Experience Design in an Informal Learning Environment: The Redesign of a Library Exhibit

Samuel Furner
spfurner@gmail.com

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Experience Design in an Informal Learning Environment: The Redesign of a Library Exhibit

Samuel Furner
12/10/2020

Design and Development Project Report
Instructional Psychology & Technology, Brigham Young University
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Highlights for Designers

These topics summarize lessons learned during the design, resources that informed the design and evaluation, and design practices we incorporated into the project.

**Design Knowledge:** A synthesis of seven major takeaways from the project.  
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**User Analysis:** Our process for validating user personas, creating a user journey map, and identifying learning gaps.  
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**Risk Analysis:** A method we used to anticipate, measure, and address challenges that occurred during the project.  
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**Implications from the Environment Analysis:** The parameters that we designed within and their impact on the project.  
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**Implications from the Comparative Analysis:** Design principles that came from an in-person analysis of six museums and galleries.  
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**Relevant Learning Theories:** An annotated bibliography of the learning theories that informed the design. It includes articles about narrative learning, object-based learning, and museum learning. See pages 17 and 82 for a discussion on their application in the design.  
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**Design Resources:** An annotated bibliography of design-related articles and books. The resources address experience design strategies, practical guidelines for exhibit design, and instructional design considerations.  
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**Incorporating Analysis into the Design:** A breakdown of how the user, environment, comparative, and content analysis informed our design decisions.  
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**Designing through Prototypes:** A sample of the prototypes that we created during each major phase of the design.  
Pg. 84

**Product Implementation:** A description of how we prepared the design for a successful installation. The section includes design guidelines and documents that we gave to the installation team.  
Pg. 96

**Evaluation Resources:** A list of the books and articles that we used during the evaluation. They include evaluation instruments, guidelines for observing exhibit visitors, and suggestions for gathering and analyzing qualitative data.  
Pg. 127

**Project Management:** A report of how we used Agile methods to manage the project workflow. The section includes a budget breakdown and meeting agendas.  
Pg. 127
Purpose

For this design project, we transformed a university library exhibit into a more engaging visitor experience. Alexander's Box, the original exhibit, displayed artifacts from the collection of Lloyd Alexander, an author best known for his fantasy books.

Besides faculty and some students, few patrons entered the room that houses the exhibit. Those who did go in seldom interacted with the exhibit (see the Learner Analysis). Sarah (I have used a pseudonym) initiated the project and served as the main client. As a librarian, she supports the library's mission to inspire learning, improve “discoverability of and access to resources,” and provide “spaces that facilitate collaboration, experimentation, creation, and discovery.” Her goal was to redesign the exhibit so that it would appeal to university students, the target audience.

The design team that worked on the project consisted of the following four members:

- **Project Manager and Designer**: I worked with Sarah to create a project goal. I tracked progress and facilitated team meetings. I also helped write text, designed the panels, and created the interactive activities.
- **Content Developer**: Helped design the exhibit layout, wrote content, and created interactive activities.
- **Multimedia Developer**: Edited videos and helped design the augmented reality (AR) interaction.
- **Graphic Designer**: Designed panels and helped review the layout.

Other stakeholders advised the team at various stages of the project. They included employees from the library's assessment and usability department and the library exhibit manager. The multimedia developer, besides being a member of the design team, was a stakeholder due to his role as the supervisor of the unit over patron instruction (see Stakeholders for a detailed description of those involved in the project).

Our goal for this project was to make an exhibit that encouraged visitors to engage with the material. The desired outcome was expressed in this statement:

> **Alexander's Box will help visitors have a meaningful experience as characterized by emotional connection and discovery.**

We borrowed this goal from Rossman, Duerden, and Pine's (2019) classification of experience types. They identify prosaic, mindful, memorable, meaningful, and transformative experiences. Each type of experience varies in the level of the participant’s influence on the experience and the impact of the experience on the participant. According to this classification, a meaningful experience is one in which a participant feels heightened emotion and discovers something new about him or herself, or the world in general.

To understand if we achieved this design goal, we created four questions to guide our evaluation:

1. What do visitors feel while going through the Lloyd Alexander room?
2. Which parts of the exhibit elicit those emotions?

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1 Harold B. Lee Library. “Strategic Directions.” [lib.byu.edu](http://lib.byu.edu)

2 Unless otherwise noted, sources can be found in the Annotated Bibliography.
3. How does the exhibit contribute to visitors’ view on the role that creativity plays in their life?

4. Do visitors have a desire to share insights they learn in the exhibit?

These questions served as a starting point to plan the formative and summative evaluation, but they changed slightly as we drafted interview and survey questions during the formative and summative evaluations (see Criteria).

During the design itself, however, we relied primarily on the design goal. We also used a statement we called “the big idea” to design for visitor learning. This statement is a tool used in exhibit design to communicate the desired message that visitors will understand by going through the exhibit (Serrell, 2015). The big idea we created for this exhibit, as expressed from the visitor point of view, is as follows:

I can create from my own human experience a story that inspires others.

The section Phase 1: Planning provides a more detailed discussion of how we arrived at this statement.

Project Needs and Constraints

The design constraints included challenges visitors faced in the original exhibit and factors from the context and environment—such as stakeholder involvement, the physical space, and the available timeline and budget.

Needs of the Target Audience

We designed the exhibit to account for the needs of university students, our target audience. We also considered the needs of secondary audiences such as university faculty, community patrons, and fans of Lloyd Alexander. We used primary and secondary research to understand the needs of the target audience (see the Learner Analysis).

Secondary Research

John Falk is known for his research on why people visit museums. In his book, Identity and the Museum Visitor Experience, Falk (2016) identified five common reasons people visit a museum and assigned each type of visitor with a descriptive label. They are the explorer, the facilitator, the hobbyist, the experience seeker, and the recharger. According to Falk, a visitor’s objective for coming to a museum influences how that visitor interacts with an exhibit. The explorer, for example, comes to see something new or intriguing. This visitor tends to read more labels and is less likely to take part in a highly structured tour.

Zaugg (2016) conducted similar research in the university library that houses Lloyd’s collection. He found through interviews that, like museum visitors, students came to the library for various reasons. Zaugg also assigned each type of patron with a label that described that patron’s goal for using a library. They include the explorer, the collaborator, the side-kick, and Islander, among others. A library patron’s motives influenced how he or she used the library space. The explorer generally came to a library to discover something new or interesting and was more likely to try a new service. The岛ner came to find a secluded spot to study and returned often to the same location.

Zaugg and Falk’s research suggests that those who visit the Lloyd Alexander room might come for multiple, and potentially conflicting reasons. A student who comes as an explorer may be motivated to enter the room because of something which peaks his or her curiosity. Yet this student might hesitate to enter when she sees a group of students who are studying there as collaborators.
Primary Research

I analyzed comments from a library exhibit titled *The Great War: A Centennial Remembrance* to understand how visitors experienced previous exhibits at the library. After going through this exhibit, visitors were impressed by stories and artifacts from people who served in World War I. These were especially memorable if they related to something from the visitors’ own lives, their family, or their religious beliefs. Many visitors said they were thinking about a relative who had served in a war while they went through the exhibit. They also pointed out that they liked how the exhibit referenced a popular poem about the war.

We recruited student library employees to go through *Alexander’s Box*. Of the nine participants, none had heard about Lloyd Alexander prior to the exhibit. In the post-exhibit interview, they frequently mentioned the panel and artifacts associated with Disney’s *The Black Cauldron*. They also pointed out the instruments and music, Lloyd’s experience in World War II, and the artifacts in the office space.

Their greatest challenge was that they did not know that they could enter the Lloyd Alexander room. Some did not know the room existed while others had seen the room but thought it was off limits. Once in the room, visitors said they were confused about where to start they wanted something to complete their experience after they had gone through. Visitors also pointed out artifacts that were too high or too low to look at comfortably. Additionally, they wished there were more hands-on elements, like books they could open and read.

We confirmed these findings by observing students who were studying in the room. When asked how they knew about the room and why they used it, they said they did not know anything about Lloyd Alexander or why there was an exhibit about him. They had learned about the room from a friend, or because they saw the door open. Three visitors went through the exhibit when they first used the room but did not remember anything about it.

From this research, we identified three challenges, or gaps, that prevented visitors from having a meaningful experience in *Alexander’s Box*:

1. Environmental gap: Students thought the room looked closed and off limits. Once in the room, they were confused about where to begin the exhibit and where it ended.
2. Knowledge gap: The audience had no prior knowledge about who Lloyd Alexander was, and why he warranted a display in the library.
3. Motivation gap: Because they had not heard of Lloyd, students were not inherently motivated to look at objects or read about him.

Constraints from the Environment and Context

The nature of the physical environment and the general context around the project also influenced how we approached the design (see the Main Implications of the environment analysis).

Stakeholder Constraints

The project involved many library stakeholders. They included the library installation team who would install the design, the assessment office which helped with the evaluation, the library’s online learning team, and the marketing team. Other stakeholders had an interest in the project as well, but I did not work directly with them. They included the library custodians and help desk employees who would be involved in maintaining the space. The list of Stakeholders in the environment analysis provides a more thorough description of the primary and secondary stakeholders.
Working with each stakeholder added additional constraints to work within. For example, the text panels had to be under certain a size to print on the installation team’s equipment. Before hanging panels on the walls or filming visitors during the evaluation, we needed to receive permission from the marketing team.

**Physical Constraints**

The room served as a conference room, exhibit, and study space, though library administrators generally prioritized its role as a conference room. This meant that there needed to be a table and chairs for faculty to use. Students needed to know that they could study in the room, but that it would periodically become unavailable. The room also had to have a door that faculty could close when they met.

We were additionally limited to which parts of the room we could change. Sarah said that it was not possible to make major renovations to the room due to budget and time constraints. For this reason, we were not able to change permanent features, such as the light fixtures. Because of a contract with Lloyd Alexander’s family, the exhibit needed to include a replica of Lloyd’s office. Sarah also asked that we display certain artifacts, such as the Irish Harp and Newbery medal (See Physical Environment).

**Timeline and Budget Constraints**

We received an experiential learning grant from the library which required us to complete at least part of the project by August 2020. The grant gave us money to prototype technology, conduct a comparative analysis at museums in the Washington D.C. area, and receive a personal stipend. The section Budget in the Appendix gives a breakdown of our total resources and expenses.

Another time limitation we considered was the installation team’s availability to install the exhibit. The team would become unavailable after June 2020, due to another major exhibit they were designing and installing. We began our design phase on March 1st, and we planned to install the design before June.

**Product Description**

Our final product is an exhibit titled *The Journey is the Treasure: The Life of Lloyd Alexander*. The product we delivered to Sarah included a physical prototype in the room and an installation-ready design. In its completed state, the exhibit has panels that discuss Lloyd’s life, a case and enclosed space with artifacts, various interactive activities, and images connected to augmented reality videos. See the Product Walkthrough for a video of the final exhibit prototype.

**Exhibit Walk Through**

A visitor can go through the exhibit in any order. Yet we structured the displays chronologically so that a visitor who enters through the door may begin at the north wall and follow the displays clockwise around the room. Figure 1 shows a final rendering of each wall of the Lloyd Alexander Room.
West Wall (Outside)
Outside the room, a panel invites the visitor to enter. This panel shows the exhibit title and a portrait image of Lloyd above a brief paragraph that explains the exhibit.

North Wall
The visitor receives an introduction to Lloyd’s life and his work. A map of Prydain—Lloyd’s imaginary land—and an image from the book cover of *The Black Cauldron* gives a glimpse into his creation. A small panel informs the visitor of the rules of the space and another panel provides instructions for how to watch videos. A large panel hangs next to a bookshelf. There, the visitor sees an overview of Lloyd’s work and may browse books he wrote.

East Wall
The visitor who continues to the east wall looks at three primary displays: a timeline with stories from Lloyd’s early life until when he published his first book, a display case that features his series *The Chronicles of Prydain*, and an introduction to Lloyd’s writing process and office space. At each display, the visitor can scan images to watch Lloyd talk about his life and writing process. In the corner, the visitor may create his or her own story, draw a cartoon, or color a picture.

South Wall
In an enclosed space, artifacts replicate Lloyd’s office. The visitor may read a panel that describes ways Lloyd felt inspired to create. Videos, images, and an I Spy activity also help the visitor explore
the office space. To the right, a painting of Lloyd hangs on the wall below a quote. The panel discusses the end of Lloyd’s life and artifacts from his fans show how he impacted his readers.

**West Wall (Inside)**

Coming to the west wall, a visitor looks at a panel which encourages the viewer to reflect on ways to share creativity. On a table below the panel, the visitor may share in a comment book an insight he or she received during the visit. As the visitor leaves the room, they see a panel listing the designers and the sources used. Close by, another panel invites the visitor to leave the door open.

**A Closer Look**

I will provide a glimpse at one of the displays to demonstrate how the text, visual design, and interactive activities combine to create a complete experience. *Creative Space* is in the southeast corner of the room. A panel introduces the visitor to Lloyd’s writing process (Figure 2). The text is white on a black, semi-transparent background which overlays a photograph of Lloyd’s house.

Next to the introduction, a large panel with an image of Lloyd in his office gives the visitor a glimpse at his workspace (Figure 3). The visitor can then compare the real space with the display. Above the image, a question invites the visitor to reflect on the tools he or she uses to create. Blue labels provide greater detail about the books in the office and Lloyd’s typewriter. The visitor can scan an image on an overlaying panel to watch a video titled “The Box.” Below this panel, a small table has paper activities for visitors to fill out.

The visitor who turns to face the south wall looks at the recreated office space and a panel titled *Lloyd’s Inspiration* (Figure 4). The visitor may scan an illustrated typewriter to watch videos about how music, art, and cats inspired Lloyd. Labels describe these sources of inspiration in greater detail. In the corner of this panel, an I Spy game encourages the visitor to look for artifacts in the
office that Lloyd placed there to inspire himself. Visitors are tasked to find four instruments, ten animals, a map of Africa, a flag of Wales, and the date and time in The Box.

**Figure 4**
“Lloyd’s Inspiration”

![Image of Lloyd’s Inspiration](image)

**Accommodating Audience Needs**
We worked to accommodate the need a visitor has for guided exploration, personal connection, comfort, and discovery. See Design Specifications for a complete discussion on how we accounted for the user analysis and other front-end analysis in the final exhibit.

*A Need for Guided Exploration*

In the original exhibit, visitors tended to begin at the northeast corner and work their way around the room. We used this flow to organize the displays in chronological order. We placed a panel outside the room and dedicated the north wall to serve as a starting point for the visitor. The southwest corner focused on the end of his life so that visitors who went through the exhibit in order would experience a clear beginning, middle, and end.

*A Need for Personal Connection*

We emphasized content that visitors were interested in. In interviews and surveys, visitors said much of what they learned came from reading about Lloyd’s early life. We expanded the display to include stories about when he was a child, how he found his first job, served in World War II, and met his wife. We also emphasized the struggles he faced to become an author. The target audience has heard of Disney’s version of *The Black Cauldron*, so we included a larger image of the movie poster, expanded the text discussing its creation, and added references to the movie in the introduction panel.

*A Need for Comfort*

Visitors pointed out artifacts that were too low or too high to look at comfortably. To avoid this, we used accessibility principles outlined in *Standards Manual for Signs and Labels* (1996) to place text panels and artifacts at an optimal height. We also tested color contrast, font size, and readability through usability tests. We tried to remove ambiguity about how a student could use the room by designing a panel that showed acceptable behaviors like using the room as a study space and sharing the space with others.

*A Need to Cocreate*

Rossman et al. (2019) provided a perspective on the participant as a co-creator of their experience that we tried to account for by providing opportunities for various levels of participation. At the basic level, a visitor could simply read the introduction panel outside the door. If the visitor wished to learn more, they could enter the room and look at captions, images, and artifacts. For those
wanting a deeper experience, they could reflect on question prompts, do the interactive activities, or scan and watch videos.

Design Process and Evolution

The design went through five major phases: planning, drafting, two digital prototypes, and a physical prototype. We followed an iterative approach where we analyzed the learners' needs, designed a prototype, evaluated the prototype, and implemented feedback into new iterations.

Phase 1: Planning (February-March)

During this first phase, we began with a groundwork on which we built the rest of the exhibit. The design team—consisting of Sarah, myself, the multimedia developer, and the content developer—met to determine criteria for what would make the exhibit successful. We prioritized structuring the exhibit around a unifying theme and story, incorporating Lloyd's voice into the text, making each display self-explanatory, and providing activities to encourage interaction.

To design the main message, I used what Serrell (2015) calls a big idea. This statement guided how we selected, organized, and displayed content. The big idea also represented the insight we hoped visitors would leave with.

We created three iterations in order to arrive at the final version:

**Iteration 1**

*The pain, the humor, and the things we pick up along life's path can inspire those who look deeper*

**Iteration 2**

*My own bumps in the road can feed my creativity to inspire others.*

**Iteration 3**

*I can create from my own human experience, a story that inspires others.*

We refined the big idea so that it would more accurately represent Lloyd and communicate a message which could resonate with multiple visitors. The first iteration focused on how positive and challenging life experiences can lead to inspiration. The second addressed how inspiration and creation can impact others. The third iteration identifies the visitor as an active participant in the act of creating.

Phase 2: Drafting Touchpoints (March-April)

The content developer and I worked together to design the individual displays around this big idea. We called each display a touchpoint—a term we borrowed from Rossman et al (2019)—and assigned it with a number. We used this term because it represented both the physical elements of the experience—the text, artifacts, and images—as well as the more tacit, internal aspects of the experience, such as the visitor's personal reaction to the display.

We combined the touchpoints into an experience map which gave an overall picture of how a visitor might experience the exhibit (see Figure 5). Each column on the map represented a touchpoint, and each row showed a dimension of that touchpoint. The first touchpoint in the exhibit was titled “See the Room.” The desired reaction, as expressed from the visitor's perspective, was “I want to see what’s in that room.” We decided that the “front stage” of this touchpoint, or what visitors would interact with, would be an introduction panel next to the door. The supporting
people and resources that would make this touchpoint possible included a visual designer and those who would maintain the room.

**Figure 5**

*Experience Map for the New Exhibit*

We drew from narrative theory—specifically a story structure called the Hero's Journey—to shape the experience. Not only did Lloyd utilize the Hero’s Journey in his own fantasy writing, many significant events in his life could be compared to points in the hero’s journey (Jacobs, 1978). The description in the Content Analysis explains how we understood Lloyd’s major life events. For example, like a hero who comes from humble beginnings and heeds the call to adventure, Lloyd, a boy from Philadelphia, listened to the call to write and become an author. We did not necessarily expect visitors to recognize the Hero’s Journey in the exhibit. Instead, aligning a touchpoint with a moment in the Hero’s Journey helped us understand how that touchpoint fit within the overall experience and informed what kind of message it should communicate.

For example, we aligned “Becoming a Creator” with the phase in the Hero’s journey known as the Ordeal—the challenging period a protagonist goes through to transform into the hero (Rossman et al, 2019). This touchpoint focused on the challenges Lloyd overcame before publishing a book. A visitor could experience this display by reading stories, looking at photographs, and watching videos to understand how Lloyd survived this challenging period. A question prompted the visitor to reflect on how they had overcome a personal challenge.

**Phase 3: Digital Prototype 1 (April)**

We transformed the experience map into a draft script and layout that became the first digital prototype. The content developer and I refined the text, and we chose artifacts that we would include in the exhibit. During this time, I began to draw and receive feedback on visual renderings.

In the script outline, we listed the major topics and possible content for each panel. In the outline for the introduction panel, we noted that it should include a quote from Lloyd, the text should reference parts of his personal life, and it should highlight who he impacted and loved.
I developed the visual concept by creating a sketch of how the panels and artifacts would be organized in each display. I then drafted grey-scale digital renderings. Doing these low-fidelity prototypes allowed us to quickly move elements around and compare how variations of the displays might change the exhibit experience.

Figure 6
Sketch and Rendering of East Wall

One instance when this proved especially useful, came after we conducted user testing. We received feedback that the exhibit looked too crowded. I created renderings which showed several possible solutions, which I presented to Sarah. I proposed to create more space in the room by (a) moving one of the large display cases to a different wall, (b) finding a smaller case to use, or (c) removing one of the large cases from the room. After we learned that it would not be possible to acquire a smaller case, Sarah chose the third option.

A script outline helped mitigate challenges that came from designing the text and visual renderings simultaneously. During this phase, the graphic designer joined the team. We had not developed a visual plan for the design, so at first, we struggled to know how to include him in the process. After we outlined the text for the outside introduction panel, he was able to sketch ideas based on that content.

Phase 4: Digital Prototype 2 (May-July)
We combined the visual renderings and text into a full-scale digital prototype. Novice and expert reviewers provided feedback on the text which we then added to the panels. Sarah helped us access digital images from Lloyd’s personal collection. We also gained access to the original video files that been part of a documentary about Lloyd. The multimedia developer began to select parts of these videos to include in the exhibit. The content developer, graphic designer, and I were primarily involved in designing the panels and writing copy text. I also worked with the multimedia developer and content developer to brainstorm interactive activities.

Figure 7 shows a color rendering of Touchpoint 3 *Breathing Life into Prydain*. As is apparent in the rendering, we had identified the artifacts that would be in each display. Each panel included text, and some had images. We also chose colors and font styles.
When we brainstormed and began to design interactive activities, we identified four possible types of interactions:

1. Ideas visitors could reflect on.
2. Personal application activities
3. High-tech exploration tools
4. Low-tech exploration tools.

Due to limited money and technological experience, we chose to design activities which required little technology. These included reflection prompts and a personal application activity that guided visitors to write their own story. Other activities we created were an I Spy activity located by The Box, and a bookshelf with books that visitors could browse. We decided to use AR technology to incorporate the videos into the exhibit. The multimedia developer found an inexpensive program which was intuitive to use and allowed us to develop AR videos to place throughout the room.

Another need we addressed during this phase was how to reduce the complexity of the exhibit so visitors would not be overwhelmed. One especially challenging area was the display about Lloyd’s early life. This display consisted of text, images, and videos. Drawing from our comparative analysis of other exhibits, we chose to present the panels in a collage of text and images (See National Museum of African American History and Culture). We did this to help visitors quickly scan over the content and focus on the panels that interested them. When presented with this design, visitors were at first confused about what order to view the panels. To clarify the order, we structured the panels along a timeline that identified where they fit in the context of Lloyd’s life.

**Phase 5: Physical Prototypes (July-September)**

For this phase, we created two physical prototypes. The first included full-color prints of the outside panel, introduction panel, and office area. We also printed black text on white paper for the rest of the displays. Each team member went through the prototype and noted spelling errors and unreadable text.
We then incorporated the feedback into a second prototype. We finalized panel designs, made changes to text, and developed the video segments so they could be viewed. We printed the interactive activities and placed them on a table. We also displayed a selection of Lloyd’s books in the northeast corner of the room. The completed prototype allowed visitors to go through the exhibit and have a near-complete experience (See Figure 8).

**Figure 8**
*Physical Prototype: Outside, North Wall, “The Box” Area*

During this phase, we worked to improve the video interaction. At first, many visitors did not see that they could watch videos. Those who tried to access them struggled to scan the tagged image and start the video. This was, in part, because focused their camera on the icon in the corner, instead of on the entire image. To clarify the instructions, we designed an icon to better communicate how to scan the image (see Figure 9). We also instructed the visitor to “center the camera on the image.” Since many visitors had not seen the instructions panel, we placed steps for accessing the video on each AR panel throughout the exhibit.

During this prototype, several visitors had a less-than-meaningful experience. They read only a few panels, did not participate in the interactive activities, and felt either bored or overwhelmed (see the Summative Evaluation). When interviewed, these visitors mentioned that they struggled to know who Lloyd was, or why he was important. We found during the interviews that one likely reason for this was because the displays were out of order. Another reason was that they struggled to find interest in the content.

Major changes to the exhibit content were not feasible at this point since we had already overextended our deadline for finishing the project. Instead, we focused on making three changes that, though minor, we believed might at least partially address these challenges:

1. **North Wall Redesign:** I combined the introduction text, the map of Prydain, the picture of Lloyd, and the exhibit title into introduction panel. I placed an image of the book cover for *The Black Cauldron* behind the introduction text to serve as a visual reference for those who had seen the movie. Moving the text also placed it closer to the AR instructions panel.

2. **Book Timeline:** I then designed a timeline of all of Lloyd’s work, which I placed next to the bookcase. This allowed visitors to see where a book fit within the context of Lloyd’s life. For
visitors who might question why Lloyd merited an exhibit, it served as a visual representation of his impact on literature.

3. **Introduction Panel Redesign:** I redesigned the introduction panel for each display to make them more uniform across displays, but distinct from the other types of panels. I made the panels the same size and, instead of black text on a semi-transparent white background, I made the background black, and changed the text so it was white.

Once I made these changes, we were finished with the redesigned exhibit. The project lasted longer than we planned, and many unexpected challenges made it necessary to adjust our design. Yet overall, the final product reflected the main elements Sarah had identified as necessary to the redesign. We had created a central theme and story that unified the displays. Text provided context about Lloyd’s life and guided visitors to engage with the artifacts. Interactive activities encouraged visitors to explore topics that interested them.

**Product Implementation**

We planned a two-stage implementation process: first a physical, high-fidelity prototype, then the final installation.

**Physical Prototype**

We worked with the library marketing team to print the panels and renderings. We then mounted them on the walls and over the display cases. We inserted video panels and created prototypes for each interactive activity. Though the prototype did not reflect the final structure of the exhibit, it was still fully functional for those using the room. (see Physical Prototype).

**Installation-ready Design**

The final installation of the exhibit will happen when the installation team is available to print and install the final design. To prepare the space, they will remove the prototype panels and the artifacts which will not be in the new design. The client will purchase a new bookcase for the room as well as additional tables for displays and interactions. (see Installation-ready Design)

We created a digital folder containing files and documents necessary to install the exhibit. This folder includes documents that outline steps to take to prepare for the installation, templates for paper interactions, measurements for where to place panels, and printable-ready files of the panels. These are the files that the installation team will use:

- **Steps to take before and after installing:** This document lists steps to take to prepare the room, such as scanning a book cover and inserting it into the design. It also includes items future designers could implement to improve the exhibit.

- **Artifact Lists:** A spreadsheet that lists which artifacts should stay in their current locations, those that should stay in the room but move to a new location, and artifacts that need to be taken out of the room.

