VR Quest® STEAM Curriculum Guide
4th Grade Social Studies

New York State Geography

Hamilton Buhl®
Never-Ending Learning Innovation

New York State Geography

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

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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?
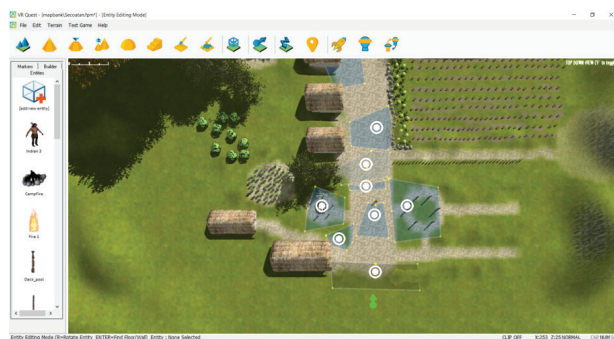
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Additionally, the VR Quest® STEAM curriculum supports ENL programs as it creates equitable opportunities for scholars to develop social and academic language while improving their performance and constructing meaning. In order to accomplish this goal, 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.

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Curricular Alignment

DOK Tags	Common Core	IFC Standards	AASL	ISTE
Author's Perspective	W.4.1. Write opinion pieces on topics or texts, supporting a point of view with reasons and information.	Analyzes and evaluates what is known, Predicts answers to inquiry questions based on background knowledge and beginning observation or experience.	1.A1	3d
Domain Specific Vocabulary	a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose.	Distinguishes between fact and opinion.	V.A2	1b
Explanatory Texts	b. Provide reasons that are supported by facts and details.	Identifies facts and details that support main ideas. Follows a model or template provided to complete inquiry project and follows a timeline.	I.D1	3d
Facts	c. Link opinion and reasons using words and phrases (e.g., for instance, in order to, in addition).	Asks questions to clarify topics or details. Generates a list of key words for a research-based project with guidance.	I.B1	5c
Illustrations	d. Provide a concluding statement or section related to the opinion presented.	Uses selected search engines to find appropriate information.	II.A2	1a
Informational Texts	W.4.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.	Uses pre-selected Web resources to locate information.	V.A1	2b

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DOK Tags	Common Core	IFC Standards	AASL	ISTE
Key Details	a. Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.	Selects and uses multiple appropriate print, nonprint, electronic and human sources to answer questions.	III.B1	3d
Narrative	b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.	Uses various note-taking strategies.	IV.D1	6a
Opinion	c. Link ideas within categories of information using words and phrases (e.g., another, for example, also, because).	Recognizes the right to express own opinion in an appropriate manner, even when the opinion differs from the ideas of others. Restates ideas of others accurately and adds own perspective.	II.D2	1b
Organization **Point of View**	d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Provide a concluding statement or section related to the information or explanation presented.	Uses common organizational patterns to organize information. Uses pre-writing to brainstorm ideas for most effective way to present conclusions.	I.B2 I.A2	1b 3c

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DOK Tags	Common Core	IFC Standards	AASL	ISTE
Quotations Reasoning Sequence of Events	W.4.3. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a. Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally. b. Use dialogue and description to develop experiences and events or show the responses of characters to situations. c. Use a variety of transitional words and phrases to manage the sequence of events. d. Use concrete words and phrases and sensory details to convey experiences and events precisely. e. Provide a conclusion that follows from the narrated experiences or events. W.4.4. Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.	Recognizes the right to express own opinion in an appropriate manner, even when the opinion differs from the ideas of others. Restates ideas of others accurately and adds own perspective.	VI.A2	3c
Audience	W.4.5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. W.4.6. With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.	Paraphrases and summarizes information that answers research questions. Uses common organizational patterns to organize information. Understands the concept of "audience;" determines audience before creating product.	III.C2	6d

