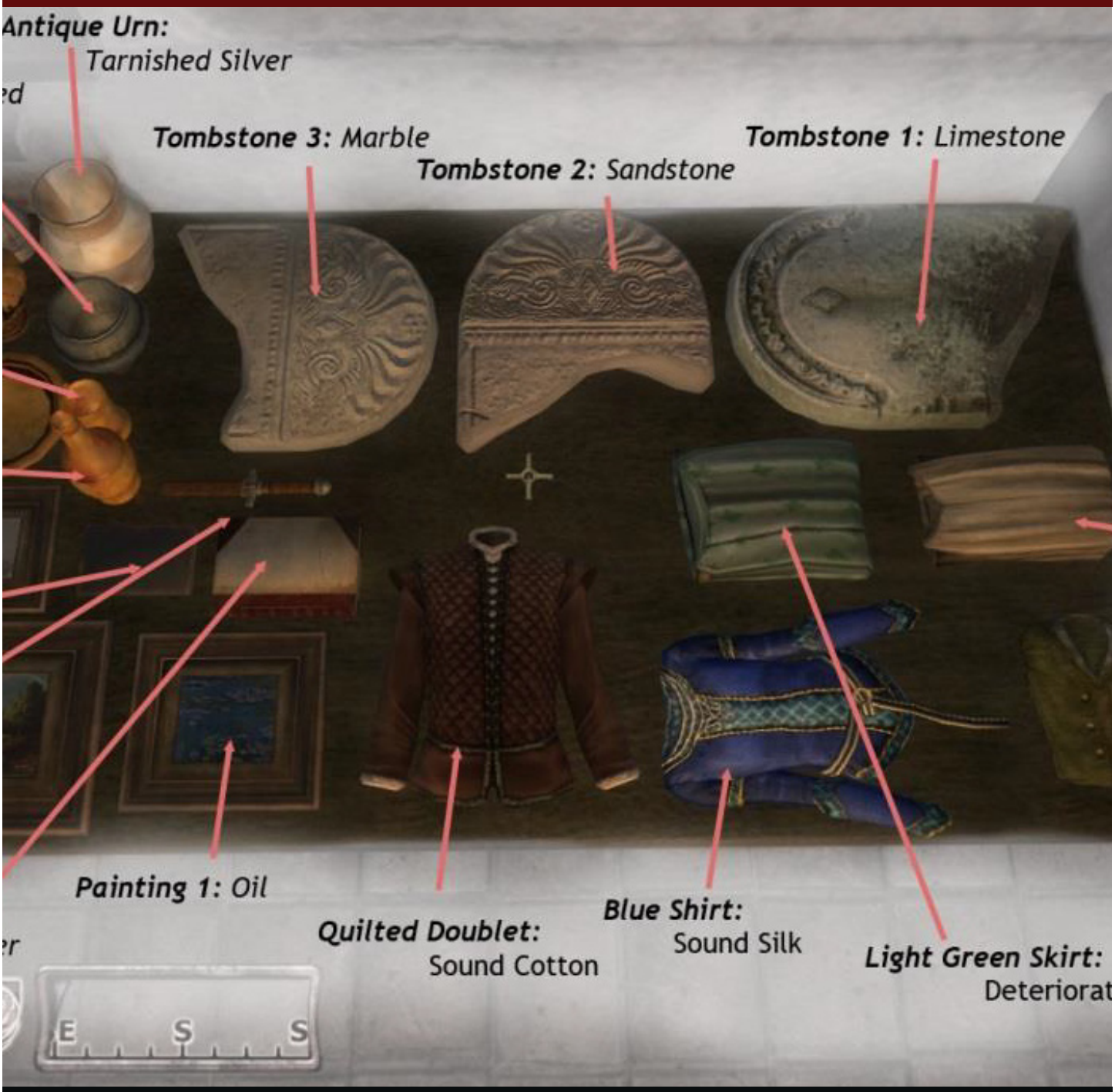
An Innovative Educational Game Strategy for Conservation and Preservation | 2013-11

Rochester Institute of Technology



National Park Service
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National Center for Preservation Technology and Training

Narrative Final Report
NCPTT 2011 Grants
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Title Page

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Executive Summary

This project built a video game module and evaluated its potential as a tool for preservation training and outreach. The module was developed within an existing game platform Elderscrolls IV: Oblivion. By using an existing game for the mod/prototype, the project was able to focus on creating multiple game narratives and assess how well they delivered preservation and conservation educational goals and outcomes. After completion of the module development, the three different narrative strategies were assessed through incorporation into college curricula and classes at the Rochester Institute of Technology and the University of Delaware. Although played on a commercially licensed game engine, the mod itself is open source.

The mod itself is made up of four overarching game arcs or quests that, all together, make up about 5-7 hours of gameplay depending on player experience. Each major quest is based around preservation based learning goals and outcomes:

1. Conservation Tutorial
2. Getting to Know the Collection
3. Health and Safety
4. Managing the Environment
5. Nefertari's Tomb
6. Pigment Analysis
7. Archimedes Palimpsest
8. The Trustee's Quest

Assessment in class, both at RIT and the University of Delaware, determined that students overall engaged with the material in a more meaningful way than the previous lecture based delivery. Feedback from students was used to improve the integration of game play and educational goals. In addition, a walkthrough and an Educational Guide were prepared to help educators in other institutions use the mod in their classrooms.

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Introduction

Role playing games (RPGs) have the ability to create a virtual world in which students can focus on learning conservation and preservation processes in a low risk environment. That is, there is no serious penalty for making mistakes. Players can fully test educational concepts within this world without danger of hurting themselves or the materials. RPGs have been used successfully in other areas such as medical[1 2 3 4], disaster and military [5 6 7 8 9] training. A limited amount of research has been conducted, and some examples of interactive media and games for conservation and preservation exist[10 11]. However, the research and application is in the early stages for these fields.

Some of the major questions regarding educational video games, addressed by this project, involve design and implementation.

- How do we integrate narrative and technical elements?
- What type of image quality is required?
- How should the game be used in the classroom?

[1] "Virtual God Complex: Video Game Training for CT Surgeons."
[2] Inskeep, "Surgery Trainees Warm Up Using Video Games."
[3] "Medical Students Say Video Game Technology Could Improve Training - iHealthBeat."
[4] Kirkendoll, "Medical students believe video games can help them become better doctors | University of Michigan Health System."
[5] "War games: Military training goes high-tech - CNN."
[6] Atkinson-Bonasio, "Video Games in Military Training:
An Interview with Roger Smith."
[7] "Video Games As Disaster-training Tools."
[8] Robson, "Not playing around: Army to invest $50M in combat training games."
[9] AP, "Military Training Is Just a Game."
[10] Goins, "IPI :: Stored Alive!."
[11] "Haptic Virtual Reality Simulation Training for Conservation (Preservation, Library of Congress)."

Materials and Methods

Design

The main concepts for the quests were worked out in team meetings. Overall guides (design documents) for each quest were created. Asset lists were then generated for the art team, research items for the researchers and dialogue trees for Robert Dooling to then fill in the dialogue (please see Appendix G for more details).

Quests and educational goals

Each quest had specific educational goals and, in addition, used different quest narrative structures to evaluate effectiveness.

1. Conservation Tutorial
    a. Players learn game navigation and controls. Also, introduces players to the Conservation Guild and some of the quests that will emerge later as part of the Trustee's Quest.
2. Getting to Know the Collection
    a. Educational goal: basic deterioration and material properties
    b. Used a wrapper approach of a non-related fictional narrative to introduce the topic and allow the player to have fun.
    c. Educational content embedded in a "matching" structure. Players had to match the material to the correct storage drawer.
    d. Based on NPS Conserve-o-gram literature
3. Health and Safety
    a. Educational goals: introduction to MSDS and wearing gloves to handle toxic pigments.
    b. Used a standard Fetch quest and NPC interaction.
    c. Items and safety practices used later in the game (Nefertari quest) to review concepts.
4. Managing the Environment
    a. Educational goal: introduce players to monitoring storage conditions and the impact on collection materials.
    b. Collect data from data loggers
    c. Artificial aging of material samples
    d. Brief quiz on best environments for some collection materials
    e. Based on NPS, "The Museum Handbook"
5. Nefertari's Tomb
    a. Educational goal: the original use and meaning of the tomb
    b. introduces the pigment analysis quest by contextualizing the collection and study of Egyptian pigments

    c. Game play helps player understand the meaning behind the tomb's wall paintings.
    d. Based on "The Book of the Dead," translated by Budge.
    e. New strategy of incorporating the story and intangible aspects of a real object to help contextualize laboratory "simulation" that player will encounter in quest 6 (pigment analysis).
6. Pigment Analysis
    a. Educational goal: Polarized light microscopy for pigment identification, FTIR and Raman
    b. Tutorial on how to use polarized light microscopy for identifying pigments.
    c. Use NPC interaction to scaffold learning with the polarized light microscope and other laboratory instrumentation
7. Archimedes Palimpsest
    a. Educational goal: Introduce the Archimedes Palimpsest, basic information of rare books, the multispectral analysis of texts
    b. Players recreate the history of the Archimedes Palimpsest and multispectral imaging.
    c. Use fetch quests and puzzles to create a narrative reliving the journey of the Archimedes Palimpsest.
    d. Multispectral imaging recreated in the lab
8. The Trustee's Quest
    a. The main educational goal of this quest is to bring up discussion of the ethics of looting and collecting.
    b. Made up of a number of authentication mysteries that reinforce the material identification methods learned earlier in the game.
    c. Use techniques learned earlier to re-enforce learning, almost a review section

Assets

A number of game objects had to be created for the Oblitus Artium mod. For most mod objects, we were able to re-texture existing models in the game using Adobe Photoshop. Some objects did not have existing models, like the microscope and FT-IR, and had to be made from scratch. They were first drawn out as concept art by Alicia Treat (see figure 1). The mesh for the object was created in Maya by Evelyn Morse. The final texture for the mesh model was then made in Photoshop and saved as a dds file. Mesh and texture files would then import the into the Oblivion mod bsa file.

Oblitus Artium contains a large amount of educational text elements which had to be made for the quests and to fill the library. Oblivion has a number of stock books that are easily able to be re-used. New text is simply added to a book object within the TES Construction Set. Standard HTML tags are used to format the text (see figure 2).

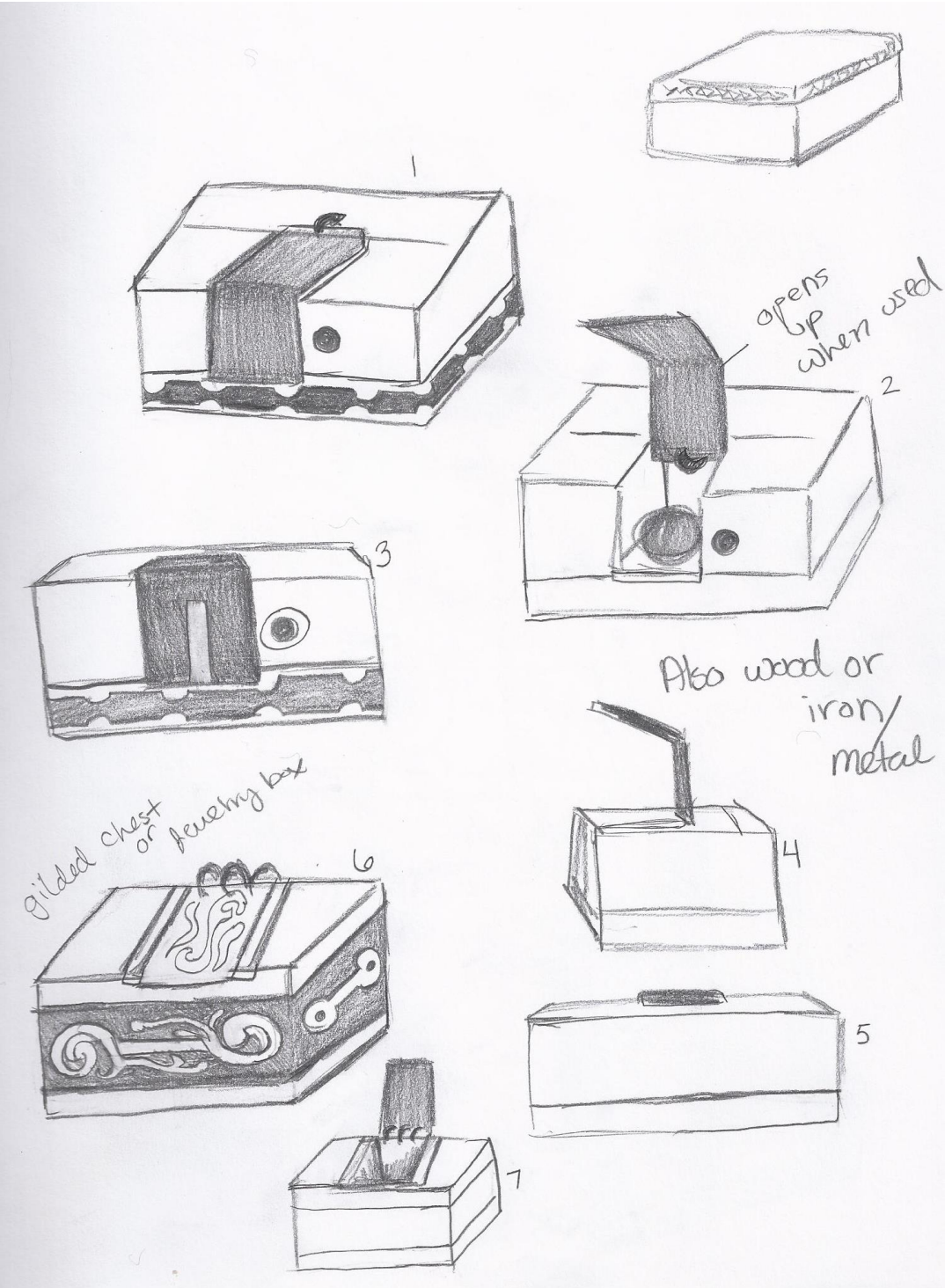

Figure 1: Concept art for the FT-IR by Alicia Treat

The most complicated object, Nefertari's tomb, had a number of steps. The first step was to create the tomb based on the three dimensional reconstruction available on Osiris net by Thierry

Benderitter and Jon Hirst. The textures from this model were used as placeholder art but, for the most part, were of too low an image quality. New textures were made by Elizabeth Goins using scanned photographic images which were then cut out in pieces, transformed, re-colored and overlaid onto the tomb walls. Sections were also colored and filled in by hand in Photoshop. Photographs of the entire tomb were unavailable and so the tomb is a mixture of medium and low resolution images and Photoshop rendered surfaces.

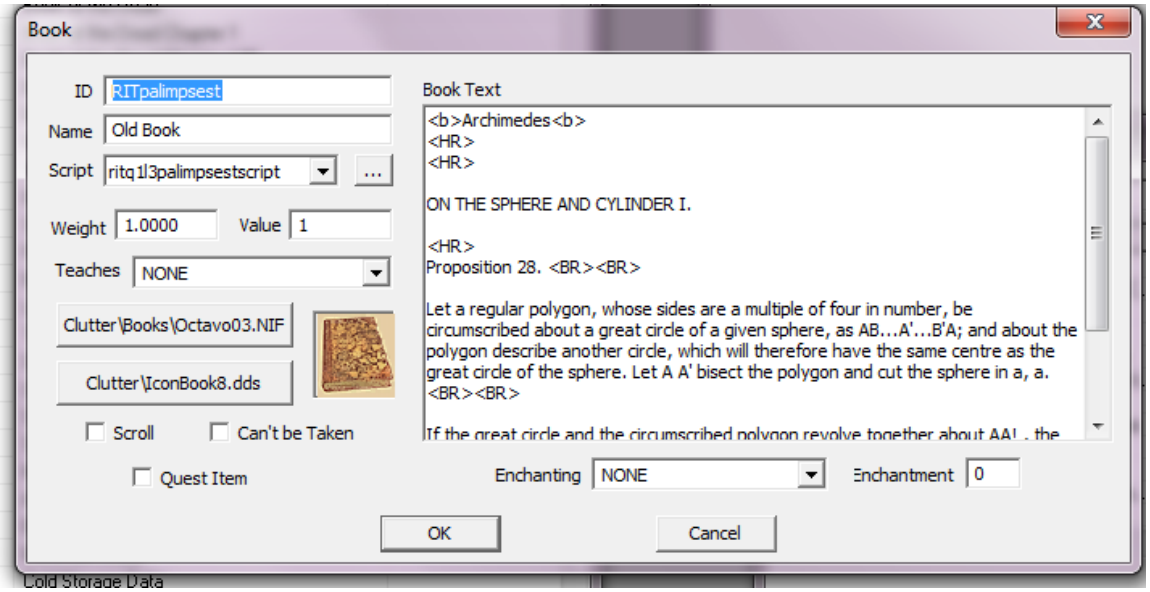

Figure 2: Screen shot from TES Construction Kit showing the book object of the Archimedes Palimpsest text, On the Sphere and Cylinder.

Overall, we found that modified, photographic images of the art worked the best in the game world. True photographs were too "real" and broke immersion within the game. The best approach was starting with a real photograph of an image and then modifying it in Photoshop so that it had detail, but was still simplified in a way that blended with the other objects and settings in the game. This approach was useful for keeping file sizes down for large elements, like Nefertari's tomb and for keeping players immersed. However, it was problematic for objects that needed visual clues. One example, identifying deteriorated stone, shows the problems encountered. If a real rendering of deteriorated stone was used for the game object texture, it was too obvious and easy for students to pick out. We were unable to find a visual balance for these objects and so decided to use generic rock textures visually. Students had to make decisions based on text descriptions over which we had more control over modifying the level of difficulty. However, for microscope samples, using real photomicrographs when "looking" under the microscope worked very well at keeping player immersion intact and giving real visual data.

An island was created to house the Conservators' Guild with existing Oblivion assets to try to create the feeling of Venice. Every interior had to be designed and "cluttered." Historic period interiors were researched by Kim Desorcie and she attempted to recreate the sense of old Europe with existing game artwork (please see Appendix H for Kim's paper on her approach).

Sound is an important part of the experience; however, this project did not include using actors to create the sound files. Instead, blank sound files are inserted for all dialogue options so that the player has time to read the subtitles.

Development

The mod was developed over the winter, spring and fall of 2011-2012 using The Elder Scrolls (TES) Construction Set. This construction set is a free toolkit used for developing mods and released by Bethesda, the company that created The Elderscrolls series. The construction kit uses its own scripting language but there are a large number of wikis, guides and tutorials available.

In order to manage this project and keep it on track, workflows for the different teams had to be integrated. Teams had to communicate frequently to make sure output and deliverables worked within the game. Schematics for the overall integration are shown in figure 3. Main tasks were kept on track through a high level management table, shown in figure 4.

Oblitus Artium by RIT/NCPTT is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License and may be freely modified or added to by institutions or individuals.

Work may continue in the future by adding in new quests by using the buildings, characters and objects created by this project.

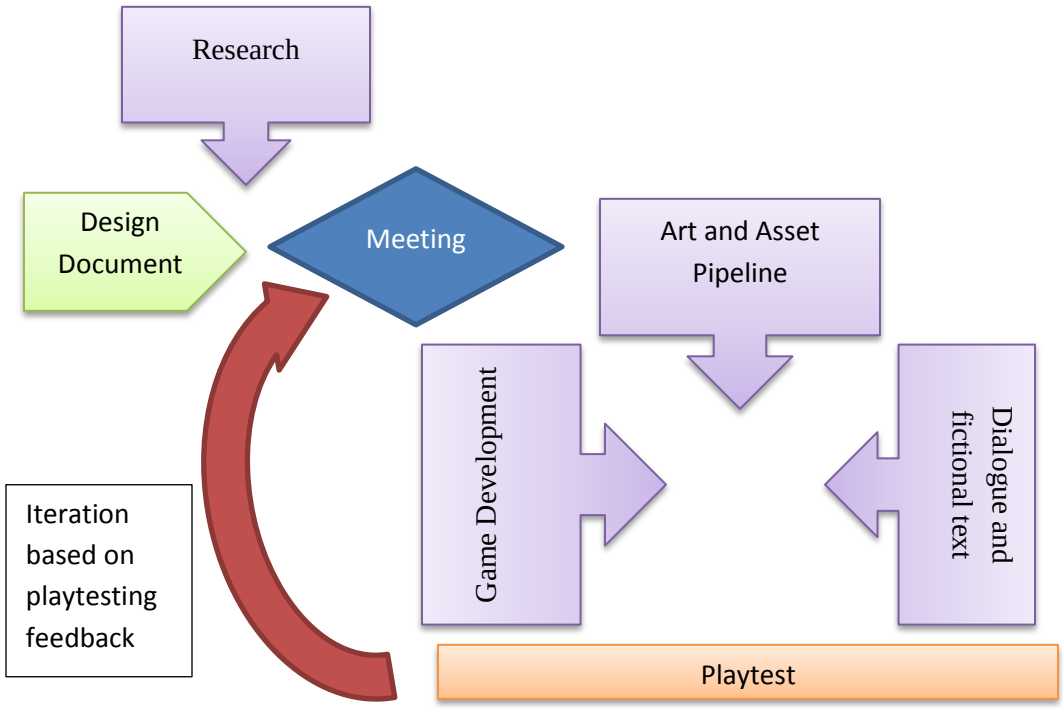

Figure 3: Workflow for design and development of each quest.

