation of various coinages from different city-states, as it is worth noting the differences in iconography).
3rd Layer	Hellenistic Era-the era in which the first portraits of rulers were put on coinage for political reasons, starting from the generals of Alexander the Great.
4th Layer	Byzantine Empire-Solidus and later coinages-the decline of the Empire can also be seen through its coinage, particularly regarding the quantity of gold.
5th Layer	Ottoman occupation.
6th Layer	Modern Greek State-phoenix and a new drachma, to promote the idea of a brand-new state, which is reborn and walks in the same glorious pathways as Ancient Greece.
7th Layer	The future: Cards, internet banking, Bitcoin, and more.

5.2. *The Virtual Exhibition*

The virtual exhibition works as a part of the digital telling of stories. Through virtual exhibitions, students continue to provide a virtual tour of numismatic history.

We used the ArtSteps tool to create the virtual coin exhibition (Fig. 13). ArtSteps is a unique web application that enables creators to create digital worlds (exhibitions, museums) by designing realistic 3D rooms. It is an impressive and extremely easy-to-use tool that does not require any installation and only requires a browser and an internet connection.

Fig. 14 represented Silver 1/8 Stavraton of Constantine XII Palaiologos (1448–1453) from Constantinople Mint Cut. On the obverse, Jesus is depicted in the type of Pantocrator, facing forward. On the reverse, there is a bust of the emperor, with a bejeweled crown with pendulums and a garment.

In Fig. 15, on the obverse is a composition of arms of the Greek Revolution, crowned with laurel. The value of the coin (2 DRACHMAS) and the minting year (1978) are indicated. The reverse side of the coin shows a bust of Georgios Karaiskakis, in profile to the right. He wears a fez without a tuft, while the collar of his shirt is visible. His name can be seen on the left.

5.3. *Web Site with Statues and Monuments*

This website contains a map and a virtual exhibition about the statues of Piraeus City and the coins that depict the same historical figures. Piraeus is one of the most historic regions of Greece with many statues and monuments adorning its squares, churches, and neighborhoods. However, the information about where they are, as well as

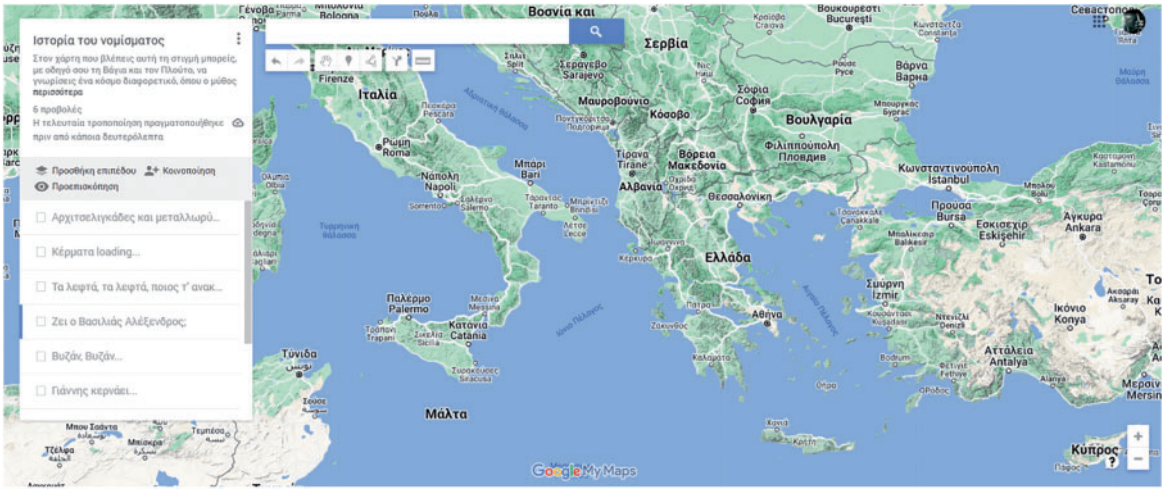


Fig. 9. Digital map layers of the scenario.

