

University Library Split Game

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Annotated Portfolio

KU LEUVEN

About Our User: Anna is a 20-year-old Flemish student studying history at KUL. She comes to the library for long periods of time and often takes breaks outside where she eats a snack or drinks water. During these breaks, she will look at her phone or play music. Nevertheless, Anna wishes she had new forms of entertainment, especially ones that are limited in time (10-15 minutes) and can rejuvenate her for more studying. In terms of the library, Anna finds its aesthetics inspiring but doesn't know many specifics about its history. She wishes she had more time and opportunity to learn about this history, though her busy schedule makes it difficult.

About our Narrative: In 1968, growing tensions between French and Dutch speakers in Belgium resulted in the split of Leuven's Catholic University. Two new, autonomous universities (KU Leuven and UC Louvain) were formed in the aftermath and largely defined according to language. As a result of this split, it was also decided the collection of over 1 million books in Leuven's central library would need to be divided. After researching this history more deeply, interviewing our users, and brainstorming with others, we choose to focus on the historic rules that were used to ensure the library split was as "fair" (or as arbitrary) as possible.

About our Game: In response to our users' POV, we developed a short educational game that students can play on their study breaks outside the library. The objective of the game is to correctly slide four books on moveable sticks to either KUL or UCL (see pictures to the right and below). At first, players who are unfamiliar with the history of the split (the majority of our users) will need to create their own strategy for splitting the books – for instance, one might think the books should be divided according to language or subject material. After a first attempt, users can push a "Check Answers" button and a "Hint" button to help them adjust their approach. After trying multiple times and learning new tips from the "Hints" button, the player will eventually be able to correctly "shelf" the books, letting them "win" the game, learn about the library, and feel refreshed for a return to studying.

Final POV: How might we create a playful and tangible way for Anna to engage with the history of the library split during her study breaks in order to rejuvenate her for more studying, knowing that she is intellectually curious, is embarrassed about how little she knows about Belgium's French history, decompresses through entertainment, feels a sense of accomplishment from completing a task, and takes only 10-to-15-minute breaks?



Getting Hints: There are three hints that can be consulted during the game:

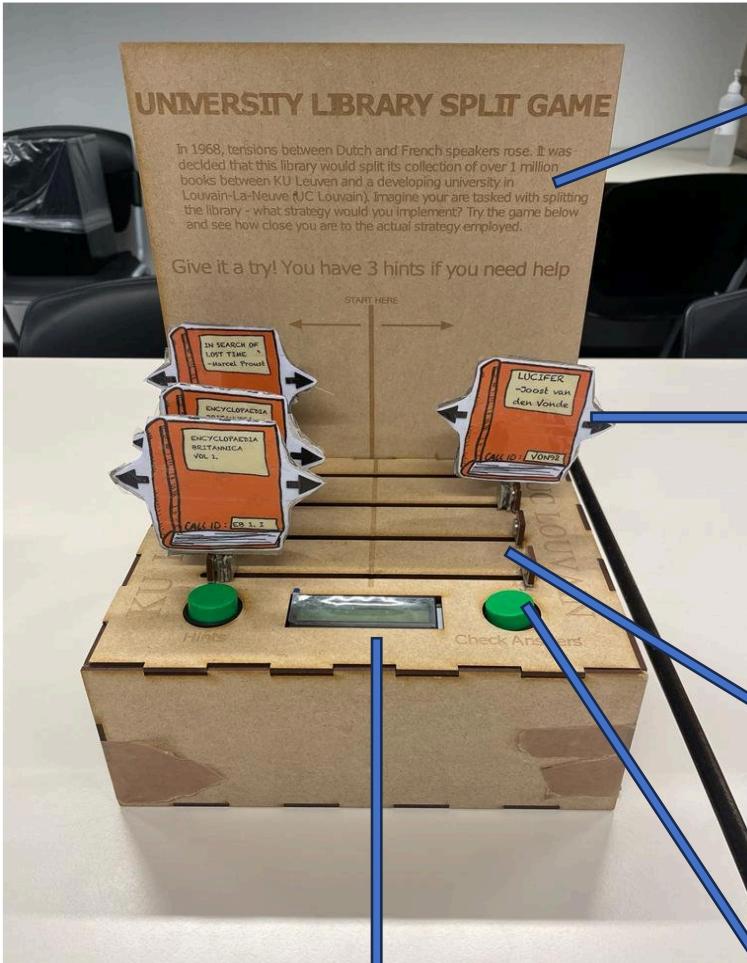
1. "Volumes together"
2. "Notice Call ID?"
3. "odd, even..."

Each hint becomes available after the "Hints" button is pushed. This allows the user to challenge themselves according to their own preferences (i.e., one player could use all the hints right away and another only when needed). It is also the main way players can learn about the facts surrounding our narrative.

