Empowering Young People in Immersive Experiences

Key Findings From an XRA Limitless Future Workshop

XR ASSOCIATION

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Overview

The future of XR includes exciting applications for youth — for education, entertainment, healthcare, and other uses. As youth increasingly engage with immersive online environments, the XR Association (XRA) has been exploring ways to ensure that younger users' well-being and safety are considered in the development and expansion of XR technology. To further that goal, XRA and Georgia State University partnered to host the XRA Limitless Future Workshop: Empowering Young People in Immersive Experiences. The workshop brought together key stakeholders, including educators, industry leaders, college students, and others, to share insights and collaborate on solutions to enhance youth safety in digital immersive spaces. The two-day information gathering session and workshop was held October 17 and 18, 2024, at Georgia State University in Atlanta, Georgia.

The first day featured several focus groups of primarily 8th-grade students from the Atlanta area who were asked to test and evaluate a series of immersive experiences and provide their opinions and reactions to those experiences. The feedback on those experiences included suggestions related to hardware safety and comfort, social and psychological well-being, educational opportunities, and other issues associated with making immersive experiences more impactful and enjoyable.

The second day, which was informed in part by the information gleaned from the focus groups, was devoted to discussions among industry and academia exploring the opportunities and challenges of safeguarding youth experiences in virtual reality (VR), mixed reality (MR), and augmented reality (AR) both for educational and entertainment purposes.

The morning session focused on the feedback from the focus groups and how to define what "safety" and "harm" mean in immersive entertainment environments for youth. The afternoon session focused on ideas, concepts, and techniques developers might use to create a safer, more inclusive digital future for youth.

Day One:
Focus Group Experience & Feedback

XRA invited 22 Atlanta-area teenagers, along with Georgia State University (GSU) and Georgia Institute of Technology (Georgia Tech) faculty and students, to attend a demonstration of several XR experiences and provide feedback.

The 22 students were asked to provide feedback on five different XR experiences that included a variety of demos from Reframe XR, Owlchemy, Transfr, EmergeNet, and CareerViewXR. The demos, which were limited to 20 minutes per session, explored a range of use cases from learning about potential post-high school careers, educational purposes, such as exploring the solar system and learning about dinosaurs, to entertainment and fun.

Demo Experiences:

- **ReframeXR** – A mixed reality educational experience showcasing MR classroom management of educational immersive experiences.
- **Owlchemy Labs** – *Job Simulator:* A first-person VR game.
- **TransfrVR** – Exploring high-growth careers by completing an engaging task.
- **EmergeNet** – Career and technical education experience
- **CareerViewXR** – A 360 degree video showing a day in the life of a commercial lobster fisherman.

An XRA quantitative survey of the student focus group participants found their experiences to be positive overall and that students felt safe while in the immersive worlds. For example:

- 95% of students had tried VR before the demonstration, and **more than 3 in 4 said they "loved it."**
- 80% experienced **no physical discomfort** from using headsets or being in the experience
- **92% felt safe or very safe** while participating in the demos
- 86% said they **would recommend virtual reality (VR)** experiences to a friend
- 72% said that the **length of the experience was just right** or could have been longer
- 92% said that the experience **helped them understand career options** they hadn't considered before

During qualitative discussions with the students ("focus groups") several interesting insights were articulated.

1. Desire for Purpose and Agency

While many students reported enjoying their experiences, they offered several suggestions for making them more engaging. Student ideas included ensuring that XR experiences have a "purpose" or a goal and that users are given the freedom to fail as they pursue that goal or goals. This feedback was consistent whether the experience was entertainment- or education-related. Indeed, focus group moderators emphasized that providing a clear sense of purpose and defined goals may be crucial for keeping students engaged and preventing disruptive behavior in immersive environments.

2. Desire for Interaction with Known Users

Students in the focus groups tended to enjoy interacting with each other in the virtual spaces they were provided and congregated together when given the opportunity. Indeed, many reported using existing apps or tools that allow multiplayer video game players to talk to friends and family. They also noted that when they play video games, they tend to play with people they already know in real life. Students expressed a strong desire for more opportunities to interact and collaborate with each other in the VR experiences. They also saw value in using VR for educational purposes, like visiting museums or learning new skills, rather than just entertainment.

Moderators noted that students had no reluctance or fear of public or multi-user experiences in which they may encounter users they do not already know. To address potential safety issues, students said they appreciate and sometimes use tools that already exist in gaming systems to mute, block, and report users who are disruptive, bullying, or otherwise bad actors. While students wanted to have the ability to report another user, many said they were disinclined to use what they considered to be a blunt tool that offers little transparency into how those who are reported are evaluated and/or barred from multi-user spaces.

3. Fear Can Be Fun

While students reported that the realism of the experiences presented to them during the XRA demo created some fear in them, they also expressed positive emotions such as happiness and having fun while in them. Despite their fear response to some experiences, they requested more experiences with horror and surprise, along with sports, building, and cooperative experiences. While they appreciated the realism that XR experiences could achieve, students also encouraged experiences that were unrealistic and fantastical as a way to make the experiences unique and more engaging.