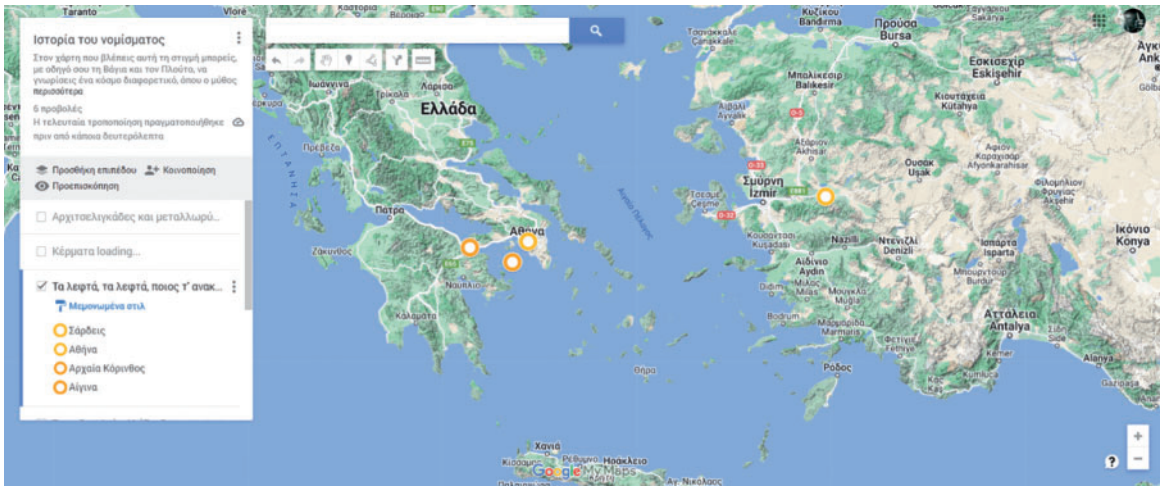


Fig. 10. Digital map layers of the scenario as teaching process of the scenario.

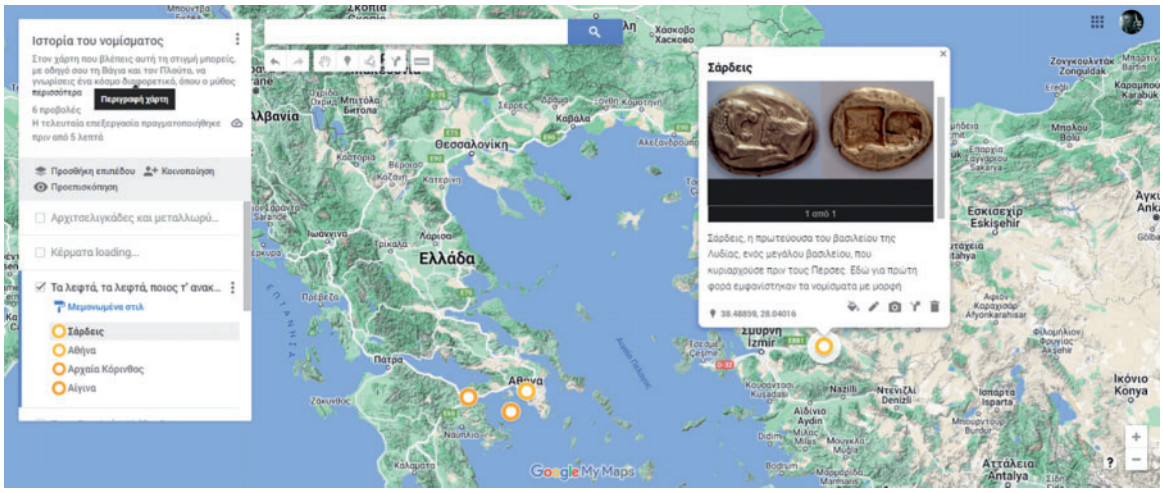
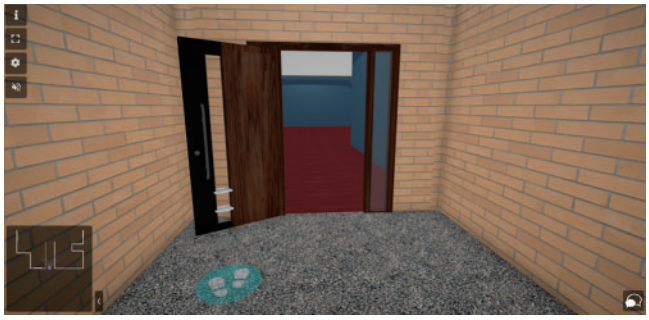


Fig. 11. Comments and notes in the digital map layers of the scenario.

