

# VR Quest® STEAM Curriculum Guide 6th Grade Social Studies









## **Table of Contents**

VR Quest® STEAM Curriculum Guide Introduction
Curricular Alignment
The Seven Steps of VR Quest®
Defining the Objective
Brainstorming and Collaborating12
Research
Websites for Student Use16
Student Voice and Empowerment
Storyboard
Sample Storyboard19
Build the Interface
Pilot Test
Revise
Take it Home

Please refer to the VR Quest® User Manual available at <u>www.vrquest.hamiltonbuhl.com/user-manual</u> for hardware requirements and step-by-step instructions on how to play.





#### VR Quest® STEAM Curriculum Guide Introduction

VR Quest® is pleased to introduce its STEAM virtual reality platform using the best digital content to create a transdisciplinary education product that emphasizes social emotional learning. Designing games strengthens academic concepts by reinforcing content knowledge and expands skill sets with reliance on logic, probability, geometry and other mathematical principles.

VR Quest's® **STEAM** curriculum challenges students to create, innovate, and problem solve all while connecting them to history, science and real-world events and issues that affect their lives. It includes extensive support for teachers such as embedded professional development and instructional resources to support a differentiated learning experience for each student.

The **Science** component can be best seen through scholars being able to create various physical environments and natural resources that will influence their characters and the game. There are landforms, geographic and climate factors that scholars account for during the game's design.

**Technology** is evident as VR Quest® provides a full virtual reality experience for the user, but also fosters problem solving while building mindset and skills. Additionally, the game creator has the option of focusing on the game design, presentation and story, there are also elements of the programming language, LUA that can differentiate the experience for scholars.

The **Engineering** process is facilitated through the design implementation. Scholars are consistently planning, designing and building their creations. When the design process is completed, the game must be piloted or tested out. By determining if there are glitches or does not run as anticipated, scholars are able to fail, regroup and correct the approach.

**Art** is the actual creation process and the aesthetics of the game or how one artistically perceives what is being created. The design concepts being facilitated while the placement of colors and variety are consistently addressed.

The **Math** component is seen through sizing, scales, ratios, proportions and rotational axis. In the creation process, creators utilize logic, probability, geometry and various other mathematical principles. Scholars will need to visualize and generate geometric shapes. Using visual examples and models, they will demonstrate how formulas work.

**Social Emotional Learning** is prompted as scholars are guided to consider all perspectives. How did all parties feel? Were some more privileged and have an advantage over others? How do issues of power, wealth and morality influence exploration and colonization? Could the United States have shown more empathy or compassion in dealing with other countries or groups of people? If you were given a chance to lead, what would you do differently? Why is it important to always consider the human side of the equation? How can we right the wrongs of the past?





Additionally, the VR Quest® STEAM curriculum supports ENL programs as it creates equitable opportunities for scholars to develop social and academic language while improving their performance and constructing meaning. In order to accomplish this goal, scholars engage in all domains of language acquisition (listening, speaking, reading, and writing) while being active participatory learners through inquiry within meaningful contexts and authentic experiences.

Through its multi-ethnic characters, settings and variables, VR Quest® showcases different cultures and heritages as valued assets to learning and offers an opportunity for the learning community to expand its understandings of global awareness international mindedness.

Regardless of whatever communication level an ENL student is at, he or she can display knowledge and create something special unique while reinforcing written and spoken English.

#### As a classroom or content teacher:

- Collaborate with other teachers in different disciplines and grades about the most important concepts and skills to be taught and transferred into the game.
- Seek out the school librarian to support the research and to design instructional curriculum maps.
- Implement assessment rubrics with information fluency skills to guide the design process.
- Incorporate students' knowledge and use of multimedia resources.