4. Comfort, Safety, & Customization Considerations

Moderators found the focus groups also had few concerns about XR hardware comfort and accessibility. However, some students raised issues with the weight and fit of the VR headsets, such as the pressure on their noses and hair. Regarding hardware, they wanted more customization options like adjustable straps and nose pieces. Some also expressed concerns about whether using VR would make them too sedentary if they used it for extended periods.

Image courtesy of Owlchemy, Job Simulator

Day Two:
Defining Safety and Harm

Based on the focus group data and the experience of key stakeholders, the workshop participants examined the potential harms to youth who take part in both entertainment and education-based XR experiences.

Behavioral Issues

Though the student focus groups seemed largely unconcerned about encountering strangers in multi-user public XR spaces, the workshop nevertheless identified potential harms that can come from online bullying and harassment. XR spaces are not immune from behavioral issues that have cropped up on other digital platforms, and students in the focus groups noted that they are familiar with and use existing tools to mute or block users who are disruptive or engage in inappropriate behavior.

As noted previously, students were reluctant to use the "report" function in many existing 2D online multi-user platforms because of the social stigma associated with "snitching." A separate concern about reporting functions included a lack of transparency in how it works. In some cases, the worry may be that a single report may get someone banned for mildly annoying behavior. In other cases, users who have used the report function previously may feel that their concerns were not heeded because truly bad actors were not prevented from accessing the multi-user space.

Discussion centered on the need for proactive moderation and community-driven approaches to address behavioral issues.

Psychological Effects

The group explored the potential psychological impacts of XR on younger users and the need for appropriate content guidelines and ratings. There was significant discussion around the potential risk of inappropriate immersive content causing undue distress in youth and the importance of carefully considering how to determine whether specific apps or experiences are developmentally- or age-appropriate for youth.

For example, the focus group students requested more horror-like game content, but workshop participants raised concerns that the gory realism of some horror games – especially in mixed reality experiences where virtual elements are integrated into the physical environment – could adversely impact youth if they begin to associate otherwise safe spaces, such as their homes, with frightening experiences. For intense experiences, some participants emphasized the importance of providing "cooldown" periods or ways for users to temporarily step out of those experiences without needing to exit the app entirely.

Workshop participants raised concerns about the possibility of XR blurring a user's sense of reality and the impact on younger users' ability to distinguish real from virtual. Participants noted that youth by the age of 12 or 13 can generally understand abstractions and differentiate between what is real and what is not. There was some speculation that younger children, who grow up as digital natives, may be able to discern between real and virtual experiences at earlier and earlier ages, but the group was not aware of any existing science on this topic. Discussion centered on how to determine when youth are developmentally able to distinguish what is real and what is made up. But participants emphasized that youth should not necessarily be shielded from age-appropriate make-believe in XR, pointing out that made-up stories – whether in XR or a Disney movie or storybook – are useful for teaching important lessons and that part of education is learning how to distinguish between fantasy and reality.

Content-Related Issues

Discussion on the psychological effects of XR experiences on youth also raised questions about how to ensure younger users are only exposed to age-appropriate content. Workshop participants discussed how to ensure parents and responsible adults (as well as youth users) were aware of the actual content in immersive experiences.

While official (Entertainment Software Rating Board) and unofficial (Common Sense Media, Digital Respons-Ability, etc.) ratings systems exist for video games and other online content, some participants noted that those ratings may not always account for user-generated content.

Additionally, video game promotional videos may not contain some of the more violent or controversial features of the game because those promotional videos are generally produced – like movie trailers – for a general audience. Because of that, video game promotional videos may not always provide parents or youth with the most accurate representation of the content included in the game. The uncertainty for users in evaluating content caused participants to agree that a blend of independent ratings, platform content moderation, and online community content moderation and ratings is likely needed to safeguard youth in immersive experiences.

Age Assurance and Data Privacy Considerations

Participants discussed the complexity of tackling age assurance and data privacy considerations for XR experiences for youth and in educational settings. Discussion centered on the various legal and regulatory frameworks in the U.S. and around the world that govern youth online safety and privacy and how they sometimes conflict.

For example, current laws, such as the Children's Online Privacy and Protection Act (COPPA) and the Family Educational Rights and Privacy Act (FERPA), restrict the kinds of data that organizations can collect, share, and hold. Meanwhile, the proposed Kids Online Safety Act (KOSA) at the federal level, would among other things, require some form of age assurance, potentially complicating privacy and First Amendment rights in other areas. Indeed, in April 2024, the Federal Trade Commission cited data collection and privacy concerns in rejecting a bid by software companies to use biometric facial analytics to determine a user's age for age assurance purposes.

In light of the uncertain regulatory landscape, workshop participants generally agreed on the need to minimize data collection and consider the long-term implications of capturing biometric and identity data from youth, especially in educational settings.

