

BC XR LAB

2023/2024 ANNUAL REPORT



Bellevue College nursing students share a patient care simulation experience



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Summary	
Events	115
Students	1001
Faculty	250
Public	312
Total	1563

BCXR Lab Events Summary

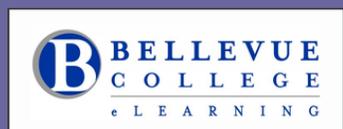
This report is written in July 2024, and summarizes activities, projects, workshops, grants, and other initiatives taking in place in the BCXR Lab from September 2023 through June 2024. This is the lab's sixth year.

Our attendance statistics show that in 2023-2024, the XR Lab had 115 events, hosting 1001 students, 250 faculty, and 312 public visitors for a total of 1563 engaged participants.

Our preparation for XR Lab events and workshops are only one part of our larger story for the 2023-2024 academic year. Beginning in October 2023 the BCXR Lab launched their engagement with two federal grants, one for the US State Department, and the other for the National Science Foundation (details included later in this report). We continued our visiting scholar program with participation from former Tasmanian Fulbright Scholar, James Riggall, and Maria Sanchez-Isaza, based in Bogota, Columbia. Additional teaching institutions became members of the Bellevue College hosted NW XR EDU Network, and we made significant connections with the Caen University Game Learning Lab in France, and the Chinese Academy of Art in Hangzhou, China.

The BC XR Lab provides a hands-on project-based teaching environment for Bellevue College students, as well as aspiring high school students as evidenced in the AIDS/HIV Virtual Information Gallery created by three students from Big Picture High School. The following categories of activity are covered more in depth within this report.

- Mission and Functions
- BCXR Lab Staff and new Coordinator, Drew Stone
- Federal grant awards project launches
- BC XR Lab and student projects
- Virtual Reality Design and Communication course
- Institutional networking and Open Education Resources (OER) initiatives
- BCXR Lab Collaborations
- AI-XR Spatial Computing
- VR Student Club

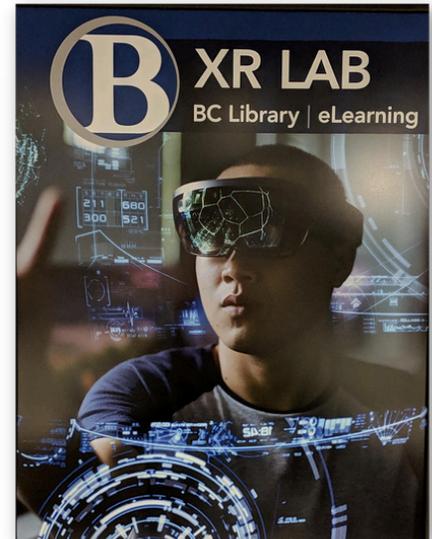
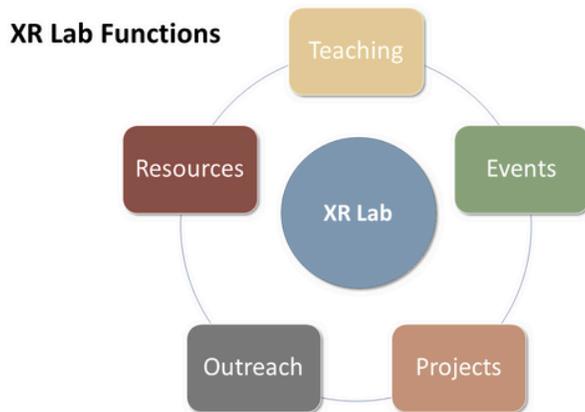