## **Curricular Alignment**

DOK Tags	Common Core	IFC Standards	AASL	ISTE
Argument Cause/ Effect	W.6.1. Write arguments to support claims with clear reasons and relevant evidence.	States and verifies what is known about the problem or question and makes connections to prior knowledge.  Writes questions independently based on key ideas or areas of focus.	1.A1 1.A2	6c 4c
		office faces of areas of focus.	IV.A1	6a
Claims Classification Comparing	a. Introduce claim(s) with clear reasons and evidence clearly.	Analyzes and evaluates what is known, observed or experienced to form tentative thesis or hypothesis.	II.A2	3a 3b 5c
Contrasting Counterclaim	c. Use words, phrases and clauses to create cohesion and clarify the relationships among claim(s), reasons and evidence.	Determines what resources will most likely offer quality information.  Considers culturally divergent and opposing viewpoints on topics.	IV.A2 IV.A1	5c 5c
Dialogue  Domain Specific  Vocabulary	d. Establish and maintain a formal style.	Uses the categorization of materials within Dewey areas to locate resources and browse for additional materials.	II.A2 V.A1	1a 1b
Evidence	e. Provide a concluding statement or section that follows from and supports the argument presented.	Uses technology resources such as online encyclopedias, online databases, and Web subject directories to locate information on assigned curriculum topics.  Uses organizational systems and electronic search strategies – keywords, subject headings) to locate appropriate resources.	I.D1	3c





DOK Tags	Common Core	IFC Standards	AASL	ISTE
Explanatory Text Facts Graphics Key Details	W.6.2.  Write informative/explanatory texts to examine a topic and convey ideas, concepts, information through selection, organization, and analysis of relevant content.	Uses multiple sources to acquire background information and brainstorms ideas for further inquiry.  Questions differences between sources and seeks additional sources to resolve.  Evaluates and paraphrases information that answers research questions.	III.B1 IV.B1 IV.B4	6d 3a 4b
Informational Text Main Topic Multimedia	a. Introduce a topic, organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.	Evaluates quality of electronic and print information for usefulness, currency, authority, and accuracy.  Uses both facts and opinions responsibly by identifying and verifying them.  Takes notes by paraphrasing or using quotation marks when using someone else's words.  Evaluates quality of electronic and print information for usefulness, currency, authority, and accuracy.	IV.B4 II.B3 III.B11	4b 5b 4a
Narrative Organization Pacing	b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.	Uses both facts and opinions responsibly by identifying and verifying them.	VI.C1 IV.A2	4a 3d
Relationships	c. Use appropriate transitions to clarify the relationships among ideas and concepts.	Interprets information and ideas by defining, classifying, and inferring.	IV.A1	6d
Sequence of Events	d. Use precise language and domain specific vocabulary to inform about or explain the topic.	Forms opinions and judgments backed up by supporting evidence.  Publishes final product for a particular audience and purpose.	IV.B4	6b





DOK Tags	Common Core	IFC Standards	AASL	ISTE
Visual Information	<ul> <li>e. Establish and maintain a formal style.</li> <li>f. Provide a concluding statement or section that follows from the information or explanation presented.</li> <li>W.6.3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details and well- structured event sequences.</li> <li>a. Engage and orient the reader by establishing a context and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.</li> <li>b. Use narrative techniques, such as dialogue, pacing and description to develop experiences, events and/or characters.</li> <li>c. Use a variety of transition words, phrases and clauses to convey sequences and signal shifts from one- time frame or setting to another.</li> <li>d. Use precise words and phrases, relevant descriptive details and sensory language to convey experiences and events.</li> </ul>	Interprets information and ideas by defining, classifying, and inferring. Considers culturally divergent and opposing viewpoints on topics. Uses common organizational patterns to organize information in order to draw conclusions. Cites all sources used according to local style formats. Publishes final product for a particular audience and purpose. Uses interactive multimedia tools to exchange data collected and to learn curricular concepts by communicating with peers, experts and other audiences. Determines what resources will most likely offer quality information. Evaluates quality of electronic and print information for usefulness, currency, authority, and accuracy. Uses technology resources such as online encyclopedias, online databases, Web subject directories to locate information on assigned topics in the curriculum. Forms opinions and judgments backed up by supporting evidence. States and verifies what is known about the problem or question and makes connections to prior knowledge. Writes questions independently based on key ideas or areas of focus. Analyzes and evaluates what is known, observed, experienced to form tentative thesis or hypothesis.	VI.C1	3a