Designing for Youth Safety

Workshop participants generated several suggestions for how XR hardware and software developers could address the needs of younger users. The overall message from participants was for developers to proactively address youth well-being and safety in their original designs rather than relying on plug-ins or waiting for regulatory mandates. Thoughtful, user-centric designs focused on accessibility, data minimization, and privacy were recommended.

Youth-Centered Spaces

In designing for youth, software developers were encouraged to partner with trusted organizations, educators, and other experts to develop age-appropriate content and experiences that align with child development best practices. Experiences that had a clear purpose and goal were also seen as necessary for engaging youth in both entertainment and educational settings.

Fostering Good Behavior in Children and Adults

Developers looking to build experiences for youth were encouraged to design experiences that encourage positive social interaction and collaboration rather than competition against other users. Features like cooperative gameplay, shared goals, and the ability to easily communicate were seen as fostering a more constructive environment.

Developers were also encouraged to create reward systems for good behavior. In gaming, that might include special badges, coins, “skins,” or other gifts that users could use to enhance their gameplay.

While muting, blocking, and reporting abilities were recommended to allow users to protect themselves from bad actors, participants also suggested that XR software developers create alerts for those users who have been muted or blocked to encourage them to modify their disruptive behaviors. Other suggestions included allowing users to create bubbles around themselves that prevent other users from interacting with them in multi-user spaces. While not widely utilized, also raised in the discussion was the use of polling the user group to see if others in the same experience agree to address the behavior of the individual bad actor.

The need for transparent community guidelines was also recommended. Community guidelines should be written in plain language for the target audience and include the consequences of violating the community guidelines. Implementing guidelines in this way can assist users in overcoming their desire to avoid reporting.

Content Moderation

Participants acknowledged the difficulties in moderating immersive online spaces and suggested several methods for ensuring that younger users are protected from inappropriate content while using XR technology. Potential solutions included platform or app-managed content moderation, online community moderation, ratings systems, and community guidelines.

Existing rating systems will likely prove useful to XR content, but those ratings by themselves may not be able to address all the challenges unique to immersive environments. Because of that, workshop participants suggested that additional community-based rating systems could be employed in some instances. This could be particularly useful when it comes to user-generated content. In those cases, community-based tagging and rating approaches could act as a supplement to official rating systems.

Platforms and/or apps also need to implement their own robust moderation tools and systems that can quickly identify and address inappropriate or harmful behavior. This may include content moderation augmented by artificial intelligence (AI), reporting features, and clear community guidelines. As part of the workshop, Schell Games explained how their AI-powered moderation system allows them to quickly identify and address bad behavior while still maintaining human oversight for more ambiguous situations. Schell Games noted their AI moderation tools learn from human moderation as well, so that their AI models have gotten more adept at identifying disruptive, harassing, or otherwise toxic behavior and taking corrective action.

Data Minimization

The workshop participants emphasized the importance of developers minimizing the amount of data they collect on youth, especially sensitive data like biometrics and identity information. Participants also cautioned that developers should endeavor to ensure that any collected data is properly secured and not used for purposes beyond the intended experience, such as inappropriate marketing.

Participants also emphasized the need for data transparency and user control, such as giving users, especially young users, visibility and control over their data and their online identity.

Parental Controls and Accessibility

For both entertainment and educational settings, participants discussed the need for inclusive multiplayer experiences, as well as the value of making XR experiences accessible via 3D and 2D devices, from headsets to tablets and phones. Doing so would be especially useful for educational apps because it could make the experiences more accessible to more students in the classroom.

Parental controls were also seen as essential tools to keep youth safe from potential online harms. Developers were encouraged to integrate parental controls and notification systems that allow responsible adults to monitor and manage children's activities while using XR. This could include activity reports, screen mirroring, content filtering, and the ability to set time limits. Some participants suggested a reporting system that notified parents of their children's achievements (i.e., getting to the next level, beating a "boss," winning a new token or tool, etc.) as a way to help parents understand the child's experience and create a positive interaction between parent and child around the use of the app.

Given the digital divide between parents and youth, developers were also encouraged to provide straightforward onboarding and tutorials that educate parents and youth users on safety features, appropriate behavior, and how to report issues. Some participants also encouraged the XR industry to agree on standard placement for block, mute, and report functions so that users could easily find those tools regardless of the platform or app they might use.

Conclusion

XR hardware and software has focused on use by adults but as the technology continues to advance the XR industry recognizes that younger people are also utilizing and enjoying this technology. For example, educators as well as students are seeing the positive impact of XR technology in learning and the importance of play as a vital part of a young person's development. For these reasons and more, the continuing development of tools that safeguard youth experiences in online immersive environments is key to the successful future of XR. As the industry progresses, XR products and experiences should include more designs that come from a child development-first perspective as well as content that is appropriate for the intended age. Fostering a safe and inclusive environment for all will be essential to ensuring that immersive computing realizes its promise of becoming the next dominant computing platform.

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