Start	Task Due	Team Members
Q1: Phase 1	Asset list for Alicia Q1	Joel, Alex and Ryan
Concept Art Research		Alicia, Kim
Narrative and Dialog		Robb
Research Q2		Nina and Robb
	Q1: Review Phase 1	Entire team
Q1: Phase 2	Q1: Phase 1	Joel, Alex and Ryan
	Dialog Q1	Robb
Q1: Assets, 3d models		Joel, Kim and Alicia
	Asset list to Alica:Q2	Nina, Robb
	Research details Q2	Nina and Robb
	3D Models and import Q1	Joel, Kim and Alicia
Q2 assets and concept art		Alicia, Kim
Q2: Phase 1	Q1: Phase 2	Joel, Alex and Ryan
	Review Q1: Phase 2	Whole team
	Q2: Phase 1	Alex, Ryan and Joel
Q3: Research		Nina, Robb, UDel
	Review Q2: Phase 1	Whole team
Q2: Phase 2		Joel, Alex and Ryan
	3d Models and import Q2	Joel, Kim and Alicia
	Dialog	
Research Q4	Q3: Research details	Nina, Robb
	Asset list to Alicia: Q3	Nina, Robb
	Q2: Phase 2	Joel, Alex and Ryan
	Review Q2: Phase 2	Whole team

Figure 4: management chart to manage major tasks, quest and phase completion

Results and Discussion

Assessment

Play testing was used to evaluate the mod as to its level of fun/engagement, functionality and ability to meet educational goals. Overall, three levels of assessment were conducted during development:

- Bug fixing and general gameplay by the project team
- Playability, engagement levels and general problems by RIT students not involved with the project
- Educational assessment in the classroom and with focus groups at RIT and UD.

During the iterative development process, the mod was constantly play tested by the development team to look for bugs and to evaluate and improve elements like player immersion, story flow, asset content, etc. Each quest was then tested on RIT students who were not part of the development team in order to assess playability and level of fun.

Educational assessment took place in the classroom during the 2012-13 fall and winter semesters/quarters (please see Appendix E for IRB information). The Tutorial, Getting to Know the Collection, Health and Safety, and Managing the Environment were tested at RIT during the fall of 2012 in the class, *The Conservation of Cultural Materials*. The class was made up out of 11 female and 5 male undergraduate students from a wide variety of non-technical majors (please see Appendix D for details). The student feedback from the tutorial section was positive and most students liked the idea of including a game to help them learn the material. Many of the students also reported that they liked being immersed in the game world. Elderscrolls IV: Oblivion is known as a sandbox RPG. That is, the game is set in an expansive, visually interesting world in which the player is free to wander and talk to NPCs. The educational content in this quest was focused on familiarizing the player with the game's navigation and controls. It also served to introduce them to the main story elements.

The next quest, *Getting to know your Collection*, ramped up the educational content to introduce students to material identification and deterioration. This quest activity is based on a matching quiz and requires players to place materials into the appropriate drawer. They must correctly identify the material by reading each item's description and comparing it to books they can get from the game's library and journals. These books are virtual copies of NPS Conserve-o-grams. Overall, students enjoyed being able to access the virtual books and were able to complete the game tasks. Most of the complaints centered on the material descriptors being too vague or missing from the reference books. This section of the game was reworked after assessment to: 1.) make copies of all relevant materials available in the game lab setting and 2.) Make material descriptors clear and more reflective of reading content. Students also expressed some frustration with the "spirit" quest. This was a fictional narrative element that "wrapped" the game content.

This content was added to try to make the activity lighter and more fun as this topic was particularly difficult for students in a classroom setting. Based on student feedback, the spirit quest was polished and refined to be shorter, less "glitchy" and to play more smoothly.

A small focus group of four RIT technical majors were used to evaluate the Nefertari and Pigment analysis quests. These students had no previous knowledge of Polarized Light Microscopy or pigment history. By the end of the game, most were able to correctly remember specialized terminology and had a working knowledge of pigment analysis. This group also reported that the quest was engaging and they thought it was a good way to teach science to non-science majors.

Assessment at the University of Delaware incorporated the feedback from teaching assistants:

> *"… the student assistant who had never before played any type of role-playing game had no difficulties in getting started or in figuring out how to navigate through and complete the mod. It was also gratifying that the student assistant with no prior conservation or preservation interest found the game activities to be very intriguing, and expressed interest in a whole course focused on the topic. As a role-playing game aficionado, he was also quite satisfied with the "fun" level of the game (the educational aspects were very well incorporated into game play)." (see Appendix C)*

Deliverables

This projected successfully completed all proposed deliverables. In addition, a walkthrough and educational guide were also created:

- Oblitus Artium mod (esp and bsa files)
- Mod Walkthrough
- Educational Guide
- Publications and presentations

Conclusion

This project tested different ways of incorporating preservation content into a role playing game quest structured narrative. One of the most interesting things discovered during this project was that conservation and preservation, if understood as including the tangible and intangible aspects of material culture, engaged art and other non-science majors in science and chemistry. This has led us to re-think conservation and see it, not as a narrow, specialized field, but as a broad subject that can bridge disciplines and perhaps be used to engage girls and other non-traditional science demographics in STEM learning.

Students responded to being immersed in a fantasy world and surprisingly, did not mind multiple choice quiz formats within the game play. What they found frustrating were the mistakes we made in initial design such as: lack of scaffolding in the quest structure, sloppy text, bugs and superficial narratives. The narrative structure that appeared to work the best had better

integration of educational tasks with narrative, eg. Nefertari's Tomb and Pigment Analysis (see Goins, et al "Modding the Humanities: Experiments in Historic Narratives" for more information).

The sandbox (open) world of Elderscrolls IV:Oblivion proved to be a good choice for giving players the feeling that they were exploring a new world. However, creating tasks appropriate for the educational content was often challenging and the programmers had to fight against the limitations in the game's scripting and pre-built quest and character structures. Also, when building the lab, the team had to build objects for which there was no existing model in Oblivion. Microscopes, FT-IRs and other pieces of lab equipment all had to be modeled and textured to include in the game. This proved time consuming. Additionally, for educational purposes, photorealistic game objects were not necessary. Real data, for problem solving was important but students did not notice switching between real and "faked" game objects. For example, the lab does not look real but students would evaluate real photomicrographs of pigments.

Overall, modding allowed us to experiment with content and structure quickly and inexpensively to deliver a rich and immersive experience. The inclusion of real objects and processes in a fantasy world engaged players with the content and it is interesting to note that they enjoyed having game copies of NPS Conserve-o-grams in the virtual world. These documents are freely available on the internet but students found them more interesting when they were in a fantasy environment and they were required to use them in a quest task. This method proved to be successful and a valuable addition to the classroom.

Strengths and Weaknesses of Virtual RPGs for Conservation and Preservation Education

Strengths

- Narrative structure allowed for the integrated presentation of intangible and tangible aspects of material culture.
- Excellent method for teaching STEM content to non-traditional STEM demographics
- Using a commercial game to develop a mod is relatively inexpensive and fast, yielding high quality results.
- Made material less intimidating and more engaging to students.
- Highly experiential and allowed students to play at being a conservator or scientist.

Weaknesses

- Difficult to include large amounts of content in the game, better results were with less content that focused on big concepts and engagement. Conclusion that games are excellent when used in conjunction with other pedagogical tools like lecture, texts, web sites, films, etc. Please see Appendix B for the Educational Guide.
- A few students do get frustrated with the technology or come into the process "hating games."

- Educators might not be familiar with playing this type of game. To help with this, a Walkthrough was created (please see Appendix A).

Dissemination

The mod itself will be made available on an RIT website. In addition, it will be uploaded to Nexus Mods so that it is made available to a broader audience.

http://www.nexusmods.com/

The mod and process have been reviewed and discussed in peer reviewed conferences and publications:

- Goins, Elizabeth S.; Egert, Christopher; Phelps, Andrew; Reedy, Chandra; and Kincaid, Joel (2013) "Modding the Humanities: Experiments in Historic Narratives," Journal of Interactive Humanities: Vol. 1: Iss. 1, Article 2.
- Goins, Elizabeth, "Designing History: A Multidisciplinary Approach," invited talk presented at Serious Play conference, Digipen, Redmond, WA, August 2013.
- Goins, Elizabeth. "Bringing the Virtual Model to Life: the Power of Interactivity," presented at High Tech Heritage, University of Massachusetts Amherst Center for Heritage and Society, 2012.

Several articles were written about the project in the RIT and Rochester press:

- Research at RIT, Women in STEM, Historic Preservation Through Gaming, Spring/Summer 2012, p. 13

  http://www.rit.edu/research/media/documents/12_SS_Research_at_RIT.pdf

- RIT University News, Vienna Carvalho-McGrain, Sep. 2011. RIT Professor Wins Grant to Design Historic Preservation Video Game

  http://www.rit.edu/news/story.php?id=48538

Video clips of some of the game play are available on YouTube:

- Oblitus Artium Library

  http://www.youtube.com/watch?v=ZjBu8yhtZg4

- Nefertari's Tomb

  http://www.youtube.com/watch?v=gY5IQazAqWU

Acknowledgements

National Center for Preservation Training and Technology
http://ncptt.nps.gov/
Generously supported and provided funding for the project

National Park Service
Reference and source material for game content
http://www.nps.gov/museum/publications/conserveogram/cons_toc.html
http://www.nps.gov/museum/publications/handbook.html

The RIT MAGIC Center
http://magic.rit.edu/
Technical support and equipment

Osiris Net
Virtual reconstruction of Nefertari's tomb
http://www.osirisnet.net/

The Getty Conservation Institute
Reference material
http://www.getty.edu/conservation/our_projects/field_projects/nefertari/

TES Alliance
Resource for Oblivion modding
http://tesalliance.org/forums/index.php?/tutorials/category/1-esiv-oblivion-modding/

Nexus Mods
Community support for modding and dissemination
http://www.nexusmods.com/

Archimedes Palimpsest
Resource and reference material
http://www.archimedespalimpsest.org/

College of Liberal Arts, RIT
Indirect Faculty Support
http://www.rit.edu/cla/

Appendices

Appendix A: Walkthrough

Conservator's Guild Guide

Guide to the quests in the Conservation Mod

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Prerequisites

Install Oblivion

If you have not already done so please follow the installation instructions that came with your version of *The Elder Scrolls IV: Oblivion*. Make note of the installation directory that you use because you will need to navigate there soon.
The default locations are:

- DVD Install - C:\Program Files (x86)\Bethesda Softworks*Oblivion*
- Steam Install - C:\Program Files (x86)\Steam\steamapps\common*Oblivion*

Note: Both of these locations assume a 64-bit Windows. If you have a 32-bit Windows then replace "Program Files (x86)" with "Program Files".

Update Oblivion to 1.2.0416

Oblivion had two main updates. These were the Knights of the Nine and Shivering Isles Expansions. If you have the Shivering Isles and have installed it you may skip this part and go on to Installing the Mod. If you have the Shivering Isles but have not installed it and do not want to then you should still follow these steps.

- Either go to http://download.zenimax.com/elderscrolls/*Oblivion*/patches/1.2/ShiveringIsles_v1.2.0416English.exe to download the patch application or download the mod from ------- and extract the files and run the ShiveringIsles_v1.2.0416English.exe application.

Installing The Mod

To install the Conservation Mod:

1. Get a copy of the latest version of the mod from ------.
2. Extract the files from the .zip file and place them in the *Oblivion* data directory. The *Oblivion* data directory can be found at ***%INST_DIR%\Oblivion\data*** where **%INST_DIR%** is the appropriate installation directory from above. For example: C:\programs\bethesda\oblivion\data

Now that all the files are in place we have to tell the game to use them.

1. Start the *Oblivion* launcher.
2. Click on the Data Files button.
3. In the left column of Data File entries you should see one named ConservationMod_1_9_0.esp. Check the box next to this entry.
4. Click Ok and you can then close out the launcher or start playing the game.

Extras

Here is a list of highly recommended useful items that you may want to look into downloading.

- The *Oblivion* PC User's Manual
- The *Oblivion* World Map

This part of the walkthrough assumes that you have completed the steps about installing The Elder Scrolls IV: Oblivion and the conservation mod found above. Also, please do yourself a favor and read/skim the manual for the game. The download link can be found at the end of the installation page. It also should come with any physical copies and should be accessible through the Steam interface for any Steam installs.

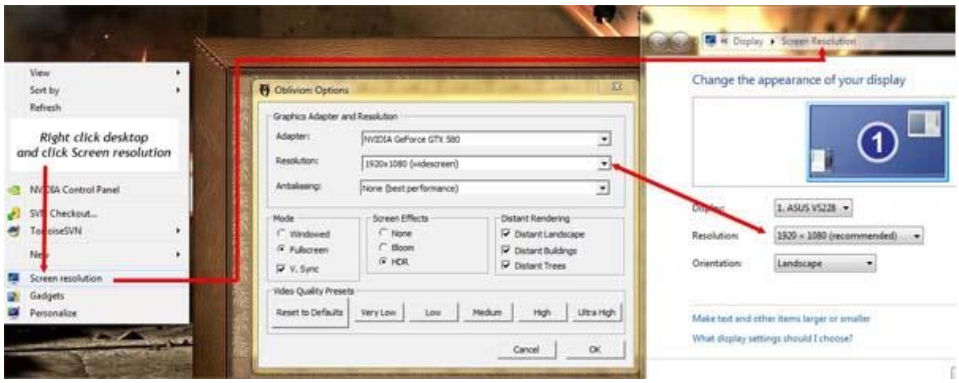
Conservator's Guild Tutorial

The Conservator's Guild Tutorial starts at the beginning of the game. This means you will have to choose to ignore the default game tutorial. Do not worry, an abridged tutorial is provided. It is recommended that you do NOT use an existing character to play this mod, though the option is provided. The first couple of steps are for those starting a new character. It goes over the game launcher and some options, starting a new character and beginning to play. If you really do not want to start a new character then you can skip ahead to **The First Quest**.

The Game Launcher and Options

Upon starting up *The Elder Scrolls IV: Oblivion* you will be presented with a launcher. It is a good idea at this time to check and make sure that the Conservation Mod is set to load. To do so click on the Data Files button and make sure that the box next to ConservationMod_1_9_0.esp is checked. You can then click Ok to close the window. This would also be the best time to set any graphics options you might want since the game has not started yet and some require a restart. The game can have difficult time recognizing some computer hardware so it is recommended that you open up Options and at the very least make sure that the game's resolution matches your monitor's resolution similar to Figure 1. After you have done this you can click Play and *Oblivion* will start up and show you some opening videos. These can be skipped by pressing the Spacebar or Esc keys.

Figure 1



Quickly, while still at the main menu, click the Options button and select Gameplay. Set the General Subtitles to on. This is needed so that some of the god voices in the game will show up. Click return until you are back at the main menu again.

Starting A New Character

After the opening videos click on New to start a new character. If the game asks if you want to start a new game click Yes. The next video is also optional, you may watch it if you want to, it is just an introduction to the setting of the main game. This video has nothing to do with the Conservation Guild Mod. After the video ends you will be presented with a character creation screen. The only thing required is a name in the field at the very top of the sheet. You can choose to customize your character as much as you want, but be warned there are a lot of options and you can easily spend a lot of time at this screen without realizing it.

Starting To Play

You are now in the game. The first thing that you should do is move around. This will cause a movement tutorial box to pop-up. After reading the box and closing it you will want to move towards the door of the prison cell you are in to get the character across the hall to start his dialogue. The sooner he starts talking the sooner you can get out of here. Eventually some guards will come and tell you to stand against the back wall. This is an important branching point in the main quest versus the Conservation Guild Quests. You can talk to the Emperor as you wish but as soon as he is done stand still.

The guards will open a secret door and they will all go through. DO NOT go through this secret door.

Making the Game Easier or Harder to Play

Note: You can change the level of difficulty in this game. Press the [ESC] key and select "OPTIONS" then select "GAMEPLAY." This will open a dialogue box that allows you to set subtitles and also the level of difficulty. Players that are not familiar with role playing games should start with the lowest difficult setting – make sure the slider is all the way to the left. This setting can be changed at any time during the game.

The First Quest

Conservation Tutorial

The First quest starts as soon as the secret door closes. A box will pop-up telling you how to interact with objects in the world. At the bottom of the box is a button labeled "Make this my active quest", click it. This will make it so that you can easily follow this quest. You should pick up one of the objects it tells you to. Continue with the tutorial and soon a cloaked woman will unlock your cell and talk to you. She will give you instructions for continuing the quest as well as many useful items for surviving in the game. You should put on the armor and your preferred weapon (sword and shield or the bow). Once you have done that you should continue out and to the right, going up the stairs and out the door.

Make sure that you complete all the tutorial activities like picking up objects, checking inventory, etc. The quests will not advance until these activities are completed. The Mysterious Stranger will NOT appear until these quests are completed.

You should now be outside and technically free to explore the world. You should, however, continue with the quest as it will get you acquainted with combat. So:

1. Follow the red quest marker on the compass at the bottom of the screen
2. Go through the door into the Imperial City Market District
3. Continue forward towards the next door to the Imperial Palace Green Emperor Way
4. Turn right and go through the first section of graves across to the next one
5. Upon entering the second section the quest marker will disappear and a pop-up box will tell you that you are near to the goal
6. Open your inventory and filter it by miscellaneous
7. Click on the mysterious symbol to look at the note
8. Close the inventory and search along the right wall for the mausoleum with the same symbol on it

You should now be in Hanticand and the quest marker should have returned. It will now be pointing at the Mysterious Stranger. Follow it and talk to her. Most of the dialog is optional, the one that will advance the quest at this point is "What did you need?" She will explain her situation and give you a key, if you agree to help. You may now continue by doing the following:

1. Follow the quest marker down the hall you are in towards the door to the south
2. Upon entering you will be given a combat primer, read it.
    - You can take the first left to find some extra items - you will have to kill an imp to get them though
3. Continue down the main hallway killing the two rats and go through the next door - all other doors are locked
4. Kill the skeletons in this chamber
5. Open the coffin in the centre of the lower room and take the bowl
6. Go up the fallen ledge to the east of the coffin and turn left at the top
7. Turn right into the hallway and follow the secret passage out to the starting area
8. Once back in Hanticand go through the gate and talk to the Mysterious Stranger to give her the bowl
9. After she tells you where to go open the map and find Anvil
    - The game map is wider than it is tall for the most part so go more west than south when looking - Elsweyr and Valenwood are too far south.
10. Fast travel to Anvil lighthouse by finding its symbol and clicking on it
11. As soon as the area loads head south-west and swim towards the floating city
12. Head towards the nearest building, slightly to the left of the wall, and talk to Suger
13. After talking to Suger go up the closest set of stairs onto the seawall road and follow it to the museum

You have just completed the beginning of the tutorial. The rest is the next two quests which will ask more of you as a student than did the first part. You can decide which to do first but this guide will go with Cennino's quest first. Cennino will be behind the boat in the first room of the museum. Newton can be found by turning right upon entering and going through the two doors to the lab.

Getting To Know The Collection

Talk To Cennino

To start this quest you must be on the island of Oblitus Artium. Go to the museum. You will want to talk to Cennino who is currently behind the boat you see as soon as you enter. Talk to him about "Work" and he will tell you a story about the last assistant they had doing your new job, Meyer.

Meyer, the ex-assistant

You will have to talk to Meyer to find out what he did with the books.

1. Turn around and go back outside
2. Open the world map and find the *Anvil Dock Gate* and fast-Travel there (by clicking on the icon on your map)
3. Follow the quest marker around the right side of the tree directly in front of you and head into the building
4. Find Meyer in the main room with the help of the quest marker and talk to him about the "Journals"
    - You will have to bribe him with 25 gold - The Mysterious Stranger should have given you 25 gold for finding the bowl, if you spent it you will have to earn 25 gold again by looting and selling or doing quests
5. After you finish talking to Meyer talk to Wilbur the Innkeeper about Meyer
6. Once Wilbur is done talking about Meyer ignore your quest marker (it will still lead you to the destination but it is a longer route) and turn around and go back out the door you came in

Recover The Journals

1. Head towards the *Anvil Dock Gate*, the giant gate in the City wall on the right side of your screen
2. Go through the *Anvil Dock Gate* to *the Gold Coast* and continue right along the shoreline path
    - When the path turns sharply left do NOT follow it, that leads to the lighthouse, instead continue past the rocks and bush and you will find the path again; heading up the side of a hill
3. At the top of the path follow the branch left to the South-South-West through the stone henge
4. Continue down the hill and go around the outcropping rock - the door to the *Smuggler's Cove* is on the other side of this rock

The Smuggler's Cove

The first two lefts in this cave are optional, you can loot them now or later or never if you so choose. It is also recommended that if you do not plan on doing these first two that you sneak to eliminate any chance of attracting all of the enemies at once as they can easily overwhelm you if you make too much noise. Do not forget to use any healing items or stats boosts if you have them as well as weapon poisons. Get used to checking your inventory for these as you will be expected to be able do this on your own without instruction for any future combat encounters. Also do not forget about your spells, magicka is a very powerful ally in *The Elder Scrolls IV: Oblivion*.

