Shower-thoughts: An immersive VR experience about mind wandering during bathing

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Abstract

What happens in our minds when we are taking a shower? This is an art project about shower-thoughts. In this project, the author has collected his thoughts during bathtub bathing. Using frame-by-frame VR animation, the author recreated 6 independent scenes based on 5 selected shower-thoughts. Starting from "When you swim underwater, you are also swimming above water," ending with "For a moth flying to a flame, the bonfire is its sun, and the firefly is its star." The outcomes were displayed in an exhibition in which the audience will be invited to lie down in a real bathtub and experience the visualized shower-thoughts in a VR headset. The project aims to disseminate shower-thoughts as a form for documenting and sharing ideas generated during mind wandering. It further explores the application of creative painting in VR as well as its limitations.

Keywords

Shower thoughts, Mind-wandering Visualization, Immersive Experience, Virtual Reality Painting, Spatial animation

Introduction

"Showerthoughts are miniature epiphanies that make the mundane more amazing."

- r/showerthoughts – Reddit

Nowadays, taking a shower has become so commonplace that showers have become a dependable fixture in bathrooms where people clean and groom themselves all over the world. [12] During moderately engaging activities like showering or bathing, people often seem to generate creative ideas. [14] These wandering ideas that come out of people's minds while taking showers are called showerthoughts. In 2011, a Reddit community called "r/showerthoughts" was created on the internet for people to share their own shower-thoughts in text and expect comments and discussion. [23] This internet community has approximately 33,000,000 members now and is the top 10 community on Reddit ranked by size. The shower-thoughts that people share online are typically one or two sentences, using oral phrases but clear and compelling.

As an active member of this community, the author has collected a number of shower-thoughts based on his own preferences, plus his own shower-thoughts recorded in recent years as a database. In order to give the audience a more comprehensive experience of shower-thoughts in different moods and thoughts, the author chose five distinct, classic, basic human emotions as themes from a wide range of shower-thoughts. Based on the content of each shower-thought, the author visualized them in immersive space as outcomes to show the images in the author's mind while reading or wondering about these shower-thoughts.

This work addresses the following research questions:

RQ1 How do we design an immersive experience of shower-thoughts?

RQ2 What are the unique affordances of VR in showing contents of shower-thoughts?

To explore these questions, the author used the VR animation software "Quill" to build six VR 360° scenes, frame-by-frame animated with different tones of color and atmospheres. The artist installed the outcomes alongside a real bathing setup in an exhibition. "Shower-thoughts" allows exhibition visitors to browse visualized shower-thoughts in an immersive space while actually lying down in a real bathtub. In the virtual space, it is possible to switch between different scenes from the perspective within the bathtub. After experiencing all the scenes, the audience is invited to write down a shower-thought of their own. These would reflect how much this immersive experience introduces the idea of shower-thoughts to the audience.

Figure 1. The installation of Shower-thoughts, with visitors at exhibition site (left), and small cards for visitors to write down their own thoughts (right). © 2024, The Author

Background

Shower in History

The shower has been a familiar feature in society for hundreds of years, whether it is used to clean up after spending a hard day's work farming or the nine-to-five job at the office. In contrast to the delightful baths of today, the manufactured shower initially appeared inside the asylum walls in the early 1800s as medical devices designed for the purpose of curing mental illness. [7] During that period, the shower functioned as the standard punishment for intentionally disobeying in the asylum. Until the middle of the 1800s, when the "modern period of dermatology" shifted the focus to the skin as the site of disease, showers began to be used for people to affordably wash their skin in public areas. [18] By the end of the 1800s, hygiene showers had become widespread in Europe as a standard feature of public baths in army barracks, schools, and factories. [11] However, because of the unaffordable price, private showers were not popular in the 19th century. Beginning in the 1950s, the rhetoric of capitalist modernization utilizes a sense of limitless development, which makes the 1970s the era of the bathroom and personal care. [17]