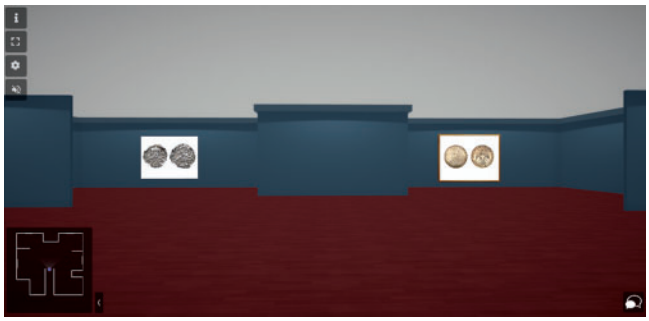
the reasons why they were sculpted, is not widely known, with the result that most visitors are unaware of their existence. But whoever decides to get involved with them and explore them will notice that each one of them has its history and represents faces and symbols from antiquity to modern history. All the statues and monuments have as a point of reference the wider area of Piraeus such as the hero of the Greek Revolution of 1821 Georgios Karaiskakis who met a tragic death near the port of Piraeus on April 23, 1827 (Fig. 16).

The busts of many statues of Piraeus were a source of inspiration for the creation of coins in the Greek area which we would like to highlight in our work. The purpose of our work is to highlight and promote the monuments

Fig. 12. The story of Bitcoin, as a part of the scenario.



(a)



(b)

Fig. 13. (a) The virtual exhibition (part of the scenario). (b) Views from the virtual exhibition (a part of the scenario).

and statues of the wider area of Piraeus and their association with coins of the Greek area. As part of the work, a route of 4 km was designed, starting from the statue of Georgios Karaiskakis in the port of Piraeus and ending at the Lion of Piraeus. The entire route is in the form of a trail and includes eleven (11) statues through the Google Maps application. This specific application was used to highlight the route to the visitor and to show how easy it is to access the specific statutes. The construction of the specific route happened after "visiting" the specific statues which were captured in the form of an indicator symbol for each statue. Afterward, an image of the statue was added to each marker as well as a text that included some information about the statue (Fig. 17).

Also, a timeline was made in the "time. graphics" application where the periods with the unveiling of the eleven (11) statues of Piraeus have been placed. This application was built after a study to find information about the unveiling of the statues to visitors and each of the eleven (11) statues is placed on a timeline in the form of a parallelogram-shaped marker with a small text about information about its unveiling statue. At each marker, there is either an image of the statue or the point where it is located on the map since the application did not allow the free addition of images beyond seven. We have then constructed a digital exhibition with some coins associated with the eleven (11) statues we have chosen and are displaying them through the "artsteps" application and the format of digital frames.

6. Conclusions-Evaluation and Next Steps Plans

6.1. Evaluation of the Scenario

The digital map, the virtual exhibition with the "artstep" tool, and a website with the busts of many statues of Piraeus are alternative ways of teaching about the historical course of coinage, based on a virtual map, where students will be able to navigate the most important places in the history of money and numismatics. In this way, we suggest that applications like this should be used even in mainstream school settings in Greece, as they could prove to be an invaluable asset, especially in today's era, when students seem to be less and less engaged and motivated to learn in conventional ways. This map can also be effectively used as a versatile and engaging teaching tool in Institutes for Vocational Training and Vocational High Schools, particularly in subjects such as Economy and ICTs.

In vocational training institutions, where economics is a core subject, the combination of the digital map, the virtual exhibition with the "artstep" tool, and the website with the busts of many statues of Piraeus can be integrated into lesson plans to supplement theoretical concepts with visual and interactive content. By exploring the evolution of money and coinage through the map, students can better grasp the historical context of economic systems, trade, and financial developments, thereby fostering a deeper