- **Measurements for Text Panels:** These are simplified, black and white renderings of each display with measurements for where panels hang on the walls.

- **Printable Panels:** Two Adobe Illustrator files contain full-scale versions of each panel, quote, or graphic that needs to be printed. Each image in the files is embedded and text that will be placed directly onto the wall has been converted to be a vector object.

- **Style notes:** This document includes design specifications in case the panels need to be changed. It defines the fonts for each type of text panel, margin sizes, and the hex code for colors.
Evaluation

We evaluated the exhibit after we created the two digital prototypes, and once we installed the second physical prototype.

Criteria

Sarah was the primary stakeholder interested in the evaluation results. She was most interested in knowing if the new exhibit increased visitor interaction and engagement—what we had classified as a meaningful experience.

In the pre-design phase, I identified four evaluation questions that we hoped to answer (see the project Purpose for a description of those questions). As we began the actual evaluation, we revised the third question to focus less on a specific insight the visitor might gain, and more on how well that insight aligned with the exhibit’s big idea.

The revised questions that guided our evaluation were:

1. What do visitors feel while going through the Lloyd Alexander room?
2. What new insights do visitors take away from the exhibit?
3. How well does the exhibit communicate the big idea?

The evaluation results helped Sarah know if the exhibit achieved the design goal. The results are also a resource she can use as she meets with library administrators to discuss future changes to the exhibit.

The library assessment department requested that we provide a report of the evaluation results. Their purpose, however, was simply to document the study for internal use, and they did not express any specific criteria we needed to meet.

Procedures

We used a combination of formative and summative evaluations to determine how well the final design provided emotional impact and discovery.

Formative Evaluation

For the first formative evaluation, I created a survey which showed grey-scale digital renderings of the exhibit. I then posted the survey on social media and sent it to a university class via email. Twenty-nine people responded anonymously to the survey.

Respondents identified if their reaction to the exhibit idea was negative or positive. They selected the parts of the exhibit they would like to explore, and they organized the display topics in order of interest. Participants were then asked to identify how well the renderings reflected the exhibit’s big idea. The section Formative Evaluation 1 includes a table of the survey questions that respondents answered.

We conducted the second evaluation after we had designed full scale renderings of each panel. I uploaded the panels onto Google Slides which I distributed on social media and through an email sent to library employees. A professor also agreed to send it to his students.

Fifty-nine participants clicked through the prototype, then answered a short survey. Responses were completely anonymous, and participants did not identify if they were students. See Formative Evaluation 2 for a table of the survey questions we used. In response to the survey, participants shared how they felt after going through the prototype. They described a new insight they had.
learned, and they selected the part of the exhibit that impacted them the most. Respondents also shared how they wish the exhibit was different.

**Summative Evaluation**

In the summative evaluation, we recruited participants through social media and a school group email. We also asked family members to go through the exhibit.

We recruited 22 people to go through the physical exhibit we compensated them with a gift card. In addition to those we recruited, five children came with their parents, making a total of 27 people who went through the exhibit. We did not interview the children or ask them to complete the survey. Yet we recorded their comments.

Twelve participants were in the 24-35 age range and six were in the age range of our target audience—between 18 and 24 years old. Of the 27 participants, 11 were university students while 16 were not.

Before going into the exhibit room, we asked participants to describe an impactful museum experience. We then escorted them into the room and instructed participants to explore it as they would any other exhibit. After they finished, we gave them a short survey and asked several interview questions. The section *Summative Evaluation* in the appendix provides a table of the survey questions we used, as well as a list of the questions we asked participants during the interview.

Twenty-two of the participants took the post-exhibit survey. I based the survey on the one used for the formative evaluation. In addition to asking participants how they felt in the exhibit, the survey asked them to compare the exhibit with a previous museum experience and select how likely they would recommend the exhibit to family or friends.

After gathering the data, we transcribed the interview recordings, then coded the answers based on pre-established codes. We also recorded the time that 21 visitors spent at each display and noted their behavior. We triangulated the three sources of data—observed behaviors, responses, and survey results—to understand the visitor experience. The methods in *Summative Evaluation* provides greater detail on how we analyzed the data.
Evidence

Formative Evaluation 1

For the first evaluation, participants responded positively to the exhibit concept. Figure 10 shows their responses. Fifteen people felt somewhat positive about the exhibit while 11 felt extremely positive. Only one participant felt neutral, and two felt somewhat negative about it.

Figure 10

Reaction to the Exhibit Concept
Participants felt intrigued by the physical components of the exhibit. For this question, participants were asked to select from a list of exhibit elements. Figure 11 shows that 20 of the 29 participants felt interested in an artifact and 19 selected an image. The interactive activities, such as the comment board, the I Spy game, or the booklet were selected fewer times.

**Figure 11**
*Items Respondents Want to Explore*
According to those who took the survey, the concept was generally effective at communicating the big idea. Ten participants felt that it communicated the theme extremely well while 10 selected “very well.” Only nine selected moderately and slightly well. It should be noted that participants did not see any text, besides a few titles, and the displays were rendered in grey scale with a few artifacts. Therefore, this comparison was made against a prototype that was still missing many components of the exhibit.

Figure 12
How Well the Concept Communicates the Big Idea

When participants organized display topics in order of interest, there was generally an even spread of the interest they felt for each topic. Table 1 shows how they rated each topic. The most notable insight is that 12 people ranked the topic about Lloyd’s early life as most interesting and seven people identified it as the least interesting. The topics related to creativity all have a mean greater than three, which shows that they were generally rated as less interesting.

Table 1
Order of Interest by Topic

<table>
<thead>
<tr>
<th>Sub-Themes</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>The impact an individual can have on others</td>
<td>8</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>2</td>
<td>2.59</td>
</tr>
<tr>
<td>Growing up and finding a purpose in life</td>
<td>12</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>7</td>
<td>2.62</td>
</tr>
<tr>
<td>How a creation reflects the creator</td>
<td>3</td>
<td>9</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>3.1</td>
</tr>
<tr>
<td>The struggles that come with creating</td>
<td>4</td>
<td>3</td>
<td>8</td>
<td>9</td>
<td>5</td>
<td>3.28</td>
</tr>
<tr>
<td>The tools and process of creating</td>
<td>2</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>9</td>
<td>3.41</td>
</tr>
</tbody>
</table>
I identified two major themes of what participants liked the most about the exhibit:

1. **Organization and Flow**: Eleven participants shared that they liked something about the flow of the exhibit or its structure. One person said, “Nice flow. It pulls me in to want to learn more and see what each display is about.” Another liked that there were “so many parts” while a different participant felt that it was “multifaceted.”

2. **Artifacts**: Multiple participants commented about the artifacts. One participant said, “I liked the idea of the sectioned off room within this room, it’s something you don’t really see elsewhere on campus.” Another felt that having different artifacts helped make the exhibit “interesting and engaging.”

**Formative Evaluation 2**

The second formative evaluation provided greater insight into what visitors learned from the text, and how they felt as they experienced the exhibit. For the question about the prototype’s emotional impact, participants selected various emotions from a list of options (see Figure 79). Forty-eight participants selected “intrigued,” 26 selected introspective, 25 selected “excited,” and eight participants selected “overloaded” or “frustrated.” Those who felt overloaded attributed it to the amount of text and captions. One visitor said, “There’s a lot of information.” Another felt that “there were so many words!”

When asked about which display was the most impactful, 24 participants selected the panels about Lloyd’s early life. Thirteen people selected the Prydain case and 13 chose the panels from the end of his life.

We identified four major categories of insights that participants shared:

1. **Challenges (16 participants):**
   a. “It’s okay to struggle.”
   b. “My mental health problems don’t have to stop me from writing.”
   c. “That trials are meant to forge us.”

2. **Inspiration (13 participants):**
   a. “I can find inspiration from all sorts of places. I liked that Alexander found inspiration from Celtic legends, Mozart, and other books.”
   b. “Filling my creative space with inspiring items is something that intrigued me.”

3. **Creating (8 participants):**
   a. “Creativity is endless.”
   b. “It’s maybe more of a reminder that it is easier to connect with others when you share a bit of yourself.”

4. **Views on Lloyd (7 participants):**
   a. “His heart was in his work!!”

The insights reflected the themes of the big idea—namely thoughts on inspiration, creativity, and the importance of life experiences. Many participants commented on the impact of challenges in Lloyd’s life or their own. Participants also expressed a refined understanding of who Lloyd was as a person.
When asked how they learned this insight, the majority of respondents selected a story or quote (See Figure 80). Twenty-five participants said that they learned an insight from a photo. This contrasted with the first evaluation where participants were more interested in exploring an artifact. Where the first prototype had been mostly a visual concept, this prototype focused around text panels with images. The artifacts were represented mostly as indistinct silhouettes. Therefore, this result might have been due to the nature of the prototype.

**Summative Evaluation**

In the physical prototype, the 21 participants that we recruited to go through the exhibit spent on average 18.69 minutes in the room. One person spent three minutes going through the exhibit, and two participants spent 35 minutes in the exhibit. Figure 13 shows the average time that visitors spent at each location.

**Figure 13**  
*Prototype Layout with Average Time*

The participants stayed longest by the office area—an average of 6.45 minutes. There, they watched videos and did the paper and I Spy activities. They spent the second longest amount of time at the first display case where they spent on average 3.81 minutes. Along the west wall, visitors lingered for an average of 2.9 minutes.

Twenty-two of the 26 participants took the post-exhibit survey. Sixteen felt it was equal to, or better than, their previous museum experience. Six felt that it was worse. As Figure 14 shows, the four participants who had visited a local museum—as represented by the bars with diagonal lines—felt that this exhibit was better than the previous one. On the other hand, except for two visitors, those who had been to a non-local museum felt that it was equal to, or worse than their prior experience.
When asked how likely they would recommend the exhibit to a friend or relative, nine participants felt that they were somewhat likely to recommend it and six felt extremely likely (see Figure 8). Only two said that they were somewhat or extremely unlikely to recommend the exhibit, while two were neutral. We also noted that many of those who were unlikely, neutral, or somewhat likely to recommend the exhibit went through the it alone or without another adult. In contrast, the majority of visitors who were with another adult were somewhat or extremely likely to recommend the exhibit.

For the survey, participants selected emotions that they felt while in the exhibit. Figure 15 shows the frequency that each emotion was selected. Sixteen people selected “introspective,” 15 selected “intrigued,” and 10 chose “excited.” In contrast, three visitors noted that they felt overloaded and frustrated. The four visitors who selected “Other” said they felt “curious,” “inspired,” “motivated to learn more,” and “bored.”
I examined the comments from participants who felt bored and to understand why they felt that way. One visitor stated that “it was just that video which I thought was a little underwhelming.” Another visitor explained that “the exhibit seemed a little scattered to me.” Though none of the children took the survey, they generally did not enjoy the exhibit. One child stated repeatedly that, “this is not fun. I want to get out of here. This is not fun.” and another child observed that “there is not much to do.”

When asked about a new insight or takeaway that they gained in the exhibit, visitors shared insights that were similar to those from the digital prototype. They talked about inspiration, the challenges of life, and new insights about Lloyd as a person:

1. **Inspiration (12 visitors)**
   a. "I was impressed with how Lloyd wrote stories through his own experiences. That was kind of my main takeaway from it all."
   b. “I need to inspire my own work place.”

2. **Views on Lloyd (11 visitors)**
   a. "He's very outward focused."
   b. "Lloyd seemed like a great guy who really viewed everything with awe and admiration and had an overall appreciation for life."

3. **Challenges (9 visitors)**
   a. “Like he was clearly suffering with depression, had tricky things, and some failures, but he knew he wanted this thing.”
   b. “...the example of him just not giving up when it sounds like it took him a while to kind of get going and went through bouts of depression and he still like stuck to it.”

4. **Impacting Others (8 visitors)**
a. "One thing that I take away is just like the desire to make an impact"

b. "I had forgotten how many books he had written."

5. Interesting Facts (8 visitors)
   a. "Wow and Tim Burton."

6. Creating (6 visitors)
   a. "And then realizing that he couldn't express what he wanted to express in something that was for adults."

The greatest difference from the formative evaluation was that in this one, more participants talked about inspiration and their refined understanding of Lloyd than they did about challenges. Participants also shared insights about how to impact others which had not been a theme discussed in the formative evaluation. Their comments also show that ideas relating to creativity did not play major role in their experience.

Outcomes
These results suggest that most participants had a more engaging experience than what was offered by the original exhibit. When in the room, they frequently related the exhibit to their own lives. For example, a participant said, "and it just kind of made me think about myself and what I'm teaching or helping the athletes that I'm working [with]." Similarly, an undergraduate student explained that as he went through the exhibit, "I was kind of more just like looking for like, I guess, connections or like something that would like seem significant."

The exhibit generally led visitors to reflect on the big idea, though how they experienced the exhibit influenced the insights they gained. Those who saw the digital prototype reflected more on the challenges Lloyd faced, while those who went through the physical prototype thought more about the theme of inspiration. A participant who was studying animation said that his main takeaway was "the idea that inspiration can come from anywhere, even the most mundane aspects of life or the places that seem most unlikely for inspiration to come from." The fact that most participants lingered by the panel titled "Lloyd’s Inspiration" also suggests that they learned the most about inspiration. Still, visitors reflected on the other aspects of the big idea. One participant said that "it just made it seem like doing anything creative and just adding anything is positive for other people."

The emotional impact that visitors felt during the exhibit was more challenging to measure, yet the results suggest that most had a positive experience. In the physical prototype, several visitors reacted positively to the AR videos and I Spy activity. One visitor said, "that was very cool" after watching a video. Another responded to the I Spy activity by saying "That was brilliant." The survey results suggest that visitors felt introspective and intrigued in the exhibit. They also felt willing to share the exhibit with someone else which suggests that they felt that it would benefit others.

Even though visitors reflected on new ideas and felt intrigued and introspective, I do not believe that the data support classifying this exhibit as a meaningful experience. Most participants enjoyed their experience, yet they did not express a deep level of connection or feeling which characterizes a meaningful experience. Additionally, we were not able to evaluate how the experience impacted them over time.

Several participants had a less than positive experience. Those who felt “overwhelmed,” “bored,” and “frustrated” spent the least amount of time in the exhibit. They glanced over the text, and only one watched a video. When we analyzed their interview responses, we found that either they
struggled to feel interested in Lloyd—as was the case for one undergraduate student—or they felt overwhelmed by the text. One person said, “when I look around, there’s just a lot of words.”

Children also struggled to engage in the exhibit and they repeatedly asked when they could leave. One mother who went through with her son said, “I mean you could see that our toddler wasn’t a fan.” Parents with children said they wished the exhibit had more hands-on activities. A mother with two daughters said that she would want “probably more hands-on things” in the exhibit. All five children did spend time drawing on the paper interactions, though this held their attention for only part of the time.

As we analyzed these results, we brought to Sarah’s attention several major limitations of the study. One was that most of the participants in the summative evaluation were family members or friends of those on the design team. Because of this relationship, they might have given a more positive review. The experience they participated in also lacked some authenticity. Participants knew they were being filmed and the act of recruiting them eliminated the spontaneity that future visitors would have as they approach the room. In addition, several displays were out of order and artifacts were partially covered, which distracted many participants. The client accepted these limitations as inevitable due to the circumstances, and she felt that the results were still valid for her purposes.

These findings suggest that there is room for future improvement. Since videos are especially effective at helping visitors engage in the exhibit, future designers should work to make them even more visible and easier to access. They should also find ways to encourage less-interested visitors to watch the videos. Designers can work to include more tactile and hands-on elements which would better engage all types of audiences, especially children.

There is still a need to help visitors who are not familiar with Lloyd feel motivated to explore. We identified this challenge in the pre-design phase, and it was one we hoped to address. Though visitors did engage more with the new design, they were recruited to do so. Future evaluation is needed to know if those who study in the room feel motivated enough to look at the exhibit.

Despite these limitations and challenges, *The Journey is the Treasure* gives students, faculty, and community members a space they can enter to learn, be inspired, and engage with Lloyd’s collection. Our efforts to evaluate prototypes during each design phase were integral to identify the strengths and the weaknesses of the final design.

**Design Knowledge and Critique**

The exhibit’s title *The Journey is the Treasure* is a phrase that communicates the value which comes from learning through experience. As we participated in the challenges and complexities of the design process, we achieved the personal and collective growth that was needed to deliver the final product. The design knowledge that we gained from this experience may be of profit for those who seek to improve learning design. There were seven major takeaways that were salient in this project.

**Make Informed Estimates**

Seek to understand how long it will actually take to complete a project, and assign accurate time estimates for what you will create. Then, double that time. This maintains momentum and reduces pressure.

Every part of the exhibit took much longer to design than I had estimated. I allocated four weeks to writing text, and it took two months. I underestimated how much time it would take to research, draft, review, and edit the text. More research up front and asking experts how long they thought each component might take, could have helped me better plan the time we would need to write the labels.
Define Done
Clearly identify what the minimum viable project will look like. Include specific features and the scope of those features.

I established a project backlog of key features we would create, such as an overarching story, new text, a new visual design, and key artifacts. But we did not clarify how much of each feature we would deliver as the final product. For example, we did not decide on the amount of text we would write, or the size and number of displays we would design. Without clear parameters for what the final product would look like, we were not able to gauge if the design was within our desired scope and capability.

Establish Clear Milestones
Before designing, establish specific deliverables and deadlines. Record these milestones, make them visible to the team members, and frequently monitor them as they draw near.

In our planning phase, we created a timeline with a deadline to complete the exhibit by the end of April. We set a goal for when we wanted to finish, and we broke the time down into two-week sprints. Yet we failed to reach this deadline, in part, because we set vague goals. Instead of saying we would complete renderings by the end of a sprint, we would have been better served by a specific goal, such as presenting a sketch of each display on a certain date. We could then intentionally adjust the size of the deliverable, or extend the timeline, if we could not achieve that goal.

Create a Simple Design
Push against overcomplexity in a design. Too much noise can overwhelm the learner and hide the message.

Our design quickly grew to a size that was almost unmanageable. The copy text expanded into many panels that we had to design and incorporate. Even after we removed panels and simplified displays, some visitors still felt lost in the noise of the design. Based on the audience’s needs, it would have been better to create fewer, high-quality panels and interactions.

Stay True to Agile’s Core Principles
Have a plan, stick to it, but do not keep it so rigid that the plan falls apart. When challenges occur, return to the basic principles.

We decided to follow Agile principles because we liked the flexibility and adaptability that the approach provides. At first, we tried to follow a Scrum model, but this proved impractical due to the nature of the team. As we continued to apply core principles—embracing change, prioritizing relationships over processes, and delivering a working product—we were able to adjust our process until we found a workflow that was effective for our circumstances.

Communicate through Prototypes
Prototypes provide a clear picture that prevents misunderstanding.

We created physical representations of the exhibit from its beginning to the finished design. The big idea statement was a concrete representation of the core message that the client and users could react to. As we continued to write text and draft visual renderings, we were able to quickly test ideas and adjust without any major cost. For example, a full-scale digital rendering let us digitally “move” display cases, artifacts, and panels without actually having to change the physical space. We found, though, that the purpose of a prototype is to answer a specific design question. If it cannot answer that question, a different prototype is needed. Our digital renderings could not show how the colors and text actually looked when printed, so we created a physical prototype in the room.
Design in a Community

Working with a team leads to a deeper design, prevents pitfalls, and introduces new possibilities. The final exhibit was not the product of a single designer. Instead, each team member, consultant, and visitor added a unique flavor and depth to the experience. The graphic designer brought new shapes and colors to the panels. The multimedia developer used his technical skills to create a more accessible AR experience. Many visitors made suggestions that we incorporated into the exhibit, such as including a panel with a complete list of Lloyd’s books.

Books written by professional designers also filled gaps in our knowledge and skills. The Smithsonian A Guide to Exhibit Development (n.d.) guided how we structured the exhibit in a hierarchy of interpretation. Serrell’s (2015) book about script writing was invaluable for helping us write text that would appeal to the visitor.

Reflection and Conclusion

This project proved to be a journey that was well worth taking. As a team, we strengthened our practice and ability to collaborate toward a common design goal. The exhibit’s big idea—*I can create from my own human experience a story that inspires others*—became, in many ways, a guideline that we followed. We did not do this by including personal stories or experiences in the exhibit. Instead, as a team we drew from our own skills and from our strengths to create a new learning experience.

I learned during the process that people are willing and eager to help complete a shared goal. Many library employees offered their resources and support. The library assessment department was especially accommodating. They offered to review our evaluation instruments and loan equipment for gathering data. The exhibit manager also provided vital design knowledge and critique and provided data from previous library exhibits.

Even with this support, it required a much greater amount of time and work to finish the exhibit than I expected. As I described above, I underestimated the effort it would take to write text, design panels, and create the prototypes. I think it is important that a designer is aware of his or her personal limitations and takes on a project that is carefully scoped so it can be completed in the needed time frame.

Though the project had its flaws, I was able to draw from learning theories, design principles, and Lloyd’s life to transform a passive experience into a more engaging one. *The Journey is the Treasure: The Life of Lloyd Alexander* gives library patrons the opportunity to engage with Lloyd’s legacy in a personal way. As they read text, watch videos, and take part in activities, they can feel inspired, and discover a little more about themselves and the world around them.
Appendix

Product Walkthrough
This video gives a walkthrough of the physical prototype we installed in the exhibit room. In the video, I describe the major components of each display.
https://youtu.be/SGvHbdTYj_s

Learner Analysis

Before entering the design phase, I conducted a user analysis to understand the needs of our target audience. I did user interviews, analyzed exhibit guest books, and found secondary literature to understand the learners’ background and needs. I then created several design tools based on the data to guide us as we developed the product. This learner analysis describes these key deliverables and provides samples of the data we analyzed.

Secondary Research

During the 2013–2014 school year, the library created and validated patron personas through a qualitative study (Zaugg, 2016). The library assessment and usability department collaborated with a university class to conduct focus groups, interview patrons and librarians, and observe students in the library. The researchers identified ten common reasons why students used the library. Zaugg called these categories personas and assigned each one a descriptive label:

1. Explorer: Comes to the library to discover what it has to offer.
2. Collaborator: A student who studies with other students from the same class or with a group of friends who work on a project together.
3. Focuser: Uses the library to remove distractions in order to complete assignments.
4. Side-Kick: Likes to complete personal assignments in social settings
5. Islander: Repeatedly returns to a favorite place to study in the library.
6. Socializer: Tries to get to know people and socialize. Is not focused on studying.
7. Chillaxer: Blends work and play in the library.
8. In-n-Outer: Comes to the library for a single purpose, then leaves.
9. Pirate: Uses the technology and resources to avoid buying them.

Zaugg proposed that the personas can be further grouped into several common ways they use the library. The Collaborator, Socializer, and Chillaxer use the library as a way to connect socially. The Focuser, Islander, and Collaborator are task-focused while the Explorer, Pirate, and Outsider are tool-focused. Of course, even though an individual might be classified as one persona on a certain day, that patron could use the library for a different reason as circumstances change. For example, a patron may typically use the library as a Socializer and then become a Focuser to study for a midterm exam.
To understand visitors who go to museums, I drew from John Falk’s (2016) extensive work on visitor motivation. Falk interviewed visitors at various museums, aquariums, and science centers across the United States. From his research, he identified five types of visitors:

1. **Explorer**: The museum interests and appeals to the visitor’s curiosity as they seek to expand their horizons. These visitors will avoid hyper-structured experience but enjoy things that are new and interesting.
2. **Facilitator**: They attend a museum to fulfill the needs of someone they care about such as a child, or another adult.
3. **Experience Seeker**: They visit an exhibit so they can say that they have been there and had the experience. They are socially motivated people who want to have fun while doing something interesting.
4. **Professionals/Hobbyist**: These visitors are interested in the topic. They usually come alone and might be extra critical of the exhibit.
5. **Recharger**: These are visitors that feel rejuvenated from being in the environment of the museum. They like museums because they can escape from the world and ponder and reflect.

It was interesting how both these researchers created personas to describe types of visitors. In both contexts, the visitors came to fulfill a specific need. That need might have been a piqued curiosity, a desire to find some place to talk, or an environment that encourages focus and reflection.

**Visitor Registrar**

I analyzed visitor comments from three library exhibits. They were *The Great War: A centennial remembrance*, *Rose Marie Reid: Glamour by Design*, and *Welcome to our Charity Bazaar*. I hoped to understand how patrons approached exhibits in the library and what contributed or detracted from a meaningful experience. Table 2 is a sample of the data from *The Great War* and shows how I recorded, organized, and analyzed the comments. I transcribed the comments for all three exhibits. I noted if the visitor recorded how many were in a group and if they identified their hometown.
Table 2
Sample Data from Comment Books

<table>
<thead>
<tr>
<th># in group</th>
<th>Location</th>
<th>Comment</th>
<th>Tag 1</th>
<th>Tag 2 (Think, Feel, Do, Touch Point)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Arizona</td>
<td>I love in flanders field</td>
<td>Flander's Field Touch Point</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Arizona</td>
<td>Thank you for remembering &quot;The Great War Dough Boy Search&quot; American Veterans of World War One</td>
<td>Thank you Feel Stories and ... Touch Point</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Arizona</td>
<td>Very nicely done. Thank you. I really enjoyed the world and LDS history timeline</td>
<td>Timelien Touch Point</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Arizona</td>
<td>Loved all the personal stories</td>
<td>Personal Story Touch Point</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Arizona</td>
<td>IT really brought history to life</td>
<td>history to life Think</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Arizona</td>
<td>I loved it. Just got back from serving in England</td>
<td>in England Feel</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Arizona</td>
<td>Great to see other perspectives. Great Exhibit</td>
<td>other perspectives Touch Point</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Arizona</td>
<td>Yesterday's problems put today's problems in perspective</td>
<td>perspective Think</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Arizona</td>
<td>History teacher loved it</td>
<td>History teacher Touch Point</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Arizona</td>
<td>Wonderful display. I would add in the deshag, the treaty of versailles and the actions of Briton and France sowed the seeds for WWII &quot;and&quot; for much of the turmoil in former ottoman territories today in the Middle East. Regards</td>
<td>add Touch Point</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Arkansas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Arkansas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Brazil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Brazil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Bulgaria</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>California</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If a visitor said how many people were in their group, I counted that number, if not I assumed that the person who left the entry was alone. Based on this calculation, at least 865 visitors went through The Great War exhibit, 171 visitors looked at the Rose Marie Reid exhibit, and 123 visitors attended the Charity Bazaar exhibit. For all three exhibits, 782 visitors were from the United States, 322 did not say where they were from, and 55 came from a foreign country including Canada, Mexico, Guatemala, Brazil, and various locations in Europe.