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DOK Tags	Common Core	IFC Standards	AASL	ISTE
Organization	W.4.7. Conduct short research projects that build knowledge through investigation of different aspects of a topic.	Understands the basic concept of plagiarism as copying the work of others. Drafts the presentation/product. Assesses and revises own work with guidance.	III.B2	6a
Purpose	W.4.8. Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information and provide a list of sources. W.4.9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply grade 4 Reading standards to literature (e.g., "Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text [e.g., a character's thoughts, words, or actions]."). b. Apply grade 4 Reading standards to informational texts (e.g., "Explain how an author uses reasons and evidence to support particular points in a text").	Asks questions to clarify topics or details. Understands the concept of "audience;" determines audience before creating product. Recognizes the right to express own opinion in an appropriate manner, even when the opinion differs from the ideas of others. Restates ideas of others accurately and adds own perspective. Identifies and evaluates the important features for a good product. Understands the basic concept of plagiarism as copying the work of others. Identifies facts and details that support main ideas.	VI.C2	7b

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 New York State geography and gain insight by recognizing and analyzing different forms of evidence (maps, graphs, art, artifacts, photographs, oral histories) to make meaning of history. As you begin to develop questions about this great state, its history, the geography, economics and government, you will be able to explain chronologically how events are related to each other.

In this VR Quest®, you create an adventure in the diverse geography of New York State. The graphic below outlines the basic steps involved in creating your learning 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.

VR QUEST®

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7 STEPS

- **01 Define the Objective** — What will players know or be able to do by the end of this adventure? This is the main theme of your VR Quest®
- **02 Brainstorm** — Come up with as many ideas as possible related to your quest
- **03 Research** — Flush out the details so you can create the best VR Quest® possible
- **04 Storyboard** — Outline the scenes, characters and events a player will experience
- **05 Build the Interface** — Use VR Quest® to create the virtual world where the quest will take place
- **06 Pilot Test** — Make sure everything works, so players can succeed in the quest
- **07 Revise** — Fix any problems in terms of story, content or interface

01 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**.

Specific

Measurable

Attainable

Realistic

Time-based

By the end of this quest, players will be able to _____.

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Here is a sample **SMART** objective:

Players will be able to:

- Explain why geography matters and how it affects history, economics and government.
- Critique what makes a complex society with reference to specific time periods being studied.
- Define how people have immigrated and migrated to New York City and New York State and contributed to its cultural growth and economic development.
- Determine the strategic role of New York City and New York State in the Revolutionary War with respect to geography, battles, key figures, leaders, role of Native Americans, African Americans and women.

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.

02 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.

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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.

03 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 geography of New York State:
New York State has a diverse geography and very physical features. It has several Native American groups, mainly the Iroquois (Haudenosaunee) and Algonquian-speaking groups, who inhabited the region that was later known as New York. Native Americans interacted with the environment and developed unique cultures that helped make New York special and to this day, still contribute to the growth and development of the state.

The geographic features have greatly influenced location. Additionally, the role of environment, climate, natural resources and animals of the state, has propelled the development of Native American cultures in New York State.

• How has the location of New York State in relation to other states (countries/world/bodies of water and mountain ranges) helped define the culture of the economy, government, ways of life, customs, beliefs, values and traditions?

• Compare and contrast a region in New York State to another region by describing characteristics and historical events.

• Distinguish human-made features and human activities from "environments" (natural events or physical features like land, air, and water that are not directly made by humans).

• Assess how environments affect human activities and how human activities affect physical environments.

• Identify periods of time, decades and centuries, to put events into chronological order.

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Know the significance of math, science and technology throughout New York State's history:
Native Americans employed mathematical skills to measure time in years and centuries. They were able to understand the difference between B.C.E. and C.E. Native Americans utilized the chronological significance of data present in their daily lives.

Mathematics was a central part of everyday life. It can be seen in the trade system and tools that were used. Science was also a major component of many Native American tribes as they utilized slash-and-burn methods to cultivate soil for farming purposes. Additionally, longhouses and wigwams were constructed on mathematical and scientific principles of ratios, symmetry and proportions.

Explain how past practices are current and still used today:
Define how Native Americans were very advanced in science and technology with agriculture and cultivation, a central aspect of daily life. Corn was planted with dead fish and beans. The dead fish supplied the nutrients for the plants while the beans grew close to the ground and kept much-needed moisture in the soil. The beans also acted as a natural deterrent to maize pests. These individual plantings were built on little mounds with indentions on top to collect rainwater.

Taking it to the next level with critical thinking:
Physical environment has influenced human activities and development throughout history. As society begins to expand and becomes more complex, people, laws and various new technologies shape history.

Examine some of the topics below:

• Determine and describe how human activities alter places and regions.