As a conventional space now, the bathroom serves as a place to practice disease prevention techniques as well as a platform for carrying out moral obligations and hygiene rituals. [24] Meanwhile, the bathroom converts the shower into a private activity designed for personal, family life that serves as a place to escape from public, political life. [4] The solitude of shower spaces and relaxation resulting from shower activity provide a unique opportunity for unhindered thoughts and are ideal for creativity and problem-solving. In addition to maintaining skin hygiene, showering in this century is claimed to be one of the main activities that could have breakthrough ideas and moments of clarity. [21]

Shower Effect

The term "shower effect" describes creative or disruptive ideas that come to mind while engaging in seemingly unrelated activities. [3] Everyday tasks like showering, walking the dog, gardening, and even dishwashing can trigger unconscious processing and result in insightful insights.

One theoretical explanation of this stated effect is that it occurs during moderately engaging activities such as showering and walking because they promote productive mind wandering, which makes a contribution to the generation stage of creativity. [14] To generate creative ideas, one has to achieve a balance between focused linear thinking and unstructured random associations [1, 5]. The former limits originality, whereas the latter is frequently irrelevant to our creative problems. Showering is one activity that may help us achieve that balance because it provides an engaging environment for mind wandering while still imposing some external constraints on thought. Both mind wandering and unconscious processing have been linked to improved creative performance. [10] Because when people's minds are in a resting state with no primary tasks, it will activate the default mode network (DMN) in the human brain that is involved in creativity. [15] The default mode network participates in complex, evaluative, and unconscious types of information processing. [6] It involves a variety of mental processes, such as perspective-taking, mental simulation, episodic future thinking, and mind wandering. [2] But most importantly, it facilitates the acquisition of unusual connections between memory and knowledge, which leads to innovative ideas.

Beside mental relaxation, physical relaxation has also been suggested as one of the factors that may activate DMN. [19] Among the activities in which the mind is moderately involved, bathing performs better in terms of relaxing the body.

Nevertheless, it is also argued that the "shower effect" is not directly related to the act of bathing. It has been suggested that people usually schedule their baths at night and in the early morning, which coincide with the times when people's insights are active. [19] There were even a significant number of people who said they never had a shower-thought moment.

Shower-thoughts can be considered as ideas resulting from the "shower effect" discussed previously. The insightful solution coming from the shower-thought moment could be one type of shower-thoughts. But shower-thoughts are more than just problem-solving. In this project, the artist uses a narrow definition of the phrase "shower-thoughts", which refers to a format in which members of the Reddit community share mind wanderings in a sentence or two. In terms of content, the shower-thoughts discussed by the artist were more concerned with everyday relevance, counterintuitiveness, and unexpectedness.

Virtual Reality Painting Tool

This project built animation using the software "Quill," an art design software released in 2016. The software, which is compatible with Oculus headsets, enables digital artists to draw 3D models by immersing themselves in a virtual environment and using controllers as "pens." [16] Compared to other VR painting software, Quill is strong in practical animation features. Goro Fujita, a prominent Quill user, has utilized this software to create numerous lively scenes for his individual "Quillustration" artworks, each featuring looped animation. [9] Hollywood animation studios and the independent game industry also use Quill as their primary program. [20, 25]

In contrast to 3D software, virtual reality (VR) advanced in allowing users to immerse themselves in a synthetic environment rather than viewing it from the outside. [13] For VR painting software like Quill, navigation features and easy-to-use tools allow artists to easily create complex paths and animations. It also allows artists to create scenes with large scales in rooms of limited size. However, VR has disadvantages for first-time- or inexperienced viewers, who will encounter significant barriers to operating the control panels in the VR system. [25] The potential cyber-sickness during the VR experience could be an obstacle for a particular group of people. [26]

Methods

Collecting Shower-thoughts

In the pre-production period, the collection of shower-thoughts was carried out through the artist's diary and online research. Over a two-month period, the artist recorded his own thoughts as he engaged in activities that stimulated his mind to wander, such as bathing and walking. It is similar to keeping a diary for things like dreams and other types of activities. Together with the texts in his diary and the contents he posted on his social media over the past three years, a total of 14 shower-thoughts were collected. Meanwhile, the artist also collected shower-thoughts on Reddit, a user-generated content forum that was introduced in the previous statement, and Weibo, a social media platform that has accounts dedicated to sharing shower-thoughts submitted by fans. When collecting shower-thoughts from the Internet, the artist focused more on the diversity of themes, the interest in the use of words, and the cultural characteristics of different languages. A total of 23 shower-thoughts were collected from the Internet community.