I found that for all four exhibits, the vast majority of patrons came from the states that were closer to the university (See Figure 16). This is not surprising since an exhibit that is closer is easier to visit. California was the second most common home state with 10% of visitors either identifying it as their hometown or their current living address. Texas and Idaho were third and fourth most common, though significantly less than the first two.
To understand more about the experience in the exhibit, I analyzed comments from *The Great War* exhibit. I coded each comment based on if it communicated an action, thought, feeling, or interaction of the visitor.

As Figure 17 shows, visitors commented most frequently about an artifact, such as the track shoes of one of the soldiers, or a Canadian uniform. Thirteen visitors said that they enjoyed the stories. One visitor said, “Elder Hugh B. Brown’s account with a young sick boy is especially touching.” Nine visitors left a comment about the poem “In Flanders Field” by Canadian John McCrae. A visitor who was from Canada wrote, “Flanders Field is so Canadian! I love this!”
Visitors who left a comment frequently mentioned some personal connection they felt with the exhibit. Twenty-one visitors identified themselves as military veterans or mentioned family members who had served in the military. One visitor shared that “just yesterday I discovered about my grandfather’s battalion.” Six visitors also noted that, as members of the Church of Jesus Christ of Latter-day Saints, they enjoyed learning about the war through the perspective of members of the church. A visitor from Michigan said, “Great exhibit! Especially liked seeing LDS perspective on WWI.”

This research suggests that a visitor who comes to one of the library exhibits is typically from the western United States, though there is a chance the visitor might be from another country. The visitors tend to notice parts of the exhibit that are visually appealing, concrete, and relate to a past experience. Stories and artifacts help a visitor feel connected to the people the exhibit is about. The visitor might feel connected because the story is similar to a previous experience or it aligns with core values and beliefs.

**Lloyd Alexander Exhibit User Experience Interviews**

To understand how visitors experienced *Alexander’s Box*, the original exhibit, I conducted interviews with student library employees. I interviewed a total of 9 students who were studying various subjects including music education, humanities, chemical engineering, and sociology.

After recruiting them, I took participants to the Lloyd Alexander room. There, I asked several preliminary questions about their experience with museums and their knowledge of Lloyd Alexander. I then instructed them to go through the exhibit, after which I had them draw the exhibit layout. I asked them these additional questions:
After transcribing the interviews, I organized the data into themes by writing each comment from the first three interviews onto sticky notes and posting them to a whiteboard (see Figure 18). As I found commonalities between the comments, I created codes that I applied to the rest of the interviews.

I grouped the participants' comments into three major themes: a refined perception of Lloyd, things in the exhibit that stood out, and challenges they faced in the room.

Perceptions of Lloyd Alexander. None of the participants had heard about Lloyd prior to the exhibit. After the exhibit, the participants commented 19 times about his personality. One student said, "he went and just did things the way he wanted to, and that was cool." Comments related to life events included 14 about his service in World War II and nine about his school experience. One user said, "he was like I'll save someone from the draft you know." Another commented about his schooling that "it was really interesting seeing how he, like it mentioned there that he graduated at 16." There were also thirteen comments on the overall impact Lloyd left on literature and those around him. One participant said, "like wow this guy's like a lot more prolific than I realized."
These comments show that even though visitors did not know anything about Lloyd Alexander before going through the exhibit, as they went through, they gained a sense of who he was and the impact he had on literature.

**Points of Connection.** As I coded and organized the data, several key impactful elements emerged. They include, in order of how frequently visitors mentioned them, Disney’s *The Black Cauldron* movie, music, World War II, and his office. Figure 19 shows how frequently participants mentioned each exhibit element.

**Figure 19**  
_Frequently Mentioned Parts of the Lloyd Alexander Exhibit_

![Bar chart showing the frequency of mentions of different exhibit parts.](chart)

All nine of the participants mentioned Disney’s *The Black Cauldron* as something they noticed while going through the exhibit. The video recordings included several instances when visitors paused and exclaimed that they knew *The Black Cauldron*. A participant said when she came to that point in the display, “oh the black cauldron? I’ve seen that. That like takes me way back.” Another participant said several times to her coworker that Lloyd’s name sounded familiar for some reason. Then, when she got to *The Black Cauldron* movie poster, she said, “So he wrote *The Black Cauldron*, that’s why I know him. I have read something by him.” Her coworker said in response, “Oh wait, that’s the Disney movie, right?” Even those who had not seen the movie had heard about it. A participant said “I was like, okay I haven’t seen *The Black Cauldron*, but I’ve heard of it. But then also wondering like, why is it here?”

The second most mentioned element of the exhibit was the musical instruments. Several students had played an instrument and one was studying music education. During the interview, a participant said, “I guess I remember like the violin and harp because I was like oh that’s interesting, I like that he picked those up.” Another student wondered why there were so many references to Mozart. She observed, “...cause there's like that little plaster over there too and there's a picture right there but...it doesn't say.”

A third interesting point for students was Lloyd’s experience in World War II. Several thought it was noble for him to sign up for the draft to save someone else from having to. A student explained...
that as he read about Lloyd’s experience, he thought of his great uncle who had served in the air force and he “remembered a little bit about him.” Participants noted that he met his wife during his military service in France. One participant said to another while she was reading the text panel, “oh. so, he married a French woman.” Some participants talked about the effect that the war had on Lloyd and how it did not seem to affect him negatively like it did other authors. “Like after World War II was a really pessimistic like perspective on the world,” one participant observed, “but I think for him like he didn’t really seem to go that route.”

Finally, visitors enjoyed seeing Lloyd’s office space. Previous to going through the exhibit, several said participants said that an exhibit that impacted them gave a sense of authenticity, either because they were located where an event happened, or they simulated something in a realistic way. While talking about her experience in a museum in Belgium, a participant said, “I just remember being there and being like, holy cow, like everything that had just happened like came like super to life.” Another participant said of one exhibit that “you can like feel like what an earthquake feels like.” A participant who went to the home of a painter in Spain said, “it was cool because you’re in his house….you’re like there where he actually sat and painted.”

When visitors talked about Lloyd’s office space, they mentioned similar reasons for liking, or wanting it to improve. One visitor said, “I kind of want it to feel lived in, like you’re seeing a part of his life.” Another felt impressed that “this is the actual typewriter that he wrote these books on, you know.”

Pain Points. Participants expressed several common concerns. They mentioned frequently how they struggled with the location of the room, the layout of the exhibit, and the lack of interaction in the experience.

Several visitors said they did not know that they could go into the Lloyd Alexander room. A participant noted that “it’s a little ambiguous as to whether or not you’re allowed in here.” Some of those reasons for the ambiguity were the closed door and keypad, the furniture that made it look like a conference room, and not knowing it existed.

Challenges related to the layout included not knowing where to begin as well as specific comments on areas that were too low or high to see. A participant suggested that we "keep the low stuff up, like oh like I can look at this in detail." Concerning how the organization influenced the experience, one visitor wanted “something to bring it home.” The participants also wanted more description about what the objects were and if there was a certain organization to them.

Comments about wanting more interaction focused mostly on how much text there was to read and not being able to read the books. A participant felt that the panels did not have “...as much emotional connections as kind of just like, it felt like I was reading a Wikipedia page.” Another visitor would have enjoyed being able to hold Lloyd’s books and look at them. She said “I'm kind of like very much hands on...they’re like, oh like he was so good at this. Then I’m like well I have never read anything. I can't read anything cause it's off limits.”

Despite these challenges, visitors were generally satisfied after going through the exhibit, though it impacted some more than others. The first participant who went through the exhibit felt that “nothing really stuck out” and that she “didn’t really feel anything.” On the other hand, the second participant who went through said that the exhibit “made me reconsider what I actually read and what I consider literature.” Others said they thought the exhibit was “relatable,” “straightforward,” and “inspiring to learn about him.” A participant said that “you do kind of come to feel it like a
degree of tenderness for the man" while another said, "I thought it was a really sweet exhibit...I think the exhibit itself is really well done." Within the few minutes that visitors were in the exhibit room, it was a positive experience where they gained an idea about who Lloyd Alexander was.

**Data Sample.** Table 3 is an example of the data I transcribed and organized. Each column next to the comments shows the various labels I assigned a comment in order to categorize it into themes.

**Table 3**
*Sample User Analysis Responses with Codes*

<table>
<thead>
<tr>
<th>Transcribed Audio</th>
<th>Code 1</th>
<th>Code 2</th>
<th>Code 3</th>
<th>Code 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>I guess I liked, I just watched the secret life of Walter Minney.</td>
<td>Life</td>
<td>Before</td>
<td></td>
<td></td>
</tr>
<tr>
<td>So this um I think that story has a good message of um, like, being, like putting yourself out there, and like, doing what you want to do. Um.</td>
<td>Life</td>
<td>Before</td>
<td>Impact</td>
<td>Putting yourself out there</td>
</tr>
<tr>
<td>Cause in the movie he like always wants to, he has this big imagination, he ends up traveling.</td>
<td>Life</td>
<td>Before</td>
<td>Value</td>
<td>Story</td>
</tr>
<tr>
<td>but if you want, I don't know, pursue a promotion or something, you can definitely learn from that.</td>
<td>Life</td>
<td>Before</td>
<td>Value</td>
<td></td>
</tr>
<tr>
<td>I don't know anything about it. Is he an author?</td>
<td>Author</td>
<td>Before</td>
<td>Life</td>
<td></td>
</tr>
<tr>
<td>I guessed because you asked me about the story.</td>
<td>Author</td>
<td>Before</td>
<td>Life</td>
<td></td>
</tr>
</tbody>
</table>

**Alexander Room Survey**

After completing the user interviews, we desired to know the experience of visitors who studied in the room. For a period of time, we noted when students were in the room. We then approached the students and asked if they were willing to answer three questions:

1. How did you learn about the room?
2. Why do you use the room?
3. What do you know about the exhibit?

Over the course of a week and a half, we observed 13 people using the room and extended the survey to eight of those students. Though probably not a representative sample of those who use the room, the comments did reconfirm the interview data.
Six students learned about the room through a friend. Two said they had seen the door opened and saw the sign that said they could study there. When asked about why they use the room, some students liked it because they could talk. Others went there to get in the ‘zone’ and be away from people that might distract them. Four of the students said they liked the room because of the soft chairs and another liked studying there because when she looks around, it is more interesting than just looking at a white board.

Generally, the students did not know anything about the exhibit. Three of the visitors had gone through the exhibit when they first entered the room, but they did not remember anything about it. One student had read some books by Lloyd in elementary school but could not remember which ones. The other students did not know anything about the author. One of the students said that the exhibit did not grab his attention like an exhibit about vinyl records on the library's main floor.

Though only a small data sample, the number of students using the room during the time frame for gathering data suggests that only a few students actually used the room. Those who did, generally knew they could go in by word of mouth. Occasionally, students entered the room when they saw the door open. The students who used the room tended to be those who returned frequently to study there because it felt comfortable and they could talk without interrupting anyone. Though students enjoyed the space, they rarely interact with the exhibit.

**Data Synthesis**

I synthesized the evidence into several concrete deliverables that communicated the identity of the target audience and helped us understand their experience in the exhibit. These include a Point of View statement, user personas, and a user experience map. Representing the data through visual graphics and concrete statements gave the design team something to reference during the design.

**Point of View (POV) Statement.** In accordance with experience design practices (Rossman et al, 2019), a point of view (POV) summarizes the results of user research into a concise statement that represents the user’s need. We based the following POV on the motivations we identified through the primary and secondary research:

> Students studying in the library want an exhibit room that is comfortable, helps them study, and provides a new context to explore familiar things because an open exhibit room can guide to fresh insights and personal fulfillment.

This POV states that visitors want a room that is open and clearly accessible to study in. This means they can use comfortable furniture, access power outlets, and feel welcome enough to linger in the space. Though students might look at the exhibit, that is likely not the reason they are in the room.

Students who go through the exhibit want one which builds on familiar objects, experiences, and ideas in a way that guides them to learn new things. In the same way that visitors at *The Great War* exhibit remembered someone they knew who had served in the military, visitors compare what they are looking at with their own lives and find meaning that is relevant to themselves.

**User Personas and the Target Audience.** Building on Falk (2016) and Zaugg (2016), I created four personas, or fictional visitors, who represented various subgroups in the target audience. Each persona had unique needs which influenced how they might interact with the exhibit space and room. With the exception of the Explorer, I gave each persona two labels: one to represent their reason for being in the library, and the other for why they would visit a museum.
The four personas are: (1) The Explorer, (2) the Collaborator/Facilitator, (3) the Islander/Recharger, and (4) the Side-kick/Hobbyist.

**Figure 20**
*Persona 1: The Explorer*

The Explorer. This student is inquisitive. He does not have a specific reason for being in the library, he simply enjoys learning about new things and discovering what might be around the next corner. He avoids experiences that restrict his ability to explore and follow his interests. When something does pique his curiosity, he is willing to spend time to learn more. A major obstacle this student faces for interacting with the exhibit is that he does not know the room exists, or he believes it is off limits to students. In addition, the exhibit does not help him to find more information about something he finds interesting. When he has an unanswered question, he does not know where to go, besides Wikipedia.
The Collaborator/Facilitator. This student comes to the library to fulfill a social and academic need. She likes to use rooms and spaces that let her work on projects with her class friends. She is motivated to succeed and to do so in collaboration with others. When she goes through an exhibit, she is usually with other people. She might occasionally reference the content but generally her focus is on talking with the person she is with. She values a library space which allows her to collaborate and an exhibit that can help her better socialize and find common connections. She enjoys using the Lloyd Alexander room because she can talk with her study group. She wishes it had a white board and she does not like that her group has to leave when there are faculty meetings.
Persona 3: The Islander/Recharger

Maria Gomez

The Islander/Recharger

Bio
Maria found the second floor music area right after classes started and studied there the rest of the semester. During finals week, all the tables were filled so she wandered around the library until she saw people leaving the Lloyd Alexander room. Maria finds inspiration in the things around her. She frequently returns to the same place to study and finds comfort in the familiar, though she does enjoy exploring new things through foreign literature and movies. She wants a museum experience which is comfortable, easy to access, and lets her reflect.

Library Motivation
Environment
Growth
Achievement
Social

Goals
Find a comfortable, accessible study space
Find inspiration in the environment
Finish assignments and school work

Frustrations
The room does not look like it is open for use
There are people in the room
The exhibit should have more quotes on the walls

“I love that there’s classical music playing because it helps me study and relax. I feel like it is my main area of the library.”

The Islander/Recharger. This student wants a space that is comfortable and accessible. Once she finds a place that meets these criteria, she will habitually return there to study. When she is in an exhibit, she focuses on how the overall space makes her feel and if it helps her reflect and ponder. A major frustration with the Lloyd Alexander room is that it is not always available since other people use it. She also wants more things on the walls that she could be inspired by while she studies.
Figure 23
Persona 4: The Side-kick/Hobbyist

Stephanie Miller
The Side-Kick/Hobbyist

“\When I see other students studying, it gives me the feeling that they are being responsible and working hard so I should too.\”

<table>
<thead>
<tr>
<th>Involved</th>
<th>Dedicated</th>
<th>Interested</th>
</tr>
</thead>
</table>

Bio
Stephanie enjoys being around people and learning why they do the things they do. Her interests include music, reading, and movies. She loves helping children enjoy learning and is always looking for ways to be a better teacher. She noticed that other people were studying in the Lloyd Alexander Room so she decided to study there with her friend. She likes the large windows and that she can talk without worrying about annoying others. She would like an exhibit that sparks conversation, gives her new insights, and helps her learn about the motivations of the author in an interactive way.

Library Motivation
- Environment
- Growth
- Achievement
- Social

Goals
- Finish personal assignments and school work
- Connect with others
- Find inspiration for teaching

Frustrations
- The room appears restricted
- Cannot interact with the books
- No place to resolve unanswered questions.

Age: 21
Major: Elementary Ed
Class: Junior
Family: Married
Home: Richmond, VA

The Sidekick/Hobbyist. This student is driven to finish personal tasks and assignments. She enjoys studying around people, yet she usually does not study with a group. This visitor is most interested in an exhibit that deepens her knowledge about a topic she knows something about. If the topic is interesting enough, she will go out of her way to visit the exhibit. She enjoys the Lloyd Alexander room since it has large windows and lets her talk with friends. She also thinks it’s really neat that she can look at Lloyd’s actual typewriter and book covers. Like the other students, she hesitates to study in the room because it looks off limits. She feels like she leaves the exhibit with many unanswered questions about Lloyd and she does not know where to go to learn more.

These four personas represent general categories, rather than actual people. Students might identify with a different persona as their needs change. In addition, the pairing of library and museum labels that I gave each persona does not mean that having one characteristic as a library patron predicts behavior in a museum. A student who approaches a library as an Islander might not visit a museum as a Recharger. I matched several of the labels based on similar characteristics, such as the Islander/Recharger and Collaborator/Facilitator. I combined other labels like the Sidekick/Hobbyist because I wanted to include those characteristics in the personas and that was the only pairing possible.

User Experience Map. I mapped how most visitors went through the exhibit on a chart known as an experience map. Each column in the diagram represents a “touchpoint” (Rossman et al, 2019), or a step in the overall experience. For example, the first thing a visitor does in the exhibit experience is to look at the room. As I learned through the research, this was usually the last
touchpoint they experienced. Each row represents a dimension of the visitor’s experience. I filled each rectangle with a quote from the library employee interviews. Each quote represents a common thought, feeling, action, or challenge visitors expressed during that part of the experience.

### Main Implications

The user research provided several implications for how we approached the design. Below I note each implication and how we addressed it in the design.

**First Implication.** The target audience is composed of multiple groups who have various reasons for being in the library. Some of those reasons might be contradictory.

As I designed, I considered how different choices affected potential visitors. The user personas were especially helpful as I drafted the exhibit’s big idea. As I looked at each persona, I tried to imagine how the big idea might interest an Explorer versus an Islander. Seeing the faces and reading the fictional biographies of the students also helped me consider if the big idea would intrigue someone studying Economics versus a student majoring in Elementary Education or Humanities. Based on
this comparison, I created a big idea that addressed universal topics like inspiration, creation, and impact rather than a more specialized theme, such as how to be an author.

**Second Implication.** Many exhibit visitors are returning alumni or faculty members with families. Though they were not the target audience, I had to be careful to not isolate them from the experience.

We considered the needs of these secondary audiences by asking former faculty members to review the label text. They had known Lloyd personally, so they were able to clarify or correct any inaccurate content. We also designed a variety of activities in order to appeal to different levels of interest and engagement. One way we tried to include children was to create a coloring page and an I Spy game to play.

**Third Implication.** Learners faced three primary challenges: (1) they did not know the room was open, (2) they did not know anything about Lloyd, and (3) they did not feel motivated to go through the exhibit.

The experience map helped us locate where these gaps inhibited learning. For example, we found that most visitors did not make it past the first touchpoint of entering the room since they did not know it was open. We revised the experience to include touchpoints that helped visitors overcome these challenges.

**Fourth Implication.** Visitors like stories and artifacts. The stories might be about life events that they are currently experiencing, such as finding a job, getting married, and living in a foreign country. We also needed to consider previous experiences which could influence the things that visitors value in an exhibit.

We focused the project on creating a meaningful experience in which participants felt impacted emotionally and learned new insights. This aligned with the POV in which we had said visitors wanted a comfortable, familiar space. We tried to emphasize things students were familiar with. We referenced *The Black Cauldron* throughout the exhibit in case visitors had seen the Disney movie. Since students had been interested in Lloyd’s early life, we included additional stories about his growing up period.

**Fifth Implication.** Create a space that allows both exploration and study.

We kept furniture in the room that students could use. For the panel by the entrance, we used wording that welcomed the student in and encouraged that student to study and explore the space. A panel also shows the visitor what was appropriate to do in the room.

**Sixth Implication.** Consider the questions visitors will have and provide ways for them to get answers to those questions.

The front-end analysis helped us identify common questions like why there were so many images and statues of Mozart, or how Lloyd’s collection came to be in the library. We focused on answering many of these questions in the panels. We also included videos so visitors could learn even more about Lloyd’s life. Several panels encouraged visitors to learn more by pointing them to resources throughout the library. At the end of the exhibit, we listed the resources we used in case a visitor wanted to look for those articles and books.
Environmental Analysis

The context that we designed in was influenced by the organizational structure of the library and constraints imposed by the physical space. Factors such as time and restricted library access also impacted our design.

Stakeholders

1. Education and Juvenile Collection librarian: Sarah is the librarian responsible for the Lloyd Alexander collection. She curates the collection and oversees its display. Sarah was invested in the project because of her role as a librarian, her personal interest in children's literature, and because she had known professors who interacted closely with Lloyd Alexander. For this project, she wanted the redesigned exhibit to truly honor Lloyd Alexander and be more accessible for students.

2. Library administrators: Part of the library's mission is to provide spaces that facilitate discovery and access to resources. The library serves as the university's primary academic library. It houses more than six million items including books, periodicals, musical scores, DVDs and audiobooks, maps, and numerous donated collections. The library also offers access to software, technology, and spaces for students and faculty to collaborate and create. These services demonstrate the library's emphasis on enhancing education in new and innovative ways.

3. Experiential grant reviewers: These library faculty approve projects for the experiential learning grant. The purpose of the grant is to provide real-world learning experiences for students and to encourage student-librarian collaboration. They were interested in how the project completed this goal.

4. Exhibit manager: The exhibit manager is responsible for designing and maintaining the library's galleries and exhibit spaces. He and his student employees work with students and other artists to set up exhibits in the library. His group did not have direct responsibility over the Lloyd Alexander exhibit, but he offered to support the design and complete the final installation. He was especially interested to see how we would incorporate AR into the exhibit.

5. Online learning supervisor: He oversees the design of programs that improve patron learning in the library. His team had previously worked on incorporating AR technology into the exhibit, so he was interested in finding a way to successfully use the technology. He served on the team as the multimedia developer and he edited the video segments.

6. Library marketing manager: He is responsible for approving signs that hang in the library and giving permission to film. He wanted us to hang panels in a way that did not damage walls or doors. Because the installation team was unavailable during the physical prototyping phase, we worked with him to print panels and renderings.
7. Assessment and usability department: This department is responsible for assessment in the library. These stakeholders were interested in how we conducted evaluation and the data we gathered. They were willing to advise during the evaluation planning and loan equipment.

8. Social Science reference specialist: He oversees the help desk student employees. These employees help maintain the juvenile collection which the exhibit falls under. Therefore, his student employees would be responsible for monitoring the space and replenishing any interactive activities.

Secondary Stakeholders

1. Elementary education faculty and students: Several classes in the teacher training department focus on how to use children’s literature in the classroom. Retired professors who taught those courses knew Lloyd personally and worked with his family to negotiate the donation. Current professors assign projects that incorporate the juvenile collection.

2. Community members: Many alumni return to the university and look at library exhibits as part of their visit. In addition, other community members may use library resources.

3. Fans, friends, and family of Lloyd Alexander: As part of the agreement to donate Lloyd’s collection to the library, his family required that a permanent exhibit displayed Lloyd’s work in the library. They hoped that the exhibit would be a creative space where students could be inspired by his life.

Physical Environment

The Lloyd Alexander room resides on the fourth floor of the library. The room is meant to serve as an exhibit space, conference room, and study room. Next to the door, there is a card swipe, a room number plaque, and a plaque that gives the hours the room is open.

Figure 25
Outside the Lloyd Alexander Room
On the inside wall, next to the door are two sets of light switches. One turns on exhibit lights and another controls ceiling lights. Large windows along the west wall allow patrons to look out at the juvenile collection. A large conference table surrounded by chairs is in the center of the room.

**Former Exhibit.** In the original exhibit, a patron walked into the room and faced a wall with two cases that held objects, text panels, and a portrait between the cases. To the right of the display cases, a recreation of Lloyd’s office, called “The Box” by the author, preserved Lloyd’s workspace where he wrote and drew. The space included a desk, typewriter, drawing supplies, various memorabilia, and several bookcases featuring his work. Pictures hung along the wall accompanied by quotes.

**Figure 26**

*Inside the Lloyd Alexander Room*

The exhibit content was organized into these sections:

1. Photographs in picture frame, text panel
2. Display Case 1
   a. Early Years: text panel, photo, two books.
   b. War Time: text panel, photo, *Janine is French*, letters, military cap.
   c. Adult Writing: text panel, manuscript of *And Let the Credit Go*
   d. *Time Cat*: text panel, book, manuscript of *Time Cat*.
   e. Inspiring Prydain: text panel, harp
3. Painting, text panel
4. Display Case 2
b. Cricket Magazine: text panel, magazines, manuscript, envelope.
d. Later Life: text panel, picture, pipe, medal, letters, heads, little wizard, medal figures, donkey.
f. Disney's The Black Cauldron: text panel, picture book, stickers, cover with signatures of characters, picture of concept art.

5. The Box Area: text panel, music stand, typewriter and stand, desk, drawing tools, books, objects, trash can, chair, bookcases with books, pictures, quotes, manuscripts.

Identifying the Constraints

I gathered three types of data in order to identify the constraints we faced. Notes I took during client interviews helped me understand their needs and expectations. I walked through the exhibit space and identified potential issues which I confirmed with the user analysis. I also conducted a risk analysis to identify other risks and potential obstacles.

Stakeholder Meetings. I met with Sarah so we could create a list of priorities and goals. In those meetings, she gave the background context of the project about where the exhibit came from and why it needed to be redesigned. In this interview, she stated that her main goal was to make it interactive. She said that the majority of those who looked at the exhibit were fans who knew about Lloyd Alexander so she hoped we could create something that would appeal more to students who did not know about him. She also let me know which resources were available. One person that she identified was a former student who had created a documentary film about Lloyd. He had video footage and digital copies of images that she thought we could use. I took these notes during the interviews:


Make more interactive. Fans know him, read, fans of him. Moms and dads trying to get children involved. Big fans. They want more information. Want more of it. 95% of that kind. Audience. Target audience: non-fans, people who don't know him. Find a way to engage them. Bring more people into it. Children and literature class. Class assignment. People walking in. Assume don't know anything. University, college age.
Flexibility but will stay a while. Meet with Erik from exhibit design. Terry Young, Paul Ricks: children’s literature professors.