• Identify multiple perspectives from an historical event.

• Assess different types of political systems used throughout New York State history and in United States history as you reflect on the responsibilities and rights of a citizen to bring social justice and change.

• Investigate issues pertaining to differences and conflict in order to negotiate and compromise resolutions.

• Explain how individuals in positions of power can influence people's rights and freedom. When is social action required? Offer possible solutions to both past and current situations.

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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 geography of New York State provides a wealth of opportunities and challenges to design a quest where players discover more about New York City and New York State history as they face and overcome obstacles and problem solve.

Here are a few ideas:

• Tell players to utilize various globes, maps and documents to show the location of New York State in relation to other states (countries, world, bodies of water, mountain ranges) and specific bays (Jamaica, Lower and Upper New York Bay, Great South), rivers (Allegheny, Bronx, Delaware, East, Genesee, Harlem, Hudson, Mohawk, Niagara, Richelieu, St. Lawrence, Susquehanna), mountains (Adirondack, Appalachian, Catskill), islands (Fire, Long Island, Manhattan, Roosevelt, Governors, Liberty, Staten Island) and special areas (Allegheny Plateau, Atlantic Ocean, Long Island Sound, Niagara Falls, Palisades, Tug Hill Plateau). Highlight the political geographic features of New York City and New York State (Canada, Connecticut, New Jersey, Massachusetts, Pennsylvania, Vermont) and the major cities (Albany, Buffalo, New York, Rochester, Syracuse, Yonkers). Reference the boroughs of New York City (Bronx, Brooklyn, Manhattan, Queens, Staten Island).

• Geographic features influence location. Illustrate the role of climate, vegetation, topography, environment, natural resources and animals in the development of Native American cultures in New York State.

• Create a museum gallery walk of key people in early New York City development (Peter Minuet, Adriaen Van Der Donck, Peter Stuyvesant) and of major explorers of New York (Henry Hudson, Giovanni da Verrazano, Adriaen Block, Samuel de Champlain).

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Websites for Student Use

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

http://www.bigorrin.org/algonquian_kids.htm

http://www.geocities.ws/mrwelchsocialstudies/algonquian_worksheet.pdf

https://www.ducksters.com/geography/us_states/new_york_history.php

https://navajocodetalkers.org/5-iroquois-facts-for-kids/

https://www.britannica.com/topic/Iroquois-people

https://native-american-indian-facts.com/Northeast-American-Indian-Facts/Iroquois-Indian-Facts.shtml

https://kidzfeed.com/new-york-facts-for-kids/

https://www.iloveny.com/things-to-do/culture/people-cultures/

https://kids.nationalgeographic.com/explore/states/new-york/#new-york-statue-of-liberty.jpg

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.

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04 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 VR 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 New York State VR Quest®.

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This lid and basket are made from Iroquois sweetgrass.

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Sample Storyboard VR Quest®

Introduction Panels 1 and 2		Body Panels 3-10

1. Player will guide the user through various physical geographic features of NYC and New York State.

2. Player comes to a body of water and discusses its importance to technology, transportation, growth, settlement and economic development.

3. Player must find cultural artifacts within New York.

4. Player recognizes the mathematical dimensions of Iroquois longhouses.

5. Player moves through selected region and discusses how the Iroquois used slash and burn methods to cultivate soil and fished and hunted.

6. Player continues narration focused on customs, values, traditions, beliefs and ways of life.

7. Young guide will recognize and explain how climate, vegetation and topography affect the growth and development of New York City and New York State.

8. Voice explains: *"Many individuals and businesses specialize and trade. This was the beginning of an economy system and it all goes back to geographic features since New York State has major waterways."*

9. Player walks around and distinguish between the various types of resources (human capital, physical capital, and natural resources) required to produce goods and services.

	Climax	Summary

10. Player recognizes and identify patterns of continuity and change in New York.

11. Player needs the most important artifacts to present to the elders. *"Oh no! I don't have the most important artifact from my journey. What will I do?"*

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

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05 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 Iroquois spoon has a decorative squirrel at the top. It was used to ladle food and liquid substances. Different artifacts can illustrate what daily life was like or even what objects held cultural or spiritual importance in the Native American belief system.

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06 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.

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07 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 3D 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.

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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!