Selecting shower-thoughts

When choosing which shower-thoughts to visualize, the artist first filtered out the ones whose content was not simple to visualize. Shower-thoughts with abstract subjects or concepts encounter difficulties while visualizing. These shower-thoughts are usually related to time, philosophical concepts, and current political topics. They often lack some figurative objects to carry the visual narrative. For example, "There is no physical evidence to say that today is Wednesday; we all just have to trust that someone has kept count since the first one ever." After filtering out the shower-thoughts with abstract content, the artist evaluated his emotion while reading each shower-thoughts using the Positive and Negative Affective Scale (PANAS). [8] In this process, only the shower-thoughts that showed significant emotion on the scale were retained. In the final step, shower-thoughts that are distinctive in the type of theme and possible visuals were chosen. The last process took place in parallel with the VR animation. In the end, the following five shower-thoughts were selected:

– "When you swim underwater, you are also swimming above water." (From Internet, Wordplay, Delightful, Bright Colors, Blue Tones)

– "The moment you close your eyes, there will be eyes open somewhere in the world at the same time." (Original, Disturbing, Dangerous, Colors Dark, Red Tones)

– "You can not make lemonade if life only gives you lemon but no sugar." (From Internet, Adaptation of Famous Quote, Sentimental, Yellow-Green Tones)

– "Portals in deserts might be the greatest air conditioner ever, since it provides hot winds during the daytime and cold winds at night." (From Internet, Mysterious, Magical, Spectacular, Strong Color Contrast)

– "For a moth flying to a flame, the bonfire is its sun, and the firefly is its star." (Original, Heroic, Serene, Dark Light)

Visualizing Shower-thoughts

The artist chose to use VR as the technique for visualizing because he expected to provide the viewer with a better, more immersive experience of the emotions and images in the artist's mind as he read or created the text. The primary method was the use of the VR animation software "Quill," which enables artists to create scenes in VR with Oculus Touch and a distinctive illustrative style. Beyond traditional flat CG tools, "Quill" allows hand movements to become strokes of color in true 3D. [22] It was used in this project because of its ability to draw complex strokes freely in 3D space. Compared to 3D modeling and computer-generated software, these hand-drawn strokes are more humane and positively naive. This fits better with the colloquial, unprofessional, and easy-to-read nature of shower-thoughts. The lack of excessive detail creates a relatively boring task for the viewer to deal with, which benefits in activating their creative minds and allows them to wander their minds even more in order to solve their own creative tasks rather than allowing the viewer to focus entirely on the work.

The artist chose to draw 2-5s seamlessly looping animations for each of the scenes corresponding to the shower-thoughts. In Irving's research, the researchers verified that people who watched a boring video while thinking performed better on creative-type problems. [14] In creating the animation, the artist used a screensaver style to represent boring tasks.
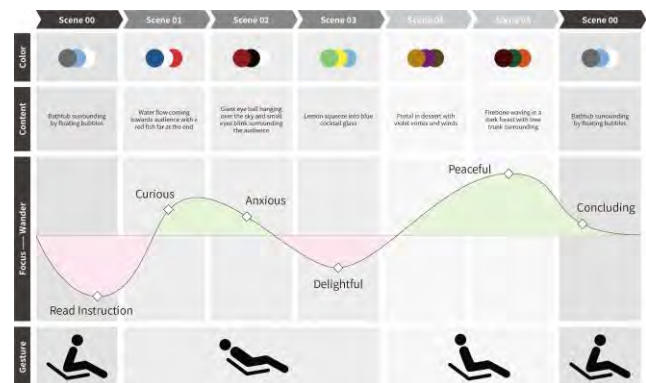
Outcomes