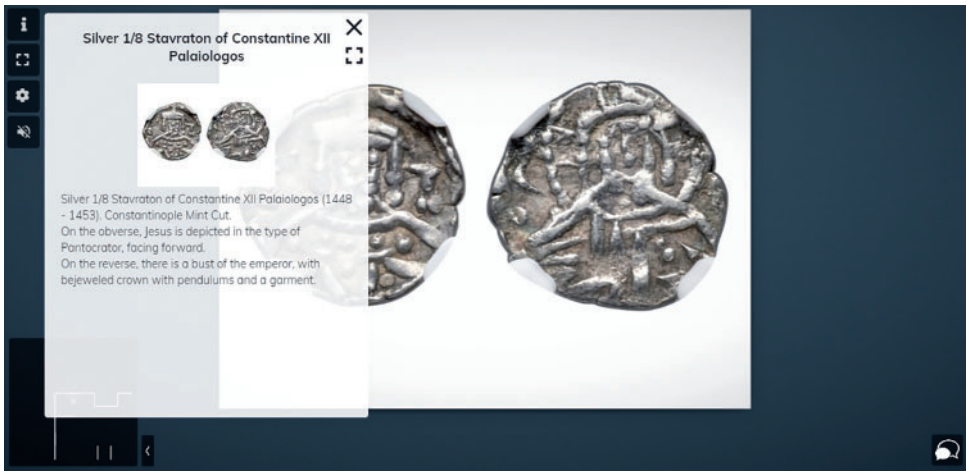


Fig. 14. Silver 1/8 Stavraton of Constantine XII Palaiologos (part of the exhibition).

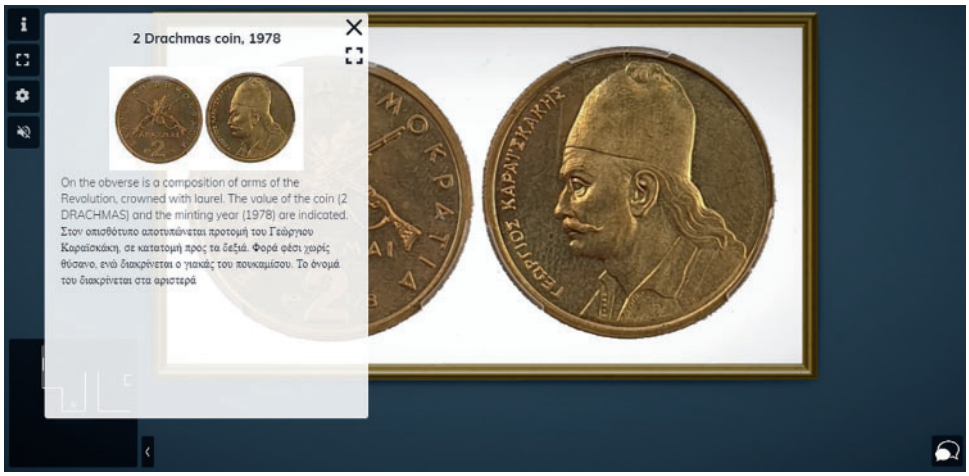


Fig. 15. Two (2) Drachmas coin, 1978 (part of the exhibition).

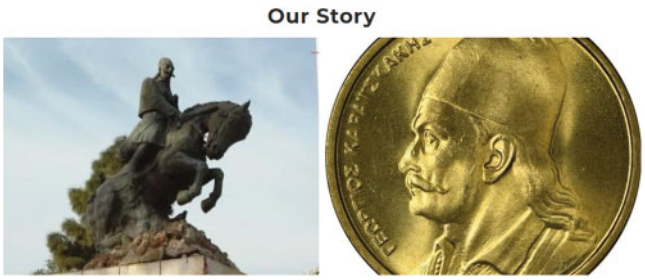


Fig. 16. Webpages for Piraeus monuments. The hero of the Greek revolution of 1821 Georgios Karaiskakis (part of the exhibition).

Fig. 17. Webpages for Piraeus monuments. Eleftherios Venizelos (part of the exhibition).

understanding of economic principles and their real-world applications.

Beyond this digital storytelling can serve as a powerful tool to introduce financial literacy concepts in vocational high schools. By showcasing historical examples of monetary systems, students can learn about the importance of responsible money management, budgeting, and saving. This knowledge is crucial for their financial well-being and future careers, preparing them to make informed financial decisions in adulthood.

Since Vocational High Schools have lessons about Information and Communication Technologies (ICT), the digital map aligns perfectly with the curriculum. Teachers can use the map to demonstrate how technology can be harnessed to present complex historical information in an accessible and interactive manner. Students can explore the map using various ICT tools, honing their digital skills while immersing themselves in historical and economic knowledge.

The digital map's multidimensional representation of historical data encourages critical thinking among students. In vocational training institutions, where problem-solving skills are highly valued, the map can be used to prompt discussions and debates on economic and historical issues, fostering intellectual growth and analytical abilities. Also, teachers can assign project-based tasks that involve students using the digital map to research and present their findings on specific historical monetary

systems or economic events. This approach not only deepens students' understanding but also nurtures their research, presentation, and teamwork skills.