The other stakeholder I met with was the exhibit manager. We discuss the role he would play in the project and what was expected from it. He suggested several resources we could use during the design. He also let me know about considerations to keep in mind for printing panels. The notes from that meeting are included below:

Questions to ask:
- What is your background?
- What are your expectations for the project? What role do you plan to play?
- Where do you think the exhibit could go?
- Does there exist any user research for exhibits in the library? If so, where can I access it?

Notes from Meeting 1:
Consider maintenance.
Super excited by Augmented Reality.
Beverley Serrell: Big Idea. Get the Big Idea of the exhibit
Books to look up: exhibition design, user experience, people in museums.
Try to find out how well it is accessible.
Know how exhibit steers to path.

Notes from Meeting 2:
Panel size: up to 64” 50” wide max on the wall. Sticky backaper
Text and image > make outline
3-4-day lead of what colors need.
Image Size: 80 dpi- 150 dpi. Put an attribution
Final deliverable: one file. Embed everything Map parts out.

Room Observation. I went through the Lloyd Alexander room and I noted parts of the space that might be a barrier to the visitor. Things I identified were:
- There was no introduction panel or title.
- There were labels for only some of the artifacts. The labels focused more on discussing what the artifacts were, rather than where they came from or why they were important.
- The labels were information-focused.
- I could not identify what the main message of the exhibit was.
- The multiple light switches, key card swipe, and plaques by the door could be confusing.
- I was aware that much of that area was changing and I wondered if that would impact the room.

Though these were personal observations, many of them were confirmed during the user testing. Participants had thought the room was closed to students because of the card swipe and closed door. When they went into the room, they wished for a clear indication of where to begin. Some
mentioned that the labels felt like a Wikipedia article and they had questions about many of the artifacts (see the Learner Analysis for a complete discussion).

Environmental Observations:

- No intro plaque or title, by wall
- Organization:
- Picture of life
- Early works and more Bio. War experience, documents that show words he crossed out.
- Painting
- Different later works and objects
- Alexander's Box - Crooked pictures
- Start by his pictures and work around The Box. See at a distance lots of objects
- Object descriptions are only on principal plaque
- Plaque: Identification what they are. Not where came from or why he chose to have them. Glow from lights.
- What is the main takeaway of the exhibit? What is the Big Idea?
- What experience will those who see it have?
- Windows: ca see out. Full wall. See people studying
- Multi-Purpose Room. Turn lights on manually
- An unknown switch, lots of lights on ceiling, temperature. Warm and Cold lights - turn exhibit lights on manually.
- White walls.
- Who are the primary users?
- Plaque of exhibit hours next to card swipe: “please walk in during hours.”
- Reasons for having an exhibit? What are the attitudes of other employees in the library about the exhibit?
- Location on the 4th floor, by table study area. Next to Juvenile Literature.
- Changes in the area: Rebranding as experiential learning zone. Moved 3D printers, AR, and VR tech to media center. Remodeling the CID space and renaming.
- What is the future of Juvenile Lit in this area? How does the mural and exhibit fit in if the books are moved to the 1st floor? Would they move the exhibit down there? How can the exhibit fit in this space?

To create renderings, I measured everything in the room. I noted details such as the size of display cases, where power outlets were located, and the height of the carpet border along the bottom of the wall.
Figure 27
Measurements for the East and North Walls
Risk Analysis.

A third way I identified constraints was to brainstorm risks and obstacles we might experience. In this way, we identified that the installation team would become unavailable after June. We also considered the possibility that the library would close due to COVID-19. I assigned each risk a number representing the probability that it would happen, and a number for the impact this obstacle would have on the project. Multiplying these two numbers together gave me a value for the total risk which I organized from greatest to smallest. For each item, I then proposed a solution for how we would mitigate, replace, or accept each risk. Figure 28 is a sample of this risk analysis.

**Figure 28**

*Sample Risk Analysis Chart*

<table>
<thead>
<tr>
<th>Possible Risk</th>
<th>Probability</th>
<th>Impact</th>
<th>Total Risk</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eric won’t be able to install the exhibit in the given time frame</td>
<td>0.9</td>
<td>0.8</td>
<td>0.72</td>
<td>Change timeframe to April 22 we deliver the completed design</td>
</tr>
<tr>
<td>We lack knowledge of how to create an exhibit</td>
<td>0.9</td>
<td>0.8</td>
<td>0.72</td>
<td>Mitigate: bring in people to give advice. Hold frequent check-in meetings. Read 20 min/day from exhibit design book</td>
</tr>
<tr>
<td>We do not have a web developer in case it has to be something online</td>
<td>0.9</td>
<td>0.8</td>
<td>0.72</td>
<td>Mitigate: look into using website creation like woocommerce</td>
</tr>
<tr>
<td>I have other projects that interfere with my time to work on it</td>
<td>0.9</td>
<td>0.8</td>
<td>0.72</td>
<td>Set aside time each week to work on project. Adjust timeframe so that the heavier design work is done after semester ends. Talk with team about adjusting deliverable date. Make an effort now, while it is open to go there. Go there Wednesdays. It happened. Now I need to talk with the team about how to move forward without access to new contacts. Consider focusing on what is already in the room. Accept</td>
</tr>
<tr>
<td>Access to special collections is taken away</td>
<td>0.9</td>
<td>0.8</td>
<td>0.72</td>
<td>Go into doing an online exhibit. Look into doing an online exhibit. Follow up with Rachel on what is the MVP. Have a discussion in the sprint planning meeting about scope. What do we honestly think we can finish? What is the MVP? What is she willing to commit to do? Make sure the things she is taking on are the ones that she wants to.</td>
</tr>
<tr>
<td>COVID-19 makes it so we can’t go to the library at all</td>
<td>0.7</td>
<td>0.8</td>
<td>0.56</td>
<td>Focus on label writing and interactions. Look into doing an online exhibit. Instead, follow up with Rachel on what is the MVP. Have a discussion in the sprint planning meeting about scope. What do we honestly think we can finish? What is the MVP? What is she willing to commit to do? Make sure the things she is taking on are the ones that she wants to.</td>
</tr>
<tr>
<td>Megan does not have enough time to work on the project</td>
<td>0.7</td>
<td>0.8</td>
<td>0.56</td>
<td>Follow up with Rachel to see what we exactly can do in the room without approval. What can we do with approval. Have her begin looking</td>
</tr>
<tr>
<td>We can’t get approval to put things on the walls</td>
<td>0.5</td>
<td>0.8</td>
<td>0.4</td>
<td>Make sure to include Eric in the discussion when we begin talking about label size and show him the visual mockups</td>
</tr>
<tr>
<td>We lose power and can’t meet online</td>
<td>0.5</td>
<td>0.8</td>
<td>0.4</td>
<td>Accept</td>
</tr>
<tr>
<td>We can’t get the text labels printed they are too large or small</td>
<td>0.5</td>
<td>0.8</td>
<td>0.4</td>
<td>Talk to Rachel about the MVP and how we might scope it. Look into consolidating the touchpoints and focusing on fewer. See if we should combine Touchpoint 4 and 5. Make TP 3 very simple</td>
</tr>
<tr>
<td>We won’t get it done before I need to graduate</td>
<td>0.9</td>
<td>0.4</td>
<td>0.36</td>
<td>I have Matt begin looking into the tech options. Talk to Rachel about the MVP and how we might scope it. Look into consolidating the touchpoints and focusing on fewer. See if we should combine Touchpoint 4 and 5. Make TP 3 very simple</td>
</tr>
<tr>
<td>We don’t know how to use video technology</td>
<td>0.7</td>
<td>0.4</td>
<td>0.28</td>
<td>Have Matt begin looking into the tech options. Talk to Rachel about the MVP and how we might scope it. Look into consolidating the touchpoints and focusing on fewer. See if we should combine Touchpoint 4 and 5. Make TP 3 very simple</td>
</tr>
<tr>
<td>I neglect the actual development/design because I am focusing on the pm stuff</td>
<td>0.7</td>
<td>0.4</td>
<td>0.28</td>
<td>Dedicate 1 hour each day to pm stuff.</td>
</tr>
<tr>
<td>I neglect the pm stuff because I am focusing on the design/development</td>
<td>0.7</td>
<td>0.4</td>
<td>0.28</td>
<td>Dedicate 1 hour each day to pm stuff.</td>
</tr>
</tbody>
</table>
Main Implications.

As I gathered data, I identified physical constraints we needed to account for and consider in the design. I also discovered other constraints which impacted our design process and the final product.

Physical Constraints. The physical space imposed several restrictions on the design and experience. First, there was a finite amount of space we could use. Available space included the entire north and east walls, the area by the door on the west wall, and some of the windows—as long as most of the windows remained uncovered. The window ledge along the west wall made it impossible to place furniture there.

There were some aspects of the exhibit that Sarah did not want us to change or remove. This was mainly the office space. Because of the contract with the family of Lloyd Alexander, a replica of Lloyd’s office needed to be in the exhibit. Sarah decided that beyond adding a few artifacts, we would keep it as it was. She also requested that we display Lloyd’s harp and the Newbery Medal. Aside from these requests, she was willing to approve any other changes we made.

Since the exhibit needed to support the room’s shared purpose as a study space and conference room, we designed around there being a table with chairs in the middle of the room. Based on user feedback, we requested permission to move the large conference table that is currently in the room and replace it with a smaller one. Unfortunately, administrators did not approve this change. We used the detailed room measurements to plan around power outlets in order to keep as many uncovered as possible for student use.

Sarah said that major renovations to the room were not feasible due to the time it would take to receive approval and the low likelihood that such changes would be approved. This meant that we could not change the light fixtures to match our new design. We also could not install permanent interactions like a TV display or make any other changes to the walls. Interestingly, even though administrators did not approve moving the table, we received permission to paint the north wall a grey color. A few weeks after asking, a maintenance crew had completed the request.

In addition to the constraints from the current space, we had to consider the possibility that the exhibit will eventually move. Sarah informed me that though this change might take several years to happen, administrators had discussed possible locations where it might move. To account for this possibility, we tried to make our design adaptable to a new space.

Other Constraints. As the project progressed, we faced several other constraints and challenges. The first came as COVID-19 spread, leading to restricted access and closures. The library maintained limited operating hours, but the special collections department, which holds the artifacts not on display, was completely closed to students and faculty. Because of this, we could not access any artifacts that were not already in the room. In addition, the exhibit manager could not return unused artifacts. Closures related to the pandemic also meant that fewer students were on campus which made recruiting participants for the evaluation more difficult.

We also faced several time constraints. The first was that due to the library grant, we had to complete at least a portion of the project before August 2020. Another time constraint came with the installation team’s unavailability to help install the exhibit after June when another project would begin. We planned to finish the design so the exhibit team could install in May which would make the exhibit available for students returning for the fall semester. As it turned out, we did not meet this deadline, and we were not able to install the exhibit as part of this project. Instead, we
installed a prototype and gave the client a design she could hand to the installation team when they became available.

**Consulting Products/Precedent**

Prior to designing the exhibit, I conducted a comparative analysis of several exhibits that were on the same university campus as the Lloyd Alexander exhibit. I also traveled to San Francisco and Washington D.C. to analyze museums at those locations. I visited six museums and galleries as part of this analysis:

- **University Galleries:**
  - Harold B. Lee Library, Utah
  - Education in Zion Gallery, Utah
- **Museums:**
  - The Walt Disney Family Museum, San Francisco
  - The Library of Congress, Washington D.C.
  - The National Air and Space Museum, Washington D.C. area

My purpose was to identify how exhibit designers communicated a big idea and how they guided visitors through the experience. I also wanted to observe what technologies and methods they used to encourage interaction.

**Similar Products**

**In Memory of L. Tom Perry.** This display, housed in the library’s special collections, commemorates the life of a leader in the Church of Jesus Christ of Latter-day Saints. The display is a single, wooden encasement which holds documents, memorabilia, and two video screens. The screens show photographs of L. Tom Perry. A plaque outlines key moments in his life, while the objects show several items that were important to him in his work and church service.

The exhibit is simple and only takes a few minutes to experience, yet the simplicity allows the visitor to gain a brief insight into L. Tom Perry, his life, and his relationship with the special collections portion of the library.

**Education in Zion Gallery.** Housed in the Joseph F. Smith building on the university campus, this gallery houses exhibits that focus on the role of education in the university and church’s history. One exhibit, *BYU and the Four Aims*, teaches visitors the four principles that guide the university’s vision. In one room of the exhibit, display cases highlight people who exemplified each aim. In addition to looking at the displays, visitors may sit on soft chairs as they look out of a large window onto campus.

Three aspects of the exhibit were insightful for my project. First, the designers used signage to clearly communicate the exhibit’s location, content, and the rules of the space. Entering the gallery, visitors can see a map which shows the various exhibits and how to access them. At the entrance of the exhibit, there is a large panel with a cutout picture of the university’s founding president, Karl G.
Maeser. This panel includes some introductory text as well as a statement that introduces the exhibit’s big idea, “Individually the four aims are not uncommon, but together they are unique.” Within the exhibit, signs show what behaviors are unacceptable, such as eating food, talking on a cell phone, or moving furniture.

In the portion about people who exemplified the aims, each person is highlighted in a display case. A case contains a large photograph of the individual, the person’s name in large font, a quote from that person, several text panels, an icon representing the aim that the person exemplifies, and an artifact from the person’s life. The background of the case is a single color on the top half, and a large historical photograph on the bottom portion. The text tells stories about how those individuals interacted with students. For example, one panel stated, “If you have a campus job, thanks Brigham T. Higgs...” This activates the prior experience of students who worked on campus.

Besides using visual design and text to communicate a big idea, the exhibit demonstrates how to include interactive elements while using limited technology. As visitors walk through the exhibit, they see glass talkback boards with a reflection question. The visitor can write an answer, read others’ comments, or simply reflect. These comment boards guide the visitor’s thoughts, yet they are open-ended questions which allow for individual responses. To allow deeper exploration, a booklet sits on a small table with stories about each individual. A large panel next to the window gives statistics about how working with a mentor can enhance learning. The panel then provides ways that students can find and work with a mentor. In the middle of the room, a large cube hangs from the ceiling with a question on each side. Because of limited lighting, however, it was hard to read some of the questions.

In a different exhibit within the gallery, I noticed one display that recreated a historic space. The display case showed artifacts from a type of school in the 1800s. The artifacts provided insights into what the room might have looked like, such as having a wooden floor, what people wore, the books they had, and what an everyday activity, such as washing hands, might have been like. The size of the case allows visitors to get close to the artifacts without touching them. Text panels provide additional insight on the context, what the objects were, and why they were important to those living at the time.

**Figure 30**
*Mary Farahnakian Display Case*

**Figure 31**
*School of the Prophets Display Case*
The Walt Disney Family Museum. This museum in San Francisco contains multiple exhibits which follow a chronology of Walt Disney's life. Beginning with his childhood on the first floor, a visitor walks through several floors before ending with a display that discusses his death. As visitors walk through, they read text labels, look at artifacts, watch videos, listen to audio recordings, and take part in interactive stations.

**Figure 32**
*Walt Disney's Childhood*

**Figure 33**
*Video Recording of Disney*

The exhibit uses stories from Disney’s life to engage visitors. In the room about his childhood, videos tell stories about how he grew up. Figure 32 shows one video that tells about how he sold papers in winter for his dad and the struggle that was for him. In many recordings or videos, Disney tells about an experience and provides greater context behind something on display.

The overall feel of each exhibit room contributes to the emotion of a given moment. Disney’s childhood area feels like it is an old-fashioned parlor. As a visitor progresses through the exhibit and Disney’s life, the rooms become more modern until arriving at the last room in the exhibit that focuses on Lloyd’s legacy. Here, the interior design of the room does not represent any specific time period. The walls are white, soft audio plays, and images from his movies are projected onto the walls.

Though the museum helps remember the nostalgia they feel from growing up with his stories and visiting Disneyland, there is an enormous amount of content. At times it felt overwhelming to choose where to focus my attention. Presenting all of his personal collection in a continuous flow gave a sense of what he accomplished in life. Yet it also decreased the impact of any one moment within the exhibit.

Library of Congress. At the Library of Congress, I went through the exhibit titled *Rosa Parks: In Her Own Words*. This exhibit was similar to the Lloyd Alexander exhibit in that it focused on the legacy of an individual, and it was housed in a library gallery. In a similar way that we created an exhibit in a conference room, this exhibit was in a space that was not originally intended to hold an exhibit. I observed that the designers placed a large, noticeable panel at the beginning of the exhibit. This panel included an image of Rosa Parks with a title and introduction text. This text was much longer than that in the other museum.
The exhibit followed a linear flow around a wall the designers had built in the middle of the room. Display cases held manuscripts and photographs that highlighted Rosa Park’s experience during the Civil Rights movement. As the name suggested, the exhibit included many quotes by Rosa. The designers placed quotes on the wall in large, block letters. Though I did not read many of the captions or panels, these quotes helped me gain a sense of what the exhibit was about.

![Figure 35](Image)

Introduction to Rosa Parks

![Figure 34](Image)

Rosa Parks Manuscripts

The way the designers displayed Rosa’s documents was interesting. They placed a large photocopy of the paper on a black wall. Below this, a small caption explained what the document was. This made the document noticeable and easy to look at.

**Consulting Products**

This next group of exhibits were influential because they employed tactics which I wished to imitate in our design.

**A Pillar of Light.** This exhibit in the library’s special collections area demonstrates how an exhibit can guide visitors to learn more from manuscripts, and text. It also is an example of an exhibit that created a mood through purposefully designed lighting and sound.

This exhibit commemorates the 200th anniversary for an event which is significant to members of the Church of Jesus Christ of Latter-day Saints. As visitors enter the library’s special collections area, they see a large poster (See Figure 36). The sign includes the exhibit’s title with a painting of the event in vibrant. The title and painting help visitors know instantly the topic of the exhibit. In contrast to the Education in Zion exhibit, the designers do not include the big idea statement on the panel.

![Figure 36](Image)

Pillar of Light Introduction
As visitors enter the exhibit, they see, in subdued lights, an open room with trees along the wall, leaves above, and the sound of soft instrumental music and forest noises. The visitor looks at cases that display books and documents. Photocopies of manuscripts and pictures hang on the walls. Before the visitors approach the display cases, they see a bench in the middle of the room. A book sits on the bench and a sign invites the visitors to read it. As a visitor sits, words on the wall invite the visitor to pray and ask about the truth of the message.

The environment simulates the grove of trees where the event took place. Furniture to sit on, and text that invites the visitor to meditate and pray, encourages the visitor to linger and reflect. This simulated environment helps the visitor see him or herself in the place of the person that the exhibit is about. These elements give a sense of presence and authenticity to the experience. Thus, the visitor is invited to look within him or herself and think about the content and message of the exhibit.

The only technology that the exhibit uses to encourage interaction is audio recordings, a tv with earphones, and an iPad with pictures on it. Rather than focusing on technology, the exhibit uses the overall feel of the environment to encourage engagement and interaction.

In addition, the open books and photocopies of manuscripts help visitors interact with the historic documents. Because the books are enclosed in cases, the designers created photocopies of the manuscripts that visitors can look at closely and read. The pages hang next to each other on a wall, and key sentences are outlined and written on a small text panel by each image. This allows the visitor to see the differences between accounts of the event. Visitors can also scan a barcode to see a website that has a transcription of the manuscripts.

As visitors leave the exhibit, they see two large boards with questions on them. Visitors can place stickers under each board that are color coded with possible answers. In addition, visitors may leave comments in a booklet. Unlike other comment books, this booklet has only blank pages so visitors can leave any type of comment they wish. This gives the visitor complete control over his or her response and allows each person to leave a physical impact on the exhibit. Their comment will then influence future visitors who look at the answers and compare it with their own experience.

**Figure 37**
*Pillar of Light Manuscripts*

The insights I gained from this museum came primarily as I walked through the historical galleries. Three exhibits covered the history of African Americans in the United States. These three exhibits guided visitors through a linear flow of the history of African Americans in the United States. As I went through, I observed primarily the use of signs and words to guide the visitors.

Each main exhibit began with a large panel which included a title, an introduction paragraph, and a breakdown of the major sections (see Figure 38) The title was noticeable because of its size and the contrast of the white text on a black background. The text was also backlit which added to its visibility.
Comparing the Figure 38 with Figure 39, demonstrates how the first panel a visitor looks at can communicate the exhibit’s big idea. The black and white panel for the history exhibit communicates the more somber tone and serious nature of those displays.

**Figure 38**  
*The Journey Toward Freedom Introduction Panel*

In contrast the panel for an exhibit titled *Explore More!* communicates energy with its vibrant red background. The font for the title has a modern look in contrast to the more traditional font on the history panel. This panel encourages the visitor to “make the journey your own” while the history panel is much more passive and focused on presenting the historical information.

In the historic galleries, the designers developed ways to present a large amount of information in visually appealing ways. As I observed visitors in the gallery, I noticed that they looked at only a small portion of the content. There were so many panels and artifacts that it would have been impossible to spend time at each one. Yet instead of feeling overwhelmed, visitors could quickly see the things that looked interesting and focus on those. One way the designers accomplished this was to place text panels and images together in a type of collage (see Figure 40). Panels that were black provided an overview of that section, and orange panels gave more detailed information. The text panels were interspersed among multiple images related to the topic.

Another way the designers drew visitors to certain parts of the exhibit was by contrasting complexity with simplicity. Generally, the galleries were filled with content in every direction, yet at certain points, there was empty space with only one item, such as the quote on the wall. Because this was the only text on the wall, it stood out from the rest of the displays.
In the history galleries, the designers created several displays which gave a sense of being present in the time and place of the historic events. One example is a sit-in counter where visitors could sit by a restaurant bar as though they are taking part in an actual sit-in during the Civil Rights movement. In a display case about Barack Obama’s presidency, the designers create a sense of presence by placing a large image at the back of the panel which shows a vast crowd gathered in front of the senate building (see Figure 41). The viewer feels like he or she is part of the crowd.

National Air and Space Museum. A third exhibit I looked at while in Washington D.C. was quite different from the others. The African American museum and the Library of Congress exhibits were in an enclosed room where the visitor went from one gallery to the next. This museum displayed most of its collection in a large, open multi-level room. This was to accommodate the full-sized airplanes, helicopters, satellites, and even a space shuttle.

The designers relied primarily on the novelty, historical value, and size of the artifacts to engage the visitors. Visitors learned about the artifacts through captions and panels, but the designers did not use any visual techniques to communicate a message. For example, display cases that held smaller artifacts were placed throughout the displays and along the walls. Each artifact was accompanied by a small label which gave a description of the artifact. These labels were black text on white paper. The text was the same size with no variation in font style or color.
This museum was primarily a passive experience for the visitor. They could not enter any of the aircraft and there were no activities integrated with the displays. At several locations, though, the designers provided a digital activity where a visitor could explore a 360 image of the inside of a plane or space shuttle. In this interaction, visitors could only move the image and look at numbered labels that identified various parts of the aircraft.

Though this museum was not as interactive as other ones I had visited, it still reconfirmed that looking at a real artifact can impact visitors. Simply seeing an airplane that I had read about or standing next to a real space shuttle and seeing its immense size, provided a kind of experience that felt engaging and memorable even if I was not actively doing anything.

**Main Implications**

This analysis was beneficial because we learned how other designers have created exhibits that communicate a message, guide the visitor, and invite interaction. These points summarize the implications of this analysis and its impact on our design:

1. **Size does not always equal impact**: A large museum, like the National Air and Space Museum, can create a sense of awe because of the size of the artifacts. Yet as I learned at *A Pillar of Light*, even a small exhibit that communicates a relevant big idea can lead to a meaningful and transformative experience. For our design, we could not rely on the size of the space or the artifacts to impact the visitor. We instead focused on creating a meaningful big idea that we could communicate through the displays.

2. **Help the visitor enter a new space**: Many of the exhibits used sounds, objects, media, lighting, and images to transport the visitor to a different time and place. This new space then helped the visitor approach the experience with a fresh perspective. We were limited in our ability to change the physical look of the Lloyd Alexander room. Yet we could design panels that gave a sense of presence.

3. **Interaction does not require technology**: New technology can provide interactions that would be otherwise impossible, yet effective exhibits encourage interaction even without technology. This might be through a large introduction panel, intriguing titles, questions that encourage reflection, and things to touch and look at.

4. **Use purposeful visual design to create the mood**: Each exhibit I visited had a unique feel. The National Air and Space Museum felt large and energetic while the National Museum of African American History and Culture had exhibits that were serious and prompted reflection. The designers created this feeling with lighting and with how they structured the space. They also used colors, font styles, panel layouts, and other design choices to contribute to the mood. Since we could not change the lighting or the walls themselves, it was especially important that we rely on visual design elements to influence the mood.
5. **Present information so it is not overwhelming:** Having a large number of artifacts, text, and images does not mean an exhibit is overwhelming. How that information is presented makes the difference. Without content organized in a clear hierarchy or a place to pause and reflect, a visitor can become overwhelmed. This means that carefully selecting what to include in the exhibit was important, in order to avoid displaying too much and overwhelming the visitor. The content we did include needed to be placed in a hierarchy of relevance for the visitor.

6. **Provide moments to breathe and reflect:** Allow for guided and open reflection. Include a space at the end where visitors can reflect on the overall experience and connect with their past. The exhibits I saw, both large and small, had space to sit and reflect. This was usually at a transition between galleries or at the end of an exhibit. Though there was no spot where visitors could sit and reflect without interruption, we encouraged visitors to pause and linger before leaving.

7. **Build layers of interaction:** Providing many options for more and less engagement allows visitors to cocreate their experience. This taught us that it was important to create text, images, and artifacts that would appeal to the one-minute visitor and still have enough depth to engage the more dedicated one.

**Content Analysis**

I had little prior knowledge about Lloyd or his life, except for having read his *Chronicles of Prydain*. For this reason, the content analysis proved crucial for creating an authentic exhibit. I worked with the content developer to research about his life. We read biographies, watched a documentary video, and I read as many of his books as I could borrow from the library. Before we could write text or design panels, we needed to discover his voice and understand how his works impacted us.

During this research, I discovered a depth and richness which, if visitors could glimpse, would leave them inspired and motivated to pursue their own dreams. Lloyd embodied a humble simplicity and passion for life which he was able to communicate through the words he wrote. It was this essence and depth that we hoped to communicate through the revised exhibit.