Visualizing Shower-thoughts

Figure 2. Narrative flow © 2024, The Author

Virtual reality animation scenes are created independently and displayed in a designed order. The artist designs the narrative flow according to the change in the level of focus-wandering expected from the audience. The audience is expected to have a relatively low level of mind wandering in

scenes one and two to reach a certain level of concentration in the third scene and finally to reach the highest level of mind wandering in the fifth scene. At the same time, the artist adjusts the colors in the first three scenes containing the introduction so that they make some visual connections in color. For example, the secondary color of the previous scene is used as the primary color of the next scene. The artist believes that this will allow the audience to immerse themselves more seamlessly in the scene during the pre-experience, rather than being confused by the huge visual changes at the beginning. In contrast, there are large color changes between subsequent scenes. The artist arranges the color contrast in the later scenes so that the audience can feel more impact and variety. In addition, the artist also designs the audience's gesture when browsing the animation. The viewer will go through the process from sitting to lying down, then leaning, and finally sitting up straight again. The animation places the thematic elements at different heights and uses the content itself to naturally guide the viewer's eyes from looking down to looking up and looking down in the end. In order to view the contents above, the viewer will naturally recline in the bathtub and stay in a relaxed position as expected by the artist.
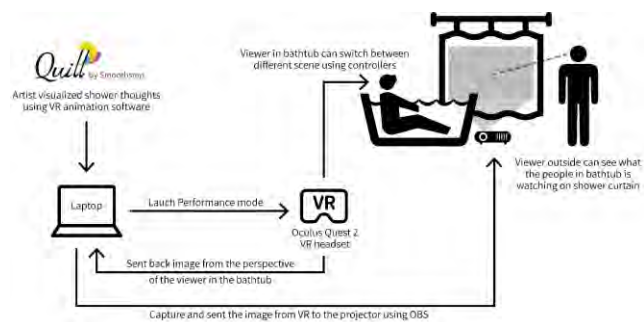
Art Exhibition

Figure 3. System diagram © 2024, The Author

The installation consists of an Oculus Quest 2 VR headset, a laptop, a short-throw projector, a 1.7-meter-long bathtub, and a shower curtain. "Meta Quest Link" software links the VR headset to the laptop that runs the animation software "Quill." A Type C-USB cable will send the images from the audience's first-person view in the VR headset back to the computer. OBS will stream these images in real-time to a short-focus projector for projection onto the shower curtain. Projecting the contents on the shower curtain allows the audience outside the bathtub to know what the viewer in the bathtub is browsing. Shower curtain is selected as the canvas because the distorted and blurred edges can provide the feeling of watching blurry imaginations. At the same time, projections on the shower curtain can demonstrate what might be seen in the VR headsets for members of the audience who are reluctant to enter the bathtub for reasons of shyness, dress code, or concerns about hygiene.

VR Animation

The animations are 12 frames per second, 2-5 seconds seamlessly looping, with stereo soundscapes that synchronize the movements and emphasize the environment.

Scene 00 The first scene has a digital copy of the real bathtub with blue and white bubbles. The audience can hear the sound bubbles and water filling up the bathtub. This scene is designed as an entrance that connects the real world with the virtual world.
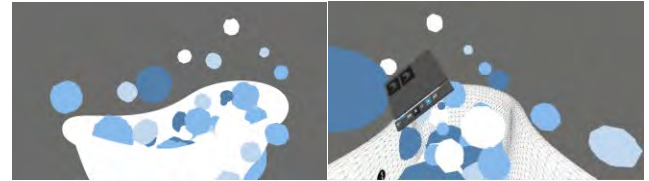

Figure 4. Screenshot of scene 00 (left), viewer's perspective (right) © 2024, The Author

Scene 01 This scene comes from the shower-thought, "When you swim underwater, you are also swimming above water." It has a fish swimming in the center

Figure 5. Screenshot of scene 01 (left), viewer's perspective (right) © 2024, The Author

The animation in this scene is the fish waving its tail with blue and white curves flying towards the audience's sight. A VR headset distinguishes the effect of curves moving to the audience's sight from 2D video reproduction. This uniqueness exemplifies the advantages of using VR to visualize shower-thoughts in this project.