Vocational training institutions, vocational high schools, and high schools as well, can organize interactive workshops and seminars that revolve around the digital map. Collaborating with experts from various fields, such as archaeologists, economists, and ICT specialists, can create enriching experiences that expose students to different career possibilities and practical applications of their education.

Incorporating digital storytelling (maps–exhibitions–webpages) into VET and general high school education creates a multifaceted and immersive learning experience, aligning theoretical knowledge with real-world applications. This integration equips students with valuable skills, fosters a deeper appreciation for history and economy, and prepares them for successful futures in various professional domains.

6.2. The Added Value of the Scenario

The implementation of digital storytelling (map–exhibition–website) as an innovative teaching tool for the history of money and coinage in primary and secondary education holds great significance. This dynamic approach not only brings archaeology closer to the public by showcasing relevant artifacts but also serves as a powerful platform to convey the intricate evolution of money and economy. As students engage with this interdisciplinary approach, encompassing archaeology, information sciences, and economics, they gain a deeper understanding of historical relationships and financial systems. In conclusion, the implementation of a digital map in teaching the history of money and coinage is a transformative step forward in education. By bridging the gap between archaeology and the public, this initiative offers students tangible connections to their past, fostering curiosity and appreciation for their heritage. Through interactive exploration, learners gain insights into the complexities of economic systems, trade routes, and the impact of currency on societies, equipping them with critical life skills such as financial literacy. The digital map's interdisciplinary approach intertwines ancient and modern financial innovations, empowering students with a comprehensive understanding of financial systems' evolution.

As educators, it is our responsibility to embrace innovative tools like the digital map to enhance historical understanding and cultivate essential life skills among the next generation. By combining technology with the richness of history and archaeology, we inspire students to think critically, appreciate their roots, and envision a future that builds upon the lessons of the past. As we forge ahead into an ever-changing world, the significance of this digital map in teaching the history of money and coinage lies not only in the exploration of our financial heritage but also in empowering future generations to create a prosperous and informed global society.

Some practical applications of the research findings could be the following:

1. Curriculum Enhancement: The research findings can inform the development of enriched history and economics curricula for primary and secondary education. Integrating the digital map into lesson plans can invigorate traditional teaching methods, making the learning experience more interactive and engaging for students and further enhancing the use of technology in the classroom.
2. Financial Literacy Programs: Schools can use the research findings to design specialized financial literacy programs. By leveraging the digital map's ability to convey the nuances of economic systems and financial history, educators can instill practical money management skills in students from an early age.
3. Professional Development for Educators: The research findings can guide professional development workshops for educators. Training teachers on how to effectively utilize the digital map as a teaching tool ensures its optimal use in the classroom and maximizes its impact on student learning.
4. Museum and Exhibition Enhancements: Museums and cultural institutions can incorporate the digital map concept into their exhibitions. By creating interactive displays showcasing historical artifacts and their significance, museums can enhance visitor engagement and provide a more immersive learning experience.
5. Community Outreach: The digital map can serve as a tool for community outreach programs. Schools and local organizations can use it to host educational workshops, seminars, or public events that bring the history of money and coinage closer to the public.

Thus, the practical applications of the research findings extend beyond the classroom, reaching various aspects of education and public engagement. By leveraging the digital map's potential to enrich history education, promote financial literacy, and bridge the gap between archaeology and the public, educators, and institutions can create lasting impacts on the lives of students, communities, and society. Embracing this transformative approach, we can pave the way for a more informed and empowered generation, armed with historical insights, critical life skills, and an appreciation for the complexities of our shared financial heritage.

6.3. Evaluation

The educational assessment of the whole scenario is defined by the set of individual systematic and organized processes proposed by the digital narrative. To evaluate the conclusions, we organized discussion circles among the teachers, after initially presenting them with the aspects of the scenario. The evaluation, which was carried out in the form of an organized discussion between the teachers of the Finance Sector or Specialty, concerned the process of concluding what derives from what we proposed in the individual transitions of the scenario, but also as a whole. We put to the judgment of the specialized teachers of the Sector and the Specialties, the indicators of the implementation of the axes of the proposed scenario, concerning the analytical program they implement. We discussed with them the question of the effectiveness of teaching from the enrichment of digital media. Thirty-five (35) expert teachers of the Sector and the Specialties of Economic

directions, from three Vocational High Schools of the 4th Athens area, in their laboratories supervised by the 1st Laboratory Center of Agios Dimitrios (First Vocational High School of Agios Dimitrios, Second Evening Vocational High School of Agios Dimitrios, and Day Vocational High School of Alimos) evaluated the scenario's digital tools as a whole. The organization of the evaluation for all the applications was intended on the one hand to evaluate the pre-diagnostic control and to determine the weak points of the script, and on the other hand to evaluate the effectiveness of the teaching, in combination with the degree of satisfaction of the expectations of the students of the Department or the Specialty.