**Lloyd as a Person**

I synthesized what I read about Lloyd into the following mind map. I recorded what I had learned about his motivations, his outlook, struggles, writing habits and style, and the things that inspired him.
Figure 44
Mind Map of Lloyd as a Person
I then summarized the insights I had learned into these observations:

1. **Motivations:** His reason for writing changed from a noble and grandiose desire to write something of literary value, to a simple desire to share his unique and genuine life experience. This motivation was strong enough for him to sacrifice comfort and convenience to pay the necessary price.

2. **Outlooks:** Major characteristics of Lloyd included his discipline, his value for individuals, and his pessimistic optimist. Though he believed that inevitably something bad would happen—and he often suffered because of the misery that he saw in humanity—he also believed in people's goodness and ability to love.

3. **Struggles:** Early in life, Lloyd struggled to fit in at school, in his first job, and in the military. He was young for his age in school and did not like the rigid academic structure. At his work as a bank runner, he hated the environment and uniform. In the military, he felt lost in the ranks and restricted by the regimentation. After the war, Lloyd struggled to get his works published and ultimately reached the point where he was ready to give it up. He also struggled throughout his life with “personal demons” or deep feelings of inadequacy and low self-worth. After finishing a book, he frequently felt like it was a failure because it did not completely match the idea he had in his head.

4. **Writing Habits and Style:** though Lloyd at first struggled to succeed with writing, it was not due to a lack of effort and discipline. Throughout his life, he woke up between 3-4:30 am every day to write. During his efforts to get his first book published, he would write full time, seven days a week. Before writing a book, he read profusely. For one book that he wrote, he estimated that he read around 200 books. After finishing a book, he would spend six months rejuvenating by pondering and reading books that interested him.

5. **Inspirations:** Lloyd incorporated many aspects of his life into his writing. His first breakthrough in writing came when he realized that he needed to write about things that were familiar to him and that he cared about. He found inspiration from playing the violin, Mozart, and his harp. He drew from his experience with his struggles and found humor in experiences like working in the bank, living with his French wife in America, and serving in WWII. He loved his cats and incorporated them into books. In addition, he read prolifically, beginning in childhood and continuing throughout his life. He loved Arthurian legends, welsh mythology, and countless other subjects.

**A Timeline of Lloyd’s Life**

Since much of Lloyd’s life and outlook were interwoven deeply into his works, learning about his life gave insight into how he wrote his books. The following chart is a graphic we created to understand the progression of Lloyd’s writing. It demonstrates the shift in perspective and purpose that he experienced over the course of his life.
Figure 45
A Snapshot Timeline of Lloyd Alexander’s Life

A Snapshot of Lloyd Alexander’s Life

- **Early Childhood**
  Reading was "the major activity". Deciding on become an archaeologist, artist, or preacher. Young for his grade in school but did not like assigned reading.

- **High School and Adolescence**
  Dedicated to his art.
  Inspirations: Mozart, fill soul with world’s best poetry. Work not published. Hated work as a bank runner.

- **College and Military**
  Challenges: regimentation, college classes utter trite.

- **Early Writing**
  Chance to enter literary world. Wanted to write something of literary value that dealt with the grand truths of life.
  Wrote 12 hours (avg 5000 words) a day, 7 days a week.
  Manuscripts rejected, no work, wife adapting to new environment and loss of her baby, living with family.

- **And the Credits Role**
  "I learned to write things that I knew and loved, that were meaningful...to me as a human being" Wrote about his experience at a bank, his wife’s experience in America, his cats. First book published. Learned to find the humor in life’s experiences. Divide things with a scalpel rather than a meat cleaver.

- **Childhood Fantasy and Prydain**
  "I was interested in exploring how we become adults...Foster compassion and humanness" Based book on his cat Solomon. Lead to reading Mabieonion 12 times (welsh mythology). Following a "personal stirring". At some point have to stop reading and start writing. Met editor. Ann Durell. Bought harp.

- **Later writing**
  "The book is the thing that matters most" Woke up between 3:30-4am every day. Faced Mid-life Crisis and depression "personal demons". Writing is a way of gaining a new vision of ourselves and the world. "You can make it with good will and love."
Organized Content

At the same time that we developed the experience map and exhibit outline, the content developer and I gathered the quotes and thoughts that we felt were relevant to the exhibit. Our goal was to create a database of content that we could draw from as we wrote the panels. During the researched, we noted quotes and stories we felt related to the big idea, then we placed them in a spreadsheet. We labeled each item with a number based on the touchpoint we believed it supported.

For example, we identified a quote Lloyd had shared about art which we believed fit well in the display about Prydain, which at this point was touchpoint 5. Table 4 is a sample of the quotes and information that we gathered and organized.

Table 4
Sample of Research Document Entries

<table>
<thead>
<tr>
<th>Content</th>
<th>Comments/Things that stand out/How it might be used</th>
<th>Touch Point You Think It Supports/Strengthens</th>
<th>Page</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Underlying every great work is a great truth and we must find it.”</td>
<td></td>
<td>5.4</td>
<td>Jacob, 1978</td>
<td></td>
</tr>
<tr>
<td>“The process of growing up; developing into a humane human being.”</td>
<td>The theme</td>
<td>5.4</td>
<td>Jacob, 1978</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alexander wanted to explore in Prydain chronicles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“He was able to achieve a glimpse into the human condition, from his particular viewpoint, which was genuine, insightful, and revealing”</td>
<td>Gives a general idea of his impact</td>
<td>2.1</td>
<td>Jacob, 1978</td>
<td></td>
</tr>
<tr>
<td>“There is, unfortunately, no button we can push to relieve us of moral choices or give us the wisdom to understand the morality as well as the choices”</td>
<td></td>
<td>3.1</td>
<td>Jacob, 1978</td>
<td></td>
</tr>
<tr>
<td>“Through the decision making process, people reveal themselves.”</td>
<td></td>
<td>3.1</td>
<td>Jacob, 1978</td>
<td></td>
</tr>
<tr>
<td>“As bad as life may be, and it can be horrible, it has something going for it. You can make it with good will and love.” (J 431)</td>
<td></td>
<td>3.4, 7.1</td>
<td>Jacob, 1978</td>
<td></td>
</tr>
</tbody>
</table>
**Main Implications**

The major implication of this analysis is that Lloyd was a complex individual. He was deeply committed to his art and immersed himself in it, but he was also present and interested in the welfare of others. Lloyd viewed himself as a pessimist, yet he used humor in his writing. Our design needed to capture this complexity by representing his joys and pains as well as his optimism and his pessimism.

The analysis also revealed that Lloyd incorporated his personal life and character into his writing. For him, writing was a way to work through what he experienced. If our design only focused on his work, it would leave out a large portion of what made that work meaningful. We needed to interweave samples of his writing and stories from his life to provide a complete picture of Lloyd.

As we studied about Lloyd and read his books, we gathered a large number of quotes. Lloyd shared many pieces of wisdom through writing. For example, writing about creativity, he said, “Before we can say honestly to someone else, ‘Yes, I know how things are with you,’ we need to first know how things are with us.” (as quoted in Jacobs, 1978, p. 432). This proved to be a great advantage and a great challenge for us. We used his words to introduce the main topics and to support the copy text. Yet because there were so many quotes, it was challenging to narrow down to only a few to include.

Another takeaway from the analysis is that Lloyd was a unique individual. He had many eclectic tastes and idiosyncrasies. The artifacts in his office especially reflected this characteristic. At The Box, visitors can see a portrait of Mozart below a rubber duckie and an owl that is holding up a sign which says, “down with silly signs.” Our challenge was to represent those unique characteristics in a relatable way. We wanted to communicate that Lloyd was comfortable being himself, yet that he knew how to connect with people and meet them at their level.

We relied on the genuine and humanizing side of Lloyd to help people relate to him. As we studied about his life, it was clear that he experienced many of the same hopes, joys, and challenges that members of the target audience would have felt. He grew up in a humble home, yet he dreamed about changing the world. Like many of those coming to the room, he went to school, struggled in his first job, met his wife, and started a family, all while under extreme poverty. Therefore, even though we included his awards and literary accomplishments, it was also important to focus on his humble attitude toward life and his desire to create something that would speak to the adult in the child.

**Annotated Bibliography**

These resources were essential for guiding our design decisions and creating a quality product. They include writing about Lloyd Alexander, theoretical discussions on narrative and museum learning, and best practices for designing exhibit experiences.

**Domain Knowledge**

I approached this project with little knowledge of Lloyd Alexander. Therefore, the literature from the domain knowledge was invaluable as I developed my own concept of Lloyd as a person. As I read the material, I began to see a picture of the motives and experiences that underlie Lloyd’s writing.

The domain-related literature gave an overview of Lloyd’s life, and discussed the extent of his work. Jacobs and Tunnel (1991) and Jacobs (1978) provide a chronological account of his life and experience as an author. They show how Lloyd struggled initially to find success in his writing and the changes that lead to his first published book. They also discuss his writing process, his outlook.
on life, and his thoughts on creating. These authors include personal quotes from Lloyd as well as quotes from family, friends, and those he worked with. The works by Tunnell (2003) and Tunnell, Jacobs, Young, and Bryan (2000) place Lloyd’s most popular books, *The Chronicles of Prydain*, in the context of Lloyd’s life and the genre of fantasy literature. Jacobs et al (2000) also discusses the field of fantasy literature and various subcategories within that field. The book by Tunnell (2003) is an encyclopedia of characters and places in the Prydain series. The author discusses how Lloyd created each character and how they were inspired by welsh mythology and his own life.

Though the above-mentioned articles and books provide a comprehensive view of Lloyd’s life from his birth until 1990, there were no scholarly resources that discussed the time after this period until his death. I could only find a documentary film that talked about the end of Lloyd’s (Crossley, 2012). There were also no sources that discuss his current impact on children literature, nor how current authors view his work. A limitation to the sources that I used is that most of them were written by the same professors. Though they knew Lloyd personally, we were limited to understanding his life through their perspective.


A film documenting Lloyd’s life from birth to death. The film includes interviews with friends, colleagues, and scholars.


This dissertation provides a deeper understanding of Lloyd. The author interviewed Lloyd and those who knew him, then he compiled the results into the dissertation. The dissertation outlines important events in Lloyd’s early life and discusses his personality, his life outlook, and beliefs on creating and art. The dissertation includes many excerpts from Lloyd’s own writing.


The authors provide a broad picture of Lloyd Alexander’s life. The book addresses his motives for writing, how his life influenced his writing, and the experiences and inspirations that lead to the books he wrote. It also helped me understand important moments in Lloyd’s life.


This is an encyclopedia of everything related to Lloyd’s *Chronicles of Prydain*. Entries discuss how Lloyd created each character in Prydain. The author includes quotes from Lloyd, references to parts of his life that influenced the characters, and the people in welsh mythology that Lloyd based the characters on.


This source overviews the genre of fantasy literature and references Lloyd’s books. They provide a brief discussion on how his books fit in the broader genre.
Learning Theories and Instructional Strategies

The theoretical literature I drew from places the learner in the role of an agent who actively participates and engages in a learning experience. That engagement is motivated by a natural fascination with stories. Fisher (1984), in his early writing on narrative theory, proposed that narrative is an integral part of who we are as humans. According to Fisher, we use narrative to discover meaning and order in what can be a confusing world. Clark and Rossiter (2008) applied this theory to instructional design by describing how instruction that is engaging applies elements from stories. Taeger (2018) in his dissertation work, considered the role narratives play in creating a space for transformative learning experiences. Stories that do not explicitly teach a lesson allow learners to find personal meaning.

Though we designed in an environment that was unlike that of a museum, literature from museum studies still gave valuable insights into how learning can occur in an informal learning environment. We planned to build the exhibit around Lloyd’s personal artifacts. Therefore, Burritt’s (2018) work on object-based learning helped us understand how to use artifacts to help visitors learn. She proposes that objects are physical representations of a historical context. An effective display helps the visitor develop a literacy for the stories behind an object.

Falk and Dierking (2018) provide insight into how visitors approach an informal learning environment. They found in their research that learning in a museum is a highly personal experience. Visitors draw from their previous experience to create a unique meaning from the content.

This literature reveals that there is a learning paradox which exists in informal settings. Designers seek to achieve a specific learning outcome, yet the informal nature of this kind of environment makes it so visitors can approach the experience on their own terms and engage in what they feel is relevant. Narrative learning is one possible way to work through this conflict. Stories provide guidance and structure, yet they give learners space to come to their own meaning and significance. Taeger (2018) warns against moralizing in a story and proposes the need of narrative space so learners can discover the meaning and insights that will be transformational to them.


The author discusses how to use objects in an exhibit. Rather than viewing them simply as interesting artifacts that a visitor can look at for a few seconds, we can structure the exhibit so that it guides visitors to see the objects in a new way and to explore the stories behind them.


This academic article gives ideas on how narrative learning can improve education by using stories. The authors give practical suggestions building on the benefits that come from a story structure.


The authors explain how museum learning fits within the larger context of experiential learning. They talk about various types of visitors and how they approach and exhibit with unique backgrounds and needs. Visitors then draw from their past to create new meaning.

This article explains the early assumptions of narrative theory. Knowing these assumptions and implications helped us determine if they fit well in the context of this project.


This dissertation discusses the role that narrative can play on learning. The author describes transformative learning and how using stories in education can lead to this type of learning. He gives several suggestions for how to create stories that prompt transformative learning.

**Design Approaches**

I approached the design through the fields of experience design, exhibit design, and instructional design. These three perspectives supported a view of the learner as an active participant and provided a wealth of best practices that we could draw from.

Rossman and Duerden (2019) suggest that designers can structure an experience around a unifying story. They propose the Hero’s Journey as a fitting structure for many experiences. The learner, as the hero of his or her own story, heeds the call to adventure and engages in the experience. She discovers how to overcome obstacles and challenges along the way and returns from the experience somewhat changed.

Parrish (2009) also drew from story elements to identified principles that lead to a deeper learning experience. One way he believes that a painting, a musical composition, or a theatrical work engages those who participate with it is through the interplay of conflict and resolution. The participant is motivated to continue in the experience in order to find resolution. He suggests structuring instruction around a beginning, middle, and end and incorporating tension and resolution throughout the experience.

To guide the learner toward a specific goal, Serrell (2015) proposed creating a big idea that centers the exhibit on a single message. The interactive activities, media, text, and the physical environment are designed to help the visitor explore and wrestle with this big idea. Ultimately, however, it is the learner who decides how the big idea applies to his or her life. The Smithsonian’s *A Guide to Exhibit Development* (n.d.) provided advice for how to build the exhibit around the big idea. This includes structuring the displays around critical questions that explore various aspects of the big idea.

Many of the resources I gathered gave practical guidelines for effective design. Serrell (2015) suggested best practices for writing labels. The American Association of Museums (1995) outlined standards for how to hang panels, where to place artifacts, and other ways to make an exhibit accessible. The book *Exhibition Design* (Hughes, 2010) gave visual design principles and ways to layout content in order to design an aesthetic experience (Parrish, 2009).


The manual gives measurements for where to place labels and guidelines for font styles, colors, and font size. This resource helped us place panels so visitors with various needs could still see them.

**Hughes, P.** (2010). *Exhibition design.* London: Laurence King Publishing

A guide for visual design in an exhibit. The author provides suggestions for how to guide visitors through visual design, best practices for placing text on a wall, and the use of lighting.

These principles helped me consider the overall experience and its impact on the learner. The article discussed principles the author drew from art, music, and theatre that help a participant become immersed in the experience.


This book provides guidelines for designing experiences. It includes a theoretical framework for approaching experiences as well as practical suggestions and templates for designers.


The author discusses how to structure an exhibit around a central big idea. She defines what a big idea should look like and how to write one. She gives best practices for writing text and creating panels.

Smithsonian Exhibits (n.d.) A Guide to exhibit development.

This design guide discusses the process of creating an exhibit. It outlines the members of an exhibit design team, the steps for creating an exhibit, and how to organize exhibit text.

Design Specifications
The final product is an exhibit titled The Journey is the Treasure: The Life of Lloyd Alexander. The exhibit is made of three layers of interpretation:

1. **Text, images, and artifacts**: Lloyd’s artifacts are the core of the collection and add a degree of authenticity to the exhibit. Panels introduce the themes of the exhibit, tell stories from Lloyd’s life, and contain quotes that Lloyd expressed through his books. Images from Lloyd’s life show him during major life events.

2. **Interaction activities**: In various locations of the exhibit, visitors can engage in activities. They include question prompts, a bookshelf that visitors may browse, and a story writing activity.

3. **Videos**: The visitor who wishes to learn more can use a cell phone camera to scan an image and access a video. The videos include interviews with Lloyd as well as comments from friends and scholars who knew him.

Walkthrough
A visitor may walk through the exhibit in any order. We structured the displays, however, so that a visitor who enters through the door, can begin on the north wall, and follow Lloyd’s life chronologically.

**West Wall (from Outside)**. Next to the door, an introduction panel invites visitors to enter the room. The panel displays the exhibit title above a portrait of Lloyd. A short paragraph introduces the visitor to Lloyd and lets them know they can enter the room.
**North Wall.** This wall introduces visitors to Lloyd’s life. A panel introduces the exhibit title and shows an image of Lloyd. Above this, a quote addresses the role of fantasy in understanding life. To the left of the introduction panel, a small panel informs visitors of the rules of the space. To the right, visitors can see the steps for how to access videos using a cell phone.

A large panel hangs next to a bookcase and gives a glimpse at Lloyd’s work. The panel lists each book Lloyd wrote with the year of publication, a note of interest, and its location in the library. Below the title, a question asks the visitor, “which book interests you?” The visitor may scan an image to watch a video of friends and scholars talking about Lloyd. On the bookcase, several of Lloyd’s books are available for visitors to look at and borrow.

**Figure 47**

*North Wall Color Rendering*
East Wall. As the visitor continues to the east wall, there are three primary displays: (1) a timeline of the early part of Lloyd’s life, (2) a display case that explores his most popular series *The Chronicles of Prydain*, and (3) an introduction to Lloyd’s writing process and his office space.

**Figure 48**
*East Wall Color Rendering*

The timeline begins with a panel about Lloyd’s birth and his hope to do something meaningful in life. A quote from his book *Taran Wanderer* hints at the refining challenges he will experience before becoming a writer. As the timeline progresses, the visitor can read text and look at images about various life events. They include his early childhood and adolescence, his service during World War II, and meeting and marrying Janine. The second part of the timeline covers the trying time before he published his first book. A question encourages the visitor to think about lessons he or she has learned during hard times. Throughout the timeline, various videos provide more information about life events.

The display case features artifacts related to Lloyd’s *Chronicles of Prydain*, such as his Irish harp and a wooden spoon with carved symbols. On the other side of the case are figurines, several books, and the Newbery Medal. Labels describe the context behind each artifact and why they were meaningful for Lloyd. For example, the label next to the wooden spoon includes a quote from Lloyd about what each symbol meant to him. The case about Prydain also includes information related to Disney’s adaptation of *The Chronicles of Prydain*. A copy of the movie poster for *The Black Cauldron* is meant to catch the attention of those who have seen the movie.

The third display on this wall serves as a transition into the office area. The introduction panel discusses his continued efforts to write, and a large panel next to the introduction shows an image of Lloyd in his room surrounded by books, pictures, memorabilia, and his typewriter. Across the top of the panel, a question asks, “What tools help you create?” Labels highlight additional information about Lloyd’s creative process, such as the kind of books he read and the reason he used a typewriter all his life. The visitor may scan an image on a smaller panel to watch a video of Lloyd talking about his workspace. On a table below the panel, there are various paper
activities for visitors to do. A visitor can write their own story, make a cartoon, or color a picture.

**South Wall.** Along this wall, the artifacts are laid out to imitate how Lloyd arranged them in his office. These include a writing desk and chair, a typewriter, pens, glasses, a lamp, and books. A variety of smaller artifacts fill the space and reflect Lloyd’s eclectic tastes. They include a rubber duckie, an old witch, and a garbage can with Fflewddur Fflam painted on it. Next to the table, a bookcase holds examples of Lloyd’s books as well as several musical instruments. Above this case, a panel gives insight as to why Lloyd kept so many representations of Mozart in his home.

**Figure 50**  
*South Wall Color Renderings*

A panel titled “Lloyd’s Inspiration” faces The Box which helps the visitor delve into the meaning behind the artifacts in the space. The visitor can scan an illustrated typewriter to watch videos about how cats, music, and art inspired Lloyd in his writing. The panel also has labels that describe these sources of inspiration. On the corner of the panel, an I Spy activity invites visitors to look for artifacts in the office space and consider how they might have inspired Lloyd. The list includes:

- 10 animals
- 3 busts or pictures of Mozart
- 4 instruments
- A map of Africa
- A flag of Wales
- 3 characters from Prydain
- The date and time in his Box

The visitor who looks at the southwest corner of the enclosed area sees a display focused on the end of Lloyd’s life and how he impacted others. Next to a portrait of Lloyd, a panel discusses his continued efforts to write, even with deteriorating health. On tables in front of the portrait, various artifacts provide insight into his impact on readers. These include an award he received, memorabilia that his fans made for him, and letters he received from readers. The last book he wrote, *The Golden Dream of Carlo Chuchio*, is also displayed next to a panel that gives a brief description of the story and expounds on the circumstances around its writing.
West Wall (from Inside). Leaving the last display, visitors see a panel on the window which asks them to reflect on how they can share their creativity (see Figure 51). The panel offers ideas such as leaving an insight in a comment book, sharing a picture of something meaningful, writing down thoughts on important (or not so important) issues, and reading an inspiring book with a loved one. On this panel, a video shows friends and readers who describe how Lloyd impacted and inspired them through his writing.

The visitor leaves the exhibit by the same door that they entered. Next to the door, a credits panel lists those who contributed to the exhibit and cites the resources that served as the base for the content. The last panel the visitor looks at extends the invitation to “Discover your story” and encourages the visitor to leave the door open so others can use the room.

**Front-end Analysis Considerations**

**Designing for the Big Idea and Design Goal.** We designed the exhibit to help visitors reflect on the exhibit’s big idea. Each display centers around a question related to the statement: *I can create from my own human experience, a story that inspires others.* The introduction along the north wall introduces the theme of the exhibit and explores the question “who was Lloyd Alexander?” The display about Lloyd’s early life considers what it means to be human and how one can find meaning in challenging experiences. The Prydain case asks what it means to create while The Box area addresses the creative process. The final display delves into *why* Lloyd created—to impact others, especially children. Designing around a central theme helped us choose content and stories that directed the visitor to this big idea.

We designed a meaningful experience by creating displays that encourage creativity, discovery, and personal connection. The bookshelf is one example. It is an open, accessible way for visitors to delve into content related to Lloyd. A visitor can finger the pages, read a summary, and look at the book covers to gain an idea of what Lloyd created.

As visitors experience a wide collection of quotes, stories, artifacts, and activities, they can find words and ideas that are personally meaningful and impactful. The reflection prompts encourage them to apply those insights to their own lives. The panel on the window then provides ideas for how they can share what they have learned. This encourages the visitor to continue learning beyond the exhibit.

**Considerations from the Bibliography.** We used the resources related to the domain knowledge as our source content for the text. Jacobs’ (1978) dissertation was especially helpful because it discussed Lloyd’s personal life, his writing, and his views in great detail. These resources helped us find stories and provide context for the artifacts. Jacobs cited many of Lloyd’s own words which we incorporated into the text. An example is how we guided visitor’s thoughts to the big idea in the introduction. We placed this quote next to his photo: “Fantasy is hardly an escape from reality. It’s a way of understanding it.” These quotes brought Lloyd’s voice into the exhibit with greater force.

The resources on narrative learning impacted how we viewed the learner, and how we structured the experience. Fisher’s (1984) theory that stories help people find meaning guided us to base the content on stories from Lloyd’s life. Drawing from Clark and Rossiter’s (2018) suggestions for using...
story elements in design, we designed a clear beginning, middle, and end to the experience. We introduced the visitor to the conflict and resolution in Lloyd's life as they read about his pain, depression, and effort to create despite failure. Burritt’s (2018) insights on object learning theory guided how we created the Prydain case and designed panels for The Box area.

Each aspect of the design was influenced by the design resources I had gathered. Rossman, Duerden, and Pine’s (2019) book on experience design was informative for choosing the project goal, mapping out the experience, and designing each display. Their chapter on narrative in experience design helped us draw from the Hero's Journey narrative structure to design the displays.

We incorporated Serrell's (2015) work on label writing to guide how we drafted text. Her “10 Deadly Sins of Unsuccessful Labels” served as a rubric to compare the text against. In this way, we strove to avoid pitfalls such as creating labels that are not related to the big idea, are too focused on instruction and not interpretation, and are too long and wordy. The evolution of the outside introduction text, shown in Table 5, demonstrates how we refined the text to better align with best practices.

**Table 5**

*Iterations of the Introduction Text*

<table>
<thead>
<tr>
<th>Version</th>
<th>Introduction Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Welcome to <em>The Journey is the Treasure: The Life of Lloyd Alexander</em>. This room features the artifacts from an author who helped define American fantasy literature. Feel free to study and explore his personal artifacts.</td>
</tr>
<tr>
<td>2</td>
<td>Welcome. The Lloyd Alexander room features artifacts, videos, and stories about a children's author who defined American fantasy literature. Feel free to enter and search for how Lloyd's creativity and life can inspire you.</td>
</tr>
<tr>
<td>3</td>
<td>Welcome. Did you know that Disney's <em>The Black Cauldron</em> came from a Newberry-winning series which defined American fantasy literature? Come inside to learn about the author behind the books and discover how his life can inspire you.</td>
</tr>
<tr>
<td>4</td>
<td>Welcome. This is Lloyd's room. Feel free to study, explore, and discover how the author whose fantasy series inspired Disney's <em>The Black Cauldron</em> might inspire you.</td>
</tr>
</tbody>
</table>

After writing the first draft, we refined the wording to reduce it from 35 to 26 words. We changed the first sentence to a simple statement that referenced something concrete. We also changed the text from an information-focused approach, to action statements which invited the visitor to “study, explore, and discover.” I added the reference to Disney’s adaptation of *The Black Cauldron* to include something that visitors would recognize.
Considerations from the Comparative Analysis. The other exhibits I had looked at gave me ideas for how to use panels to guide the visitors. Based on what I observed in the Education in Zion Gallery and the Rosa Parks exhibit, I created an introductory sign that showed a large image of Lloyd. I also drew from the Education in Zion Gallery’s rule sign to create a panel with icons to show the rules of the space. Throughout the exhibit, I placed reflection questions to encourage interaction, something I had observed in the Education in Zion Gallery.