1. Continue down the right side at each branch to the end of the main tunnel
2. Once in the large room on your right kill the first two guards, easier if you fight them one at a time, and continue to the back
3. At the back you will have to fight the Ringleader who is very powerful so get prepared and kill them when ready
4. At the very back will be two tables and a chest, the table on the right has the journals, take them
5. You can then loot whatever else you want from the cove and then leave

Return to the Museum to Deal with the Spirit

You will have to take care of the spirit that Meyer mentioned before you can effectively organize the collection. If you are just exiting the Smuggler's Cove you should be able to see Oblitus Artium right in front of you and you can just swim there. If not, or if you do not want to swim, you can open the world map and fast travel to Oblitus Artium by clicking on its icon.

SAVE! - There is a known glitch in this next section.

1. Go to the museum and talk to Cennino behind the boat about the "Spirit" Meyer had mentioned
2. Turn to your right and go through the South-East door and through the next door to get to the laboratory where Newton is located
3. Talk to Newton about the "Spirit" to get his help
4. Once he gives you some items to make black watercolor open you inventory and switch to the Apparatuses filter tab (hand symbol>flask tab)
5. Click on the Novice Pestle and Mortar that Newton gave you and it will open the alchemy interface
6. Close out any tutorials that pop-up after reading them
7. Click Add ingredient and add either Gum Arabic or Carbon Black Pigment and then repeat with the next open slot to add whichever one you did not in the first slot. Note: if the ingredients do not appear, close and open the alchemy interface again.

8. Click create and then exit and close your inventory. You will now have black paint in your inventory.
9. You should then go to Cennino to talk to him about the "Spirit" to inform him of Newton's plan
10. He will give you a fake amulet to give to Newton
11. Go talk to Newton again about the "Black Paint" and he will take the fake amulet and apply the paint to the real one and place them next to each other on a table –

Issues with the amulet: One of the amulets is sometimes stretched from the table to the wall near the stairs. You should be able to see a faint golden line stretching in front of the equipment cabinet. If you do see this glitch BE CAREFUL. You might want to save here because it is possible to send the amulet through the wall if you collide with the line or amulet at all and once that happens you cannot get it back.

On the table is an amulet. If you pick up the amulet before step 11 (Newton applies the black paint), be sure to drop it from your inventory (shift + left mouse button) before step 11. The quest will not finish if you have the real amulet in your inventory.

12. You should now head out of the museum and wait a day (You will have to rest and come back the next day - Note: *Oblivion* does track days so it is safest to find a bed and sleep for 24 hours or you can press the "T" key and speed time up)
    - You can rent a bed in Anvil at the *Count's Arm Inn* for about 10 gold or you can use the one in the Oblitus Artium Apartments
13. Once you wake up you will be informed that the spirit should have switched amulets and told to go talk to Cennino
14. Instead go to where Newton is and turn to the left to find the table where Newton put the amulets
15. Pick up both amulets and then go to the back corner of the room where Heisenberg is standing, behind him is a sink
16. Use the sink to wash the paint off of the amulet and then go talk to Cennino about the "Spirit" and then about your next item of "Work"
17. The items you have to organize can be found in the room with Newton on the two large tables by the stairs, go there now

Organizing the Collection

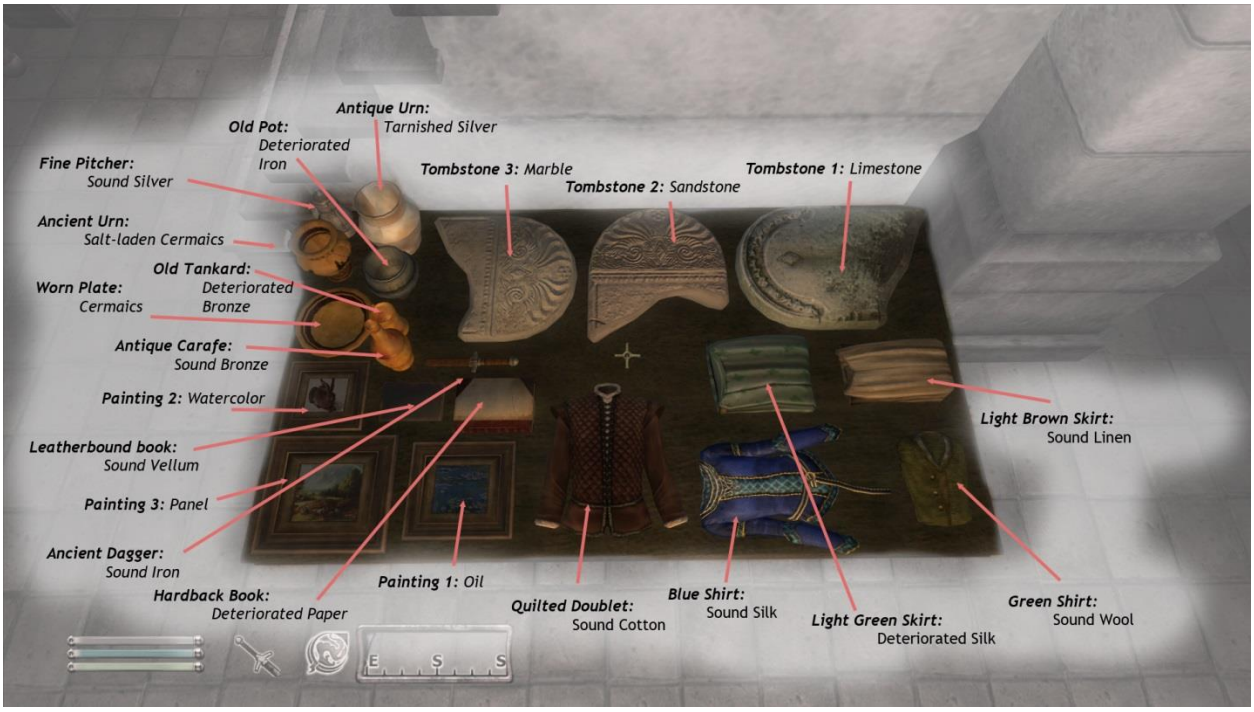
You will now have to organize all of the items on the two tables in the laboratory into their respective containers along the opposite wall. To do so you will need to use the journals and possibly some books found in the library, up the stairs, to correctly categorize each object by its description. The description for each object can be gotten by activating them. This will bring up a box with relevant information for that object as well as the ability to take the object or leave it be.

Tip: To help make organizing the collection easier you may temporarily store your inventory items in a cabinet or other container. The equipment cabinet in the lab would be fine, to place all of your miscellaneous equipment into. This means all the equipment that is in your inventory's

last tab on the right. To place things into a container you must activate it by pressing space when there is a hand icon over it. Then you should see a box similar to the inventory. This is the container's contents. To remove things you click on them and they will be placed in your inventory. To see items you can place into the container you must click on the appropriate icon at the bottom center of the menu.

Once you have placed all the items into their containers you should go and tell Cennino. He will tell you if everything is in order or not. You will get three chances to get everything in order but no hints. If you have come to him three times without everything being correct he will sort it himself. Please refer to the image for the solution to the organization.

Note: All information needed to identify the materials is in the journals in player inventory. The one exception is the test to determine if soluble salts are present (silver nitrate test) and that is upstairs in the library or in the lab bookshelf.



Health and Safety

The Health and Safety quest is a short one that starts in the museum lab and does not require you to leave. You can start it by talking to Newton after having talked to Suger in Oblitus Artium.

1. After talking to Newton you will need to get the MSDS (Material Safety Data Sheet) that he mentioned. It can be found in the lab book-shelf in the South-West corner of the room. Note: This is the empty bookshelf, NOT the one with the books on it.

2. Once you have the MSDS you should talk to Newton about "work".
3. Newton will ask you to get him a pair of safety gloves from the equipment cabinet. Go to the South-East corner of the room and open the equipment cabinet. Click on the safety gloves and move the slider all the way left to take just 1 set (1 is all you need).
4. Return to Newton with the gloves and talk about "work" and Newton will thank you and send you on your way.

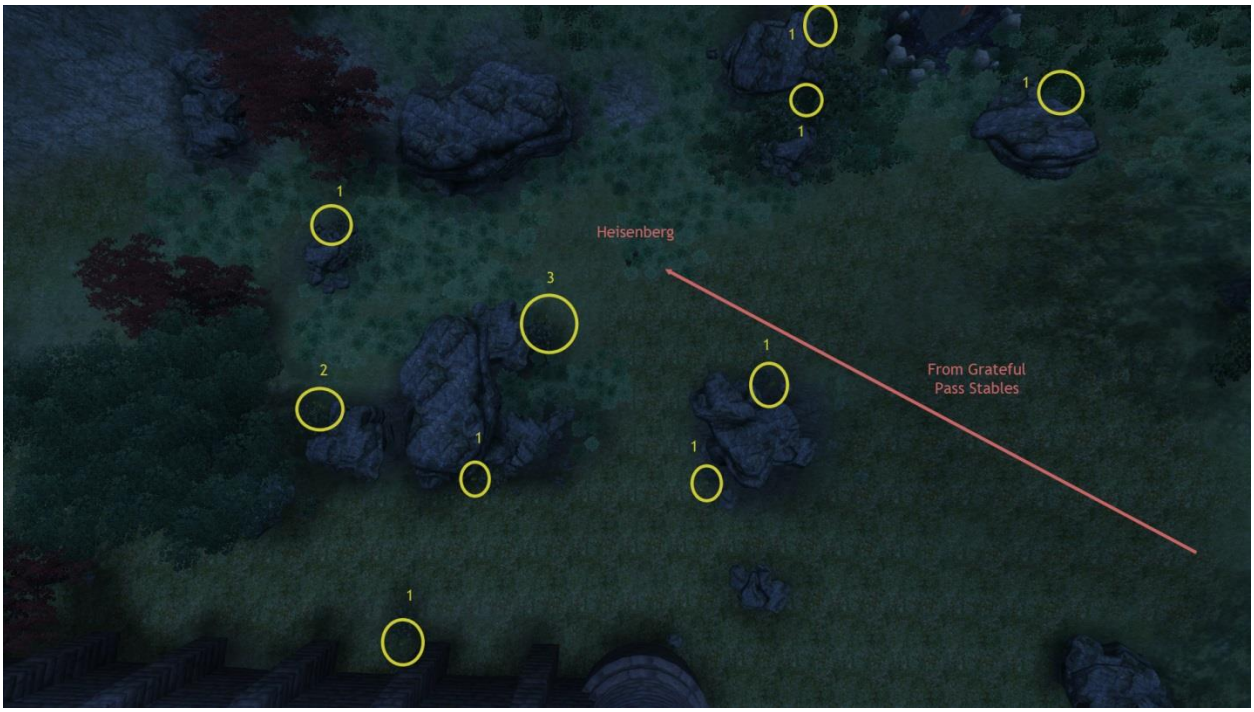
Managing The Environment

The Managing the Environment can only be started after having completed either the Health and Safety or the Getting To Know the Collection quest. In this quest you will have to:

1. Collect Madder Root
2. Get the Madder Lake Recipe
3. Acquire the Journal
4. Manage the Museum's Environment

Collect Madder Root

1. Talk to Cennino about "work"
2. Go to the lab and talk to Heisenberg about the "Journals"
3. Go outside of the museum, open the world map, and fast-travel to "Grateful Pass Stables" just west of Skingrad
    - Skingrad is North-East of Anvil, past Kvatch on the Gold Road
4. Follow the quest marker to the South-East, do NOT enter the city
5. Talk to Heisenberg about the "Journals"
6. Collect 10 madder root from the common madder plants - [Map]
    - Search in circles around Heisenberg and Aristotle - There are 13 plants in the immediate area and you cannot fail to harvest them



7. Talk to Heisenberg about the "Journals" again, after having collected the 10 madder root samples

8. Open the world-map and fast-travel to "Skingrad - East Gate" and walk straight down the road in front of you to find "All Things Alchemical"
    - If it is the night then you will have to wait until the store opens otherwise you will be trespassing, 10:00am is usually a safe bet for stores to be open by.
9. Talk to Falanu Hlaalu and trade with her (Click on the circle made by two arrows on the bottom left) to buy all 30 Alum that she has
10. Walk back outside and turn left around the curve
11. At the fork in the road go left and then right at the bottom under the bridge towards the city gate
12. Go through the gate and you should now be at the "Grateful Pass Stables" again - return to Heisenberg
13. Talk about the "Journals" again

Get the Madder Lake Recipe

This next section contains fighting. The important distinction here is that you will have to fight ghosts. Ghosts cannot be damaged by standard weapons. You will need a silver/daedric weapon to hurt them. Spells also hurt them.

1. Return to Skingrad through the West gate, the one by "Grateful Pass Stables", and follow the path as if you were going back to "All Things Alchemical" but do NOT go all the way there
2. As soon as you exit the little valley the West Weald Inn should be right in front of you, on the right side of the street
3. Go into the West Weald Inn and through the reinforced door to Sinderion's Cellar
4. Talk to Sinderion about the "Recipe"

    Note: You will need to be prepared to fight; you will want silver weapons or good spells and a decent amount of magicka.

5. Leave Skingrad and head to the "Grateful Pass Stables" again but this time go North when you get there
6. Once you find Pavya go up to the arching doorway and enter it
7. Follow the stairs down and then back up taking the right at the landing
8. Go straight and turn left at the wall then down the stairs to the market door
9. Once told to find the key you can either go back up the way you came or take the right to the throne room
    - The throne room has 3 ghosts to fight and a secret switch behind the throne, following the secret passage leads to both the forums(right) and the burial chambers(left)
    - Going back the way you came requires you to take the first left and follow the main hallway [containing about 2 skeletons] around and through the forums (two large empty rooms) to the burial chamber doorway
10. Once you reach the back room you will have to cross the walkway to reach the key
11. Go to the gate and it should open automatically, then cross the platform but be careful not to be hit by the spell casting turrets

12. Take the Grand Market Key on the pedestal at the back and return to the market [you can just jump down and climb the stairs back out instead of avoiding both sets of turrets again - the turrets on the side you jump to will still fire at you]
13. Once you enter the market be prepared for more ghosts
14. Turn left and either jump down the rubble or follow the stairs around and down
15. The Flawless Welkynd Stone is in the far right (South East/ South) side of the market
16. Once you have the stone go back to the market doorway, go straight up the stairs turning right when forced to then straight taking the left at the wall and up the stairs to get out
17. Go back to Sinderion and talk to him about the "Recipe" and he will take the Flawless Welkynd Stone and give you the madder lake recipe
18. Return to Heisenberg south of "Grateful Pass Stables" and talk to him about the "Journals" one more time

Acquire the Journal

Heisenberg will not give you the journal you need but will tell you to go to Leyawiin's Southern Books to get it.

1. Fast-travel to "Leyawiin, West Gate"
2. Turn right immediately and go behind the cathedral through the graveyard
3. The building just on the other side of the graveyard is Southern Books, you should again make sure to enter during hours of operation
    - Southern Books is known to be glitched in the standard game. Since the release of *Oblivion* it has been known that some installs have a problem where it is **never** not tresspassing to enter [you will always have a red door/trespassing marker when youtry to enter, as long as you enter during hours of operation it is fine]. It is safest to make sure its the middle of the day and just quickly talk to Bugak gro-Bol
4. Go into Southern Books and talk to Bugak gro-Bol and initiate a trade
5. Scroll all the way to the bottom of his offerings to find "your Objects and Their [Environment]" and purchase it
6. Leave Southern Books and fast-travel back to Oblitus Artium

Manage the Museum's Environment

After returning to the museum with "Your Objects and Their Environment" you should talk to Cennino. Cennino will hurriedly explain to you that the trustees are already there and want the collection managed with the correct environments for each object. He will tell you to go and talk to Newton right now. Newton will request that you Collect Data from data loggers throughout the museum and that you Artificially Age Samples of materials to understand the effects of certain environments on each.

Collect Data

Below is a simple loop around the museum that gets all of the data loggers. If you found some but not others just follow this and any that you already found will tell you so.

1. Go to the back of the lab, where the bookshelves with MSDS and material information books are and go through the door to the basement
2. At the bottom of the stairs will be three doors, two on the left and one on the right. Enter each door in order as you make your way down the hall and the data loggers will be on a wall close to the doors inside the rooms.
    - Note: Some of the data loggers can be tricky to activate, move around a bit back and forth (not so much side to side), distance is a key part of *Oblivion*'s activation mechanic and you usually need to be farther away from the data loggers to activate them. Click as soon as you see the hand activation button to collect the data.
3. Once done with the three rooms in the basement make your way up the North-West stairs, should be right in front of you if you did not go out of order
4. As soon as the first floor loads there should be a data logger right in front of you, activate it
5. Go up the stairs on the other side of the basement door to get to the second floor. The door will read "Wooden Door to Museum Top Floor"
6. Enter the second room on the left and up the ladder to find the attic data logger
7. Go back down and turn left into the room with the warrior statue and go through the door to the next room
8. Once in the next room follow the wall on your left into an alcove and there will be a data logger right in front of you (this one is especially tricky to activate so please have patience - until we fix this?)

Artificially Age Samples

To do the artificial aging you should go to the laboratory. If you followed the above loop you can get to the laboratory by going through the North door and then the next one past the library. Once in the laboratory you should head to the back table with the microscope on it to the left of the sink. There will be an artificial aging chamber, a button to activate it and a wooden box of material samples.

1. Open the box: There are 5 samples of eight different materials (bronze, iron, limestone, marble, painting, paper, silver, textile). Add all the samples to your inventory.
    - Note: This section, like the organizing the collection section, is easier with an empty miscellaneous inventory.
2. Click on the artificial aging chamber and place the five samples of each material into the chamber's inventory.
3. Close the inventory and move your mouse to the artificial aging chamber activation button which will read "artificial aging process." Click on it. You will have to press the activation for each material (8 times).
4. Open the artificial aging chamber and remove all the now analyzed samples

After collecting the data and aging the samples talk to Newton about the "Environment". He will tell you that you should be ready to answer the questions. Ask him "What questions?"
The questions and their answers are:

1. Corroded bronze --> 60F, relative humidity of 35 +/- 5%
2. Limestone relief with no soluble salts --> Any
3. Paper --> 50F, relative humidity of 60% +/- 10%

The Archimedes Palimpsest Quest is now unlocked.

Nefertari's Tomb

To start the Nefertari's Tomb Quest you must have completed the Health and Safety Quest first. You may start the Nefertari's Tomb quest at any point after completion of Health and Safety by talking to Newton about "Work". He will tell you about the new site of ancient origin that has been discovered near the mouth of the Brena River that separates Cyrodiil, the land in which TES IV: *Oblivion* takes place, from Hammerfell, a province to the north. The Guild's interest in the site is to preserve it but also to gather some pigment samples from the walls.

Caution: You will want to take a pair of Safety Gloves with you - you should probably have a pair in your inventory at all times.

To complete this quest you will have to:

1. Learn About These 'Egyptians'
2. Investigate The Site
3. Pass The Tests
4. Return with the Items

Learn About The 'Egyptians'

1. From the lab with Newton walk up the stairs to get to the library
2. Talk to Suger about "Egyptians"
3. Take all the "Book of the Dead" chapters, which are copies, you want but do not take the "Book of the Dead" itself as you are not allowed to take the original from the library.
4. Grab the book "Senet: Egyptian Board Game" also as you will need it.
    - Read any or all of the books you just picked up to your heart's content, it will only help you later

Investigate The Site

You should now leave the museum to prepare for fast-travel. Upon exiting the museum you should run into the Mysterious Stranger from the tutorial. She will be aware of your assignment to investigate Nefertari's Tomb. She will give you the key to the site and ask that you get her a piece of the Book of the Dead that has not been found yet but resides in the tomb.

Note: If you are doing this quest after having completed the Archimedes Palimpsest Quest she may also talk to you about a new quest that she would like you to undertake.

1. Fast-travel to the "Nefertari's Tomb" site directly North of Anvil
2. Enter the "Wood Door to Conservators Guild Excavation"
3. Approach Balfour, the man in the center by the fire, to discover he is paralyzed
4. Open the door to Nefertari's Tomb with the key the Mysterious Stranger gave to you

5. Walk down the ramp into the tomb and listen to what Osiris and Anubis have to say to you
    - Note: They don't actually say anything, but after a while of you not being able to move there will be a box that tells you what they would have said - so do not freak out that you cannot move, the game did not break

Pass The Tests

To continue into the tomb you will have to pass the tests of the gods for entrance to the afterlife (not all of them, just some watered down). Save your game before you start each test - the tests do not tell you if you have failed, you will just be unable to continue These tests are to:

1. Beat Fate at Senet
2. Be Judged by Maat, the goddess of Truth
3. Place the Proper Offerings
4. Name the Keepers of the Pylons

Beat Fate at Senet

You will have to beat Fate at the last couple moves of a game of Senet. You have two pieces left and Fate has one. You will have to clear your pieces off the board before Fate does. You pieces are the female statuettes and Fate's piece is the male statuette.
In the following the farthest left piece is refered to as square 6 and the farther right is 'off the board'. The squares count down from 6 to 1 and then off the board. This information is also available in the book about Senet that was in the library.