DOK Tags	Common Core	IFC Standards	AASL	ISTE
Audience Diverse Cultures Diverse Viewpoints	<ul> <li>W.6.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</li> <li>a. Produce text (print or non-print) that explores a variety of cultures and perspectives.</li> </ul>	Uses organizational systems and electronic search strategies (keywords, subject headings) to locate appropriate resources  Uses table of contents, index, chapter and section headings, topic sentences and summary sentences to locate information and select main ideas.	IV.D1 II.D1 II.D2	6b 6a 7b
Purpose	<ul> <li>W.6.5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning revising, editing, rewriting or trying a new approach.</li> <li>W.6.6. Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with other; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single setting.</li> </ul>	Uses the structure and navigation tools of a Website to find the most relevant information.  Uses both facts and opinions responsibly by identifying and verifying them.  Takes notes by paraphrasing or using quotation marks when using someone else's words.  Evaluates and paraphrases information that answers research questions.  Cites all sources used according to local style formats.  Uses both facts and opinions responsibly by identifying and verifying them.	VI.D1	7c
Argument Claims Comparing Contrasting	W.6.7. Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.	Forms opinions and judgments backed up by supporting evidence.  States and verifies what is known about the problem or question and makes connections to prior knowledge.  Writes questions independently based on key ideas or areas of focus.	I.C3 IV.A1 IV.A1 IV.A2	3d 5c 1b 1d





DOK Tags	Common Core	IFC Standards	AASL	ISTE
Evaluating Evidence Informational Texts	W.6.8. Gather relevant information from multiple print and digital sources; assess the credibility of each source and quote or paraphrase the data and conclusion of others while avoiding plagiarism and providing basic bibliographic information for sources.	Analyzes and evaluates what is known, observed, experienced to form tentative thesis or hypothesis.	I.D3 IV.D4 VI.C3	2b 2c 2a







## The Seven Steps of VR Quest®

Now put on your seatbelts and get ready for a fun-filled ride. You are the creator of this journey into history. As the adage so eloquently states: "in order to guide your future you must understand your past."

As you make this game richly unique with content knowledge, the player participants will be focused on accomplishing the games' objective or guided through an experience while being stimulated by audio, images, videos and text.

Prepare to travel through the Mediterranean World and gain insight into the interactions across the Eastern Hemisphere. Many have been fascinated by the Byzantine Empire for centuries. As you recreate an authentic geographic representation using a variety of maps, globes, aerial and satellite photographs and computer models, think about ways to insert your thoughts, opinions and ideas on how many situations were handled.

Major religions and belief systems were developed in the Eastern Hemisphere. There were important similarities and differences between these belief systems. What role did the belief systems play in a society? How can power, wealth and religion influence change and development?

In this quest, you create an adventure in the unique environment of the Mediterranean World. The following graphic outlines the basic steps involved in creating your learning VR Quest®. Be aware that you may not go in order. While brainstorming, you may start doing the storyboard, then do research. While building the interface, you may have to go back and do more brainstorming. Just like a paper that you edit and revise, you will be revisiting your storyboard and your game several times to fine tune and perfect it.

On the following pages, you can read how these steps apply to designing a sample quest. Though you can design a quest by yourself, you can often generate more ideas and create more in less time if you collaborate and work as a team.











## Define the Objective

An objective guides the player in your game and helps them focus on the task at hand. A good objective is clear, concise and **SMART**.

**S**pecific

Measurable

**A**ttainable

Realistic

Time-based

By the end of this quest, players will be able to \_\_\_\_\_\_





Here is a sample **SMART** objective:

Players will be able to:

- Determine preserved elements of the Roman Empire.
- Investigate cultural blending and cross-cultural exchange. Define blending of Roman traditions with Greek culture.
- Assess the role of the Christian Church (ca. 600C.E. ca. 1450).
- Compare and contrast different perspectives on the Crusades: Byzantine, feudal Europe and Islamic.
- Explain how trade networks promoted the exchange and diffusion of language, belief systems, tools, intellectual ideas, inventions and diseases.

Your objectives will vary depending on the type of VR Quest® you design. Your quest may have an objective that requires player participants to acquire artifacts. Or, your quest could have an objective that is based on an educational gallery walk. Regardless of which one you select, an objective is necessary to guide the game designing process, just as a thesis guides a major research paper. A good objective has no more than five main points.