I designed the panels of Lloyd’s early life based on what I had seen in an exhibit at the National Museum of African American History and Culture. In that display, images and text were placed to form a collage. This distributed the text, so it was less overwhelming. I also placed images and text panels together and organized them along a timeline. I designed the Prydain case to incorporate elements from one of the displays at this museum. Similar to how the display about Barack Obama gave a sense of depth with a large photo in the back of the case, I added a picture that served as the background for the Prydain case.

The exhibit *A Pillar of Light* gave me ideas for how to encourage the visitor to engage in the content. In that exhibit, there was a panel which encouraged the visitor to sit on a bench, read scriptures, and ponder. I created a panel that encouraged visitors to share their creativity. I also added a bookshelf for visitors to explore.

For the video interaction, we created videos that served a similar function as the videos in the Disney Family Museum. The video segments showed Lloyd talking about his life, his experience writing, and why he felt writing was important. The exhibit also followed a linear flow like the Walt Disney Family Museum, and we chose to end our exhibit in a similar way with an emphasis on Lloyd’s impact and work.

Considerations from the Environment Analysis. We prioritized building a new interpretive approach over more developed interactive activities because we knew the exhibit would eventually move. When this happens, there will be an interpretive strategy that Sarah can build on to adapt the exhibit to a new space. Any permanent technology we might have installed, such as a TV monitor or iPad station, would have become obsolete if it did not fit in the new location.

We used AR software for the videos because it is adaptable to the space and inexpensive to install. When the exhibit moves, the installation team can simply reprint the video panels and place them in a new location. This technology also requires limited troubleshooting.

The signs and panels we created were meant to overcome some of the room’s physical constraints. The outside panel welcomes visitors to the space and encourages them to enter and study. Since the office area was closed off and did not allow visitors to look close at the artifacts, I placed a large image of the actual office next to the display. This allowed visitors to look closely at books and artifacts in the space. The panel about Lloyd’s inspiration also invites them to look at certain artifacts.

To account for the installation team’s needs, we designed the panels so the largest one is within the 50-inch limit, the maximum size that their printer can handle. I created the panels using a software that they can print from. I also made sure to embed each photo in the software and make any changes to wall quotes so they can be printed and cut.

The design considers the needs of various other stakeholders. We avoided placing panels on the wooden doors, as the marketing director requested. Physical interactive activities require limited maintenance. Help desk students will reprint paper interactions and place new books on the display shelf. We chose to not use a whiteboard or dry-erase markers to minimize needed maintenance.
Design Representations/Prototypes
The prototypes in this section illustrate how the design evolved during the course of the project.

Foundational Design
We created these prototypes during the first phase of the design. They represent the overall structure and organization.

Experience Map. The first exhibit prototype was a representation of the visitor's journey through the exhibit. This map was made of micro-experiences, or touchpoints, that make up the overall experience. Each column represents a touchpoint and each row is a dimension of that micro-experience. I created the first version of the map with sticky notes on a whiteboard. This let me quickly change the order of the touchpoints or adjust the desired outcome of each one. After reworking the map until I came to a structure that satisfied the client, I created a digital version of the map.

Figure 52
Post it Note Experience Map
For this prototype, the exhibit was made of nine touchpoints:

1. See the room
2. Explore the space
3. Meet Lloyd Alexander
4. In quest for a purpose
5. Becoming a creator
6. Finding myself in Prydain
7. Meaning in creativity
8. Transforming lives
9. Leave the exhibit

The desired result for each one pointed the visitor to the big idea. We hoped that during each one, the visitor would empathize with Lloyd’s experience and apply the exhibit to his or her own life.

**Touchpoint Template.** The content developer and I used Rossman, Duerden, and Pine’s (2019) touchpoint template, a tool they include in their book on experience design, to design each touchpoint. The template guided us to design each touchpoint with three desired results. In the template for touchpoint 7: *Meaning in Creativity*, our desired results were:

1. The visitor explores the recreated office.
2. The visitor realizes that he used basic tools to share his work.
3. The visitor makes the connection that they also have basic tools to share their own work.

They would accomplish this by reading text panels and watching videos. We also had the idea to include some kind of digital activity to learn about the artifacts.

**Figure 53**

*Touchpoint Template #7*
Exhibit Outline. We created a Google Document where we defined the content for each touchpoint. In this document, we inserted the information from the touchpoint templates and expanded it to outline content for the text panels. We suggested artifacts that would be good for this touchpoint and possible interactive activities. As we created this outline, we reduced the number of touchpoints. We combined the touchpoints In Quest for a Purpose and Becoming a Creator into one display. We also made the first touchpoints, Seeing the Room and Explore the Space a part of the Meet Lloyd Alexander touchpoint and combined the final two touchpoints.

Figure 54
Sample Exhibit Outline

Layout Sketches. The content developer took the touchpoints we had identified and created simple sketches of the display. This image shows the original sketch of the display cases on the east wall. We planned to use one of the cases for content related to Lloyd’s early life and move all artifacts related to Prydain to the second case.

Figure 55
East Wall Outline Rendering
An Initial Design

After we established the initial concept, we began to refine the design. We created a script document where we consolidated our research. We also refined the layout for each display.

**Draft Script Document.** I organized the script outline document by touchpoint. In each touchpoint, I created a line for the title and primary text of a panel. In the document, we tracked the panel type and the number of words on that panel.

**Sketches.** I sketched each display on paper or a whiteboard to brainstorm possible ways to display the artifacts and content. This sketch of the touchpoint of the end of Lloyd's life shows that I had planned to move the portrait of Lloyd to the south wall. I proposed to surround the portrait with a collage of quotes people shared about Lloyd. Above this, I placed a quote from Lloyd. I also suggested placing a table behind the glass divider where we could mount artifacts.

**Figure 56**
*Sketch of Southwest Corner*

This is a sketch of the panel that would go next to The Box. I planned to have some kind of table with a booklet or other interactive activity. I included a rectangle to represent where images would go. Above the panel, I proposed hanging some kind of reflection question.

**Grey Scale Renderings.** Once I had received feedback on the sketches, I created renderings of each touchpoint in Adobe Illustrator. These were low-fidelity prototypes where I represented panels with grey rectangles and inserted Lorem Ipsum text on potential labels. I also included silhouettes of some of the artifacts. This rendering shows how we planned to design the first displays. We placed panels about his early life on the wall. We dedicated the first case to his first efforts to write and the other case to Prydain.
A Refined Design

Once we had finished writing the text, I created a higher fidelity rendering of each display. We identified the colors and font styles and we inserted text into the panels.

The prototype shows how we changed the visual look of the panels. The first panel is from before the evaluation and the second one is after the evaluation. The banner panel maintained the same basic layout, yet in the second version, we used a teal color as the primary color with an orange-brown as the secondary color. In the second panel, I cropped Lloyd’s image, so it provided more space on the side for the quote. I changed the portion of the map that is visible in the background to show more.
Figures 59, 60, and 61 show renderings of the east wall also demonstrate the transformation in the visual design. Before, I had used a bright green and dark blue color combination which I then changed to a light blue with an orange-brown. I did not have any established process for choosing which color to use: some panels were the orange color while others had the blue. Even the introduction panels were not uniform since the introduction for the timeline had blue behind white title text while the introduction to The Box panel did not.

**Figure 59**  
*East Wall Color Rendering 1*

**Figure 60**  
*East Wall Color Rendering 2*

**Figure 61**  
*East Wall Color Rendering 3*
After the evaluation, I established a more purposeful approach for using colors by making all panels that communicated the content teal while panels that encouraged interaction were orange-brown. The introduction panels also became more uniform though there were still differences in size.

These renderings show how we simplified the design. We took out one of the display cases and placed the bookshelf on a different wall. I also reduced the amount of text so I could make several panels smaller. I organized the first display as a timeline.

**Physical Prototype 1**

This first in-person prototype allowed us to see the actual size of the panels and text. We could also see if the colors changed when printed or if photographs were blurry. For some of the displays, like the timeline, we printed a smaller-scale rendering and then printed all the labels on regular printer paper so we could mark needed edits. The design was essentially the same as the post-evaluation renderings, though we had edited the text to incorporate the edits participants had suggested in the survey.

**Figure 62**
*Images of Physical Prototype 1*
Figure 63
AR Instructions Version 1

This prototype was the first time we tested the AR videos. I had created a panel that gave instructions for how to access the videos and we placed scannable lighting tags around the exhibit.

Prototype 2

For the second physical prototype, I incorporated the feedback from the internal review during the first prototype to fix grammatical errors. This version included a prototype of the physical activities.

Figure 64
Images of Physical Prototype 2

I redesigned the instruction panel for the AR videos in order to give more guidance for the visitor. I placed the instructions on top and I added a video that the visitors could watch. I also included tips visitors could follow to overcome various technical challenges. We made it so that instead of scanning just the lighting symbol, a visitor can scan the whole image. This is the same size as the video so that once the video begins, it looks like the image turns into the video.
Figure 65
*AR Instructions Version 2*

**Dive deeper with Augmented Reality:**

To access videos:

1. Navigate to [web.zappar.com](http://web.zappar.com) on your phone, or use your camera to scan this code.

2. Select "Launch" then accept the camera request.

3. Look for the lightning tag, point your camera at the picture, and wait for the video to load.

---

*Introduction, 3:35 min*

Scholars and friends talk about Lloyd’s impact on American fantasy literature.

*Tips for Success:*

1. If the sound doesn’t work, switch from silent mode.
2. Point phone away from image to enlarge video.
3. Select the bottom right arrow on the video for full screen view.
Like the other prototype, we could not change the content for some displays, so we printed a rendering instead. For this version, we did print all of the panels for the timeline and the Prydain case so we could look at them in full scale. We also covered up some artifacts and divided the Prydain case rendering between the two cases so that we could display some of the actual artifacts.

**Figure 66**
*Display Case with Printed Rendering*

![Display Case with Printed Rendering](image)

**Figure 67**
*I Spy Game*

![I Spy Game](image)

For this prototype, I revised the I Spy activity. The original activity encouraged visitors to find images of cats we would hide around the room. After seeing the inspiration panel in the room, I adjusted the activity so it would focus on The Box area and help the visitor find certain artifacts. I made this change so the activity would encourage visitors to explore The Box area, rather than taking their focus away to other areas in the room.

**The Final Design**

This version was ready to print and install. I had changed the design for the north wall, based on user feedback. I redesigned the original panel so that rather than being tall and vertical, it was closer to the ground and covered more of the wall. I incorporated the introduction text with the exhibit title and image. I added variety to the rectangular panels by dividing the panel diagonally into two parts. Next to the bookshelf, I added a list of books Lloyd created so visitors could gain an overall picture of his work.
The timeline also slightly changed in response to the feedback from the summative evaluation. Visitors felt that the text was overwhelming, and they skipped over many of the introduction panels. I accounted for this by separating the images from the text panels, making them larger, and adding more images.
I also changed the design for each display's introduction panel. I simplified the design, so it was white text on a black semi-transparent background. Behind this, I included an image. I made this change so that the panels would stand out from the other content panels and guide visitors to look at them first. This would allow a visitor to get an overview of the display before looking at more specific panels.
For the final version, I changed the AR instruction panel again to simplify the instructions. I removed the video that was on the panel. I also designed an icon to show how to scan the image because I had noticed that visitors tried to scan the lighting tag. Since many visitors had skipped the instruction panel, I added the steps for how to access the videos on each video panel.

**Implementation Instruments**

Due to the installation team’s limited availability to install the exhibit, I created an implementation plan that would be carried out in two steps. First, we created a physical, high-fidelity prototype to test with visitors. The second step will happen when the installation team installs the final exhibit.

**Physical Prototype**

For the physical prototype, I proposed to install only the content related to the exhibit introduction and The Box area. After I printed these panels, Sarah felt that it would be better to print as much of the exhibit as possible and place it in the room around the old exhibit. We adopted this revised approach as we worked to install the prototype.

I researched the options for printing the panels in order to find one that was cost effective. One option was to print through the university print and mail service. This would have required us to pay for the panels, but they have been mounted on foam, making them more durable. Another possibility was to have the library's marketing team print the panels. They would do this for free, since it was a library project, but we would have to cut out the panels ourselves and mount them on the wall. Sarah preferred this second option because of the cost and since the panels would eventually be replaced.

I sent the files to the marketing manager who printed them. The marketing team's printer was smaller than the one the installation team uses, so some of the panels were too large for their printer. To work around this, they printed the largest panels in sections, which we taped together.

When we installed panels, we needed to use an adhesive that would not damage the paint on the walls and that would hold the panels over time. At first, we used masking tape, but it did not keep the panels on the wall. After trying several other kinds of tapes, I chose to use command strips to mount the panels as these supported the weight of the larger panels and were easy to remove.

We also produced the interactive activities for the physical prototype. We created the AR videos with a program called Zappar. The basic service was inexpensive, intuitive to use, and accessible through a phone's web browser. We uploaded each video and checked if the scannable image worked. For the physical interactive activities, I borrowed a bookshelf and table from the online learning team and Social Science help desk.

We could not remove or change any part of the original exhibit, so we installed the new design around the old exhibit. This involved covering certain parts of display cases, and placing some displays, like the one about Lloyd’s early life, in a different location. For displays where we could not move artifacts, I placed a smaller-scale rendering to show what the display would look like in the final version. Though the prototype did not reflect the final design, once completed, it was fully functional for those using the room.

**Installation-ready Design.**

The next stage, the installation, will happen when the installation team is available to print and install the final design. To prepare the space, they will remove all the prototype panels and the artifacts which will not be in the new design. The client will purchase a new bookcase for the room as well as additional tables for displays and interactions.
We created a digital folder containing files and documents that are necessary for installing the exhibit. This folder includes documentation that outlines steps to take to prepare the space, templates for paper interactions, measurements for where to place panels, and files that can be printed.

**Steps to Take before and after Installing.** This document lists steps to take to prepare the room, such as scanning a book cover and inserting it into the design. It also includes items that future designers could implement to improve the exhibit.

**Figure 72**

*Steps to Do Before Installing*

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**To do Before Installing:**
- Scan manuscript page from *And Let the Credit Go* that matches the quote and put in "05_Panels to Print East Wall" file.
- Scan book cover for *And Let the Credit Go* and put in "05_Panels to Print East Wall" file.
- Scan movie poster artifact and insert image into "05_Panels to Print East Wall" file.
- Scan Black Cauldron book cover and insert image into "05_Panels to Print East Wall" file.
- Remove artifacts that will not be on display.
- Move large display case out.
- Adjust shelves in display case that will stay in.
- Remove furniture and pictures in the Box that will not be on display.
- Create a comment book.

**Furniture to get:**
- Bookcase for North wall
- Tables for the right side of box area (to display artifacts)
- Table for paper interaction
- Table for comment book (determine if a table is necessary)

**To do After Installing:**
- Check out books by Lloyd Alexander and put on bookshelf on North Wall.
  - *The Book of Three*: 813 AL27bo
  - *The Black Cauldron*: 813 AL27b
  - *The Castle of Llyr*: 813 AL27c
  - *Taran Wanderer*: 813 AL27t
  - *The High King*: 813 AL27h
  - *Westmark*: 813 AL27we
  - *The Kestrel*: 813 AL27ke 1983
  - *The Bigger Queen*: 813 AL27be
  - *And Let the Credit Go*: 813 AL27al 1955
  - *Jonnie is French*: 813 AL27f 1959
  - *Time Cat*: 813 AL27ci 2003
  - *The Marvelous Misadventures of Sebastian*: 813 AL27m
  - *The Golden Dream of Carlo Chuchio*: 813 AL27gd
- Print book spine, comic strip, and coloring pages (see Interaction Template folder) and get supplies for them.
- Coordinate with Social Science Help Desk students to keep the interactions supplied.
- Get supplies for paper interaction and comment book.

**Potential future projects to improve the exhibit:**
- Create and insert closed captions for all videos.
- Create an I Spy activity for the whole exhibit.
- Create hands-on interactions.
Artifacts Lists. A spreadsheet which lists the artifacts that should stay in their current locations, ones that should stay in the room but move to a new location, and artifacts that need to be taken out of the room.

**Figure 73**

**Artifacts to Display**

<table>
<thead>
<tr>
<th>Library Shelves</th>
<th>New Exhibit Location</th>
<th>Artifact</th>
<th>Type</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case 1</td>
<td>Case 2</td>
<td>Harp</td>
<td>Artfact</td>
<td>Move to Plyman case</td>
</tr>
<tr>
<td>Case 2</td>
<td>Case 2</td>
<td>Figures</td>
<td>Artfact</td>
<td>Keep in the case but move to different shelf</td>
</tr>
<tr>
<td>Case 2</td>
<td>Case 2</td>
<td>Movie poster</td>
<td>Image</td>
<td>Scan from poster in the case and insert into illustrator file before printing. Remove poster.</td>
</tr>
<tr>
<td>Library Shelves</td>
<td>Case 2</td>
<td>Book cover of Black Cauldron</td>
<td>Image</td>
<td>Keep in the case but move to different shelf</td>
</tr>
<tr>
<td>Case 2</td>
<td>Case 2</td>
<td>Wooden spoon</td>
<td>Artfact</td>
<td>Keep in the case but move to different shelf</td>
</tr>
<tr>
<td>Case 2</td>
<td>Case 2</td>
<td>The High King</td>
<td>Book</td>
<td>Display open if possible.</td>
</tr>
</tbody>
</table>

Special Collections

<table>
<thead>
<tr>
<th>Desk in the Box</th>
<th>Painted Eggs</th>
<th>Artfact</th>
<th>Keep all artifacts as they are at the desk and upper shelves.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desk in the Box</td>
<td>Manuscript</td>
<td>Artfact</td>
<td>See if we can get those from Special Collections to put in the Box</td>
</tr>
</tbody>
</table>

| Book Shelf on South Wall | Violin | Artfact | Move from display case and put on top shelf of bookcase |
| Book Shelf on South Wall | Bust of Mozart | Artfact | Move from display case and put on top shelf of bookcase |
| Currie of Box | By Book Shelf | Music Stand with Music | Artfact | Move from wall to a location by the other musical artifacts |
| South Wall | Same location | Book Shelf | Artfact | Need to take out one of the book shelves then put artifacts on top of the other shelf. Fill in empty shelves with translations of Lloyd's books. |

| Book Shelf on South Wall | Marvelous Misadventures of Sebastian | Artfact | Move from display case and put on top shelf of bookcase |

| East Wall | South Wall | Portrait | Artfact | Hang on wall in the Box area |
| East Wall | South Wall | Fan letters | Artfact | Move from the case and place on a table |
| Library Shelves, on book shelf of Box | Book shelf | Golden Dream of Carls Chuchio | Book | Take from box area or see if there is a different book that can put on display. If possible, display open |

| Case 1 | Table in front of portrait | Regina Medal | Artfact | Move from display case and display on a table |
| Case 2 | Table in front of portrait | Charcoal Pencil | Artfact | Move from display case and display on a table |
| Case 2 | Table in front of portrait | Donkey | Artfact | Move from display case and display on a table |
| Case 2 | Table in front of portrait | Metal Figurines locking arms | Artfact | Move from display case and display on a table |
| Case 2 | Table in front of portrait | Bead necklaces in bowl | Artfact | Move from display case and display on a table |
| Case 2 | Table in front of portrait | Image of figure at well surrounded by moons | Artfact | Move from display case and display on a table |

**Figure 74**

**Artifacts to Remove**

<table>
<thead>
<tr>
<th>Exhibit Location</th>
<th>Artifact</th>
<th>Type</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Wall</td>
<td>Picture frame with picture of Lloyd as a boy</td>
<td>Images</td>
<td>Return to special collections</td>
</tr>
<tr>
<td>Case 1</td>
<td>All artifacts except the harp</td>
<td>Multiple</td>
<td>Move the harp to the other case. Scan a page from the manuscript from Art and the Crutch Go then remove. Remove all other artifacts to special collections.</td>
</tr>
<tr>
<td>Case 2</td>
<td>Image of Lloyd receiving newbery medal</td>
<td>Image</td>
<td>Return to special collections</td>
</tr>
<tr>
<td>Case 2</td>
<td>Artifacts about Cricket</td>
<td>Magazine and manuscripts</td>
<td>Return to special collections</td>
</tr>
<tr>
<td>Case 2</td>
<td>Artifacts about The Fortune Teller</td>
<td>Book image, artifacts</td>
<td>Return to special collections. Maybe get a copy of the book to put on the book shelf.</td>
</tr>
<tr>
<td>Case 2</td>
<td>The Black Cauldron</td>
<td>Movie poster, picture book, sticker, image</td>
<td>Scan the Movie Poster, insert into illustrator file, then remove. If it is possible to display the movie poster on the back panel, that would be another option.</td>
</tr>
<tr>
<td>The Box</td>
<td>Book Case</td>
<td>Furniture + Books</td>
<td>Remove one of the book cases and any books that do not fit in the other case.</td>
</tr>
<tr>
<td>The Box</td>
<td>Book Cover Paintings</td>
<td>Artfacts</td>
<td>Remove the paintings of the book covers. May fit another place in the room where they fit well or take them out if they do not fit.</td>
</tr>
<tr>
<td>The Box</td>
<td>Lounge Chair and Pillow</td>
<td>Furniture</td>
<td>Return to special collections</td>
</tr>
</tbody>
</table>
Measurements for Text Panels. These are simplified, grey renderings of each display with measurements for where panels hang on the walls.

Figure 75
Timeline Measurements
Printable Panels. Two Adobe Illustrator files contain full-scale versions of each panel, quote, or graphic that needs to be printed. Each image is embedded in the file and text that will be placed directly onto the wall has been converted to a vector object.

Figure 76
Adobe Illustrator File 1

Figure 77
Adobe Illustrator File 2
Style Notes. This document includes design specifications in case the panels need to be changed. It defines the fonts for each type of text panel, margin sizes, and the hex code for colors.

**Table 6
Font Style Guide**

<table>
<thead>
<tr>
<th>Type</th>
<th>Font</th>
<th>Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhibit Title</td>
<td>Bodoni URW</td>
<td>Bold + Medium Oblique</td>
</tr>
<tr>
<td>Intro Panel Title</td>
<td>Bodoni URW</td>
<td>Bold</td>
</tr>
<tr>
<td>Intro Panel Paragraph</td>
<td>Upgrade</td>
<td>Regular + Italic</td>
</tr>
<tr>
<td>Subsection Title</td>
<td>Bodoni URW</td>
<td>Bold</td>
</tr>
<tr>
<td>Subsection Paragraph</td>
<td>Upgrade</td>
<td>Regular</td>
</tr>
<tr>
<td>Label Title</td>
<td>Upgrade</td>
<td>Semi bold</td>
</tr>
<tr>
<td>Label Paragraph</td>
<td>Upgrade</td>
<td>Regular</td>
</tr>
<tr>
<td>Reflection Question</td>
<td>Alexa std</td>
<td>Regular</td>
</tr>
<tr>
<td>Quote from book</td>
<td>Click Clack</td>
<td>Regular</td>
</tr>
<tr>
<td>Quote from Lloyd</td>
<td>Upgrade</td>
<td>Book Italics for paragraph quote. Regular and Size of Label text otherwise.</td>
</tr>
<tr>
<td>Interaction Title</td>
<td>Upgrade</td>
<td>Semi bold</td>
</tr>
<tr>
<td>Interaction Paragraph</td>
<td>Upgrade</td>
<td>Regular</td>
</tr>
</tbody>
</table>

**Margins**

- **Intro Panels:** 1” margins, 1” between title and paragraph
- **Subsection Panels:** 1” Margin, 1” between title and paragraph
- **Caption Labels:** 0.25” margins, 0.25” between title and paragraph

**Colors**

1. **Primary Color:** Use the teal for most of the colors:
   a. Hex #: **1F8080**
2. **Interaction Color:** Use this orange for interaction activities (AR codes, I Spy game, reflection question):
   a. Hex #: **C67E32**
Paper Interaction Templates. A printable PDF file of the story spine and cartoon activities as well as the coloring pages.

Figure 78
Story Spine Activity Template
Evaluation Instruments
I relied on formative and summative evaluation to measure visitor learning and engagement. Since we designed for an informal learning environment, this evaluation replaced a formal learning assessment. I gathered data primarily through surveys so we could comply with safety guidelines related to COVID-19. We also conducted an in-person summative evaluation with a small group of participants after we installed the physical prototype.

I evaluated each major exhibit prototype. We also frequently reviewed prototypes during standup and sprint review meetings. In this section, I will describe how we conducted each evaluation and the instruments we used.

Criteria
Sarah was the primary stakeholder interested in the evaluation results. She wanted to know if visitors engaged more in the new exhibit than in the old one. Though she hoped visitors would learn about Lloyd’s creative process, her priority was that they enjoyed their experience and took something meaningful away from it. Because of this, we deviated from the evaluation questions that we had identified during the pre-design phase (see the Project Purpose).

Before, we wanted to know how the visitors’ perceptions of creativity changed, and how much they wanted to share that insight with someone else. During the actual evaluation, we focused more on if they gained any insight at all, and how that insight aligned with the exhibit’s big idea. This allowed us to find common themes, even though visitors gained uniquely personal insights, and compare them with the big idea. Changing the evaluation questions also allowed us to reduce the number of questions and discussion prompts we included in the evaluation instruments.

With these adjustments accounted for, we asked questions related to the design goal and the big idea:

1. What emotional response do visitors have in the exhibit?
2. What new insights do visitors take away from the exhibit?
3. How well does the exhibit communicate the big idea?

During the formative evaluation, and to a certain extent in the summative one, we also hoped to answer the question: How could the exhibit improve? Data related to this question informed each new iteration and let Sarah know of future changes to make to the exhibit.

I reported the findings from the evaluation by meeting with Sarah and the team during each major design phase. I presented the data results, and we discussed how to incorporate the findings in our design. I also included a list of possible improvements in the implementation documents.

The evaluation was useful as I communicated to several other stakeholders. As I wrote a report for the experiential learning grant, I used findings from a preliminary analysis of the data to show the result of the project. The library assessment department also requested a copy of the evaluation report for their own records.

Formative Evaluation 1
We conducted our first evaluation after we created grey-scale renderings of the displays. This evaluation was formative since we used the findings to make changes to the visual design.

Method. We gathered data through a Qualtrics survey that we posted on social media. I also share the survey with a university class. 29 people answered the survey questions. Since all responses were anonymous, I did not know if participants were university students, nor where they
learned about the survey. Therefore, we could not determine if responses came from members of the target audience.