1. Turn left to view the last 7 squares of a Senet board
2. Select your left most piece, the one on square 6 and move it to square 1
3. Select the piece you just moved to square 1 and move it off the board
4. Wait for Fate to take its turn
5. Move your remaining piece to square 3
6. Move your remaining piece off the board

    Fate will take his last turn but you have already won.

Be Judged by Maat, the goddess of Truth

To pass judgement by Maat you must tell the truth even if it is ugly. This means you must know your character. You must know if you have attacked anyone, killed anyone, stolen anything and you must NOT claim to be Nefertari! All of this, aside from the obvious one that you are not Nefertari, can be found in your character's information page of the menus. Press tab, select the health, magicka and stamina bars to view your character information and select the miscellaneous tab on the far right.

1. Prepare to answer the four questions mentioned above

2. Turn around so you are facing away from the Senet board and walk into the far room
3. You are NOT Nefertari, the king's great wife, mistress of the two lands, beloved of Mut
4. You probably have stolen - check your character information - *Say Yes*
5. If you have not injured anyone this far then you have cheated - check your information - *Say Yes*
6. Killing someone is also almost assured - check your information - *Say Yes*

Place the Proper Offerings

To access the central chamber you must make the correct offerings in the back room you were attempting to enter when Maat stopped you to pass judgement.

1. Go out to where Balfour is and grab the paint palette, the inkwell next to the fire, and all the items in the barrel.
2. Place the inkwell and the paint palette into the offering box in front of Thoth (left wall)
3. Place the milk, one bread loaf and either the lettuce or the onion into the offering box in front of the cattle (right wall)
4. Place the ale, the last bread loaf, the beef and the remaining vegetable into the offering box in front of Atum and Osiris (middle wall)
5. Set fire to the contents of the middle offering box and the central chamber will now be unlocked.

Name the Keepers of the Pylons

To access the burial chamber of Nefertari you will have to name the 5 keepers of the pylons along the right side of the room (you do not need to name the keeper, watcher, and herald of the arits). The Book of the Dead Chapter 146 lists all of the answers also. The answers are the first five pylons. Two are on the same wall as the doorway you entered from, the other three are along the east wall. The first two are fairly ruined and almost unnoticeable. The last three are in decent though deteriorating condition and are fairly obvious. Each pylon is a figure with some animal head - for example the first pylon is the vulture headed Neruit.

1. Walk down the ramp to the central chamber and Isis will talk to you once your reach the bottom
2. Turn right and look at the wall from right to left starting right next to the doorway you just entered from
3. Everytime you can activate a new pylon make note of the ordinal position and check the "Book of the Dead Chapter 146" for the name of that pylon's keeper
4. Activate the pylon and select the correct answer
5. Move on to the next pylon

The correct answers in order are:

1. Neruit
2. Mes-Ptah
3. Sebqa
4. Nekau
5. Henti-Reqiu

Return with the Items

Balfour will have some pigments for you to take back to the museum and do not forget to grab the missing chapter of the Book of the Dead for the mysterious stranger.

1. Go into the burial chamber with Nefertari's Sarcaphagous
2. Open the Sarcaphagous and take the chapter from the Book of the Dead
3. Put on your Safety Gloves as Balfour will give you dangerous pigments without warning you
4. Return to the excavation site where Balfour was paralyzed and talk to him
5. Fast-travek back to the museum with the pigments from Balfour to start the Pigment Analysis Quest.

Pigment Analysis

The Pigment Analysis quest follows directly after the Nefertari's Tomb quest.
After returning from Balfour with the pigments talk to Newton about "Work" and then "Work" again to start the pigment identification. You will have to identify:

1. Blue Pigment #1
2. White Pigment
3. Pigment Blue #2, Red and Yellow

Pigment Blue #1

1. Walk to the microscope on the back table
2. Activate the microscope and select "Open Chamber"
3. Place the "pigment blue #1" into the container
4. Activate the microscope again and select "View under PPL"
5. Look at the "Microscope Blue #1 PPL" results in your inventory to analyze the pigment
6. Talk to Newton about "Identification" to provide the answers to his questions
    - Particle size distribution: Wide
    - Relief: moderate
7. Use the microscope again and select "View under XPL"
8. Look at the "Microscope Blue #1 XPL" results in your inventory to analyze the pigment
9. Talk to Newton about "Identification" to provide the answers to his questions

    - Tell Newton, "I saw lots of different colors"
10. Talk to Newton again about "Identification"

    Note: You will not be given a flow chart so his advice to you is useless at the moment.

11. Tell him the pigment is Azurite
12. Transfer the "pigment blue #1" from the microscope to the XRF Machine right next to the microscope
13. Activate the XRF machine and select "Run XRF"

    The XRF should tell you that the sample contains copper.

14. Turn left and find the pigment compendium on the book shelf to find which pigments contain copper of the two: Azurite and Blue Verditer
15. Talk to Newton about "Identification"
    - Tell him "Both match"

Pigment White

1. Talk to Newton about "Identification"
2. Tell him that the first thing to check for is "refractive index"
3. Talk to Newton about "Becke Line Test"
4. Walk to the microscope on the back table
5. Activate the microscope and select "Open Chamber"
6. Place the "pigment white" into the microscope
7. Activate the microscope again and select "Becke Line Test"
8. Talk to Newton about "Identification" to provide the answers to his question
    - "Away from the pigment"
9. Transfer the "pigment white" from the microscope to the XRF Machine
10. Activate the XRF machine and select "Run XRF"

    The XRF should tell you that the sample contains sulfur.

11. Talk to Newton about "Identification"
    - Tell him "Gypsum"

Pigment Blue #2, Red and Yellow

The answers are:

1. Blue #2: Egyptian Blue
2. Red: Red Ochre
3. Yellow: Yellow Ochre

Talk to Newton about "Work" one more time to finish up the quest.

Archimedes Palimpsest

The Archimedes Palimpsest quest requires completion of Managing The Environment. To start the Archimedes Palimpsest quest, go to the museum in Oblitus Artium and head to the second floor front room with the kneeling warrior. Talk to the Principal Archaeologist and ask "You wanted to talk to me?" to get your first instructions.

Tracking the Palimpsest

To solve the puzzle of the door at Retia, the site that was recently found, you will have to search for an equally important piece of history, the Archimedes Palimpsest. In the Palimpsest should be the answer to the door puzzle.

1. Visit Tar-Meena
2. Search Kemen
3. Ask the Cheydinhal Mages
4. Talk with the Leyawiin Priest
5. Get the Palimpsest from Fainde
6. Win the Palimpsest at Auction

Visit Tar-Meena

1. Go back down and outside of the museum and fast-travel to the "Imperial City, The Arcane University"
2. Go straight and into the door to the Arch-Mage's Lobby
3. Try to catch Tar-Meena, the female Argonian, before she leaves - do not worry if she makes it away, her 'superiors' will send her back to you right away
4. Ask her if she has any books on Archimedes

Search Kemen

1. After she has finished talking go back outside and fast-travel to "Cheydinhal - East Gate" (Cheydinhal is East of the Imperial City)
2. Turn around and exit the city gate to the Nibenay Basin
3. Follow the road up the mountain
4. Turn right onto the dirt/grass path right before the ruins
    - Right before the ruins start there, at the bend left in the road, there will be a path that leads right along the side of the mountain
    - The path will start between a rock ledge and a tree
5. Continue on the path past the "Rickety Mine" and another set of slightly different ruins should appear, this is Kemen
6. Enter Kemen through the stone door and continue straight down the corridor through the gate to the next room
7. Turn right and enter Kemen Varlasel
8. Continue straight, past the guillotine traps being careful not to touch them at all - If having difficulty with this part I would recommend using the 'tcl' command

9. Once past the traps continue straight and take the left at the wall
10. As soon as you 'notice' the book is not there leave the room as it will fill with poisonous gas
11. Go back, past the blades, and exit Kemen

Ask the Cheydinhal Mages

1. Once outside fast-travel to "Cheydinhal - West Gate"
2. The Mage's Guild entrance is on the right, behind the Inn's and Fighter's Guild, facing the city wall
3. Once in the Mage's Guild you are looking for Orintur, the head of the Cheydinhal Mage's Guild
    - Orintur will move around depending on the time of day you go there
4. Ask Orintur if anyone has been to Kemen recently
5. Orintur will inform you that the last expedition came from Leyawiin and that they found a prayer book so your best bet is the Leyawiin Cathedral

Talk with the Leyawiin Priest

1. Fast-travel to the "Leyawiin - West Gate"
2. Walk forward to the front of the cathedral and enter it to find Avrus Adas
3. Ask Avrus about the "Kemen Prayer Book", make sure to tell him you "need that book"
4. Go outside and search Leyawiin for the beggar Rancid Ra'dirsha
5. Ask Ra'dirsha about the "Missing Prayer Book"

Get the Palimpsest from Fainde

1. Fast Travel to the Wawnet Inn and go to the fork in the road and then north to find Fainde's house on the outskirts of the village
    - If you have not found Wawnet Inn yet you can fast-travel to "Chestnut Handy Stables" and cross the Imperial Bridge
2. Talk to Lieth, mentioning that you are "looking for a book"
3. Follow her down to the basement and look at the bookcase to the far left, you are only concerned with the middle row of books
4. The "old book" second from the left is the palimpsest
5. Activate the book and select the option, "This is the palimpsest"

Win the Palimpsest at Auction

1. Walk back outside and fast-travel to Oblitus Artium to inform the Principal Archaeologist that the book is going to be auctioned off
2. Fast-travel to the Imperial City, Waterfront District and follow the path north and the auction house is on the right, beyond the tower
3. Speak with the Librarian Principal and tell him "there is something else we need to buy"
4. Walk over to the first auction station on the left - the first two items up for bid are what the Librarian Principal came for, the last one is the palimpsest

You can attempt to win the first two items but it is impossible to get the palimpsest - the NPC always bids your bid+1

Understanding The Auction Interface

- The auction station requires you to activate it each time to advance the auction's stage
- There are three stages to the auction: the status stage, the bid stage, and the result stage

  The Stages

  - *Status Stage:* The first time you activate it (and subsequently each time you complete a set of stages) you will be told the Current Bid and how much money you have - you can then "Bid" or "Give Up"
  - *Bid Stage:* Next you will be given a screen where you can add or subtract to your next offer
  - *Result Stage:* The final screen will tell you what the NPC tried to add compared to what you tried to add - if you outbid the NPC you will be told here

  A pictorial sample bidding session can be found here.

5. After losing the third auction you should talk to the Mysterious Dealer - automatically informing him of everything about the Conservator's Guild

Understanding the Palimpsest

After talking to the Mysterious Dealer he will uphold his word and talk to the man he works for about the palimpsest and Conservators Guild's interest in it. By the time you get back you will be informed of a strange meeting between the Principal Archaeologist and the mysterious new owner of the palimpsest.

1. Fast-travel back to Oblitus Artium to talk to the Principal Archaeologist about your inability to get the palimpsest
2. Go to see Newton after the Principal Archaeologist informs you that the mysterious owner left the palimpsest in the Conservators Guild's care
3. Take the Palimpsest to Cennino, the Principal Conservator, to have him separate the pages from the spine
   - Cennino will need a (a full 24 in-game hours), this does not mean you have to sleep but it is the quickest way to pass the time. You could also do another quest, such as the Nefertari's Tomb Quest
   - Note: *Oblivion* tracks hours by whole numbers which means that you may have to wait for 25 hours

    - Note: *Oblivion* updates infrequently, if you have waited 25 hours and still not gotten the message you might have to do something until the top of the hour comes around (do NOT wait or sleep)
4. Return to Cennino to retrieve the palimpsest pages once you receive the in-game message informing you that it has been a day since leaving the palimpsest with Cennino
5. Tell Cennino you are "here for the palimpsest"
6. Go to the lab and talk to Newton about the "pages"
7. Turn around and press the MSI 'push block' switch on the wall next to the door that leads back to the front rooms
8. Give the MSI results to Newton
9. Give the XRF results to Newton
10. Fast-travel to the Imperial City, Arcane University and enter the Arch-Mage's lobby
11. Speak with Borissean and ask him "Can you look at this for me?"

Entering Retia

After getting the answers of 17,152 and 64 from Borissean you will have to go to Retia to inform the researchers there of the answers and see if they can help decide which is correct.

1. Fast-travel to Retia, North-West of the Imperial City and West of Chorrol
2. Talk to Aristotle who is just outside of the ruined archway, to the left
3. Tell Aristotle "I have an answer!" and pick 17,152 - he will correct you if you're wrong though
4. Go into the ruins and enter the door to the interior of Retia
5. Walk around the corner to the right and you should automatically enter the combination
6. Open the door to the library and kill the scamp - during or even before you fight the scamp you will get a quest update that mentions that status of the library at Retia
7. Congratulations, you completed the Archimedes Palimpsest Quest!

Trustee Quest

To start the Trustee quest you will have to be approached by the mysterious stranger after having completed enough of the other quests to gain her attention again. She will approach you while you are leaving the museum or may have already approached you about this quest while you were completing the Nefertari's Tomb quest.
The quest has four main stages:

1. Ukioy-e
2. Miniature*
3. Art Shop
4. Signature

If you have not been approached by the mysterious stranger and have done all the other quests, or if you have and you told her "not right now" then you can find her at either the entrance to the museum or in the tutorial dungeon of Hanticand where she gave you the key to the tutorial dungeon.

To do the two assignments she will ask for you to get a portable XRF from Newton. Make sure to talk to the mysterious stranger about this first otherwise you will not have to option to ask Newton for it. Once you have told the mysterious stranger "Absolutely, I'll work with you" go to Newton and ask him for a portable XRF. He may tell you that he does not trust you enough to give you one. If so, open up his persuasion interface (The portrait to the left of the 'X' for ending conversation) and bribe him a little; unless you want to try your hand at persuasion. About 60-75 is a good value; higher is better. Ask him for the XRF again and he will give it to you. You may now return to the mysterious stranger at either the entrance to the museum or in the middle of Hanticand to start searching for the Ukioy-e.

*Note: Miniature in this case refers to a portrait miniature.

Ukioy-e

The Ukioy-e is the first object that you should get for the mysterious stranger. While it and the miniature are capable of being active at the same time the Ukioy-e quest can have complications with its end state if done second. After returning to the mysterious stranger with the portable XRF talk to her about the Ukioy-e and she will tell you to go to the waterfront auction house and to grab the Ukioy-e before it goes up for auction.
To get the Ukioy-e you will have to:

1. Investigate the Auction House
2. Return later that Night

Investigate the Auction House

1. Fast-travel to the "Imperial City Waterfront District" or enter the "Wooden Tunnel Door to City Isle" from the "Imperial City Temple District"
2. Enter Waterfront Auctions
    - If you enter at night and the innkeeper is asleep - go back out and wait until about 9-10am
    - If you enter during the day, talk to the innkeeper, Brutius Tiliand, about the Ukioy-e
3. Go back outside and wait until about it is nearly midnight (11pm is good)

Return later that Night

1. Enter Waterfront Auctions and go down the trapdoor immediately to your left after you enter
2. Go to the Southwest corner and look on the floor for the Ukioy-e
3. Turn around and kill the guard goblin
4. Go back to the Southwest corner to get the Ukioy-e you dropped
5. The one on the left is the real one, you can leave the fake one where it is as you do not need it now
6. Return to the mysterious stranger (Museum or Hanticand) and talk to her about the miniature to start the miniature quest

Miniature

Before you can actually do this quest it must be Loredas (the equivalent of Saturday) in the game world.

<u>Days of the Week in *Oblivion*:</u>
Sundas - Sunday
Morndas - Monday
Tirdas - Tuesday
Middas - Wednesday
Turdas - Thursday
Fredas - Friday
Loredas - Saturday

You can either wait the time or do something else to pass the time until Fredas. If it is Sundas or some other early-in-the-week day you may want to do some questing or dungeon running as waiting the time away will be very boring. I say to wait only until Fredas because Your timing on Loredas matters so a day buffer is a good idea.

Once is it Fredas you can continue with the quest

1. Search for the Miniatures
2. Resolve the Mystery

Search for the Miniatures

Note: Riverview's location --> If you enter Cheydinhal from the East gate (or fast-travel to the east gate) and follow the road to the South-East, Riverview is the last house on the left before the small bridge.

1. Fast-travel to Cheydinhal and wait until it is actually Loredas, if it is not already
2. Wait until 6:00pm on Loredas; any time between 6:00pm and 7:00pm is fine just try not to go too late
3. Enter Riverview

   You will be confronted by the Librarian Principal

4. Search each of the three display cases, pointed to by quest markers, for the miniatures
   - Downstairs in the alcove to the southwest of the entrance (Quest marker sometimes breaks on this one)
   - Immediately upstairs to the left of the bedroom doorway
   - In the bedroom next to the bed

Resolve the Mystery

1. Talk to Voranil and ask him "Are you aware of... stolen paintings?"
2. Ask Voranil "There was a theft. See anything?"
3. Pick the lock and enter the Riverview Basement
4. Inspect the strange barrel in the South-West corner of the basement
5. Kill the thief
6. Use the portable XRF and scan the stolen miniature B - it is the real one
7. Talk to Voranil and tell him "I'm returning these stolen paintings"
8. Return to the mysterious stranger and tell her "I retrieved the rare miniature."

Art Shop

After completing both of the above objectives you should have to option to tell the mysterious stranger about 'Borba's Goods and Stores'. You should then:

1. Search Borba's Goods and Stores
2. Investigate Borba's More

Search Borba's Goods and Stores

1. Talk to the Mysterious Stranger about "Borba's Goods and Stores"
2. Fast-travel to "Cheydinhal - West Gate"
3. Enter Borba's Goods and Stores - last building before the intersection on the left

4. Ask Borba if the statuette is stolen and if it is for sale
5. Trade Borba the two fire salts you just acquired for the statuette
6. Use the Portable XRF - the statuette is a fake - "this can't be the right one"
7. Talk to Borba and tell her "This is not the real one" and press the subject of "illicit deals"

Investigate Borba's More

1. Pick the lock to enter Borba's basement

   If you do not want to run the chance of giving yourself a bounty first go up the stairs and Borba will follow you, once she is up the stairs quickly run past her to the basement door, sneak, and pick the lock only if you are not visible.

2. Activate the Wet Painting
3. Turn around and grab the statuette off the self in the center of the room
4. Ignore the librarian principal and Mira and go past them down the hall to get to the door to exit the hidden basement
5. Return to the Mysterious Stranger
6. Tell the Mysterious Stranger "Your statuette, madam."

Signature

After doing so much work for the Mysterious Stranger the rest of the Museum staff is wondering where you are. You should return and help Newton.

1. Return to the museum lab
2. Talk to Newton about "Work"
3. Fast-travel to 'Thief Manor'
4. Wait for the quest update
5. Talk to Mira and say "Hello"
6. Walk over to the chair pointed at by the quest marker - ignore the bit about the armor
7. Return to and talk to Mira again about the "Stolen Painting"
8. Wait a little bit and Mira and the Librarian Principal will start to fight
9. Kill both Mira and the Librarian Principal
10. Fast-travel back to the museum and talk to Cennino about "Stolen Things"
11. Go outside and talk to the Mysterious Stranger about Mira

Appendix

Useful Commands

Using the Console

The following is a list of helpful commands that can be used if someone is having an exceedingly difficult time with any part of the game that is not related to Conservation, i.e. combat.
To use the commands you will need to be using a US standard full-size keyboard with a tilde (~) key and not on a laptop. The game will, for an unknown reason, not allow these commands to be used on a laptop even if the laptop has a full-size keyboard.
To use a command you:

1. Press ~ (tilde - located to the left of the 1 key on the top-row numbers)
2. Type the command into the console
3. Press enter

Once you are done entering commands you can press the ~ key again to close the console.

Commands

- tgm - toggles god-mode; god-mode makes the character not take damage and not lose magicka/stamina/arrows
- tcl - toggles collisions; allows the player to walk through anything - useful for bypassing difficult traps or getting out of 'holes'.
- additem - adds amount of items to the target's inventory; best used on yourself. You can have the command target yourself by typing player.additem.
    - Example: player.additem F 100 -- This adds 100 gold to the player's inventory; best used for small amounts of money if needed but you do not want to do other quests/looting because you are pressed for time. (Note: Item ids are 8 digits long but since gold's first 7 digits are 0s you can use just the F)

Oblitus Artium's Facilities

Oblitus Artium has three main facilities for the player to use:

- Museum
- Guild Hall
- Apartments

Museum

The Museum is where most of the quests for the Conservation Guild will start or take place. There is a library, laboratory and many environment controlled rooms located in this building. You will encounter most of the museum during the quests and thus you do not need to worry too much about what is here as it will be explained when appropriate.

Guild Hall

This is the place where anyone not at the museum can be found. Some of the principals and other staff members will be here and thus the Guild Hall serves as another place to go during and for quests.