Checking Answers: The "Check Answers" button lets players see how close they are to solving the game. Depending on how close one is to the correct placement of the books, little notes of encouragement are included with each check; this includes messages such as "keep using hints" or "So close!". Importantly, each check does not tell which book is in the incorrect or correct position, just the total number of books that are correct. This is meant to challenge our user and let their inner competitiveness come out (more on this in our report).

"Winning" the Game: Once the user presses the "Check Answers" button after all four books have been "shelved" in the correct university, a small tune will play along with a congratulatory message on the LCD screen. While we did not create a way for the game to be reset after each user plays, the "START HERE" engraving and adjacent arrows were added to encourage users to move the books back to their beginning position.

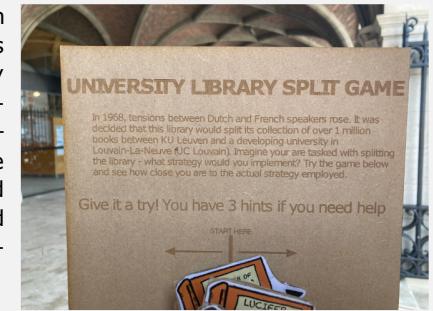
FINAL PROTOTYPE (EXTERNAL FEATURES)



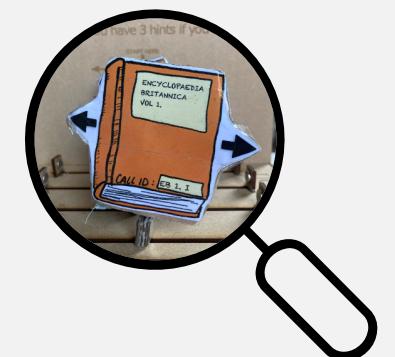
LCD Screen: In our early evaluations, we included hints under paper flaps that could be opened by the user. However, when we tested this, we observed users using the hints out of order, eliminating the game's challenge and adding a level of confusion for the user. The LCD screen was used to discourage this behavior (i.e., you cannot get to hint #2 without first reading hint #1) and simultaneously encourage the user to let their inner-competitiveness come out. Additionally, the LCD screen can show correct answers without showing which ones are correct; this allows the users to play until they solve the game.



Description & Instructions: Though our users knew much about the historic tension between French and Dutch speakers in Belgium, few knew anything about the library's split. In early interviews, only a few students could answer questions surrounding the split, though many had opinions on it once informed. The short description is used to contextualize the game for those who don't know the specifics behind the history and simultaneously provide basic instructions on how to proceed with the game. The additional arrows and "START HERE" message help with the instruction process.



The Books: The book titles were deliberately chosen to highlight some of the historic rules employed during the split. We included one French book and one Dutch book to demonstrate that the divide was not executed based on language (a common misconception for our users) and two encyclopedias to show that series stayed together. (A common "myth" dating back to the 1970s is that series were split between each university.) The arrows on the books were added after users told us they did not intuitively understand how to move the books, and the orange color was chosen after users told us that bright colors made the game more engaging. Additionally, we included a large "Call ID" number in the bottom right that (with the hints) was ultimately used to help players correctly split the library.



Magnetic Stops: The magnetic stops have the following functions: 1.) they implicitly encourage players to move the books all the way to the end of the board and 2.) they help ensure the sensors are activated inside the device (more on this later). While we, as the designers, knew the importance of moving the books so they touched the hidden sensors, the users did not and often "stopped short" when moving them. Moreover, even if players moved the books all the way, they did not always activate the sensors (i.e., they were not directly touching). This meant early tests were often impossible without "wizard-oz" intervention. After adding the magnets, most users could play without any additional help.



Two Buttons (Hints and Check Answers): In our tests and interviews throughout this project, we learned that our user, Anna, is competitive and likes to challenge herself (or, at least, likes the feeling of completing a difficult task). Nevertheless, without some kind of hint, the device becomes a simple guessing game. We therefore included two separate buttons Anna could use to help solve the game (see page above for more on these buttons).

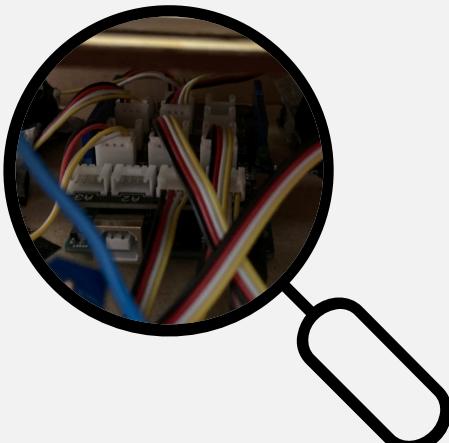


FINAL PROTOTYPE (INTERNAL FEATURES)



(4) Touch Sensors: In order to have the check answer's feature work correctly, four touch sensors were employed. Each sensor was hidden in the device but placed in accordance with the final locations of the books (i.e., 3 books were "shelved" at KUL and 1 at UCL). As the books are moved, the aluminum conductors (see description below) hit the sensors, activating the code for the "Correct Answers" button. To ensure players would not be able to detect where these sensors were, we added additional "stops". For example, if Book #1 belongs to KUL, but the user moves it to the UCL side, the aluminum sensor would hit the stop instead of the sensor; the user would not be able to tell if they've hit a stop or sensor and therefore must keep playing the game by checking their answers and using the hints.