The artist scheduled this scene as the second because it maintains a consistent color scheme of blue and white. This provides the audience with a warm-up instead of jumping straight to a completely different scene. The fish is designed to be above the viewer, which encourages the audience to lie down in the bathtub without using intentional guidance.

Figure 6. Audience sits straight (left), lays down (right) © 2024, The Author

Scene 02 This scene comes from the shower-thought, "The moment you close your eyes, there will be eyes open somewhere in the world at the same time." The viewer is surrounded by small blinking eyes and a large eye above the sky
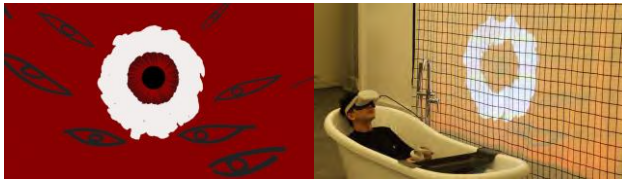

Figure 7. Viewer's perspective of scene 02 (left), viewer keep lying down and look further up in the bathtub (right) © 2024, The Author

The artist designed this scene as the third scene to create a contrast with the previous scene. The artist anticipates that the diversity of atmospheres and techniques will heighten the audience's anticipation that this virtual bath encompasses more than just water. And it somehow expands the contents of this group of works, not only breaking the limitation of objects that could be found in shower rooms but also making the scene more abstract and conceptual. The large eyeball is positioned above the audience even higher compared to the fish in the previous scene, therefore directing the viewer to continue lying down in the bathtub.

Scene 03 This scene comes from the shower-thought, "You cannot make lemonade if life only gives you lemon but no sugar." It has a cocktail glass in the middle, and lemons squeeze themselves into the glass.

Figure 8. Screenshot of scene 03 © 2024, The Author

The animation depicts a loop of lemons appearing, squeezing, and collapsing in an endless process of preparing lemonade. Several paths will move in front of the viewer's eyes. The experience of being blinded by moving objects approaches the uniqueness of using VR.

This scene is selected as the fourth scene because it has a more dynamic animation style compared to the others. It works as a small "climax" in this journey through virtual baths. The artist considers this an exploration of the possibility of the software as well as an enhancement of the diversity in his animation sequences.

Scene 04 This scene comes from the shower-thought, "Portals in deserts might be the greatest air conditioner ever, since it provides hot winds during the daytime and cold winds at night."

Figure 9. Screenshot of scene 04 (left), viewer's perspective (right) © 2024, The Author

The design of the portal creates a massive, magical architecture that requires viewers to look up and down to fully appreciate the scene. This is regarded as a unique experience in virtual reality, as viewers cannot perceive the scale of this portal through 2D images. The artist played with the hierarchy to use the small grass on the ground as a comparator. To make the portal more magical, purple is used to draw the vortex as the discord color of yellow.

Scene 05 This scene comes from the shower-thought, "For a moth flying to a flame, the bonfire is its sun and the firefly is its star." It has trees without leaves and a bonfire in the middle of the ground, with fireflies flying in the sky.
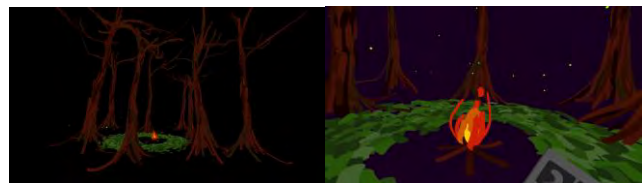

Figure 10. Screenshot of scene 05 (left), viewer's perspective (right) © 2024, The Author

This scene was designed to be the last scene because it creates an atmosphere of relaxation. The artist expected the audience to fully immerse themselves in this scene with the strongest level of mind-wandering in the entire narrative flow. By activating their linear creative thinking, the audience can start to recall all the previous shots and begin to conclude their own shower-thoughts.