Table 7 shows the questions we asked participants and the responses they could choose from.

**Table 7**  
*Formative Evaluation 1 Online Survey*

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Answers</th>
<th>Instructions</th>
<th>Research Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Description Text</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>2.</td>
<td>Renderings</td>
<td>n/a</td>
<td>n/a</td>
<td>1</td>
</tr>
</tbody>
</table>
| 3. | What is your initial reaction to the design?                             | • Extremely positive  
    • Somewhat positive  
    • Neither positive nor negative  
    • Somewhat negative  
    • Extremely negative | n/a          | 1             |
| 4. | When you went through the exhibit, what did you want to explore more?   | • An image  
    • A text panel  
    • An artifact  
    • A quote on the wall  
    • The comment board  
    • The books on the shelf  
    • The booklet  
    • A title  
    • The I Spy game  
    • Other  
    • Nothing stood out to me | Order with the top being the most interesting and the bottom the least | 1             |
| 5. | What do you like MOST about the exhibit?                                 | Free response                                                         | n/a          | 1             |
| 6. | What do you like LEAST about the exhibit?                                | Free response                                                         | n/a          | 1             |
| 7. | The exhibit’s theme can be expressed in this statement: I can create from my own human experience something that inspires others | • Extremely well  
    • Very well  
    • Moderately well  
    • Slightly well  
    • Not well at all | n/a          | 3             |
How well does the design communicate this theme?

8. We are considering the following sub-themes for the exhibit, which ones interest you the most?
   - Growing up and finding a purpose in life
   - The struggles that come with creating
   - How a creation reflects the creator
   - The tools and processes of creating
   - The impact an individual can have on others

   Place in order with the top being most interesting and bottom the least interesting

   1

9. Is there anything else you would like to share?
   Yes/No Free response n/a

Since we were working within a short time frame for completing this prototype, I conducted a rapid analysis of the data. I relied primarily on the report that Qualtrics generated, and I reviewed the free-response comments to identify any frequently occurring themes. I then communicated the results to the design team in our standup meeting where I showed them the graphs and discussed the major themes from the comments.

Evidence. For the first question, 11 participants had an extremely positive reaction while 15 participants had a somewhat positive reaction (See Figure 10). Only one participant felt neutral and two said their reaction was somewhat negative.

Participants were most interested in exploring the physical and visual aspects of the exhibit (see Figure 11). Participants were able to select all of the items that interested them. Twenty participants selected an artifact and 19 chose an image. They equally chose a text panel or a quote on a wall with 14 participants selecting each. Fewer participants selected an interactive activity. Eleven wished to look closer at the I Spy game, and 10 wanted to explore a book on the shelf.

When asked what they like most about the concept, I identified two major themes:

1. **Organization and Flow:** Eleven participants shared a comment that they liked something about the flow of the exhibit or its structure. One person said, “Nice flow. It pulls me in to want to learn more and see what each display is about.” Another liked that there are “so many parts” while a different participant liked that it was “multifaceted.”

2. **Artifacts:** Multiple participants commented about the artifacts. One participant said, “I liked the idea of the sectioned off room within this room, it’s something you don’t really see elsewhere on campus.” Another felt that having different artifacts helped make the exhibit “interesting and engaging.”
Concerning what they liked the least about the exhibit, eight participants felt that it was crammed or overcrowded. A significant reason for that was due to the table in the middle of the room. One participant shared that “I understand it’s a room used for more than just this exhibit and it stinks to have to share the space.” Participants said the amount of content also made it feel crowded. One shared that “The quotes and things near the display cases felt like they may be a little too cramped/tight.” Several participants hoped there were windows in the west wall since they thought that would make it feel less cramped.

A few participants suggested parts of the exhibit that could be more visible. Several had not seen the I Spy game in the renderings. Another thought the introduction panel would be more visible somewhere else.

The final portion of the survey gauged how well the exhibit reflected the big idea (see Figure 12). Twenty of the participants felt that the renderings communicated the big idea either extremely well or very well. Eight felt that it expressed the theme moderately well and one chose slightly well.

When identifying which potential topic interested them the most, the distribution tended to be even across the displays. Table 1 in the project summary shows this distribution. One major variation was that 12 participants ranked the topic “growing up and finding a purpose in life” as the most interesting one. The topic “the impact an individual can have on others” also tended to be ranked more interesting as is seen in its mean of 2.59. In contrast to this, the topic about the struggles of creating had a mean of 3.41 since only two participants ranked it as the most interesting.

Based on these results, participants liked the exhibit concept. They felt were interested in the artifacts—which might have been because this was the most developed part of the prototype—and the topic about Lloyd’s early life seemed more interesting to many of the participants. This reflects the finding in the learner analysis where participants tended to talk about events from Lloyd’s early life, such as his schooling and service in World War II.

Data Sample. This data sample includes responses for three of the survey questions. It demonstrates the kind of responses participant gave for the multiple selection question and the free-response questions.

**Table 8**

*Sample of Formative Evaluation 1 Survey Data*

<table>
<thead>
<tr>
<th>Question 4</th>
<th>Question 5</th>
<th>Question 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>When you went through the exhibit, what did you want to explore more?</td>
<td>What do you like MOST about the exhibit?</td>
<td>What do you like LEAST about the exhibit?</td>
</tr>
<tr>
<td>An artifact, The books on the shelf</td>
<td>It has a nice flow to it, slowly sharing more as you go through it.</td>
<td>It seemed like there were a lot of potential quotes or comments on the wall that would become too distracting to the overall message of the exhibit.</td>
</tr>
<tr>
<td>The booklet</td>
<td>I like the book sticking out from the wall that looks like</td>
<td>I never even saw the i spy game, but that sounds fun. I’d love to see some more</td>
</tr>
<tr>
<td>An image, A text panel, An artifact, The I spy game</td>
<td>you can turn its pages.</td>
<td>interactive things like the book. That was one of the things I appreciated most about the walt disney exhibit.</td>
</tr>
<tr>
<td>An image, A text panel, An artifact, A quote on the wall, The books on the shelf, The I spy game</td>
<td>I like the idea of the sectioned off room within this room, it's something you don't really see elsewhere on campus.</td>
<td>The functional table in the middle, I understand it's a room used for more than just this exhibit and it stinks to have to share the space.</td>
</tr>
<tr>
<td>An image, A text panel, An artifact, A quote on the wall, The books on the shelf, The I spy game</td>
<td>multi-faceted</td>
<td>confined to a single room</td>
</tr>
<tr>
<td>An image, A text panel, The books on the shelf, The I spy game</td>
<td>Nice flow. It pulls me in to want to learn more and see what each display is about.</td>
<td>I want to interact with the actual exhibit, which isn't possible given the electronic nature required at this time.</td>
</tr>
<tr>
<td>An image, An artifact, A quote on the wall</td>
<td>The coherency that is presented.</td>
<td>The fact that while the feel is modern, it still retains a BYU feel.</td>
</tr>
<tr>
<td>An image, A text panel, An artifact, The books on the shelf, The I spy game</td>
<td>The staged area, I love stuff like that.</td>
<td>Nothing I HATE, but text on a wall isn't that intriguing</td>
</tr>
<tr>
<td>The I spy game</td>
<td></td>
<td></td>
</tr>
<tr>
<td>An image, A text panel, An artifact, The comment board, The I spy game</td>
<td>I like the themes and titles</td>
<td>It seems a little crowded to have the two glass cases next to each other after one flat display.</td>
</tr>
<tr>
<td>An artifact, The comment board</td>
<td>the text explaining things looks short enough that I would actually read all of it.</td>
<td>On the west side, are those windows? I hope so because the first picture of the north wall felt a bit claustrophobic but if there were windows it would feel lots better.</td>
</tr>
<tr>
<td>An image, A text panel, an artifact, A quote on the wall, The I spy game</td>
<td>the glass displays</td>
<td>the books on what looked like a cart in the corner</td>
</tr>
</tbody>
</table>
**Formative Evaluation 2**

I conducted this second evaluation after we completed full-color renderings for each display. These renderings included the text and images we had written and gathered. At this point, we were trying to understand how well our design aligned with the design objective and if it communicated the big idea.

**Method.** I uploaded the renderings onto Google Slides so participants could click through to read the panels. They then responded to a survey about their experience. I recruited participants by posting the Google Slides on social media. Sarah sent an email with a link to the prototype to library employees, and a professor agreed to send the prototype and survey to his students.

Fifty-nine people responded to the survey. Like the previous formative evaluation, all responses were anonymous, so I could not determine if members of the target audience were among those who responded. Since the survey was distributed throughout the library, I assumed that many were library employees and faculty.

Table 9 shows the questions and response options for this second survey. Unlike the first evaluation, in which I hoped to gain an initial reaction to a still undeveloped concept, the purpose of this survey was to understand how the visual and textual elements helped participants gain new insights and explore the big idea. Therefore, we included questions that asked about participants’ emotional response and what they learned by reading the panels.

**Table 9**  
*Formative Evaluation 2 Online Survey*

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Answers</th>
<th>Instructions</th>
<th>Research Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Thanks for participating. All responses will be anonymous so please be honest and open. The input you provide will help us improve the visitor experience.</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>
| 2. | The exhibit *The Journey is the Treasure* helped me feel... | • Excited  
• Overloaded  
• Intrigued  
• Stressed  
• Introspective  
• Frustrated  
• Other | Please select ALL that apply | 1 |
| 3. | Please explain | Free response | n/a | 1 |
I took the items for the first question from Packer, Ballantyne, and Bond’s Dimensions of Visitor Experience Checklist (2018). Even though they created the checklist to compare a large sample of visitors across multiple exhibits, I chose to use items from the checklist because they had been validated. They also addressed various dimensions of the experience. Originally, I intended to include all the items, but based on feedback from the library’s assessment and usability department, I limited the responses to six items — three negative ones and three positive ones — in order to simplify the response. I included an “other” item as well in case a participant wanted to share something that was not on the list.

For the question asking about a new insight, I adapted Raphling and Serrell’s (1993) questionnaire for affective learning. The original questionnaire asked visitors three questions:

1. What would you say is the main purpose of the displays in the [title] exhibit?
2. What is one new idea you are taking away with you?
3. Anything else?

I did not use the first question because I wanted to make the survey as short as possible to encourage more responses. I also felt that the second question would elicit responses that addressed the evaluation goal.

My focus for this evaluation was to help the design team apply the feedback in a timely manner. Therefore, I conducted a rapid data analysis where I identified the main themes relating to how we could improve the exhibit. I also noted the responses for the first question. I reported these general
findings to the team, as well as specific things we could change, during a videoconference standup meeting.

**Evidence.** Figure 79 shows the spread of the responses for the first question. Participants were able to select multiple items from the list of emotions. Forty-eight participants said they felt intrigued, while 26 selected introspective and 25 felt excited. Additionally, 15 respondents chose “other.” Eleven of those who selected this option mentioned a positive feeling such as “inspired,” “motivated,” “appreciative,” “entertained,” “sentimental,” and “curious.”

**Figure 79**
*Emotional Impact for Digital Prototype 2*

<table>
<thead>
<tr>
<th>Emotion</th>
<th>Number of Times Selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrigued</td>
<td>48</td>
</tr>
<tr>
<td>Excited</td>
<td>25</td>
</tr>
<tr>
<td>Introspective</td>
<td>26</td>
</tr>
<tr>
<td>Overloaded</td>
<td>6</td>
</tr>
<tr>
<td>Frustrated</td>
<td>3</td>
</tr>
<tr>
<td>Stressed</td>
<td>0</td>
</tr>
</tbody>
</table>

Thirteen participants selected a negative feeling. Four of those who selected “other” felt “confused,” “vague interest,” and “unsatisfied” while nine participants selected overloaded or frustrated. Many of those who felt overloaded said it was because there was too much text. One participant said, “There’s a lot of information,” and another felt that “there were so many words!” In addition, a participant felt that it was overwhelming because of a “lack of consistency” between captions.

When asked about which display impacted them the most, 24 participants selected the panels about Lloyd’s early life. This was similar to the first prototype where visitors expressed interest in the topic of growing up. The Prydain case and end-of-life display were the second most impactful with 13 participants selecting each. Only six participants selected The Box area while three chose the introduction panel.

I identified four major types of insights participants shared, which I list with representative quotes:

5. **Challenges (16 participants):**
   a. “It’s okay to struggle.”
   b. “My mental health problems don’t have to stop me from writing.”
   c. “That trials are meant to forge us.”

6. **Inspiration (13 participants):**
a. “I can find inspiration from all sorts of places. I liked that Alexander found inspiration from Celtic legends, Mozart, and other books.”

b. “Filling my creative space with inspiring items is something that intrigued me.”

7. Creating (8 participants):
   a. “Creativity is endless.”
   b. “It’s maybe more of a reminder that it is easier to connect with others when you share a bit of yourself.”

8. Views on Lloyd (7 participants):
   a. “His heart was in his work!!”

Most of the insights were about the refining role of challenges in Lloyd’s life, or in the lives of the participants. Many others shared thoughts related to inspiration. The prevalence of these themes suggest that participants tended to reflect on concepts related to the big idea, especially those related to Lloyd’s struggles. They also gained a refined understanding about Lloyd and his impact on literature.

Participants said that they gained these insights primarily from a story or quote (see Figure 80). They selected multiple items from a list of exhibit elements. Thirty-two chose a story they read and 25 selected a quote. Twenty selected an image they saw while 10 or less chose the other parts of the exhibit such as the visual design or an interactive panel. Participants might have been more likely to choose these components because they were the most developed part of the prototype. There were some artifacts, but they were represented as silhouettes and visitors were not able to participate in interactive activities.

Figure 80
Source of Insight from Digital Prototype 2

When I compared these three findings—that the timeline was most impactful, most insights were related to challenges, and participants learned most from stories or a quote—it appeared that the part about Lloyd’s early life was the greatest contributor to learning and engagement in this prototype. This might have been because the display included stories about how Lloyd overcame
his challenges to become a published author. As Taeger (2019) proposed, stories give narrative space for people to reflect and come to a personally significant meaning.

Participants expressed several ways the exhibit could improve. First, they had concerns related to the content. One participant said, “I want to know more about his soldier days.” Five people wished there was a complete list of Lloyd’s books. One respondent said, “I think maybe a full book list of what he wrote.”

Some visitors struggled with the text. A participant said, “I found myself distracted by how many different font styles are employed in the exhibit text.” Another pointed out a panel where the text was hard to see against the background and several felt overwhelmed with the amount of “explanations, quotes, and words.”

These comments were helpful as we continued to refine the design. I focused the next iteration on reducing text and making the panels look more uniform. We also chose to remove one of the display cases to make the display less cluttered.

Data Sample. Table 10 shows response for three of the survey questions. It includes responses related to how participants felt, which display impacted them the most, and the exhibit elements that helped them gain a new insight.

Table 10
Sample of Formative Evaluation 2 Survey Data

<table>
<thead>
<tr>
<th>Question 2</th>
<th>Question 4</th>
<th>Question 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>The exhibit <em>The Journey is the Treasure</em> helped me feel...</td>
<td>Which section of the exhibit impacted you the most?</td>
<td>What helped you gain that insight or idea? Select ALL that apply - Selected Choice</td>
</tr>
<tr>
<td>Please select ALL that apply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrigued</td>
<td>Introduction</td>
<td>an interactive panel</td>
</tr>
<tr>
<td>Overloaded</td>
<td>Introduction</td>
<td>an image I saw</td>
</tr>
<tr>
<td>Excited, Intrigued, Introspective, Other</td>
<td>Box Panel</td>
<td>an image I saw, the visual design, a quote</td>
</tr>
<tr>
<td>Excited, Intrigued, Introspective</td>
<td>Timeline</td>
<td>a reflection question</td>
</tr>
<tr>
<td>Overloaded, Intrigued, Other</td>
<td>Timeline</td>
<td>a story I read, a quote</td>
</tr>
<tr>
<td>Other</td>
<td>Introduction</td>
<td>a story I read, an image I saw, the visual design, a quote</td>
</tr>
<tr>
<td>Intrigued, Introspective</td>
<td>Prydain Case</td>
<td></td>
</tr>
<tr>
<td>Intrigued, Introspective</td>
<td>Prydain Case</td>
<td>an image I saw, the visual design</td>
</tr>
</tbody>
</table>
Intrigued, Introspective  Box Panel  an artifact, a reflection question

Other  Prydain Case  Other

Excited, Intrigued  Timeline  the visual design

Excited, Intrigued, Other  Timeline  an artifact, a quote

Intrigued, Introspective  Box Panel  the visual design, a quote, a reflection question, an interactive panel

Introspective  End of Life Display  a story I read

Intrigued  End of Life Display  an image I saw

Excited, Intrigued, Introspective  End of Life Display  a story I read

Intrigued, Introspective, Frustrated, Other  Timeline  Other

Other  End of Life Display  a story I read

Excited, Intrigued, Other  End of Life Display  a story I read, a quote, a reflection question, an interactive panel

Intrigued, Introspective, Other  Timeline  Other

Excited, Intrigued, Introspective, Other  Timeline  a story I read, an image I saw, the visual design, an artifact, a quote, a reflection question, an interactive panel

Intrigued, Introspective  End of Life Display  a story I read

Overloaded  Box Panel  a quote

**Summative Evaluation**

After installing a physical prototype, we conducted a summative evaluation to determine how well the exhibit met the design goal and communicated the big idea.

Sarah, the client, was most interested in how the data would influence the design. I reported the results in a meeting with her where I presented general observations. We then discussed how to implement the results in the final design.

**Method.** The evaluation centered on an in-person exhibit experience. I recruited participants through a social media post, by sending an email to a college listserv, and from friends and family. Therefore, the participants were a convenient sample and they did not necessarily represent members of the target audience.
We recruited 22 people to go through the physical exhibit, though five children came with their parents. Therefore, a total of 27 people went through the exhibit. The sample included 11 participants who were university students and 16 who were not. Twenty came with family members or friends, and six came alone. As Figure 81 shows, most participants were between 25 and 34 years old. Five children went through the exhibit with their parents. Six were within the age range of the target audience.

**Figure 81**

*Age of Participants*

Each participant took part in four main activities:

1. Pre-exhibit interview
2. Video-recorded exhibit walk-through
3. Post-exhibit survey
4. Post-exhibit interview

For the interview portion, I wrote a list of questions that the interviewer asked the participant:

- Before you begin, I want you to think back on a time when you went to a museum or an exhibit that really made an impression on you, one that you remember to this day. Briefly tell me about that exhibit: What was it? What do you remember about it?
- What is one new idea you are taking away after seeing *The Journey is the Treasure*?
- If you could change something about *The Journey is the Treasure*, what would that be?

These questions were meant to help participants reflect on what they had learned and identify how the exhibit could improve. I included the pre-exhibit question so participants would approach the exhibit with an already meaningful experience in mind. This gave them a successful experience to measure the exhibit against as they went through.

The purpose of the survey was to understand the emotional impact of the exhibit. I reused the revised checklist from the second formative evaluation. In addition, I asked participants to compare the exhibit with a previous experience and identify how likely they would recommend it to
someone they knew. Unlike the surveys for the formative evaluation, I included two demographic questions about participants’ age and their status as students. Table 11 shows a breakdown of the questions with response items.

### Table 11
**Summative Evaluation Survey**

<table>
<thead>
<tr>
<th>Question</th>
<th>Answers</th>
<th>Instructions</th>
<th>Research Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thanks for your help. Please answer these questions about your experience in The Journey is the Treasure.</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>How does <em>The Journey is the Treasure</em> compare to your previous museum experience?</td>
<td>• Better than my previous experience • Equal to my previous experience • Worse than my previous experience</td>
<td>n/a</td>
<td>1</td>
</tr>
<tr>
<td>How likely are you to recommend <em>The Journey is the Treasure</em> to someone you care about?</td>
<td>• Extremely likely • Somewhat likely • Neither likely nor unlikely • Somewhat unlikely • Extremely unlikely</td>
<td>n/a</td>
<td>1</td>
</tr>
<tr>
<td>What words BEST complete the statement?</td>
<td>• Excited • Overloaded • Intrigued • Stressed • Introspective • Frustrated • Other</td>
<td>Please select ALL that apply</td>
<td>1</td>
</tr>
<tr>
<td>The exhibit helped me feel...</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Demographic Data

<table>
<thead>
<tr>
<th>Are you currently a university student?</th>
<th>Yes</th>
<th>n/a</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>What is your age?</td>
<td>Less than 18</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>18-24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25-34</td>
<td></td>
</tr>
<tr>
<td></td>
<td>35-44</td>
<td></td>
</tr>
<tr>
<td></td>
<td>45-54</td>
<td></td>
</tr>
</tbody>
</table>
I video recorded 21 of the participants who went through the room since I wished to understand their behavior in the exhibit and what they looked at the longest. I did not record the data for children who went through with their parents and I did not analyze the recording of a participant who went through with a member of the team. I followed Diamon, Horn, and Uttal’s (2016) guidelines for creating an observation guide. I listed possible behaviors and assigned each behavior with a two or three letter code (see Table 12). This allowed us to record participants’ behavior at each display.

**Table 12**

*Codes for Observed Behavior*

<table>
<thead>
<tr>
<th>Code</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>lat</td>
<td>Look at label</td>
</tr>
<tr>
<td>ce</td>
<td>comment, exhibit related</td>
</tr>
<tr>
<td>cn</td>
<td>comment, non-exhibit related</td>
</tr>
<tr>
<td>qe</td>
<td>question, exhibit related</td>
</tr>
<tr>
<td>ra</td>
<td>read label aloud</td>
</tr>
<tr>
<td>sar</td>
<td>scan AR image</td>
</tr>
<tr>
<td>wv</td>
<td>watch video</td>
</tr>
<tr>
<td>laa</td>
<td>look at artifact</td>
</tr>
<tr>
<td>di</td>
<td>Do Interaction</td>
</tr>
<tr>
<td>lai</td>
<td>look at interaction</td>
</tr>
<tr>
<td>lg</td>
<td>look general</td>
</tr>
</tbody>
</table>

Triangulating these three types of data helped us determine how *The Journey is the Treasure* impacted participants. I used graphs and tables to understand the survey data. For the interview responses, I placed the comments in a single spreadsheet and used deductive grouping to code the data with predetermined codes (Goodman, Kuniavski, Moed, 2012). The codes I used were:

- Insight - Personal, Lloyd, General, Action
- Content - Artifact, Panel, Video, Quote, Interaction, Design
- Feel - Negative, Positive
- Value
- Interest - Negative, Positive
For the time spent in the exhibit, I summed and averaged the time that visitors spent at each display. I also found the average for the total time that 21 of the participants spent in the room to find the total average time visitors stayed there. I presented this data through charts and figures to show where visitors tended to spend their time.

**Evidence.** On average, visitors were in the exhibit room for 18.69 minutes. This was 13.15 minutes longer than the library students who had gone through during the user testing. Figure 82 shows the total time for each participant. Two visitors spent 35 minutes in the room. One participant was in the room for only three minutes.

**Figure 82**
*Time Spent at the Exhibit*

![Time Spent at the Exhibit](image)

The bars with diagonal lines differentiate participants who were not with another adult from those who were. As is apparent with visitor 1, visitor 8, visitor 19, and visitor 20, those who spent the least amount of time in the room were there alone. Besides visitor 8, none of them watched the AR videos or did the interactive activities. Visitor 9 and Visitor 17 went through with children and they did the paper interactions which was where they lingered the longest. Visitors 18 and 21 were a major exception to this trend in that they watched movies at several of the displays which contributed to their prolonged stay.

These participants might have spent less time in the room because the exhibit activities were more enjoyable when done with another adult. It could also have been because those with another adult were able to work together to reduce any negative parts of the experience. Though the data might not support a specific reason why, it was apparent that being with someone led to a longer stay.

Visitors tended to linger at certain displays longer. Figure 83 breaks down the time visitors spent at each main component of the physical prototype.
Participants stayed longest by The Box area—an average of 6.45 minutes. Twenty of the participants looked at the panel titled “Lloyd’s Inspiration” where they spent an average of 3.38 minutes. Of those who looked at the panel, six participants watched a video. Based on their comments, I determined that eight people did the I Spy interaction. Nine lingered to look at artifacts, though I was unable to determine if they were doing the I Spy activity.

Participants also spent a significant amount of time—3.17 minutes—at the first display case which held Lloyd’s Irish harp. All of the participants lingered at this case to look at text panels and the harp, while 17 stayed to watch either one or both of the AR videos.

The third display to note was the panels about Lloyd’s early life. These would be displayed as a timeline on the east wall after the final installation, but for the physical prototype, we hung them on the windows along the west wall. Even though most participants saw this display last, they lingered there on average 2.93 minutes. Six visitors watched the videos and looked at panels. The other participants only looked at the panels. This finding reflects the results from the two formative evaluations. In the evaluation of the first digital prototype, many participants were interested in the topic about Lloyd’s early life. Similarly, during the evaluation of the second digital prototype, the majority of the respondents chose the timeline as the most impactful display.

This suggests that the early part of Lloyd’s life still impacted visitors in the physical prototype. Yet when experienced in-person, the office area played a greater role in helping the visitors explore and learn new insights. This could have been because the videos and interactive activities—which had not been present in the digital prototypes—built on the text, images, and artifacts to encourage greater participation. Most of the videos that participants watched were about Lloyd’s creativity and the things that inspired him.

Twenty-two of the 27 people who went through the exhibit responded to the post-exhibit survey. Figure 14 that is in the evaluation summary shows how participants compared the exhibit with a previous one they had visited. Only six thought it was a better experience. Ten participants felt that it was equal to their previous experience, while six felt it was a worse experience.
I compared the type of museum that participants had been to—a local museum, a non-local museum, or not specified—with how they felt about *The Journey is the Treasure*. The four people had been to a local museum felt that this experience was better. On the other hand, participants who had visited a non-local museum tended to not compare it as favorably. This suggests that the exhibit about Lloyd compared favorably to other exhibits at the university while it was not as impactful as larger museums. Yet due to the small sample size we were not able to verify this statistically.

Nine visitors felt that they were somewhat likely to recommend the exhibit and six were extremely likely (See Figure 84). Only two said they were somewhat or extremely unlikely to recommend the exhibit while two were neutral. In the same way that visitors spent more time in the exhibit if they were with another adult, those who were with someone else also recommended the exhibit.