Arduino Board and Battery: The code conducting the LCD screen, buttons, and buzzer was run through an Arduino Board. This board was taped down to the bottom board and run off of a battery. An internal piece of 3mm wood was used to help stabilize all internal pieces surrounding the Arduino board to ensure nothing would damage or disrupt it while users played the game.



Wooden Sticks & Aluminum Conductors: Each of the books were attached to moveable sticks that extend into the center of our device. At the bottom of these sticks, aluminum conductors were glued and taped on. As players moved the books to each university, the conductors would hit against the touch sensors, activating the "Check Answers" button. To ensure these conductors hit the sensors each time the books were correctly moved, we used magnets to lock the sticks in place (see previous page for discussion and picture of these magnets).

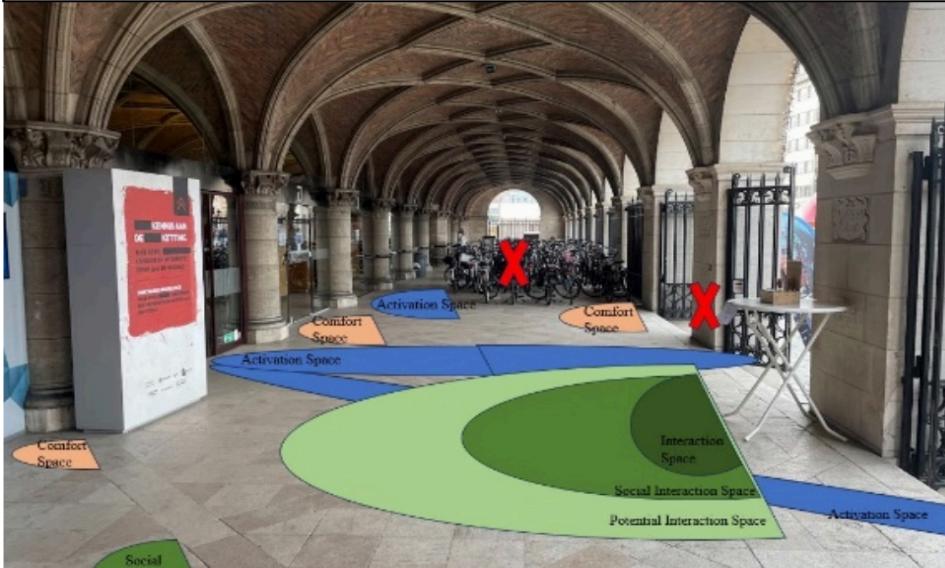


Buzzer: A small buzzer was placed inside the device and taped to the bottom board. When player checked their answers after correctly moving each of the books, the buzzer would play out a short congratulatory tune.



FINAL PROTOTYPE (THE LOCATION)

The Location



Comments: The final location we chose to showcase and evaluate our prototype was the library's center entrance. Our justification for this position was based on tests and interviews around each of the three library entrances (right, left, and center). According to our users, either standing around the main doors or sitting on the front steps was more comfortable than walking to the seats at the other entrances (see image below). In part, this has to do with the limited nature of student study breaks – walking to the left and right entrances, we observed, seems to represent too much of a commitment for many students. Standing or sitting on the steps speaks to the students' commitment to return to the library (they are not outside to get too comfortable). In essence, our game speaks to this reality. Students play it while standing up on their breaks and it only takes 5-10 minutes (15 max) to complete.

Considered Location



Comments: In early tests, we considered deploying our device at either the left or right entrance of the library. One reasoning behind this decision was the large number of tourists that entered at the center, who we thought may distract students, and the availability of seating. However, testing revealed that students entered the library from these locations less than anticipated and would not sit there during breaks. In interviews, students even told us that they often preferred to sit on the front steps of the library over these benches. Please see our report for a more in-depth discussion on these results.

User Testing



Comments: Another key reason why the center entrance proved more optimal was the large amount of available space. The picture to the left was from one of our early "Wizard-of-Oz" tests (also a semi-"In the Wild" test). A group of three students decided to play the game and each was able to comfortably participate. Additionally, students standing in some of the "Comfort Spaces" shown above became actively engaged by watching these three students play together.