## **Brainstorming and Collaborating**

The thinking and conceptualization of process is intended to be a free-flowing period to generate as many ideas as possible. Brainstorming is the collection of all ideas. No idea is a bad idea in this stage.

#### Collect all ideas

Often an idea will lead to a bigger and better idea. Once you get your creative juices flowing, you start to think of other things.

#### Write ideas on big chart paper

If everyone takes ownership and can easily read the group work, it will generate more ideas.

#### Utilize pictures, colors and music

Have you ever heard the expression you are the company you keep? Writing in color will help you color code your ideas and adding drawings, photos and sketches will ignite greater creativity. This is a great organizational tool as well.

#### Play background music

Play some relaxing wordless music. If you have Amazon's Alexa available, she can play beach sounds, pink noise, healing or mediation sounds. You name it, she has it. Studies show that music can make you more productive.





#### Set a timer

A solid half-hour for brainstorming is usually sufficient time. When you work on a timer, you are focused, clear and productive. Do not allow anything to distract you during this time. Cell phones should be put away and the only task at hand will be brainstorming.

#### Be comfortable

Make sure you have water to drink, ample room to write and draw and the atmosphere is a pleasant temperature. When you are comfortable, you will get more done.

Now that you have completed formulating and generating ideas, you have officially completed the brainstorming process. Go through all the ideas and separate the great ideas from the rest of them. Using teamwork, read through the list and discuss what you like and dislike about each. As a group, vote on what works and what doesn't then cross off the not so good ideas. Finally, think about what you can realistically create in the given time period.





## Research

Use the objectives you wrote in Step One to guide your research, answering any questions. Here's some of the research associated with the objectives in our example:

#### Assess the fall of Rome:

With the fall of Rome, the Mediterranean world was reshaped. There was discord and many civil wars.

Three distinct cultural regions developed: feudal Western Europe, the Byzantine Empire and the Islamic caliphates since these regions interacted with each other and clashed over control of holy lands. They were all very distinct and culturally rich. All these human communities adapted or modified the physical environment.

There were a variety of significant geographic features: the highest mountains, the deepest ocean trench, deepest lake, largest deserts, most islands, largest country, tallest buildings and most populous cities. The area was characterized by vast oceans, important bodies of water and land masses, as well as extremes in climate (sub-tropical vs. artic, droughts vs. monsoons).

The political, economic, military and social interactions among regions were all very different and illustrate an astounding level of sophistication. Additionally, trade networks promoted the exchange and diffusion of language, belief systems, tools, intellectual ideas, inventions and diseases.





- What were the effects of conquests?
- What were the causes and effects of The Crusades?
- Determine the growth and development of the Islamic World (Middle East, Iberian Peninsula, Indian subcontinent, Southwest Asia, North and Central Africa, Islands of Indonesia).
- Describe the patterns in human settlement, economic activity, natural resources, resource extraction and resource allocation vs. scarcity of resources in present day.
- Map the trade routes and compare and contrast the major Afro-Eurasian trade networks (The Silk Roads, Mediterranean, Indian Ocean and Trans-Saharan routes).

## Know the significance of math and science throughout the Mediterranean World: Mathematics was present in everyday life. It can be seen in the trade system and tools that were used. Record-keeping was very defined and advanced for civilizations at the time.

Examine what role math played in the Byzantine Empire. There was considerable seismic activity in the eastern Mediterranean, as well as the Ring of Fire. The geologic history (plate tectonics, the creation of continents, development of landforms, the elevation of the Himalayas) was specific to the area and illustrate various changes the earth went through.

Additionally, Byzantine science and technology played a major role in building knowledge bases and empowering Islamic science and later Renaissance Italy. Byzantine inventors synchronized clocks, as well as refined a Greek combustible fire used in battles.

#### Explain how past practices are current and still used today:

Explore and define different types of ideologies and political systems at various locations and times in the Eastern Hemisphere. Identify the roles of individuals and key groups in those social and political systems.