**Figure 84**
*Likelihood to Recommend the Exhibit*

Participants identified a similar emotional impact as those who had seen the digital prototype. The majority of participants selected that they felt excited, intrigued, or introspective (See Figure 15 in the evaluation summary). For the “other” option, only one said he felt bored, while the others were “curious,” “inspired,” and “motivated to learn more.”

During the second formative evaluation, 48 participants said that they felt intrigued while 26 felt introspective. For the physical prototype, participants felt almost equally intrigued and introspective. This could suggest that being in the room was not only interesting, it was a more complete experience. The digital prototype sparked participants’ interest, but it did not fulfill their desire to explore more. In addition to helping visitors feel interested and intrigued, the physical prototype guided them to look within themselves to find the meaning of the experience.

Though participants mostly had a positive experience, three stated that they felt overloaded and frustrated by the exhibit. When comparing this data with the video observations, I found that those who responded in this way had gone through the exhibit alone or with children. They spent a shorter amount of time in the room, and they generally did not watch the videos or do the interactive activities. To understand why they had a negative experience, I analyzed their comments during the post-exhibit interviews. One visitor stated, in reference to the introduction video, that “it was just that video which I thought was a little underwhelming.” Another visitor who said he felt bored explained that “The exhibit seemed a little scattered to me.” The first participant
who had spent only three minutes in the room, said that he was uninterested in Lloyd and would not naturally go to an exhibit about him.

I determined, therefore, that these visitors still struggled to find a personally-significant insight from the exhibit. They did not understand the overall story of his life, and they felt somewhat overwhelmed by the amount of text and material. I sought to address these issues in the final installation-ready design. I redesigned the introduction panels for each display to make them more distinct from the other panels. I also added more references to Disney’s *The Black Cauldron*, and I redesigned the panels so the images were larger and the text was smaller (see The Final Design).

Though none of the children took the survey, I discovered as I watched the video recordings, that they also did not enjoy the exhibit. One child stated repeatedly throughout the exhibit, “this is not fun. I want to get out of here. This is not fun.” Another child told her dad that “there is not much to do.”

Despite these negative experiences, participants generally expressed positive insights they gained during the exhibit. For the post-exhibit interviews, I identified six major themes that visitors reflected on. Some visitors expressed these insights as observations about Lloyd, while others applied the insights generally or referenced their own lives. I listed each theme below with representative quotes to demonstrate what visitors learned while in the exhibit:

1. **Inspiration (12 visitors)**
   a. "I was impressed with how Lloyd wrote stories through his own experiences. That was kind of my main takeaway from it all."
   b. “I need to inspire my own workplace”
   c. “Mine came from learning about how he kind of took a lot from where he lived and grew up and stuff like that.”

2. **Views on Lloyd (11 visitors)**
   a. "He's very outward focused."
   b. "Lloyd seemed like a great guy who really viewed everything with awe and admiration and had an overall appreciation for life."

3. **Experiencing Challenges (9 visitors)**
   a. “He was clearly suffering with depression, had tricky things, and some failures, but he knew he wanted this thing.”
   b. “...the example of him just not giving up when it sounds like it took him a while to kind of get going and went through bouts of depression and he still like stuck to it.”

4. **Impacting Others (8 visitors)**
   a. "One thing that I take away is just like the desire to make an impact"
   b. "I had forgotten how many books he had written."

5. **Interesting Tidbits (8 visitors)**
   a. "Wow and Tim Burton." (3a)
   b. "I mean there's some neat things, like I didn't know he had skipped a grade." (10a)

6. **Views on Creating (6 visitors)**
a. "And then realizing that he couldn’t express what he wanted to express in something that was for adults."

b. "[He] had no reservation to just let it consume him."

In addition to these insights, five participants expressed a desire to read Lloyd’s books or watch *The Black Cauldron* movie. One participant said, after finishing the exhibit, “I kind of want to watch the Black Cauldron now.” A different participant said, “I want to read the books (laughs).”

These themes suggest that visitors did reflect on some aspect of the big idea: *I can create from my own human experience, a story that inspires others.* Most of the participants commented about inspiration, which suggests that this was the message that was the most salient in the experience. This was supported by our observation that visitors spent the longest time at the inspiration panel. Visitors commented the least about creativity. This might have been because the display focused on this theme, the Prydain case, was divided between two cases and artifacts were covered up. This display also did not have an activity besides the two videos.

In addition to the concerns about visitors feeling overloaded and frustrated, I identified five aspects of the exhibit that visitors struggled with or did not enjoy. I called these challenges “pain points.” Table 13 shows each pain point with the number of participants who commented about that theme and representative quotes.

**Table 13**

*Challenges Faced in the Exhibit*

<table>
<thead>
<tr>
<th># of Participants</th>
<th>Pain points</th>
<th>Representative Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Video</td>
<td>&quot;I didn’t see anywhere to see a video.&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;oh I’m confused.&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;I had a little trouble at the beginning.&quot;</td>
</tr>
<tr>
<td>13</td>
<td>Interaction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I Spy</td>
<td>&quot;We couldn’t find the map of Africa.&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;But because it's not specified, I imagine you can use the whole room, the whole exhibit.&quot;</td>
</tr>
<tr>
<td></td>
<td>Paper</td>
<td>&quot;if I am a kid and I just see that, like I won't be attracted to it.&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;What am I supposed to do?&quot;</td>
</tr>
<tr>
<td>8</td>
<td>Organization</td>
<td>&quot;for one thing it didn't quite come across as having a narrative.&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;Overall, I would change the order of the displays to more of a chronological depiction of his life.&quot;</td>
</tr>
<tr>
<td>8</td>
<td>No previous experience</td>
<td>&quot;I have to admit. I don't know who Lloyd Alexander is&quot;</td>
</tr>
</tbody>
</table>
Participants struggled the most to use the AR videos. Many did not even see that there were videos. One visitor walked straight to the bookshelf and skipped the AR intro panel while another did not look at the north wall. Others thought the images were placeholders for future videos. A participant said during the interview, “I assume the little snippets are going to have audio clips of him speaking or somebody explaining some stuff.” Those who watched the videos struggled to navigate the technology. They could not get some of the videos to load, they had issues with the web browser they were using, or they struggled to unlock the video by scanning the image. I addressed these issues by clarifying the video instructions (see The Final Design).

For the I Spy interaction, participants thought it was a good idea, but they did not know if they should look through the whole exhibit, or just in the office space. Only one participant found the map of Africa. Since this was the first item on the list, it confused participants at first when they could not find it. To fix this, I rearranged the order of the items so that easier objects to find were the first things visitors could look for. I also added instructions to look at the desk area.

The story spine activity and cartoon also confused a few visitors. One felt that children would not be very interested in them since they were not visually noticeable or fun looking. She suggested that turning some of Lloyd’s drawings into coloring pages would be fun. Others felt confused by the instructions about what they should do with the papers. Based on this suggestion, I created a coloring page. I also made a label that gave instructions for the activity.

For the organization, participants struggled because it was a prototype, and they wished the panels on the west wall were placed earlier in the exhibit. This confirmed our choice to organize the exhibit chronologically. Yet it also showed that the displays could not be viewed as independently as we hoped. We wanted the exhibit to be able to be viewed in any order so a visitor who started in the middle could still find meaning at that display. Visitors did gain insights by viewing the exhibits out of order; however, their experience would have been improved if it had been in chronological order as they wished it was.

The final challenge participants experienced was that they had no prior experience with Lloyd. This was the same issue we had identified in the user analysis. In this case, only two participants felt that it prevented them from enjoying the experience. The first person who went through the exhibit said he just was not interested in seeing an exhibit about Lloyd. Another participant, an undergraduate student, said he was looking for some point of connection but could not find anything.

The results from the video data, survey responses, and the comments in the interview suggest that the new exhibit encourages greater visitor interaction and engagement. Visitors feel introspective and interested during the experience. They feel excited about certain parts of the exhibit, especially the AR videos and I Spy game. In reference to Rossman, Duerden, and Pine’s (2019) experience classification, I do not think the data supports classifying the exhibit as a meaningful experience. There is a level of emotional connection and insight, yet I do not know if that would be the case for university students who are studying in the room. There were only a few members of the target audience represented in this evaluation, and they tended to be those who did not enjoy the experience as much. In addition, to truly understand how enduring the impact was, I would need to follow up with participants and see how they remember the experience after several weeks.

Despite these challenges, I believe that the exhibit communicates the big idea and provides a better experience than the original design. Visitors talked about the role of inspiration and overcoming challenges. They felt moments of enjoyment and discovery as they played games, read stories, and created their own exhibit journey.
Data Sample. The following tables represent a sample of the data I analyzed. Table 14 shows how I recorded the time in the exhibit and noted behaviors. I created a list of each of the main parts of the exhibit. As I saw a visitor go to that item, I coded the behavior I observed. I also recorded how long the visitor stayed at that location the order it fell in their overall experience. As this example shows, this visitor went to the title banner first, then he looked at the introduction panel.

**Table 14**
*Sample Video Data with Time and Action Codes*

<table>
<thead>
<tr>
<th>Location</th>
<th>Action</th>
<th>Time (seconds)</th>
<th>Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intro panel</td>
<td>lat</td>
<td>35</td>
<td>2</td>
</tr>
<tr>
<td>Banner</td>
<td>lat</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Introduction AR</td>
<td>lat</td>
<td>wv laa</td>
<td>283</td>
</tr>
<tr>
<td>Bookshelf</td>
<td>lai lat</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Photograph Frame (old)</td>
<td>laa</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Case 1</td>
<td>lat</td>
<td>117</td>
<td>6</td>
</tr>
<tr>
<td>Child Writing AR</td>
<td>wv lat laa</td>
<td>252</td>
<td>7</td>
</tr>
<tr>
<td>Harp AR</td>
<td>wv laa</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Harp</td>
<td>laa lat</td>
<td>29</td>
<td>8</td>
</tr>
<tr>
<td>Portrait</td>
<td>laa</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Portrait</td>
<td>laa lat</td>
<td>49</td>
<td>11</td>
</tr>
<tr>
<td>Artifacts on top shelf</td>
<td>laa lat</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Panels</td>
<td>lat laa</td>
<td>167</td>
<td>13</td>
</tr>
<tr>
<td>Large Text Panel w/image</td>
<td>lat laa</td>
<td>78</td>
<td>14</td>
</tr>
<tr>
<td>The Box AR</td>
<td>sar</td>
<td>22</td>
<td>15</td>
</tr>
<tr>
<td>Box Artifacts</td>
<td>wv laa</td>
<td>197</td>
<td>16</td>
</tr>
<tr>
<td>Inspirations Panel</td>
<td>wv lat</td>
<td>232</td>
<td>17</td>
</tr>
<tr>
<td>South Wall Rendering</td>
<td>lat sar</td>
<td>157</td>
<td>18</td>
</tr>
</tbody>
</table>

**Total Time in Seconds** 1662

Table 15 shows the responses for the first three survey questions. Table 16 includes the comments from those who answered the prompt “please explain” after answering the third question.
Table 15  
*Sample Summative Evaluation Survey Data*

<table>
<thead>
<tr>
<th>Question 1</th>
<th>Question 2</th>
<th>Question 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>How does The Journey is the Treasure compare to your previous museum experience?</em></td>
<td><em>How likely are you to recommend The Journey is the Treasure to someone you care about?</em></td>
<td><em>What words BEST complete the statement?</em></td>
</tr>
<tr>
<td>How likely are you to recommend The Journey is the Treasure to someone you care about?</td>
<td>What words BEST complete the statement?</td>
<td>The exhibit helped me feel...</td>
</tr>
<tr>
<td>Select ALL that apply</td>
<td>Overloaded</td>
<td>Select ALL that apply</td>
</tr>
<tr>
<td>Worse than my previous experience</td>
<td>Extremely unlikely</td>
<td>Overloaded</td>
</tr>
<tr>
<td>Better than my previous experience</td>
<td>Extremely likely</td>
<td>Excited, Introspective, Intrigued</td>
</tr>
<tr>
<td>Equal to my previous experience</td>
<td>Extremely likely</td>
<td>Introspective</td>
</tr>
<tr>
<td>Better than my previous experience</td>
<td>Somewhat likely</td>
<td>Excited, Introspective, Intrigued</td>
</tr>
<tr>
<td>Equal to my previous experience</td>
<td>Extremely likely</td>
<td>Excited, Introspective, Intrigued</td>
</tr>
<tr>
<td>Worse than my previous experience</td>
<td>Somewhat likely</td>
<td>Intrigued, Other</td>
</tr>
<tr>
<td>Better than my previous experience</td>
<td>Somewhat likely</td>
<td>Introspective, Intrigued</td>
</tr>
<tr>
<td>Equal to my previous experience</td>
<td>Somewhat likely</td>
<td>Introspective, Intrigued, Other</td>
</tr>
<tr>
<td>Worse than my previous experience</td>
<td>Somewhat unlikely</td>
<td>Introspective</td>
</tr>
<tr>
<td>Equal to my previous experience</td>
<td>Somewhat likely</td>
<td>Excited, Intrigued</td>
</tr>
<tr>
<td>Better than my previous experience</td>
<td>Extremely likely</td>
<td>Excited, Intrusive, Intrigued</td>
</tr>
<tr>
<td>Better than my previous experience</td>
<td>Extremely likely</td>
<td>Excited, Introspective, Intrigued</td>
</tr>
<tr>
<td>Equal to my previous experience</td>
<td>Somewhat likely</td>
<td>Excited, Intrigued</td>
</tr>
</tbody>
</table>
**Table 16**  
*Sample Survey Free Response Data*  

<table>
<thead>
<tr>
<th>Please Explain</th>
</tr>
</thead>
<tbody>
<tr>
<td>I want to go read the books, learn more about the man who wrote them, and get a better idea on his contribution to humanity</td>
</tr>
<tr>
<td>I felt the exhibit was well established. While things were a little out of order, the content was good, and proposed thought provoking insights.</td>
</tr>
<tr>
<td>I really appreciated his work and the thought that was put into it. It made me excited to be creative in my own way, and to share his work with my future kids</td>
</tr>
<tr>
<td>I didn’t know much about this author or his books coming into this, but having learned about him and having felt that I got to know him, I’m excited to read his work and see the worlds he created</td>
</tr>
<tr>
<td>I would like to know more about his books, characters, the color of his world.</td>
</tr>
<tr>
<td>I think seeing more of his fantastical characters, more bright colors, would help me feel more excited. But he seemed to be an introspective, intriguing guy, so I guess it makes sense to feel that way.</td>
</tr>
<tr>
<td>I really enjoyed looking into a writers mind as someone who takes an interest in this subject myself.</td>
</tr>
<tr>
<td>It made me think about my life and the dreams I have that I am not working to fulfill.</td>
</tr>
<tr>
<td>By the end of the exhibit I felt connected to Lloyd Alexander and intrigued by his work, where I didn’t even really know much about him before.</td>
</tr>
<tr>
<td>I don’t know much about Lloyd Alexander but this exhibit made me more interested in his books.</td>
</tr>
<tr>
<td>I felt like the information was very interesting and clear. I struggle to know what to do with the interactive activities such as the I spy since it didn’t specify if I was looking in the box or elsewhere. I however really like the videos and I think it would be useful to include the QR code in more than one location.</td>
</tr>
<tr>
<td>Inspired me to explore my own creativity and to read more of Lloyd Alexander’s works</td>
</tr>
<tr>
<td>I am an author also.</td>
</tr>
<tr>
<td>This is an author that I did not know much about, however it was very interesting to see some of the problems an author has gone though writing children’s books.</td>
</tr>
</tbody>
</table>
This last table, Table 17, is an example of how I transcribed the audio recordings, then created a row for each comment and applied the pre-established codes.

**Table 17**
*Sample Summative Evaluation Interview Data with Codes*

<table>
<thead>
<tr>
<th>Transcribed Audio</th>
<th>Code 1</th>
<th>Code 2</th>
<th>Code 3</th>
<th>Code 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>[00:12:34.01] Visitor 4: I like the way he talks about his characters too.</td>
<td>talk about</td>
<td>characters</td>
<td>insight</td>
<td>lloyd</td>
</tr>
<tr>
<td>[00:12:38.01] Visitor 5: Yeah or this one, where he’s like …&quot;he lost a friends&quot; yeah very cute.</td>
<td>lost friend</td>
<td></td>
<td>feel</td>
<td>positive</td>
</tr>
<tr>
<td>[00:12:49.20] Visitor 5: They have his typewriter? wow</td>
<td>typewriter</td>
<td>artifact</td>
<td>feel</td>
<td>positive</td>
</tr>
<tr>
<td>[00:15:46.20] Visitor 4: Cute</td>
<td>cute</td>
<td>video</td>
<td>feel</td>
<td>positive</td>
</tr>
<tr>
<td>[00:16:10.29] Visitor 4: He’s a very cute man</td>
<td>cute man</td>
<td>video</td>
<td>insight</td>
<td>lloyd</td>
</tr>
<tr>
<td>[00:16:24.28] Visitor 5: he’s very outward focused. He doesn’t seem like…</td>
<td>outward</td>
<td>focused</td>
<td>insight</td>
<td>lloyd</td>
</tr>
<tr>
<td>[00:16:54.28] Visitor 4: right but I’m…[come back and fill this in]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[00:18:59.26] Visitor 5: [laughing] that’s awesome.</td>
<td>cats</td>
<td>video</td>
<td>feel</td>
<td>positive</td>
</tr>
<tr>
<td>[00:19:17.23] Jamie: awesome</td>
<td>cats</td>
<td>video</td>
<td>feel</td>
<td>positive</td>
</tr>
<tr>
<td>(ACTIVITY) Watching video on music.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ACTIVITY) Watching video on Art</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[00:21:02.06] Visitor 5: cute, very cute. Should we play I spy?</td>
<td>video</td>
<td></td>
<td>feel</td>
<td>positive</td>
</tr>
<tr>
<td>[00:21:00.24] Visitor 4: I guess I’m assuming it’s all in here?</td>
<td>I spy</td>
<td>interaction</td>
<td>interest</td>
<td>positive</td>
</tr>
<tr>
<td>[00:22:00.21] Visitor 5: Maybe that’s one of his characters on the trash can?</td>
<td>trash can</td>
<td>question</td>
<td></td>
<td>artifact</td>
</tr>
<tr>
<td>[00:23:47.08] Visitor 5: wait, the pig? [laughs] I think I could recognize it, but I don’t know what to look for.</td>
<td>I spy</td>
<td>interaction</td>
<td>pain</td>
<td></td>
</tr>
</tbody>
</table>
References


Budget and Timeline

**Budget**

I estimated that the exhibit would cost $5,027. Figure 85 lists the budget I created with a breakdown of the various costs. We received money from the experiential learning grant and Sarah and the online learning team had available funds for the project. I received an hourly wage because I was an employee of the online learning team. The content developer earned money as a student intern for Sarah.

**Figure 85**

*Project Budget and Actual Expenses*

<table>
<thead>
<tr>
<th>Budget</th>
<th>Actual Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant Stipend</td>
<td>$800.00</td>
</tr>
<tr>
<td>User Testing &amp; Technology</td>
<td>$700.00</td>
</tr>
<tr>
<td>Comparative Analysis</td>
<td>$500.00</td>
</tr>
<tr>
<td>Personal Salary</td>
<td></td>
</tr>
<tr>
<td>Personal Wage: $14.35/hour</td>
<td></td>
</tr>
<tr>
<td>x Hours in a week ($14.35 x 14)</td>
<td></td>
</tr>
<tr>
<td>x Total Weeks (8)</td>
<td>$1,607.00</td>
</tr>
<tr>
<td>Total</td>
<td>$1,607.00</td>
</tr>
<tr>
<td>Other supplies</td>
<td>$100.00</td>
</tr>
<tr>
<td>Student Intern</td>
<td>$1,320.00</td>
</tr>
<tr>
<td><strong>Total Expenses</strong></td>
<td><strong>$5,027.00</strong></td>
</tr>
<tr>
<td>Grant Stipend</td>
<td>$116.61</td>
</tr>
<tr>
<td>User Testing &amp; Technology</td>
<td>$530.00</td>
</tr>
<tr>
<td>Comparative Analysis</td>
<td>$469.00</td>
</tr>
<tr>
<td>Personal Salary</td>
<td></td>
</tr>
<tr>
<td>Personal Wage: $14.35/hour</td>
<td></td>
</tr>
<tr>
<td>x Total Hours (485.34)</td>
<td>$7,022.03</td>
</tr>
<tr>
<td>Other supplies</td>
<td>$35.00</td>
</tr>
<tr>
<td>Student Intern</td>
<td>$700.00</td>
</tr>
<tr>
<td><strong>Total Expenses</strong></td>
<td><strong>$8,872.64</strong></td>
</tr>
</tbody>
</table>

The actual cost exceeded my estimate by $3,845.64. I spent less on the technology and user testing than I had planned. The technology cost $350 for a software license and we only paid participants for in-person testing. The content developer also worked less hours than anticipated. The additional cost came from my own salary being $5,415.03 more than I had anticipated. This was because I worked an average of 18.12 hours per week instead of 14 hours, and the project extended 27 weeks.

**Timeline and Project Management**

I chose a Scrum Agile approach to organize our workflow. I felt like the values of creating a working product, being flexible to change, and collaborative design fit well with the project goals.
We originally planned to create the exhibit in three sprints, starting at the beginning of March and ending in the middle of May. Each sprint was meant to last two weeks during which time we would design a prototype and conduct evaluation. We planned to hold a standup meeting twice a week and at the end of the sprint, hold a review meeting.

**Original Project Timeline**

- **Sprint 1: March 2 – 13**
  - **Sprint Goals:** Create a paper prototype of the exhibit layout and renderings of each display. Design the first iteration of signs and prototypes of interactions. Research and begin writing text. Select artifacts to display. Select other media to include in the exhibit. Develop a platform to house video and audio.
  - March 9 - Complete Formative Evaluation
  - March 13 - Hold Sprint Review/Retrospective

- **Sprint 2: March 16 – April 1**
  - **Sprint Goals:** Finalize and implement signs for rules of space. Create high fidelity prototypes of interactions. Finish writing text and design text panels. Finalize visual rendering of each display and the objects and media that will go in them. Finalize design for wayfinding signs. Order needed supplies.
  - March 23 - Begin evaluation
  - April 1 - Sprint Review/Retrospective

- **Sprint 3: April 3 – 22**
  - **Sprint Goals:** Print text panels and install. Install artifacts. Print and install wayfinding signs. Create a final version of interactions and install. Install media. Install artifacts and labels in displays.
  - April 13 - Begin evaluation
  - April 22 - Final client review

- **Summative Evaluation: April 27 – May 8**
  - April 27 – May 6 Gather Data
  - May 7 – May 12 Gather, organize, and analyze data.

- Present evaluation results to client: May 13

I created a project backlog and scrum board to track our work and progress. The board included a column for the backlog, a column for features we would complete during the sprint, an in-progress column, a review column, and a “done” column. I also logged personal tasks on the board, and I added links to important documents.
I held a sprint planning meeting to start off each sprint. During this meeting, I reviewed the project goal and led a discussion about what we would work on for the next two weeks. I created an agenda before each meeting which I sent to the team members. In the agenda for the second sprint planning meeting, I planned to review the project goal and establish a sprint goal of what we would accomplish in two weeks. I also included discussion items for possible risks we might encounter, how we would accomplish the sprint goal, and the specific assignments we would complete. This is an outline of that planning meeting agenda:

Sprint Planning 3/16/20

1. **Intro/welcome (~5 min)**
   a. Meeting Goals
      i. *What can be delivered in this next sprint?*
      ii. *How will we accomplish that work?*
   b. Reminder of project big picture and goal:
      i. what are we trying to get done?
   c. Review sprint velocity: we completed about 28 points worth of work during the last sprint.

2. **Sprint Goal: (~10 min)**
   d. where do we need to be in two weeks?

2. **What are issues/obstacles we might face during the next two weeks? (~10 min)**
   a. Look at Risk Chart
   b. How will we resolve, mitigate, absorb those setbacks and realities?

3. **What will we do to get there? (~30 min)**
a. Present revised features
b. Determine sprint velocity we will take on: estimate how long we believe it will take to complete each feature.
c. Which 'bucket' does it fit in? (1, 2, 3, 5, 8, 13)
d. Choose features we will work on and determine criteria for success for each

4. **Who will work on which feature? (~20 min)**
   a. Determine tasks for each item we will work
   b. Who will work on what?

5. **Review meeting times and schedule: (~ 5 min)**
   a. Sprint Review: March 27 10:00 am
   b. Next Sprint planning: April 30 11:00 am

6. **Go and do!**

Total Estimated Meeting Time: **1hr 20min**

During the bi-weekly standup meetings, I asked each team member to answer three questions:

- What have you worked on since the last meeting?
- What will you work on before the next meeting?
- What obstacles are in the way?

These frequent check-in meetings allowed us to receive feedback and plan out the future tasks.

As the project progressed, I had to adapt from a Scrum approach to a more flexible one. The interconnected and complex nature of the exhibit made it challenging to identify specific features to work on. Usually the feature was too large and vague to complete in a sprint or we had to wait for another part of the exhibit being completed. The team members were also not able to give the time commitment that a Scrum approach required due to other projects they were working on. I adapted our process, so we followed more of a Kanban approach. We still held frequent meetings and I used the same Trello board to track progress, but we did not design in sprints.

This is a breakdown of the final project timeline:

- **March 2** Kick-off meeting
- **March 2 - April 13** Designed grey scale renderings, wrote text
- **April 13 - April 30** Digital Prototype 1 evaluation
- **May 19 - June 12** Novice and expert review of exhibit text
- **June 15 - June 29** Drafted colored renderings, revised text, created AR videos, designed interactive activities
- **July 8 - July 15** Digital Prototype 2 evaluation
- **July 14 - July 16** Installed panels
- **July 17 - July 24** Physical Prototype 1 evaluation
- **July 31 - August 5** Installed panels
- **August 17 - August 20** Physical Prototype 2 evaluation
- **August 25** Met with Sarah to review evaluation
- **August 25 - September 1** Applied final revisions
The project took much longer to complete than I had anticipated. This was mainly because I underestimated the necessary labor and time it would take to design, evaluate, and revise the size of exhibit that we created. Team members, including myself, were also unavailable to work on the project at times because of vacations or other events.

COVID-19 related restrictions actually did not significantly impact the timeline. We were still able to meet as a team virtually and continue working on tasks. I prioritized parts of the exhibit that we could do without being in the library, such as writing text and creating renderings. Then, as the library opened up, we were able to install and evaluate the physical prototypes.