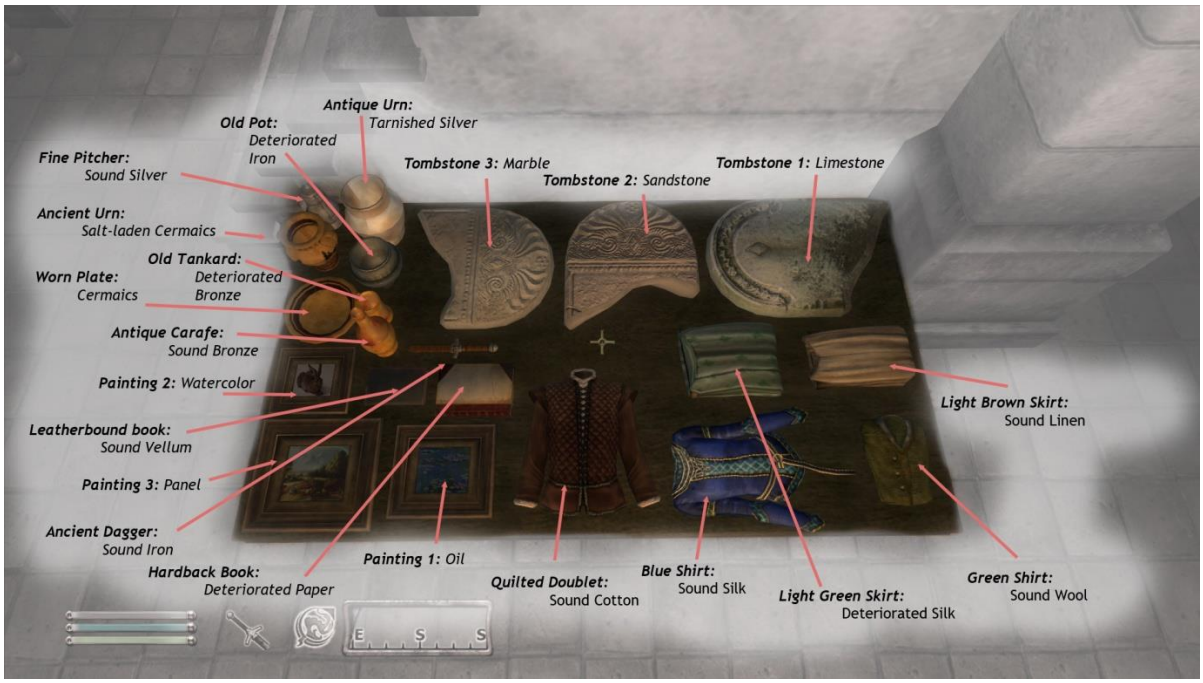
Apartments

The Oblitus Artium Apartments has a host of rooms for you to use. As of right now the first two rooms can be used as soon as you are a part of the Conservators Guild. This means that when you need someplace to sleep during the Getting To Know The Collection quest you can use one of these beds instead of paying for one in an Inn somewhere else.

These three places can be seen in relationship to each other on the following map.

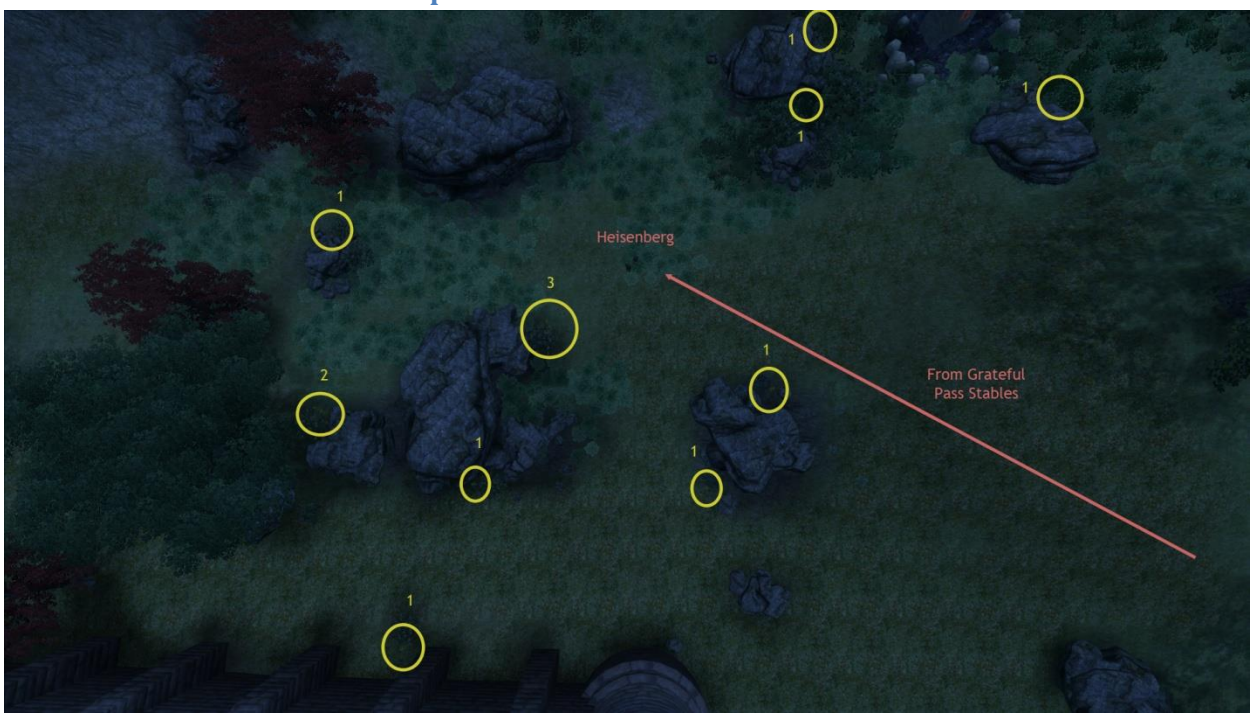
Picture Reference for Collection Organization

The above is a map of the containers used to sort the items in the collection. Any item that has to be sorted should be assigned one of the categories in the above picture. Some of the categories are not used. There are three stacks of three containers. The text blocks map to a single container either below it, to the right of it or above it.



The above is a key of all the items in the collection containing both their name and what category they belong to. Arrows indicate which object the text applies to. Bold italic text is the item's in-game name and italic text is the item's category. -- Return

Madder Lake Root Locations Map



Return

Sample Bid Session

Status Stage

Activating the auction station brings up this information screen. Notice how we only have 14000 [septims]. This is because we have at this point already won the first bid with a bid of 1000. That 1000 septims is no longer available to bid with.

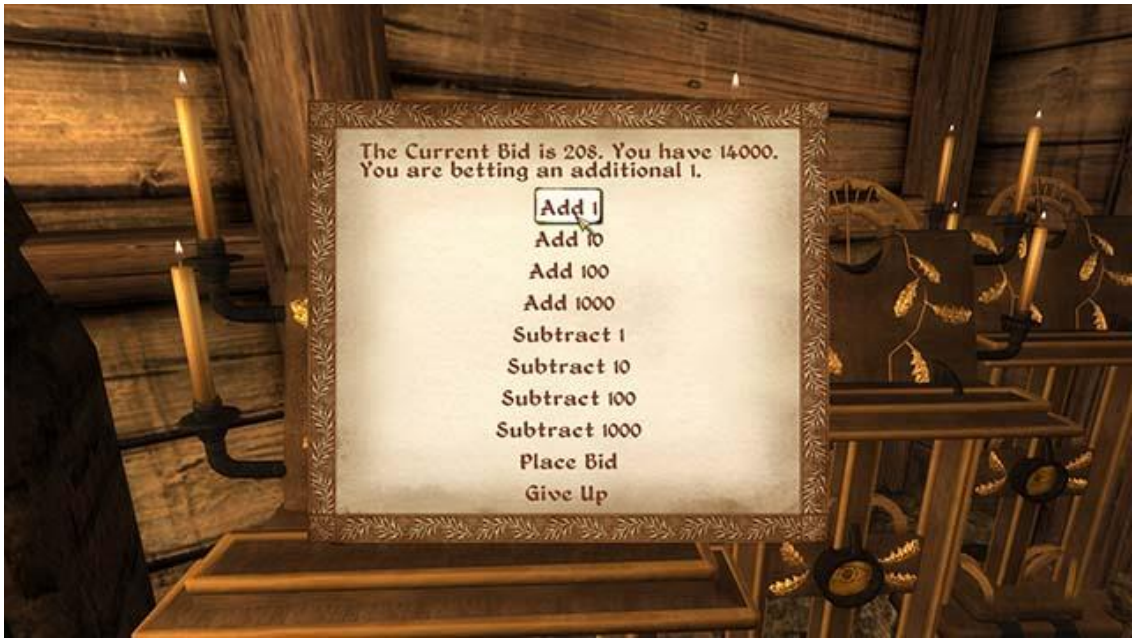
Bid Stage

Choosing the option to "Bid (Keep using Station)" on the previous screen and then activating the station again brings up this screen. Here we will select the "Add 100" option and then activate the station again, which brings up this same screen, and select the "Place Bid" option.

Result Stage

The NPC has bid more than we have, we must continue using the station to either bid more or give up.

Bid Stage



Here we can see the results of the last round of bidding. We still have our 14,000 since we did not win yet. The current bid is the NPC's leading bid of 208. We must now add to the NPC's bid. This means that our bid will be the NPC's bid plus whatever we add to it. So adding another 100 means we are bidding 308, so we will do that.

Result Stage

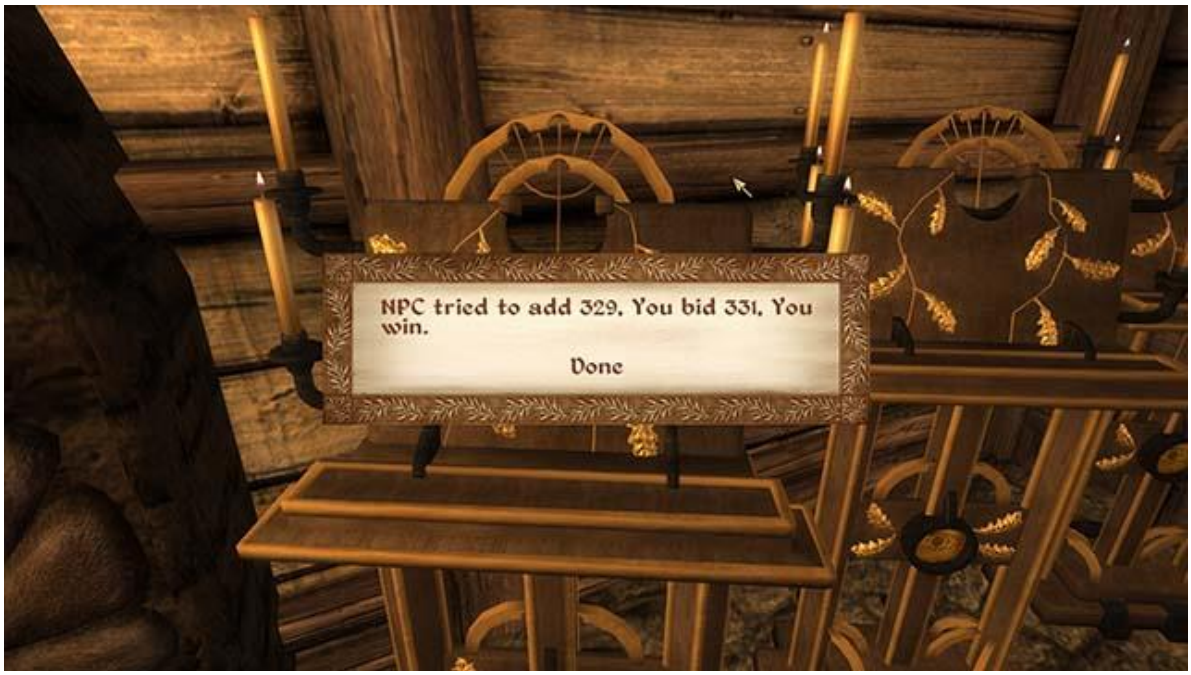
The NPC added 200, so the bid is now 408 and we must continue bidding.

Status Stage

Bid Stage

Getting a little bit bothered we decide to bid 331 using the same methods as before. We added 100 three times, then added 10 three times and then added 1 and placed the bid.

Result Stage



The NPC tried but fell a little short of our bid and we won. The total amount of money spent on this bid was 408 (previous bid) + 331 (additional bid) = 739 (total bid). -- Return to Bidding Section.

Appendix B: Educational Guide

Oblitus Artium as part of the curriculum

Some tips on integrating the Elderscrolls Oblivion mod, Oblitus Artium, into your class.

Oblitus Artium has a number of story arcs that support course modules on artists' materials and their history, museum management, art conservation and art conservation science.

Technical requirements

Each student must have a copy of the commercial game in order to play the Oblitus Artium mod. There are a number of ways to work with this in your classroom:

1. Computer lab model
    a. If you have access to a PC computer lab, the game and mod can be installed on each computer and played in class.
2. Individual Student Model
    a. Students can obtain the game and the mod and install on their own personal PC computers
3. Library model
    a. Several copies may be stored at your library for student check out. Students can then install the game and download the mod to play.

Notes:

- Each computer will need a copy of the game in order to play the mod.
- The commercial game (Elderscrolls IV: Oblivion), can be purchased at stores such as amazon
- Elderscrolls IV:Oblivion can also be purchased online via Steam. Steam is a free platform that requires each student to have an account. They can then purchase and download the game and play on any PC computer.

  http://store.steampowered.com/

- Oblivion will play on laptops, but you will need a mouse!

Examples

1. Nefertari's tomb: This arc focuses on the exploration of Nefertari's tomb and the analysis of Egyptian pigments.

Supports course modules on:

- History: Ancient Egypt
- Art History: Ancient Egypt
- Artists' Materials: Ancient Egypt, Microscopy of Pigments
- Art Conservation and art conservation Science: Microscopical Analysis of Pigments

Texts for this arc:
John K. McDonald, 1996, House of Eternity: The Tomb of Nefertari, Getty Publications
Free download, excellent text.
http://www.getty.edu/conservation/publications_resources/pdf_publications/house_eternity.html
E. A. Wallis Budge, The Book of the Dead

http://www.africa.upenn.edu/Books/Papyrus_Ani.html

2. Oblitus Artium: The entire mod focuses on cultural materials, their history and analysis as well as the ethics of collecting. The entire mod may be played to support courses that incorporate these topics.

Supports course modules on:

- Material Culture
- Artists' Materials
- Art Conservation Science
- Art History

According to the nature of the class some good books to use as texts are:

Cennini, Cennino. The Craftsman's Handbook.

The National Gallery of London series called "A Closer Look."

- A Closer Look: Deceptions and Discoveries
- A Closer Look: Colour

Gage, John. 1999. Color and Meaning: Art, Science, and Symbolism.

National Park Service, The Museum Handbook

McCrone, W. C.1982. The microscopical *identification* of *pigments*. Journal of the International Institute for Conservation—Canadian Group7(1 & 2):11–34

3. Managing Your Collection and Environment: By following these two mods, students can gain some contextual insight into collection management. Classroom assessment has found that the best way to incorporate this material is to use in conjunction with texts and another game, Stored Alive.

Supports modules on:

- Collection Management
- Material deterioration
- Environmental monitoring

Additional Resources

Articles and reports available from the Image Permanence Institute (free downloads)

https://www.imagepermanenceinstitute.org/resources/papers-articles-reports

Stored Alive, an interactive Flash game available for free download

https://www.imagepermanenceinstitute.org/resources/stored-alive

National Park Service, The Museum Handbook

http://www.nps.gov/museum/publications/handbook.html

National park Service Conserve-O-Grams

http://www.nps.gov/history/museum/publications/conserveogram/cons_toc.html

Appendix C: University of Delaware Report

Narrative Final Project Report: University of Delaware contributions to RIT's NPS/NCPTT grant, "An innovative educational game strategy for conservation and preservation", E. Goins, PI

Chandra L. Reedy, Center for Historic Architecture and Design

Administrative Summary

Undergraduate student research assistants from UD provided support to the RIT project by producing photomicrographs under a transmitted light microscope of pigments in plane and crossed polarized light, along with identification criteria, for use in the Pigment Analysis Quest, with a focus on selection of pigments culturally relevant to Nefertari's Tomb. The students participated in testing the game, providing feedback; and in contributing to written and video walkthroughs. The game is now serving as the centerpiece of a new UD course on studying material culture in virtual worlds.

With a $2,500 subcontract from RIT, the Center for Historic Architecture and Design at University of Delaware provided support for the development of the *Oblivion* mod by RIT, mainly in the form of conservation science and preservation input. Two undergraduate student research assistants were hired; the primary assistant had conservation and conservation science experience as that is her major, but had no prior experience with role-playing games of any kind. This allowed her to contribute from the conservation point of view, and to demonstrate how self-explanatory the game was for those without any gaming experience. The other had extensive role-playing game experience but no conservation or preservation knowledge (or past interest in the subject). He provided more detailed comments and reviews on the user experience playing the game, and provided a good demonstration of the conservation and preservation interest it could initiate in students not previously exposed to this field.

The main initial task performed by the UD team was to collect pigment samples that would be culturally relevant to the Nefertari's Tomb quest. In consultation with Dr. Goins, 28 pigments were selected, from which she could choose ones to use in the game. Each of these were then photographed under a transmitted light microscope, both in plane polarized and crossed polarized light, and at low magnification and high magnification for each light condition. These images were then incorporated by RIT into the game's Pigment Analysis Quest.

Research was conducted by the student using journal articles and books on pigment history, to develop a pigment compendium that briefly summarized the highlights of historical and cultural information about each pigment that was included in photography.

A pigment identification summary was also produced for each pigment, discussing the main features of each in plane polarized and crossed polarized light useful for characterizing and identifying the pigment and distinguishing it from similar pigments. A selection of the pigment information was used by RIT for the Pigment Analysis Quest.

The two student research assistants, along with other student input that was solicited, provided feedback and comments to the RIT developers on the game environment, game functionality, and other aspects of the game. It was gratifying that the student assistant who had never before played any type of role-playing game had no difficulties in getting started or in figuring out how to navigate through and complete the mod. It was also gratifying that the student assistant with no prior conservation or preservation interest found the game activities to be very intriguing, and expressed interest in a whole course focused on the topic. As a role-playing game aficionado, he was also quite satisfied with the “fun” level of the game (the educational aspects were very well incorporated into game play).

A UD student research assistant also contributed to the beta testing of the completed mod, with some final comments and suggestions. Through a Google Docs collaboration with an RIT student he also contributed to the development of a walkthrough for the game. For aiding some of our students with less role-playing game experience than the typical RIT student, he also prepared some video walkthroughs, especially intended to help students get started on the mod and to pass through some of the more challenging parts of the game.

Finally, we collected materials on teaching with games, for ideas about how to incorporate the mod into a class, using it for assignments, and assessment strategies. We are now in process of developing the syllabus, reading list, and assignments for a new undergraduate course on studying material culture in virtual worlds. The *Oblivion* mod developed in this project will be a centerpiece of the course. We obtained extra copies of the game for distribution to several university computing facilities, so they could be checked out or used there for the class if necessary. Once the proposal has gone through the full course approval process of the University of Delaware, it will be taught on a regular basis. We anticipate it will draw new interest in the study and preservation of material culture by undergraduates who might not otherwise have selected to participate in a course on this topic.

Appendix D: RIT, Student Survey Responses

Student Survey: Tutorial Quest, RIT

What were some of the things you liked about the game?

- Everything seemed fine aside from what I mentioned.
- very cool idea for in class work. engaging. keeps you interested.
- Conceptually sound.
- The history, different options to create a character. All self learned.
- I liked playing the game, it was fun. The scenario was interesting, and I like that there was so much to do.
- I really like the scenery and storyline, but I'd rather watch a video game like a movie versus playing a video game.
- The storytelling is interesting and the visuals are great too.
- The scenery was fairly visually interesting.
- I like the customization of characters and that it tells you all the controls. The scenery is great and its easy to controls the characters
- I liked the narration and the ways I could interact with the different characters and objects.
- The game as a whole, how it describes the tutorials is nice. I found it very interesting overall.
- not dying right away!
- Havent played the game enough to formulate a valid opinion.

What were some of the things that could be improved?

- The character's text scrolls by too fast. Find a way to slow the dialogue.
- cant read nearly fast enough to see what the modded characters are telling me.
- - NPC Dialog refreshes too quickly. Quest dialog should stay up long enough to read at least twice (or be user prompted to move forward through the script).

  - The quest text isn't clear about the symbol in the graveyard, I seem to remember the quest telling me that it was on a monument when in fact I was looking for a door. Caused a bit of wasted time. Looking through gravestones.

  - Crypt section was too easy. I assumed that the quest objective was going to be a straight shot through the crypt. I had a feeling that exploring any further around the crypt would be unnecessary- Turns out I was right ;). There should be a some motivating factor to explore more of the crypt.