As a process of deriving conclusions, the question was asked "What do students learn through digital tools?". For student evaluations, it was evaluated as particularly positive that we avoided the operation of written examinations or the integration of test forms. Teachers, when integrating digital tools into their teaching, consider that traditional grading forms of assessment capture the result without paying attention to the learning process, as the results of these assessments are usually limited to a final grade, which does not provide particularly useful information for the student himself. The teachers who evaluated the scenario consider it important along with changing the goals of the educational process to integrate multiple digital tools into it, and to adapt the curricula to the dynamic learning environments. The teachers through experiential observations, but also through the qualitative evaluation of the material in the pre-diagnostic control that we organized positively evaluated and accepted the frameworks of building knowledge through the multiple digital gradations of the scenario, positively evaluated the individual constructions, and accepted the use of the proposed tools. Nevertheless, they reserved reservations as to whether these "models" of approach will work in favor of specialized knowledge and will not be a piece of simple information in the field of Economics.

6.4. Future Works

This study, along with many before it, has laid a strong foundation for enhancing historical understanding and financial literacy among students. As this innovative approach paves the way for more engaging and effective learning experiences, several avenues for future research emerge. This section highlights potential areas of investigation that can further enrich the educational landscape and contribute to the development of interdisciplinary approaches in teaching history, archaeology, and economics.

An essential aspect of future research should focus on assessing the long-term impact of the digital map's implementation on students' financial behavior. Investigating how exposure to the history of money and its evolution influences attitudes toward saving, spending, and investing can provide valuable insights. Longitudinal studies tracking students beyond their educational years would shed light on whether financial literacy instilled during early education leads to responsible financial habits in adulthood.

Future research could also delve into comparing different pedagogical strategies employed with the digital map to identify the most effective teaching methods. Understanding how students respond to specific interactive elements, multimedia content, or gamified approaches will aid educators in optimizing learning outcomes. Comparative studies could also explore the impact of using the digital map in different educational settings and its relevance across diverse cultural contexts. Measuring student engagement and motivation while using the digital map is crucial for understanding the learning experience's effectiveness. Utilizing qualitative and quantitative research methods, future studies could gauge students' perceptions, interests, and satisfaction with the digital map as a learning tool. Additionally, exploring the impact of gamification elements on student motivation may reveal innovative ways to sustain interest and curiosity throughout the educational journey. To ensure equitable access to education, future research should address the inclusivity and accessibility aspects of implementing a digital map in classrooms. Investigating how various learning styles, including students with learning disabilities or different language backgrounds, engage with the map would guide the development of adaptive and inclusive features. In this context, examining the role of teachers in facilitating the use of the digital map and their professional development needs is essential. Research on how educators adapt their teaching methodologies, the challenges they face, and the support required for successful implementation would provide valuable insights for effective teacher training and curriculum development.

As the digital map intertwines archaeology, information sciences, and economics, future research could focus on further enhancing interdisciplinary learning opportunities. Collaboration between experts in different fields could lead to the development of more comprehensive and interconnected educational resources. Additionally, exploring the integration of other subjects, such as sociology, anthropology, or mathematics, with the digital map could expand its impact and relevance in the curriculum.

As we embrace the digital era in education, the study on implementing a digital map for teaching the history of money and coinage represents a stepping stone towards a more engaging and interconnected learning experience. Future research in the areas of financial behavior, pedagogical strategies, student engagement, inclusivity, interdisciplinary learning, and teacher development will undoubtedly contribute to refining and advancing this innovative approach. By continuously exploring and refining these aspects, we can empower the next generation with a deeper appreciation of their financial heritage and equip them with the necessary skills to navigate the complexities of the ever-changing economic landscape.

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Conflict of Interest

The authors declare that they do not have any conflict of interest.

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