Determine connections between East and West Genghis Khan and/or Kublai Khan The Golden Horde and the Yuan Dynasty. Both historically and currently, describing the roles of people in power in the Eastern Hemisphere. Determine ways that current figures can influence people's freedom and rights.





#### Taking it to the next level with critical thinking:

Physical environment influenced human activities and development in the Eastern Hemisphere. Important individuals, groups and institutions shared a long and diverse history. Resource locations influenced trade routes and economics. Examine some topics below:

- Cultural diffusion (Indian/Arabic numerals, mapmaking, printing, china, tea, opium, spices, Swahili, paper, silk and Buddhism)
- Interregional travelers and explorers (Marco Polo, Ibn Battuta, Mansa Musa and Zheng He)
- Development of transportation and technology and the effect on trade (junks, Caravels, ship sails and rudders, compass and astrolabe, gunpowder)
- Epidemics and pandemics (Black Death Bubonic Plague, typhus, cholera, smallpox)

VR Quest® encourages scholars to practice while they are learning game creation, but do not copy. Be creative, try new things and bring new ideas and aspects into the VR experience with your fresh take and stimulating outlook.

The Mediterranean World and the Byzantine Empire gives you a wealth of opportunities and challenges to design a quest where players discover more about this amazing civilization as they face and overcome obstacles and problem solve. Here are a few ideas:

- Tell players to reshape the Mediterranean World after the fall of the Roman Empire by including overexpansion, corruption and invasions.
- Challenge players to create a detailed museum walk of the Islamic Golden Age or the Byzantine Empire by including cultural (art, music, literature, language and architecture) artifacts.
- Explore the controlled lands within the Mediterranean Basin and highlight the blending of Roman traditions with Greek culture.





#### Websites for Student Use

Here are a few vetted websites to help you conduct research:

https://kids.kiddle.co/Byzantine Empire

www.historyforkids.net/byzantine-empire.html

http://academickids.com/encyclopedia/index.php/Byzantine Empire

https://study.com/academy/lesson/byzantine-empire-lesson-for-kids-geography-government.html

https://www.ducksters.com/history/islam/

https://kids.kiddle.co/Islamic Golden Age

https://rome.mrdonn.org/fall.html

https://www.youtube.com/watch?v=IBKKTgwPufE

https://kidskonnect.com/history/roman-empire/

## **Student Voice and Empowerment**

Educators often feel as if they must know everything before they can teach it. The beauty of game design and integrating technology to support the curriculum is scholars can become the experts. There is nothing scholars love more than to be able to teach their cohorts or even adults how to do something.

Studies show that scaffolding learning helps to not only reinforce new knowledge, but to also foster and promote a growth mindset, as well as build confidence, empower scholars and reinforce a strong sense of voice.









## Storyboard

In order to have your game make sense to the player participants, you must create your storyboard. A storyboard is a physical layout or a sequence of directions, illustrations and dialogue of the order of your story. A good storyboard depicts significant action and changes.

Think about the last good book you read. The author sat down to think about exactly what would happen when. One of the best ways to do this is to create a series of panels that almost look like a comic book.

Going through the process of planning and creating this will help you to envision both the actions that the player will be experiences, and the environments in which they'll be doing it.

#### Every story will have the following main components:

#### Introduction

Here, the player is introduced to the characters, environment and objective of the quest. You will also establish the player as the 'main character' of the story, and let them know what is expected of them.

## Body

The body is where all the action takes place. Your player will face challenges, solve puzzles, meet other characters, and build toward the climax.

#### Climax

A climax is the ultimate challenge, where the main character uses all they've learned during the course of the quest to achieve their final objective.

#### Summary

The summary congratulates the player for a successful quest and reminds them of all the amazing things they did to get here.

In order to create a good story, you will need to define the challenges that the main character will face on their journey. Ideally, all of these will build upon one another getting harder and harder as the player moves forward.

As you devise your story, be sure that the problems the main character needs to solve are not too easy, but also not too hard. If they need knowledge to answer questions, be sure to embed the answers somewhere or explain clearly where they can be found. On the following page is a sample storyboard for a Mediterranean World Byzantine Empire VR Quest®.





This illustration highlights advanced Byzantine technology.