Scene 06 After finishing watching the last scene, the audience will go back to scene 00 with a handwritten "Thank you" as the ending of this virtual bath.
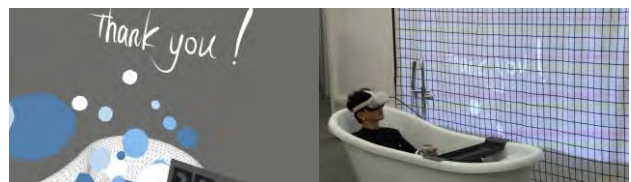

Figure 11. Audience's perspective of scene 06 (left), and from outside (right) © 2024, The Author

Qualitative Findings

This artwork has been exhibited at Weaving Spot 2024 in the City University of Hong Kong and Chinese CHI Art Gallery 2024 in the Southern University of Science and Technology. The artist interviewed audience members who visited the exhibitions (n = 9) to gain opinions about their perceptions of shower-thoughts and this virtual reality experience.

Dissemination of Shower-thoughts moments

Four audience members (P1, P3, P5, P6) indicated that they had experienced similar shower-thought moments in the bathtub. However, one audience member also indicated that he preferred singing in the bathroom to mind-wandering (P2). Three audience members (P5, P7, P8) claimed to spend more time guessing what the artist was trying to express in each scene during the experience.

Before the audience was shown the corresponding shower-thoughts for each scene, the audience had very different interpretations of some scenes. For instance, the audience interpreted the lemonade in scene 3 as the preparation of an Aperol cocktail, symbolizing a vacation mood (P3). Most viewers did not think it was necessary to know the exact shower-thoughts corresponding to each scene during the VR experience. Only one viewer (P8) felt that the original text should have been placed in the VR scene in the form of subtitles, while other viewers felt that subtitles would break immersion (P4) or limit the viewer's own imagination (P3).

After being shown the corresponding shower-thoughts for each scene, all viewers evaluate themselves with a moderately high score on how well they understood shower-thoughts, as collected on Reddit, given in one or two sentences.

However, when the artist asked the audience members in the exhibition to write their own shower-thoughts on cards after the VR experience, they could only leave a few thoughts or hand-drawn sketches. "I may have shower-thoughts in the shower someday, but not today. I am not saying this artwork does not inspire me; it just takes more coincidence to spark an idea." (P1). Nevertheless, six viewers indicated that they had other insights while watching these VR scenes, such as how their problems at work (P6) or school (P1, P9) could be solved, how VR technology could be used for psychological healing (P4), how the layout of their home decoration could be modified (P5), and what to eat tonight (P3). The first two insights are both directly linked to the technology of the work itself, which may be a mindset that draws inspiration from any artwork. The latter two insights, on the other hand, were less connected to the work itself and were more like mind wanders. One viewer (P3) stated that he was thinking, "I am going to open a barbecue restaurant on the moon when mankind is able to settle there" while watching Scene 5. This kind of unrelated thought is what the artist expected the audience to have in his bathtub.

The artist concluded that it was feasible to create the scene by simply looking at the shower-thoughts as a starting point, focusing more on giving the viewer a holistic experience rather than seeking to recreate the text.

Dissemination of Shower-thoughts moments

Most viewers found the virtual bathing experience to be relaxing and enjoyable. Two viewers did not find the experience relaxing because the VR headset was too heavy (P2), as well as because wearing both the nearsighted glasses and the VR headset at the same time was very oppressive to the nose and sides of the head (P8). Half of the viewers (P1, P3, P6, P7, P9) claimed their posture change followed the designed sight and lay down in the bathtub without being prompted by the staff. On a scale of 0-5, all viewers surveyed agreed 4-5 that watching VR was an irreplaceable experience compared to video. "My favorite part was the first scene with water flow; the lines flying towards me sprayed on my face like water in a shower. But on the projection of the shower curtain, I could only feel the lines fanned out in all directions" (P1).