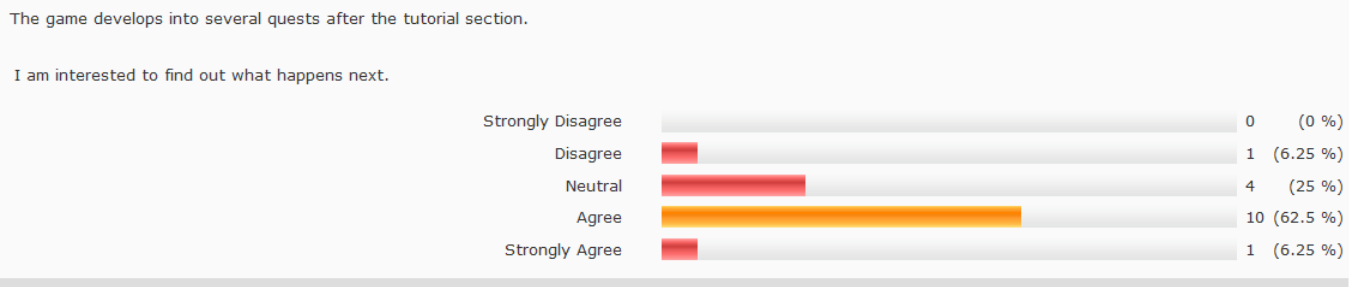
- It's not clear from a player standpoint that I was supposed to be swimming such a distance to reach the island. Since swimming is one of those modes of travel players generally try to avoid, something within the quest dialog should at least hint to the perilous ocean journey!

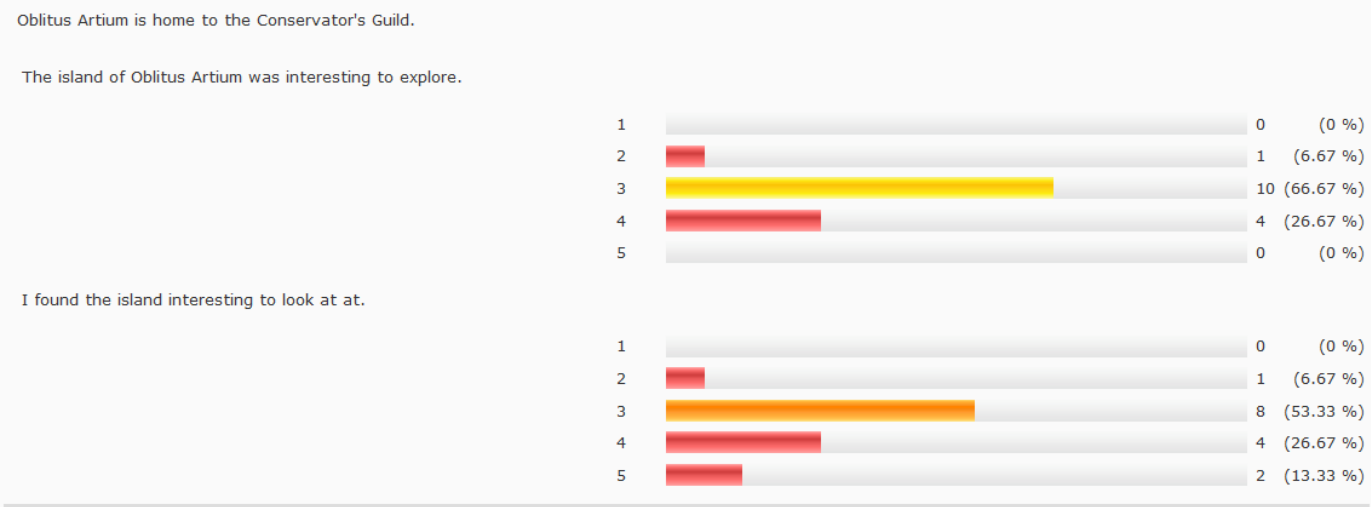
- The text was too fast.
- Do not have enough knowledge about games in general.
- The Mysterious Stranger talks too quickly. Make her slow down. At times it was unclear what I needed to do.
- The subtitles are needed because the characters talk too quickly .
- Lighting, it's a bit too dark.
- The mysterious stranger spoke too quickly when she first appeared and I didn't have time to read the words.
- The people didn't talk all the time, Some of the spelling in the pop ups wasn't always correct or words were missing. The subtitles were too fast to read
- The characters talk too fast. Also, it would be helpful if the instructions on how to access things were more clear. I was unsure on how to open doors at first, and I kept getting the message that I was unable to equip a certain item and I didn't know why. Make the instructions and controls clearer.
- The text with instructions scrolls WAY too fast. There is no voice over. The door with the symbol is described as a tomb, which implies it is a tombstone which it is not.
- the dialogue was really fast
  my person got stuck in the cell at the beginning (she needed a key)
- The game is a little bit glitchy.

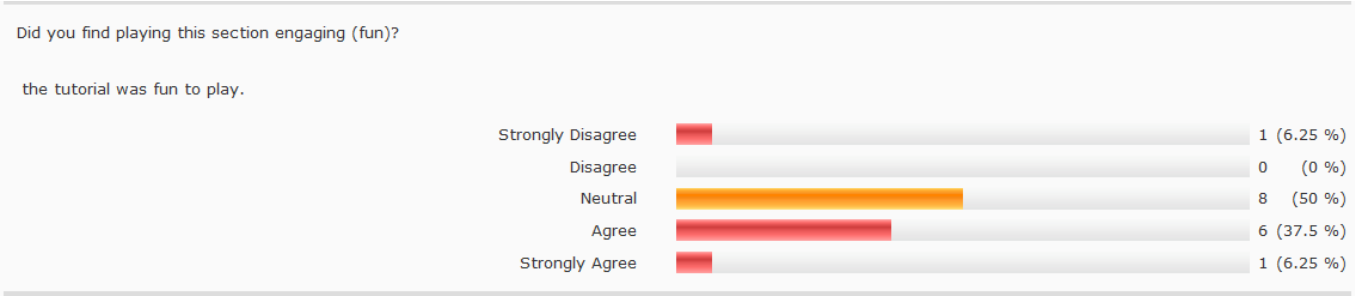
What is your major?

- Multidisciplinary - Computer Art and Print Media
- New Media Design
- 3D Digital Graphics
- JPHD - Advertising Photography
- Photography
- Fine Art Studio
- new media design and imaging
- Museum Studies
- Museum Studies

- Industrial Design
- Fine Art Photography
- Visual Media
- Museum Studies
- Biomedical Photographic Communications
- museum studies
- Photography



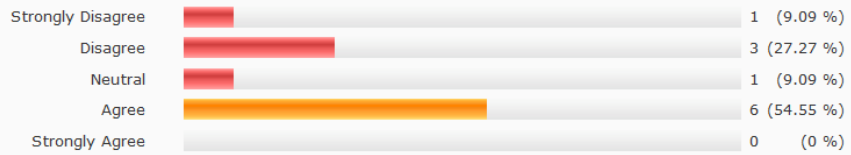




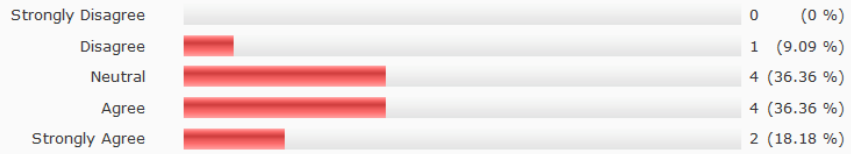
Student Survey: Getting to know the collection, RIT

Compare the task Cennino gave to you about organizing the collection to the lecture we had this week on paper deterioration.

This task added to my knowledge of deterioration?

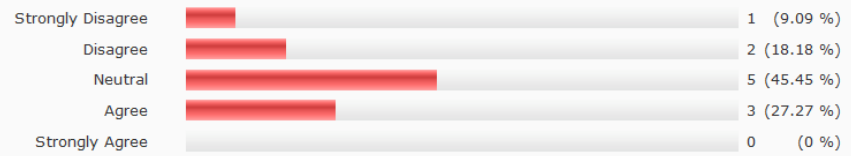


I would like to learn only from lectures, the game added nothing.

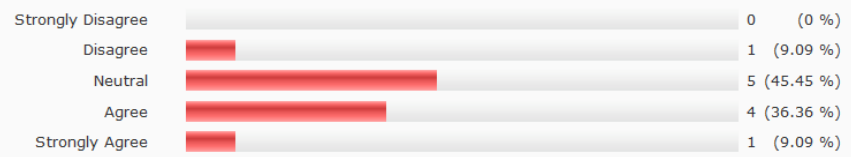


Fictional narrative components were used to help make the game more fun.

The story surrounding this quest made organizing the collection fun.

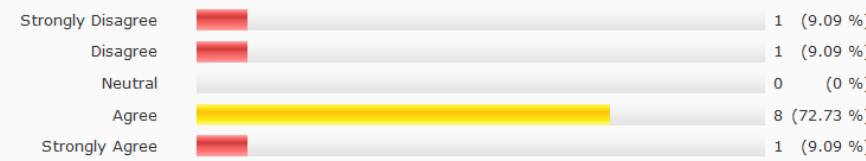


I think that orgainizng the collection activities would have been fun without having to find the journals and get rid of the spirit.

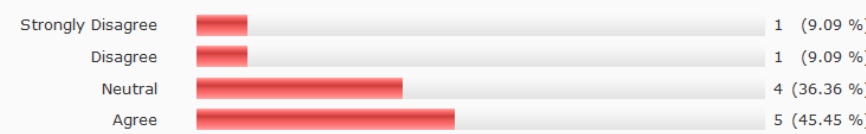


Learning about the materials.

The task of organizing the materials was a good way to learn about the different material properties.



I like that I had to go look things up in the books as it helped motivate me to read them.



What can we do to make this quest better?

- Please remove the spirit sidequest. It was not easy to get through and it added extra tedium to an otherwise simple and educational task
- The books should have more information and should have clear sections. Pictures would be extremely helpful. I could find no books that gave information on how to identify the types of stones or the different types of textiles. There was also little information on how vellum feels like as compared to regular paper. I also couldn't quite tell what the difference between a sound and deteriorated object was. Maybe I just didn't read enough.
- I found it difficult to know what I was supposed to be doing--possible because I have never really played video games and was unfamiliar with the format.
- There wasn't enough information on how to identify some of the objects. Adding more books with this information would be helpful.
- Make the tools, like microscopes and sample pieces usable to help identify the objects that I am sorting. Being able to interact with the objects more might help.
- Honestly, I barely play video games.. the last one I played was 4 years ago. Video games normally give me headaches from all the moving around and I would prefer a lecture or a puzzle.. I feel the game with the characters didn't add too much to the actual learning.
- The quest periodically froze.
- I did not understand a lot of the terminology that was used. The books were not descriptive enough and they did not help to identify the objects. There wasn't enough information about the objects to identify the materials.
- Skip the journals. I wanted to get right to finding and sorting the collection. Maybe put the journals in the library.
- Nothing.
- it would be great if the descriptions of the objects were more cohesive with what the journal says. it was difficult to complete tasks because i didn't understand how to use the materials and tools i was given.

What did you like about this quest?

- The journals and books having information was a nice touch -
- I really appreciate the idea of teaching through video games and alternative methods. However this technique definitely does not work for me and my personal learning style. As someone who has never played video games and does not enjoy doing so, I found the technical aspects of playing the game too confusing to make the game helpful. I would much rather learn through a discussion or lecture.
- I liked that we got to look at a variety of materials that we wouldn't get to look at in class. We also learn in depth about them.
- I like the opportunity to utilize the library.
- I liked that there were a lot of different pieces in the collection that I had to learn about and sort.
- Getting to know about different materials in a new way.
- i didn't die, so it wasn't that bad.
- The information from the books.
- It was fun. Not a big video game player, but it was not to hard to navigate.

Appendix E: IRB Review

R·I·T

Rochester Institute of Technology
INSTITUTIONAL REVIEW BOARD
585-475-5429 ~ www.research.rit.edu/hsro ~ sjrtlo@rit.edu

FORM A: Request for IRB Review of Research Involving Human Subjects

- **To be completed by the investigator** after reading the RIT Policy for the Protection of Human Subjects in Research, found in the *Institute Policies and Procedures Manual*, Section C5.0, and on the Office of Human Subjects Research website, http://www.rit.edu/research/hsro/process_geninfo.php.
- Submit an **electronic version** of the completed form **along with a signed hard copy** to **Sara Renna**, HSRO, Bldg 87, Suite 2400 sjrtlo@rit.edu . Location – 2nd Floor, Administrative Services Building/Innovation Center (Bldg #87), Suite 2400.

Project Title: An Innovative Educational Game Strategy for Conservation and Preservation		
Investigator's Name: Goins, Elizabeth	Investigator's Phone: 475-2475	Investigator's Email: esggsh@rit.edu
Investigator's College and Department: Fine Arts, College of Liberal Arts		
Project Start Date: August 10, 2011	Date of IRB Request: August 8, 2011	
If Student, Name of Faculty Supervisor:	Faculty's Phone:	Faculty's Email:
If Not Employed or a Student at RIT, List Name, College & Dept. of RIT Collaborator:	RIT Collaborator's Phone:	RIT Collaborator's Email:
Will this project be funded externally? X ☐ Yes ☐ No	Is the Investigator a student? ☐ Yes X ☐ No	
If yes, name of funding agency: National Park Service, National Center for Preservation Training and Technology		
Status of project:	☐ Submitted on Oct. 2010	☐ Funding pending	☐ X Funding confirmed
Do you have a personal financial relationship with the sponsor? ☐ Yes X ☐ No If yes, please read RIT policy C4.0 – Conflict of Interest Policy Pertaining to Externally Funded Projects. Complete the		

Investigator's Financial Disclosure Form and attach it to this Form A. *All information will be kept confidential*.

BY MY SIGNATURE BELOW, I ATTEST TO AN UNDERSTANDING OF AND AGREE TO FOLLOW ALL APPLICABLE RIT, SPONSOR, NEW YORK STATE, AND FEDERAL POLICIES AND LAWS RELATED TO CONDUCTING RESEARCH WITH HUMAN SUBJECTS. If significant changes in investigative procedures are needed during the course of this project, I agree to seek approval from the IRB prior to their implementation. I further agree to immediately report to the IRB any adverse incidents with respect to human subjects that occur in connection with this project.

Signature of Investigator Date

Signature of Faculty Advisor (for Student) or RIT Collaborator (for External Investigator) Date

Signature of Department Chair or Supervisor Date

Complete the attached Research Protocol Outline and attach to this cover form with other required attachments.

Attachments required for all projects:

- ☐ Project Abstract
- ☐ Investigator Responsibilities and Informed Consent Training Certificate(s) from OHRP (see http://ohrp-ed.od.nih.gov/)

Attachments required where applicable:

- ☐ Informed Consent Materials
- ☐ Cover letter to subjects and/or parents or guardians
- ☐ Questionnaire or survey
- ☐ External site IRB approval
- ☐ Relevant Grant Application(s)
- ☐ Other
- ☐ Letter of Support from School Principal

Form A (continued)**: Research Protocol Outline**

- The RIT Institutional Review Board (IRB) categorizes Human Subjects Research into three Risk Types (Exempt, No Greater than Minimal Risk, and Greater than Minimal Risk, defined at the end of this form). The IRB makes the final determination of risk type.
- **Please complete this entire form (1 through 10 below). ENTER A RESPONSE FOR EVERY QUESTION.** If a question does not apply to your project, please enter "N/A". Leaving questions blank may result in the form being returned to you for completion before it is reviewed by the IRB.
- Underlined terms are defined at the end of this form.

FOR ALL PROJECTS, please complete 1-10 below.

1) If you believe your project qualifies for Exemption, which exemption number(s) apply?
Exemption 1
(Note: The IRB makes the final determination of Exemption)

2) Describe the research problem(s) your project addresses.
Evaluate the effectiveness of an educational role playing video game at engaging the player

3) Describe expected benefits to subjects and/or knowledge to be gained from your project.
To develop training methods to be used in online and traditional classroom settings for art conservation and preservation training.

4) Describe the population sample for your project.

a) How many subjects will participate in this project?
About 40

b) How will these subjects be identified and selected for participation?
The subjects will be part of ongoing classes at RIT currently involving art conservation, art conservation science and preservation. The project will be a part of the usual classroom activities and compared as to effectiveness.

c) Describe the rationale for inclusion or exclusion of any subpopulation.
These groups are included because they are learning about the subject matter and the project hopes to identify a method to help subjects learn the material better.

d) How will you recruit subjects?
This will be an in class activity in a computer lab during class time. All subjects receive full credit for participation (there is not grade). Evaluation will be through anonymous surveys on mycourses during class time as part of the usual classroom process.

e) Describe any incentives for participation you plan to use.
This is part of their standard daily participation grade for class.

5) **Will you include any of the following vulnerable populations in your research?** (Check any that apply)

☐ Children ☐ Mentally Ill
☐ Prisoners ☐ Mentally Handicapped/Retarded
☐ Pregnant Women ☐ Fetuses

If any of these populations are to be included, please addresses the following:

a) **Rationale for selecting or excluding a specific population:**

b) **Description of the expertise of project personnel for dealing with vulnerable populations:**

c) **Description of the suitability of the facilities for the special needs of subjects:**

d) **Inclusion of sufficient numbers of subjects to generate meaningful data:**

6) **Describe the data collection process.**

a) **Will the data collected from human subjects be anonymous?** X ☐ Yes ☐ No

b) **Will the data collected from human subjects be kept confidential?** X ☐ Yes ☐ No

c) **Describe your procedures for ensuring anonymity and/or confidentiality:**
Participants will take an anonymous internet based survey, such as that found on mycourses. Settings will be adjusted to ensure anonymity.

d) **How much time is required of each subject?** 1.5 hours maximum

e) **If subjects are students, will their participation involve class time?** yes

f) **What methods, instruments, techniques, and/or other sources of material will you use to gather data from human subjects?**
Only internet based anonymous surveys

7) **Will this research be conducted at another university or site other than RIT?** X ☐ Yes ☐ No

If yes, describe location: University of Delaware

Note: If you will be conducting human subjects research at another university or college, you will also need to obtain IRB approval from that institution. **Attach a copy of that approval to this application.**

8) **Describe potential risks (beyond minimal risk) to subjects:**

a) **Are the risks physical, psychological, social, legal or other?**
None

b) **Assess their likelihood and seriousness to subjects:**
n/a

c) **Discuss the potential benefits of the research to the population from which your subjects are drawn:**
Improved understanding of class material by integrating games into the usual classroom activities.

d) **Discuss why the risks to subjects are reasonable in relation to the anticipated benefits to subjects and others, or in relation to the importance of the knowledge to be gained as a result of the proposed research:**
N/a

e) **Describe the planned procedures for protecting against or minimizing potential risks, including risks to confidentiality, and assess their likely effectiveness:**
Anonymous internet-based surveys and data collection.

f) **Where appropriate, describe plans for ensuring necessary medical or professional intervention in the event of adverse effects to the subjects:**
N/A

9) **Will you be seeking informed consent?** ☐ Yes X☐ No
If yes, describe:

a) **What information will be provided to prospective subjects?**

b) **What (if any) information will be concealed prior to participation, and why?**

c) **How will you ensure consent is obtained without real or implied coercion?**

d) **How will you obtain and document consent?**

e) **Who will be obtaining consent? Provide names of specific individuals, where available, and detail the nature of their preparation and instructions for obtaining consent.**

f) **Attach a copy of your consent materials (forms, protocol, script, etc.) to this application.**

10) **Please attach a copy of your project description or proposal abstract.**

Appendix F: Press Release

Release Date: Sept. 1, 2011

Contact: Vienna Carvalho-McGrain
(585) 475-4952; vnccom@rit.edu

RIT Assistant Professor Wins Grant to Design Historic Preservation Video Game

First-of-its-kind interactive game brings preservation studies alive and onscreen

Close your eyes and imagine yourself exploring a centuries-old, gothic Parisian cathedral that was once the site of a battle during the French Revolution. Now open your eyes—and log onto your computer where your video game guides you through the churches' twists and turns and allows you to clearly identify architectural styles, symbols on grave markers and deteriorating elements.

Elizabeth Goins, assistant professor of fine arts and director of student research in the museum studies program, College of Liberal Arts, Rochester Institute of Technology, has won a $25,000 grant from the National park Service and the National Center for Preservation Training and Technology to develop an interactive video game that will transport students to virtual worlds of preservation and conservation archetypes. She is working closely with co-principal investigators Professor Andrew Phelps and Associate Professor Chris Egert, both from RIT's interactive games and media department.

The game, a modification of the existing commercial game Elderscrolls IV: Oblivion, is the first of its kind in this field utilizing open-source technology to supplement traditional classroom coursework for undergraduate and graduate teaching programs, online professional training, volunteer training and community outreach.

"One of the big problems with training in art conservation is that students, not to mention the general public, can't practice on real objects," says Goins. "Role-playing games allow players to step inside a virtual world where they can handle materials and make mistakes without harming anyone or anything. While role-playing games have been popular in medical, disaster and military training, this technology has not been widely used in the preservation and

conservation fields."

In the game, the player acts out the role of a conservator, conservation scientist or collection manager by virtually interacting with objects, materials and data embedded in quest narratives. Within the game, players will be allowed to manage a library and protect it from the elements that accelerate deterioration. Another quest will allow players to take samples from ancient artifacts and analyze them to discover the secrets of its past.

"People naturally connect to material culture; they want to hold touch these objects and these objects connect us in a visceral way to the past," adds Goins. "Professional training in conservation and preservation consist of graduate programs that are few in number. Alternative training venues are sometimes taught online, but there is a critical lack of interactive educational material to support those who are not practicing conservators or preservationists. Museum and historical site volunteers and students needing basic working knowledge of collection management procedures will also greatly benefit from this video game."