## Sample Storyboard VR Quest®

Introduction Panels 1 and 2		Body Panels 3-10
Player will guide the user through different geographic features of the Eastern Hemisphere showing extremes in climates.	Player comes to a political structure and discusses the effects of geography on political systems.	<ol><li>Player must find cultural artifacts within the Byzantine Empire and the Islamic World to compare and contrast.</li></ol>
4. Player recognizes how advanced in science and technology the Byzantine Empire was specifically with Greek fire and synchronized clocks that sent messages across Asia Minor.	5. Player moves through town and discusses the economic systems (use of resources and land, cities, job specialization, slavery).	Player passes different physical structures and details social hierarchy and the government (political systems).
7. Young guide will recognize and explain how characteristics (cultural, economic and physical environmental) of regions affect the history of	8. Voice: "As citizens within societies within the Eastern Hemisphere, we have rights and responsibilities so that all runs smoothly."	9. Player walks around the perimeter of the area and summarizes all the cultural and political achievements' influence on contemporary
societies in the Eastern Hemisphere.		societies.
	Climax	Summary



greets elders.

10. Player returns to the center of the village and

12. Teamwork "Congratulations, my friend. You found it. Great job!!"





## **Build the Interface**

Now that you've decided your story line and main scenes, it's time to build it using the VR Quest® software. Use the tables included with 'Learning the VR Quest System' to help you remember how to use the commands to build your quest.

Depending on what's available and how much time you have, you may need to go back to Steps 2 – 4. Maybe you don't have time to fill rooms with all the right equipment or build a complex series of underground tunnels. Perhaps you're not exactly sure what equipment would be found in a space lab and need to do more research. The story might benefit from a bit more brainstorming.

How could you include different artifacts relevant to the historical period your game is describing? Would it be a series of different artifacts that will help the player participants learn more or would it be one artifact that is continually acquired?



For example, this Byzantine artifact shows the use of gold leaf with a religious or devotional image. It was not uncommon to see ivory or enamel used as well.









## **Pilot Test**

After you've finished building your first draft of the quest, you'll need to give it to people outside your team to solve. It helps to have a fresh set of eyes evaluating and making suggestions on what you need to do to improve it. This will help you to identify any problems that need fixing.

Ask the following questions of the people who try it out:

- 1. Did you know what you were supposed to accomplish to win the game?
- 2. Did everything work (switches, videos, doors, etc.)?
- 3. Did we provide everything you needed to succeed in this quest?
- 4. Was this exciting? Were you completely engaged? What do you think could make the quest better?

Professional game designers go through many pilot tests because there are almost always things that don't work the way they intend them to. Just like good writers edit and revise, as a game designer you must also seek ways to improve your game. It often helps to step away from your project and return with a fresh outlook. You may want to do several test runs.









## Revise

The pilot test will give you lots of information. Maybe players didn't understand what they needed to succeed. Perhaps they were unable to move items or open doors to move forward. Or critical information that they needed to solve the quest wasn't available.

Following are a few of the things you may need to revise:

#### **Factual Content:**

- Did players understand the quest?
- Was all the information needed available to players?
- Did the story make sense?
- Were there things that misled players because they were unclear or inaccurate?

#### Interface:

- Did the interactive features work?
- Could the players navigate the landscape?
- Was the setting attractive, and in line with the theme of the quest?
- Did things like maps or guides properly match the 3-D landscape?

#### **Overall Experience:**

- Was the quest at an appropriate level of difficulty?
- Did players stay interested in the quest?
- Were players able to complete the quest in a reasonable amount of time?
- Did players have an overall positive reaction to the quest?

In revising, it is likely that you will repeat some of Steps 2 - 6. If you have a chance to pilot test a second time, hopefully you will see how much better your quest is after incorporating feedback.





### Take it Home

One of the best things about VR Quest® is you can take your project home!

When you've finished, you will be able to save your file in a format that can play on any home computer. Your friends and family will be amazed that you've created your very own computerized VR Quest® and will enjoy playing it long after you've gone home.

In the future, we hope you'll be able to join us in designing a wide variety of quests, sparked by your creativity and imagination and share them with scholars across the United States!