During the Chinese CHI art gallery, an audience member (P5) said she wanted to try this installation the first time she saw it. However, because there was no staff around the bathtub and she did not know how to operate it, she did not have the courage to experience it by herself even though the instruction was given. The artist found that some audience members were reluctant to enter the bathtub to watch. During the exhibition, the artist occasionally received questions about whether it is possible to watch VR outside without entering the bathtub.

Figure 12. Audience try VR headset outside the bathtub © 2024, The Author

By asking the audience directly, the artist knows that this might be because they wore large glasses that do not fit the VR headset, wore short skirts or other clothing that was not suitable for entering the bathtub, and were shy about the possibility of being surrounded by people while lying in the bathtub. For those who are curious about what they will see in the VR but do not want to enter the bathtub themselves, the artist will enter the bathtub and demonstrate for them.

Another frequently asked question was what software was used to create these animations. On a scale of 0-5, three viewers (P3, P4, P9) scored a 5 for the novelty of the VR animation style, and the rest of the respondents gave no less than 3. "The difference between watching hand-drawn VR and watching 3D modeled VR by software such as Unity is like the difference between watching a hand-drawn

illustrated book and watching a poster made by Photoshop. I can see more of the author's effort and the character of the author in the hand-drawn strokes and the adorable style that heals my heart" (P4).

In conclusion, the use of VR painting software provides a unique experience for the viewer, and this uniqueness fits well with the style of shower-thoughts.

Discussion

Limitations

Characteristics of shower-thoughts in words One important feature that makes shower-thoughts on Reddit interesting is wordplay. These double entendres and humor among texts were not effectively transferred or displayed after the visualization in this project. For example, in scene 1, "When you swim underwater, you are also swimming above water," one can get the idea of swimming in the water through visuals. But the trick of using the phrases "under" and "above" is not visible without the hint of words. The diluted role of the original shower-thoughts in texts may have led to the ineffective dissemination of the Reddit shower-thoughts in a narrower definition. It can be concluded that this work succeeds in dissemination about the moment of "shower-thoughts" in a broader sense, but the visualized shower-thoughts lose their character in the text.

Audience's willingness to use VR As previously mentioned, not all viewers are willing to get into the bathtub to use VR. The combination of the bathtub and VR, while enhancing the immersive experience of the shower-thoughts, creates a hardware barrier to viewing for the audience. Similar to Bowen's experience when he tried to introduce Quill to young Chinese artists specializing in graphic tablet drawing at TOPU International Animation Week in 2022, the artist also found that most people did not know how to press the buttons on the menu board in a virtual space. [25] The obstacle of operation on the software was also cited as a reason why viewers were reluctant to experience VR without guidance from the staff. At the same time, the requirement of learning and practicing how to operate VR can also undermine the viewer's immersion while watching the animation.

Conclusion

This project used virtual reality to successfully design an art installation that spreads the concept of shower-thoughts. This demonstrates one application of VR painting software and how it is unique in style and immersive experience compared to other visualization software. The aim of the project was to share ideas generated as people's minds wandered and to encourage users to draw inspiration from them.

Qualitative results from audience interviews emphasized the positive role of VR animation in the dissemination of shower-thoughts. The seamlessly looping animation allowed viewers to enter a state of mind-wandering during the VR experience and generate their own shower insights during the process. However, the methodology used in this project had limited effectiveness in communicating the linguistic appeal of shower-thoughts. And its physical setup presents a certain challenge to the audience's willingness to experience it.

In conclusion, this project demonstrates the potential of VR drawing software when restoring personal experiences. The findings contribute to the promotion of shower-thoughts in the field of art creation. It also emphasizes the significance of virtual reality technology in activating people's creative thinking.

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