The game is currently in development and will be tested on students at RIT and University of Delaware through spring of 2012. Upon completion, the game will be offered as a free download from RIT and University of Delaware Web sites and supported with discussion boards. (Users will need to first purchase and install the PC version of Elderscrolls IV.)

##

Appendix G: Design Documents

Conservation Mod for Oblivion

Task Guide

Quest 1: The Collection Manager

Educational Goals: to acquaint player with

- basic deterioration and material properties
- environmental monitoring
- non-material aspects [history of an object in depth, the Archimedes Palimpsest]

Level 1: Getting to know your collection

Task overview: Look around the building, collect a list of objects/materials, determine their condition

Materials:

- Salt laden archaeological ceramic
- Iron weapon
- Oil paintings
- Water color paintings
- Furniture
- Ceramics
- Glass
- Textiles
    - Mordanted silk
    - Wool/tapestry
- Paper
- Vellum/parchment
- Leather (saddle etc.)
- Bronze good condition
- Bronze with bronze disease
- Marble sculpture
- Silver good condition)
- Silver tarnished
- Journals
    - Glass/ceramic
    - Metals
        - Copper based (bronze)
        - Silver
        - Gold

- Organic materials
    - Paper
    - Leather
    - Vellum/parchment
    - Wood
    - textiles
- Paintings
    - Oil watercolor
    - pigments

Level 2: Managing the Environment

Task overview: Evaluate the environmental conditions in each room and place the objects in the rooms that best suit them.

Room environments

- Top level (attic): hot and dry, lots of sun/light
- Mid-level temperate
    - Front rooms: moderate humidity and temp, lots of light
    - Back rooms: higher humidity, moderate temperature, much less light
- Lower level (basement): damp and cool
- Cool Storage
- Cold Storage

Assets

- Journals with environmental content
- Data logger (box with T and RH)
- Graphs of data for analysis
- Display cabinets with trays for sorbent
- Sorbent to control RH

Level 3: The Palimpsest

Task overview: to recreate the Archimedes Palimpsest history. This quest should take the player off the island.

1. Notice of rare codices coming up for auction, attend auction in attempt to acquire it
2. Outbid by mystery rich collector, codex disappears
3. Contact collector's agent and ask to study and display the codex.
4. Collector agrees
    a. Learn the history of the book from scroll to early codices, from looking at the collection

5. Notice second document under the first, mostly unreadable. Look for someone who might be able to decipher (search for Roger Easton)
6. Imaging process
7. Begin the analysis
    a. Discover why this is important
    b. Compare to other known Archimedes works to date

Assets

- Archimedes Palimpsest images – images available on line
- Imaging equipment
- Scrolls
- Books
- Images from other Archimedes works

Following quests need research and detail, tba

Quest 2: The Conservator – Nefertari's Tomb

Level 1: Pest management (Nefertari's tomb)

Level 2: Material sampling

Level 3: the conservation of Nefertari's Tomb

Quest 3: The Scientist

Level 1: Lab Health and Safety

Level 2: Analyze the Samples and gather data (Instrumental analysis)

Level 3: Microscopy and Pigment analysis

Quest 4: The Trustees and over view of art history

Player will travel around collecting objects. Each object will add to the understanding of the historic timeline of these objects. Collection of all objects will allow the player to resolve the "traitor in the trustees" issue and become a trustee.

- Our time periods [1000-1500 CE]
- Possible Cultures
    - India
    - China (T'ang?)
    - Maya (Meso/south America)
    - Puebloan culture (north America)
    - Greece/mediteranean
    - European
    - Africa

Getting to Know Your Materials and the Collection (narrative and overview)

Educational Goal: to acquaint the player with materials and their properties; to acquaint the player with different types of deterioration, to learn how to identify materials

Setting: this level takes place primarily within the museum. Objects and materials should be scattered through the building. Objects should not be organized in any way, the distribution should be random. The objects were originally associated with a label on the wall or stand. The labels are still in the same place, but the objects have been scattered. The player ventures out of the museum to find the old assistant who is in the Inn/Anvil (The Count's Arms) and Smuggler's Cave.

Characters: Conservation Instructor, Old Assistant, mischievous sprite, Scientist, player

Narrative Summary: After joining the guild, the player starts at the bottom rung of the ladder. The Conservation Instructor is beside himself. They have been inundated with objects rescued from looters due to the war going on in the province. Unbeknownst to the Instructor, the player and everyone else, one of these objects was home to a capricious sprite/spell/something magical which was having fun rearranging the collection all night. The Instructor walks in every morning to find that all of the objects are separated from their documentation and had been moved all over. Things have become so confused that he doesn't know where or what anything is. The last assistant had a nervous breakdown and left, screaming.

The player is tasked by the instructor to figure out where everything is. But before beginning, they need to go to The Count's Arms in Anvil and find the old assistant. He has the journals that contain the material information. The player locates the old assistant and is told about the constant rearrangement of objects/observations. The old assistant tearfully advises the player to find out what's causing the disturbance before rearranging the objects, otherwise they'll just have to do everything all over again each morning. The old assistant gives the player one journal and refuses to tell the player where the rest of them are.

The player should talk to people in the inn to find out the gossip and where the Assistant might have hidden the journals. The player will then need to clear the cave out and recover the rest of the journals. While there he finds that the old assistant had secretly smuggled out some of the objects and was moving them through the smugglers. Along with the journals and objects, our player finds a scrap of paper that describes the sprite. It is snail-like in that and can move from home to home, however, the sprite is non-corporeal (like a ghost) so it can take up as much or little space as it wants when it manifests itself. The only way to get rid of it is to tempt it into a better abode and move it somewhere else. The sprites like to live in dark enclosed spaces that are sumptuously appointed, like bejeweled caskets.

The player goes back to the museum and finds a richly decorated Faberge type egg of solid gold and jewels. The player goes to the Instructor and explains. Instructor thinks about it and thinks it makes sense. He then rummages around and gives the player a box. It is covered with glass jewels, not of any great value but bright and shiny. The conservator must then go to the lab and ask for something to make

the Egg dirty looking so the sprite won't like it anymore. The scientist gives the player carbon pigment and gum Arabic solution; the player has to mix them together to make a black watercolor. They can then paint the egg and place the box next to the dirty egg overnight. The sprite abandons the egg for the box and the player removes it and takes it to smuggler's cave.

The player has to clean the object with water and then begin to find the materials on the list. The player has to match each object with the correct label placed around the museum. When they think they are finished, they have the instructor check it. The instructor tells them if it is right or wrong but gives no hints. The player must determine the objects based on descriptions of material properties and deterioration which are compared to the descriptions in the journals.

Tasks

Research

Nina:

- Materials list, get content for journal entries. Use Climate Notebook materials database in the PC lab, building 6.
- Get environmental information (level 2)
- Graphs (from climate notebook – we might have to make them up), use Stored Alive to give you ideas for room environments
- Create document with this info to be used as educational handbook

Robb

- Develop characters – talk to design team and learn characters, develop a backstory for them
- Work with design team to develop quest narratives for all three levels in quest 1. Just rough out the main narrative points. We will refine later.
    - The designers will need these (complete) by Wednesday night.

Alicia: Concept art

Kim: Work with Alicia to determine interior look feel. Determine historic period(s) to incorporate. Research images for Alicia

Game Design

Set up rooms and objects and characters.

Task	Character	Actions	Dialog
Meet the Conservation Instructor and begin Q1L1	Player	Travel to the museum. Find Conservation Instructor	Hello I want to be a conservator
	Cons Instructor	Introduces the profession	So…you think you want to be a conservator? Well, we are the unsung heroes of the realm. Our hours are long and the pay is low. The tasks require exceptional skill and talent in art, history and scientist. Think you've got what it takes?
Task Assignment	Cons Instructor	Explains the situation to the character and gives task. Sends Player to find the Old Assistant at the Anvil Arms	
Finding the Old Assistant	Player		I'm looking for the Museum material Journals
	Old Assistant	Gives the player 1 journal. Advises the player to get to the bottom of the object rearrangement. Hints that there is some corruption within the guild (foreshadowing – should be subtle and easily dismissed as drunken/paranoid ravings). Won't give the player any more info on the rest of the journals.	
	Player	Should talk to the innkeeper who will tell them that the Old Assistant was involved in the smuggling trade. Add map icon. Have the choice here of a key, which could be hidden. Or simply have to go and fight NPCs in the cave.	
Smugglers Cave	Player	Fights NPCs, finds journals, note on the care of sprites and looted objects. Perhaps labels are id tags mentioning the Museum so that player knows to return them.	
Back to the Museum	Player	Returns to the Museum and the Instructor. Returns looted items to the instructor	
	Instructor	Accepts items	Heavens! I didn't even know these were missing! Now get to work, this place is a mess

Tackling the Sprite	Player	Finds the Scientist to obtain coloring materials	
	Scientist	Gives gum Arabic and carbon black pigment	
	Player	Mixes ingredients to make black watercolor	
	Player	Must find suitable replacement habitat. Asks the Scientist. Sends him back to the Instructor.	
	Player	Explains the sprite situation to the instructor	
	Instructor	Gives player cheap box	Hmmm, I might have something.
	Player	Applies watercolor to Faberge-type egg. Places box next to egg. Waits overnight. Removes the box and takes it to Smuggler's cave	
Organization	Player	Examine each object. With labels. Must match to complete the quest. See second table for materials, descriptors and labels	
	Instructor	Assesses the quest. Gives the player a reward of some type. Introduces the next quest.	Well, now that you know where everything is…Let's rethink this. Are they in the right place? You know, we are charged to protect these objects for eternity. Are we doing enough? Check the environmental conditions. Come get me when you are done.
	Instructor		Oh, btw, you might find this journal interesting. Your Objects and their environment. We don't have a copy anymore…check the bookseller

Table 2: Materials and info

Material	Descriptors	Label Text
Ceramic (broken and repaired)	A glassy, shiny surface. It appears hard and brittle. There is a stamp on the bottom. A drop of water on the surface stays beaded and does not soak in.	This text should come from historical info from the art team – they need to base objects on real prototypes
Ceramic with salt	The surface is matte, like a hardened clay material. A drop of water on the surface soaks in. the pot is soaked in water to clean and removed. A drop of silver nitrate added to the wash water turns milky white.	
Painting Oil	The surface is shiny and rich looking with a network of cracks over the surface. The paint was applied thickly and stands in ridges	
Painting watercolor	On a single sheet, the surface is matte with soft edges and colors that bleed and fade into transparency	
Panel painting	Part of the surface has gold leaf applied and the surface has a slight sheen. The paint has been applied in thin hatched strokes	
Books Paper	The pages are brittle and yellow, they flake when you handle them	
Codex (bood) Vellum	The pages are curved upwards, they move with changes in the humidity. They feel dry and smooth	
Metal iron	The surface is dark with patches of an orange flaky material	
Bronze	The surface is dark but there are traces of green in some of the nooks and crannies	
Silver, tarnished	The surface is dark with brownish streaks, recessed areas appear absolutely black	
Textiles silk	The material is shiny and smooth. It is brittle and in some areas where it has been folded are cracking and splitting	
Textiles wool	The material is fuzzy and has small holes.	
Stone Marble	Light colored material. Part of the surface is shiny and has no apparent porosity. Other parts of the surface, those on the top and projecting surfaces, are roughened, with veins of material that protrude. Apply a small drop of HCL, it fizzes	
Stone sandstone	Light colored material. Seems to be porous and made up of small grains. Some of the object appears to be delaminating or splitting off in a layer. Apply a small drop of HCL: nothing	

	happens	
Stone limestone	Light colored. Seems to be porous. The protected and recessed areas have a black crust. A small drop of HCL fizzes.	

Dialogue tree from Archimedes Quest

character	action	dialog
Princ Archaeologist		We've stumbled on what could potentially be the archaeological site of the century in the remote Colovian Highlands. Unfortunately, my squad of archaelogists is struggling to access the interior. Meet us there and you might be able to help.
Princ Archaelogist	Player meets PA at excavation site	Apparently we're barred from entry by this panel, a puzzle of 14 pieces. It's easy enough to rearrange them, but that does nothing. According to the principal librarian, we need to adjust these dials at the bottom to express a five-digit number. We've already configured so many possible solutions and it seems like dozens more are possible, so we're stumped. See if you can ask the principal librarian for more clues.
Player	Player approaches PL	Why not just start trying different combinations? The possibilities are finite after all...
Princ. Librarian		There is the possibility that we have a limited number of tries before a self-destruct mechanism will engage.
Player		Do you have any idea what I can do to help? Any leads I can investigate?
Princ Librarian		Well, some of the shapes remind me of an ancient

		children's game called the Stomachion. I seem to remember that this puzzle was mentioned in a palimpsested copy of a treatise written by Archimedes. I remember seeing something about the original codex in the library of the Arcane University.
Princ. Archaeologist		You are our guild's most reliable member. We need this Stomachion puzzle decoded quickly. You must find all references to it as soon as possible because we see signs that an Oblivion gate is forming on the site. We will need to access the interior before the gate formation, in case it destroys the cave.
Player	Quest added: The Archimedes Palimpsest. Player must go to the Mystic Archives at the Arcane University.	
Player	Inside the archive must ask the mages (Tar-Meena?) about books on Archimedes	I'm looking for information on the Archimedes Palimpsest.
Tar-Meena	*(To developer: Just drop the books in the dungeons - should be*	(If player is not Archmage of the Mages Guild) We hold a tome on Archimedes' work, but I can't just loan it out to anyone. The book belongs in the rare archives section, and we need an equally valuable contribution to the collection in return, just as insurance. Either retrieve Akaviri Commander Mishaxhi's Log from Fort Pale Pass or procure the Conjurer's Grimoire from Fort Black Boot.

	easy) ->	
Archivist	Gives the player a general book on Archimedes work, This book introduces Archimedes and mentions that we know of his work from two codices which were translated and copied but the originals have been lost. All that remains are copies of the original copy.	(If player is Archmage of the Mages Guild, or player returns the valuable book from the quest). Here is the book, Archimedes' Mathematics.
Player	Asks Archivist/librarian for more books	This book mentions some other works on Archimedes, but not where to find them. Do you know where I can?
Archivist	Gives the player a listing of all works that mention Archimedes' original copies.	I can dig around our archives... come back in one day and I'll have something for you.
Archivists	Player returns at least 24 hours later.	I uncovered this list of books related to Archimedes. Happy searching!
Player	In this list is the reference (written by Papadopoulos-Kerameus) to a prayer book that has some mathematical formulas recognized as being from Archimedes. The player also looks at Travels in the East, written by Constantine Tishendorf which states that he saw a prayer book at the Metochion that was a palimpsest with some mathematics under the prayers.	The list and Travels in the East refer to a prayer book written atop some of Archimedes' mathematical work... where is it?
Archivist		You're persistent. That information will be harder to obtain - we're organizing our collection in a manner most convenient for students of spellcraft, not Archimedes researchers. But see me again in one day.

Archivist	Player returns at least 24 hours later	According to our papers, the Cheydinhal Mages Guild currently has the prayer book you're looking for. Good luck! You seem trustworthy, so tell them I sent you and they'll help you.
Player	Player asks Eilonwy about prayer book	Tar-Meena sent me here to research a prayer book written over Archimedes' work.
Eilonwy	Eilonwy responds	Ah, I'm sorry, but we no longer have that prayer book. We have How to Make a Palimpsest available here, though - if you want to use it. But you cannot remove it from this guildhall.
Principal Librarian	(if player returns to PL and asks for help, not needed for next option)	Use How to Make a Palimpsest to determine the size of that book. Question the Cheydihnal mages on what happened to that book.
Player	Player asks Eilonwy about prayer book.	Do you know where the prayer book went?
Eilonwy		Alas, that history occurred before I moved here - you should ask around this guildhall, though. Orintur might know something.
Player, Orintur	Player asks Orintur about prayer book.	Player: Tar-Meena sent me here to research the prayer book written over Archimedes' work. Do you know what happened to it?

		Orintur: I remember that book and it was in terrible condition. The codex also contained a wealth of mathematics by Archimedes and it was a delight to read what we could, even if we could only handle it under conservator supervision. But as for where it went, my memory fails me. Sorry I couldn't help. The others here might remember, though.
Player, Trayvond the Redguard	Player asks Trayvond about prayer book.	Player: Do you remember anything about the prayer book written over Archimedes work? It used to be here. Trayvond: A private buyer took it off our hands with the promise that she would treat it with utmost care. She did donate one sheet of the codex that had fallen out.... to someone in Leyawiin. Not the safest place, I know.
Eilonwy	Gives the player the book, how to make a palimpsest to read (can't remove from the guild.	How to Make a Palimpsest is attached to the leftmost reading table upstairs. Remember, no moving it from the table or tampering!
Player	The player must use this information to determine the relative size of the book.	
Player	Travels to Leyawiin and asks people for codex	Player: I seek a single sheet of a codex which apparently came here from a prayer book. Any beggar in Leyawiin: Count Caro recently acquired

		something like that, I believe. Any other citizen: I have no idea what you're talking about.
Count Caro, Player	Views the codex	Player: I seek a single sheet from a prayer book that includes Archimedes' writings. Apparently you might have it? Count Caro: Yes - you may look, but not touch it. Player: The prayer book I need matches this description: [insert dimensions here] Count Caro: Sorry, I haven't the faintest clue what happened to the original. You should ask Bugak gro-Bol at Southern Books.
Bugak gro-Bol	Player learns a woman in / around the Imperial City has the book.	Player: I'm searching for a prayer book that matches this description: [insert dimensions here] Bugak gro-Bol: Huh! Some Imperial woman came into here about a week ago asking me to appraise a goddam tiny,

		useless book that sounds exactly like what you just described. Some valuable mathematical research inside, yes, but barely discernible, so I told her she would be better off saving it for a conservator. She came from whereabouts the Imperial City. Now, are you going to buy a goddam book? (He does normally says "goddam" a lot: http://www.uesp.net/wiki/Oblivion:Bugak_gro-Bol)
Player	Player asks in the Imperial City about the book	Player: I'm searching for an Imperial woman who owns a prayer book, matching this description: [insert dimensions here] Response: I haven't heard anything about a prayer book. Try a bookstore.
Player	Player asks in First Edition (www.uesp.net/wiki/Oblivion:Phintias) about the book	Player: I need help finding a prayer book with this description: [insert dimensions here]. Phintias: I can help you. Candice Corgine of Pell's Gate visited me recently to discuss that prayer book. She's down on her luck, but one of the most dedicated rare book collectors I know. No other soul appreciates reading like

		her.
Player, Candice	Player visits Candice in Pell's Gate Inn http://www.uesp.net/wiki/Oblivion:Candice_Corgine	Player: I'm on a conservator's mission to document Archimedes' work out of a prayer book you allegedly have. It looks like [insert dimensions here]. Candice: I have that in my personal library downstairs, but I have no clue where it is right now. I'm sorry, but I haven't had time to organize... I spend all of my time running this inn because I desperately need the money. Well, come downstairs.
Player, Candice	Player follows Candice into basement, a dirty underground room with rough wooden bookshelves overflowing with tarnished books. This room consists of two cells. One cell is a "vestibule" between the inn trapdoor (which is upstairs) and a locked door to the library (another cell). Candice gives some rules, if the player can't find it first, then they aren't trustworthy or expert enough. The player has only one chance at this.	Candice: As you probably know, the Archimedes Palimpsest is literally falling apart. I received conservation training from your organization... Which is how I know your guild is also in shambles. Their work is despicable compared to that of their predecessors. Foul corruption and greed makes your kind outrageously unfit for preservation! I wouldn't trust the average conservator guild member to handle my pet mudcrab! I need to know you're qualified! These dimensions you just told me upstairs - how do I know you just reiterated them from some pompous superior who barely budges his bloated behind? So here's the deal: Show me you understand your research. Find that book in one try. Look at each book here carefully before you pick it out.

Player	Player brings book back to Candice in the vestibule, fails in finding book on the first try. Candice locks gate to library.	Candice: How typical - you're wrong. 900 gold before I unlock that gate and try again.
Player	Player brings book back to Candice in the vestibule, fails in finding book on the first try. Candice locks gate to library.	Candice: Give me that! You're ruining everything. Your last chance will cost you 1800 gold.
Player	Player brings book back to Candice in the vestibule, fails in finding book on the third try. Candice locks gate to library.	Candice: You've failed. I can't trust you. History is gone forever. Player: I can do this. Please just let me try once more. Candice: Fine. [x] gold or nothing. (Repeat, with x = 900 * number of tries)
Player	Player finds correct book - Candice snatches it from them.	Candice: Thank you so much! I didn't realize that book was the one and only Archimedes Palimpsest. Don't you realize it's worth a fortune? Enough for me to pay off my decades of debts, extricate my framed husband and daughter from prison, move out of this miserable dunghole of a village... I must auction this. Sorry. I must have that money. You're welcome to the auction, of course. At Arcane University.
Player	Returns to museum island to tell the librarian	Player: I found the Archimedes Palimpsest...

		Principal Librarian: Eureka indeed! Where? Player: ...but it's being auctioned at Arcane University right now. Principal Librarian: No! Let's make all haste there!
Player, Principal Librarian	Enter auction in the Arcane University - in the open space on the left. Several anonymous mages, a rare book dealer, the Count of Cheydinhal, and another museum owner face Candice.	(List of various bidding dialogue) **Cheydinhal:** Archimedes' work belongs to his homeland. Cheydinhal, birthplace of Archimedes, demands the return of the Palimpsest! Honor Archimedes' last wishes! Shame on you thieves. What would Archimedes say? Save history! Return Archimedes to Cheydinhal!

		Rare book dealer: (if spoken to) Can't say why I'm bidding. My client is anonymous. **Each other mage:** I'm the finest conservator in the land! Society's best interest lies in me owning the Palimpsest! My preservation and restoration skills are peerless! For the sake of knowledge, hand the book over to the experts! I am descended from Archimedes! This is my birthright! Only my mathematical genius can uncover the Palimpsests' full potential! Technocracy is the only solution to this much knowledge at

		stake! We cannot trust the Conservators' Guild! The Conservators Guild is in decline! The Conservators Guild will pull Archimedes down with them! Cheydinhal has no right to meddle in science! **Principal Librarian** Our guild established the golden standard in conservation before any of you were born! Cheydinhal's conservation practices are among the worst in Tamriel! Archimedes will go to ruin in Cheydinhal!

		We correctly identified it, who better to take care of it? The advancement of science is at sake here!
Prin librarian	Bids on the item but is out bid by a dealer of rare books who is representing an anonymous client.	(Each group bids, the value going up by hundreds of thousands of gold pieces each time. The winning bid: 2,000,000, the same as the historical Archimedes Palimpsest) Librarian: We've failed our duty beyond measure. Follow me.
Player	Returns with the librarian to the inn	Librarian: Now to drink away this catastrophe. We just had to stop at 1,900,000. I was on the edge of casting our guild into bottomless financial ruin. An astronomical cost, yes, but this isn't about uncovering the archaelogical site anymore. This is about science. Our race's grandest discoveries, vital knowledge especially in the face of the Oblivion crisis, lie in that book - the mages with some conservation experience would have at least extracted some information. But now the last frontier in modern science.. is disappearing into some private collection. Disappearing into obscurity. Gone forever. Player: Why not ask the buyer if we could study and care for the book temporarily?

		Librarian: Well... most likely, we'll hear nothing from them, but you're right, it's worth a try. Let me draft the letter with the Principal Conservator. Come see us next week.
Principal Conservator, Librarian, Player	Player visits museum with Principal Cosnervator and Principal Librarian (Note: this is what happened with the historical palimpsest)	Librarian: You will not believe this, but the buyer agreed to our letter.... Goodness, I'm hyperventilating! … He just walked in and left the book on my desk. He still wishes to remain anonymous. He's an erudite gentleman with the best of intentions... I just can't believe our stroke of splendid luck. The bad news: it's even more difficult to read than I originally anticipated. Come upstairs and see if you can make anything out of it!
Prin Librarian	Player tries to read codex, fails	Librarian: Impossible, right? Ask Newton if he can figure out a technique for us to read the text.
Player	Sent by Prin Librarian to the Prin Scientist to figure out a technique to read the text. Newton follows player back to librarian's office.	Newton: I should take a look as well. Newton: An extraordinary case... The spine is clearly useless, so our best chances... I would say we need to dismantle the entire book and investigate each leaf. Conservator: That will take all night, but I'm committed to this project and I have the proper tools. Just come back in 24 hours!

Prin Scientist	Player returns to Museum, finds Newton with each page laid out on a long table. The player must test different lighting conditions to image the pages Tests: UV, blue, green, red, IR (365-870 nm)	Conservator: See Newton in the lab. Newton: Thank heavens you're here. I just wanted to say you've saved this guild from the brink of doom and your continuing dedication is bringing us ever closer to my youth. I grew up in the golden age of conservation, during the founding and early days of this guild. Back to business. Our equipment includes staffs that produce ultraviolet light, blue light, green light, or red light. I could use your help collecting and plugging data into multispectral algorithms recorded here. That data can specify the spectral signature of Archimedes work. And we'll see the prayer text disappear as it starts to match the parchment in color.
Player	Takes the images then processes the data using multispectral algorithms to bring out the spectral signature of the Archimedes text and make the text of the prayer book disappear by becoming the same color as the parchment.	
Prin Scientist	Tells the player to image the leaves that have illuminated images on them with x-ray fluorescence, this will allow them to see underneath the gold leaf of the forged illumination	Newton: Our imagers can't see through the gold. We'll have to use x-ray fluorescence. XRF is a technique that measures the amounts of each element present. The ink contains iron but the gold leaf doesn't (only gold, copper or silver). So we can detect where the iron is and map it, thus reconstructing the letters.
Player	Runs the leaves through the XRF. Gets results back. Goes to Prin Scientist	Newton: Let me see these… magnificent! Astounding! Preservation's greatest triumph!

Prin Scientist	Sends player to Prin Librarian for interpretation	Newton: Not in English quite yet, but take them to the Principal Librarian – he can translate them.
Prin Librarian	Gives player an English version of the Archimedes Palimpsest after 72 hours.	Librarian: Words cannot express my gratitiude to you. Come back in 3 days for the full translation.
Player	The player must now figure out which is the relevant information. They should remember the Stomachion from earlier in the quest. They will need help. They will have to go to the Praxographical Center at the Arcane Unviersity for information.	Librarian: Like Newton said, we've reached preservation's greatest triumph. Here's a copy of the English Archimedes Palimpsest. Your information is inside.
Gaspar Stegine or Borissean	This gives the player a clue that they must find the total number of combinations. They will have to research outside the game in order to determine this. The answer depends on how you define the problem (unique solutions vs. total).	Ah, the Stomachion, well, this is advanced mathematics. How amazing! Well, we can't tell from this if Archimedes finished but what he is trying to do is to find out the total number of solutions. The answer depends on many things. But I would think that the total number of solutions would be the one to try, yes, yes.
Player	After the player figures out the total number of solutions (17,152). And tries this on the wheel/panel. If correct the door opens. If incorrect…explosion and the player dies. (yes, this is harsh but hopefully, they have a save point).	
Player, Prin Archaeologist, Librarian and Scientist	Enter into the site which is a large library. A few large sculptures but mainly scrolls. The player should be given a reward (you guys should figure out what and by who – perhaps something they will need in the boss battle at the end with the trustee).	

Locations: Museum island, various mages guilds, Mystic Archives, crazy woman's house with archive, auction house, inn Imperial city, the Lost Library

Assets

Books: How to make a Palimpsest, Travels to the east, General book on Archimedes, single page of the codex, the Archimedes palimpsest, translated version of the Stomochion

XRF, panel to the site, copy stand, lights, computer

Appendix H: Creating the Setting for an Educational Mod

Kimberly Desorcie

Professor Goins

Independent Study

3 March 2012

Educational role playing games and simulations have levels of interactivity and immersion that other genres of educational software lack. These traits are difficult to understand and take advantage of, as they are not found in most other types of teaching materials, but also give these types of games the potential to go beyond simple presentation of information and skill practice (Rice 1). Role playing games and simulations also tend to treat the screen as a window rather than a page, and this spatial element increases their attractiveness to players (Ang, Chee, and G. S. V. R. 164). The illusion of acting within time and space also serves to make players' actions while interacting with the software (for instance, moving an object in a simulation rather than clicking a button in educational software that uses a page metaphor) meaningful enough to be perceived as a narrative, making the player feel more involved in the game's narrative as a whole (Ang, Chee, and G. S. V. R. 166). This ties the game's spatial aspects to its narrative so that they strengthen each other and deepen the player's immersion in the game world. It is important that the environments in an educational RPG be both memorable and interesting in order to increase players' motivation to learn and increase the player's ease of learning educational content presented though in-game locations.

Environmental Scan

There is no previously existing game that both uses a role playing game format and educates players about art history research and preservation as the Conservators Guild Mod does. However, games do exist that are similar to the Conservators Guild Mod in either content or approach. The game Waltee's Quest teaches players about art history, but has more in common with memorization and drill games than RPGs. It also focuses almost exclusively on the art objects, with little attention given to how they are researched and preserved and the people who work with them. Plague World: a Modern Prometheus is about a completely different subject, but makes extensive use of the RPG format to accomplish its education goals. In both Plague World and the Conservators Guild Mod, the player takes on the role of a professional who makes use of the information and skills the game seeks to teach. Both

Plague World and Waltee's Quest demonstrate educational techniques used in the Conservators Guild Mod.

Waltee's Quest

Waltee's Quest is a flash-based game for children ages 5 -8 made by the Walters Art Museum (Museums and the Web 1). Its relevance to the Conservators Guild Mod is its focus on art history and use of in-game spaces to educate the player. The core mechanic of Waltee's Quest is identifying and clicking on the lost treasures based on a list with the names and pictures of objects missing from the museum. Once a treasure has been found, it becomes permanently highlighted when seen in the place it came from, and it also appears in its (previously empty) museum exhibit (Waltee's Quest 1). The main source of difficulty is the clutter that surrounds the treasures, making them hard to pick out from the rest of the image (Waltee's Quest 1). The process of recollecting the treasures familiarizes players with their names, appearances and where they come from. The player can learn more about the objects by opening the "Walteepedia" book that is part of the interface, but this feature is not necessary to playing the game (Waltee's Quest 1). Waltee's Quest is similar to memorization games in that it presents players with facts and opportunities to rehearse them and contrasts with the Conservators Guild mod, which emphasizes simulating meaningful application of skills and knowledge learned in the game.

The design of locations in Waltee's Quest serves two purposes: to make the treasures difficult to pick out amongst the clutter, and to provide a memorable sense of place. The latter purpose is the most important to the game's educational content, as memorable settings help the player remember where they found the treasures. Each location the player time travels to has a consistent color scheme, which is echoed in the wallpaper of the part of the museum in which the treasures from that location are displayed (Waltee's Quest 1). The consistent color scheme also increases the challenge of separating specific objects from the rest of the scene (Waltee's Quest 1). The music in each time travel location is different from that heard in each of the others and in the museum, and is in a style associated with the time and place being represented (Waltee's Quest 1). The music was at least as effective as the appearances of the locations at instilling a sense of place due to the greater variation in music styles than in illustration styles and the tendency of music to stick in the player's mind.

The educational features of Waltee's Quest and the Conservators Guild Mod are both intended to teach the player about art history. Their approaches to this differ in that Waltee's Quest focuses on familiarizing the player with a set of facts (the names, appearances and origins of artifacts in the Walters

Museum), whereas the Conservators Guild Mod prevents both facts and contexts in which they can be used. However, both use the design of in-game locations to present and emphasize their educational content.

Plague World: a Modern Prometheus

Plague World: a Modern Prometheus is an RPG used as part of primary schools' creative writing curriculums (Plague World). Its purpose is to present students with moral dilemmas, show the usefulness and importance of creative writing outside of school, and teach students how to construct a persuasive essay (Barab 1). Plague World's educational focus is different from that of the Conservators Guild mod, but both use role playing to achieve their educational goals.

Players of Plague World take on the role of a reporter investigating and writing about the situation in Ingolstadt, a small town suffering from a plague (Plague World 1). The conflict centers around Doctor Frank's search for a cure for the plague, which involves experimenting on a human-like creature he created (Plague World 1). Some of the townspeople want Dr. Frank to continue his research because they believe that the creature's feelings do not matter or the ends justify the means, and others fear the doctor or sympathize with the creature and want the experiments to stop (Barab 1). The player's mission is to choose a side and persuade the townspeople to agree (Barab 1). This is done through a combination of automatically graded puzzles related to writing and constructing an argument and writing assignments graded by the teacher (Barab 1).

Plague World takes advantage of the RPG format to encourage players to become emotionally invested in the game and related writing assignments (Barab 1). In a study on the effectiveness of the game at teaching students in poor school districts, more than 80% of the students explained the story in first person terms, indicating that they saw themselves as part of the story rather than mere observers (Barab 1). Later in the study, when asked why they were working on their assignments, many students said that influencing events in the game was their main motivation (Barab 1). In addition to motivating students to work hard in class, emotional investment in the game was crucial to the educational goal of teaching students about moral dilemmas; the conflict in Plague World is fictional and impossible to completely replicate in the real world, so it can only be important to players if they care about the characters (Barab 1).

Taking on a first person role in the game also provides students with a way to practice their skills that simulates how those skills can be used outside the classroom (Barab 1). In the case of Plague World, this means publishing their writing in fictional newspapers and sending letters to fictional characters to

change readers' opinions and by extension the course of events in the story (Plague World). Some of the player's tasks in the Conservators Guild mod are similar in this regard: the player acts as an art conservator and uses skills they learn from books and characters in the game to find, recover and research artifacts. In addition to motivating students to learn while playing, as nearly all educational games are intended to, games that take advantage in the RPG format in this way can educate players about the context in which the knowledge and skills they are learning are useful and motivate them to learn more about the same subjects outside the game.

Plague World: a Modern Prometheus is an example of an RPG that takes advantage of role playing elements to accomplish its educational goals. This increases players' motivation to learn by showing the usefulness of the knowledge and skills presented by the game and deepens the player's immersion in the game's narrative. The role the player takes on also becomes additional educational content in and of itself. The same techniques that Plague World uses to educate students about creative writing and its usefulness are employed by the Conservators Guild Mod to teach players about art history and how it is researched and preserved.

Process

Resources

The Elder Scrolls Construction Set Wiki was a useful resource for information on the Oblivion Construction Set, the software tool used to create Oblivion mods. The Construction Set has no official, static documentation available to third party users, so articles written and shared amongst the users are the best resource available for learning how to use it. Only the most basic functions of the construction set were necessary to setting up the Conservator's Guild Island and the interiors of its buildings, but a basic understanding of the more advanced uses of the construction set was helpful in avoiding interfering with other aspects of the mod.

A similar resource was the Unofficial Elder Scrolls Pages Wiki. Like the Construction Set Wiki, it is an unofficial collection of articles; in this case, articles about the gameplay, narrative and setting of Oblivion and other games in the Elder Scrolls series written by the players. The Elder Scrolls Pages Wiki was useful in understanding how the Conservators Guild related to the rest of the setting. In addition, its lore articles were used as the inspiration for some of the exhibits in the guild's museum.

The resources used for art history research included books, museum websites, and online art history articles. Efficiency in research sometimes took precedence over complete reliability because the available art assets made true accuracy in representing real-world art and architecture styles impossible; the art team was busy creating assets for artifacts that were the focus of quests and laboratory machines, so objects that were not the focus of the game were to use default assets whenever possible. When information on a particular type of item and period could not be easily found in books or museum websites, but was available from unofficial online sources, multiple sources were compared and information that was inconsistent with most other sources was not used. In a few cases, photographs of paintings and tapestries from these sources were used in the creation of custom textures to depict styles that could not be found in default Oblivion assets.

Approach and Methods

All of the locations on the Conservators Guild island were designed with the goals of being easy for the player to navigate and having an aesthetic that is similar enough to that typical of Oblivion to look as though they fit with the rest of the world but different enough from other Oblivion locations to be memorable. In addition to these, the island's outdoor areas, the museum exhibits and the apartments and guild hall were each designed around other goals related to their specific purposes in the game.

Museum

The museum exhibits do not have an active role in the game, as none of the quests require the player to spend time there, but they are important to the setting because they give the player the impression that the Conservators Guild has been in existence and excavating and researching for a long time before player arrived. Thus, in addition to being navigable and looking like they belonged to Oblivion's world, it was important that the exhibits appear to be an exhibition of the guild's work.

The first work done on the museum interior was finding in-game objects that could be used as displays. The glass cases typically seen in upper class shops were particularly useful for making it clear that the space was a museum, as they looked very similar to displays used by museums in the real world. An additional benefit of the cases was that they could be locked, preventing the player from stealing the items on display. Preventing theft was important for immersion, as it would not make sense for the other guild members to either ignore theft completely, and making a quest for the player to re-enter the guild after having stolen would have taken more effort to create than was worthwhile. The

design of the display cases matched Oblivion's upper class furniture set, and some of the characters the player encounters hint that the Conservators Guild is wealthy and powerful, so most other furniture in the museum and other Conservators Guild buildings was also taken from the upper class set.

Oblivion contains few items that were intended to look ancient, so the artifacts on display were the same items that could be found in shops and peoples' homes in other areas of the game. Ceramics, metal dishes and weapons and armor were used most frequently because these types of items are commonly seen in real world museum exhibits. The similarity of the "artifacts" to common items did not detract from achieving the look of a museum because the game items are in styles that players consider to be old fashioned looking and the museum's glass cases are a different context than that in which they are found in other areas of the game. In most areas of the museum, the arrangement of items in the cases is not particularly important. The original intention was to categorize items and create displays based on specific times in the game world's history, but this idea was abandoned because there was not a wide enough variety of objects to display a clear progression of time between exhibits and making signs for each display would have been too time consuming.

Filling the museum with display cases alone greatly improved the player's ease of navigation from that in the unfurnished rooms that were used in early testing. In addition to this, a large object was placed in the center of each exhibit room. These included a statue, a large rock, a boat and a display case that was larger and of a different style than the others. These objects acted as land marks to make it easier for the player to navigate and remember which of the museum's rooms they were in.

In addition to the exhibits, a few alcoves and small rooms in the museum are set up to look like storage and work areas, with crates and desks instead of display cases. This was done to make it appear that the museum is still being worked on, and to make it look like a place where the characters work rather than something only for looking at. To further add to the perception of the museum exhibits as works in progress, the artifacts the player obtains as quest rewards will be added to the museum as the game progresses.

Island

At the beginning of the Conservators Guild mod project, there was a plan to change the textures of the exteriors of the Conservators Guild buildings to match the style of Renaissance Venetian architecture. Once it became apparent that there would not be sufficient resources for this, Venice and Renaissance Europe were taken as inspirations, but the goal of matching them closely was abandoned.

The default models and textures chosen for most of the buildings on the island are similar to buildings from the Renaissance, but not in a Venetian style specifically. Much of the island is covered in shallow water, but canal boats could not be used for transportation because boats in Oblivion do not move. Instead, the player is able to travel around the island on boardwalks. The end result does not look like Venetian architecture, but the area is memorable and stands out from other locations in the game because of being dominated by water rather than land.

The main navigation problem in the stripped-down version of the Conservators Guild island was the difficulty of finding the correct door to enter a building. The museum building had many doors, only one of which worked, and no visible indication which one was correct. This was solved by adding an especially large boardwalk leading to the correct door and providing no way to reach the other doors without swimming. The apartments were difficult for the player to locate because the building containing them looked the same as most of the other buildings on the island, and was not set apart from them. An extra entrance to the apartment building and a boardwalk leading between it and the guild house were added. However, there was not enough space for a different kind of boardwalk than those used in other parts of the island, so the player will need to be given directions to the apartments when they become relevant to the game.

Guild Hall and Apartments

Rooms in the guild hall and apartments we decorated in the styles of real world times and places associated with the artifacts the player recovers during Conservators Guild quests. From an educational standpoint, this allows the player to see other pieces in the style of the period they learn about during the quests. In the context of the game's narrative, the objects in these rooms are artifacts that the Conservator's Guild has been unable to find a place for in the other exhibits because they do not match anything from the game world's history.

The art styles represented in the decoration of the guild hall and apartments were those of New Kingdom Egypt, Ancient Greece, Edo period Japan and the Byzantine Empire. Ancient Greece and the Byzantine Empire were relatively easy to replicate because many of the items already in the game were based on art styles from European history. However, there were very few default objects based on Japan and Egypt; the swords from Cloud Ruler Temple were the only obviously Asian objects in the game, and though the lower class ceramics set was similar in appearance to pottery recovered from Egyptian ruins, it was generic looking enough that it did not look Egyptian on its own. Some simple custom textures were created for use in these rooms because their styles could not be conveyed using

default objects. In order to reduce the time necessary to make the textures, those applied to pottery were based on textures from Oblivion, and textures for flat objects such as tapestries and paintings were based on photographs of two dimensional art from the times and places they were to represent. Large objects were favored in retexturing so that each individual object would have a greater effect on the look and feel of the room it was placed in. This reduced the number of objects and textures necessary to evoke the intended period.

Navigation was less problematic in the guild hall and apartments than the other locations on the island because of their smaller size. However, the empty apartment interior that was present in the early testing had a large number of doors that all looked the same, some of which were not useable. One non-functioning door was positioned so that it appeared to correspond to a door on one of the buildings in the island outdoors, so these two doors were linked together, adding a second entrance to the apartment building. In order to avoid confusion, the other doors, which could not be sensibly be made to lead somewhere, were covered over using a stone wall object so that the doorways looked as though they had been usable at one time and were later filled in. This allowed the player to differentiate between usable and unusable doorways.

Conclusion

The design of locations in the Conservators Guild Mod is important for both as educational content and for increasing the effectiveness of educational content presented in the narrative. Some locations directly presented educational content by providing additional examples of the art styles associated with the artifacts that were the focus of the game's quests in a similar manner to the locations that players of Waltee's Quest time travel to. Environments were also used to support the narrative by reinforcing aspects of the guild mentioned in passing, such as its wealth and its past work. The interactive qualities inherent in settings in the 3D RPG genre served to improve players' immersion in the game, and by extension, its narrative and their fictional roles as conservators.

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