Core XR Lab Mission & Functions

Bellevue College XR Lab Mission

To explore the equitable use of XR technologies for teaching and learning

Bellevue College XR Lab Functions



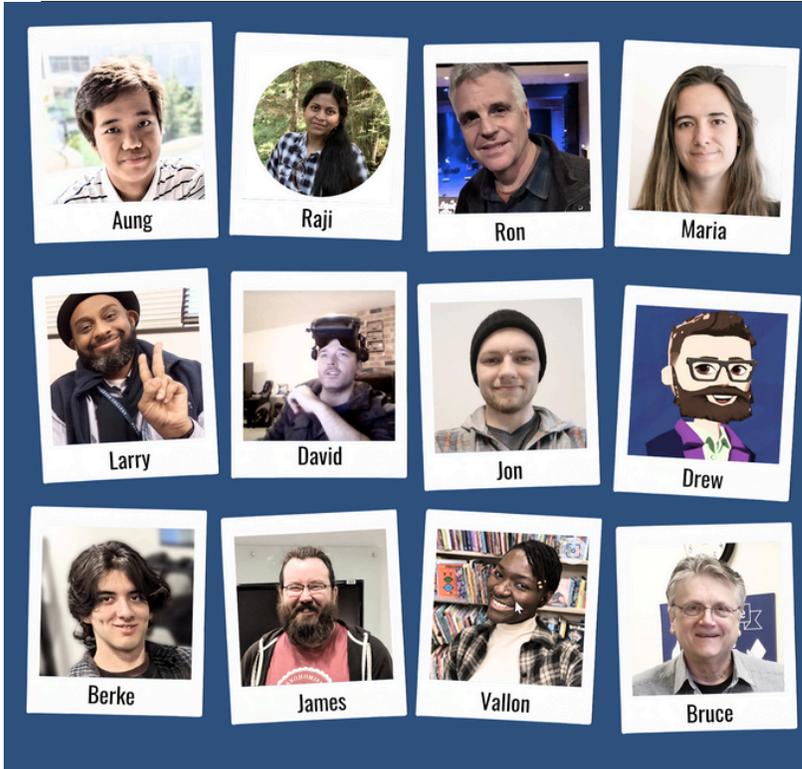
Core functions of the XR Lab:

- 1) **Teaching:** VR classes, workshops, capstone projects, internships, mentoring
- 2) **Events:** Presentations, seminars, panels, guest speakers, game jams
- 3) **Projects:** Virtual tours, teaching environments, new XR technologies, videos
- 4) **Outreach:** XR Networking, schools, libraries, industry, visiting scholars
- 5) **Resources:** XR hardware & software, consulting, curriculum, WA State OER

XR or “Extended Reality” is a term that encompasses Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR). These technologies are forms of spatial computing, which means they allow users to interact with digital objects and avatars in three-dimensional virtual spaces.



XR Lab Staff: 2023-2024



Aung Thaung: Lab Assistant

Raji Sundar: Instructional Designer

Ron Austin: Administrator - Producer

Maria Sanchez-Isaza: Visiting Scholar

Larry Boykin: Media Manager

David Wikstrom: Sr XR Lab Tech Specialist

Jon Thaler: Lab Assistant

Drew Stone: XR Lab Coordinator

Berke Can: Lab Assistant

James Riggall: Visiting Scholar

Vallon Bozango: Lab Assistant

Bruce Wolcott: Faculty Lead

One of the unique features of the XR Lab is that most staff members are part-time employees. This year, we received a grant from the National Science Foundation which provides funding for our first full time XR Lab administrator, as well as an OER librarian, curriculum developer, and additional part-time student employees. Up until now, we've divided our lab tasks among Bellevue College faculty and staff, visiting scholars, part-time employees, volunteers, as well as interns.

The XR Lab Team meets once a week to assess progress. Tasks are divided up into the following categories: administration, project development, networking, teaching, advising, curriculum development, inventory management/maintenance, events hosting, XR technologies exploration, VR Student Club, and social media. Members divide their work time between a blended on-campus and online engagement.

It's important to note that the Bellevue College XR Lab is located within the Interactive eLearning Center and has a close working relationship with the instructional design staff there, committed to the use of emerging technologies for teaching and learning.



Drew Stone | XR Lab Coordinator

Drew Stone joins Bellevue College as its first XR Lab Coordinator with years of experience in VR event production in both physical and digital realms. With backgrounds in active collaborative gaming, filmmaking, visual and performance arts, instructional design, VR event production and consulting, Drew offers a wealth of experience to help channel the productive use of National Science Foundation grants to unify students, faculty, community, and industry into meaningful collaborative initiatives.

Drew began working at the XR Lab in March, 2024 and has been applying his varied skills in XR technology, marketing, event planning, and systems organization to further strengthen the operational infrastructure of the lab.



Drew Stone | XR Lab Coordinator



XR Lab Federal Grants - Part 1

Probably the biggest XR Lab news for the 2023-2024 academic year was receiving two US Federal Grants awards which were both launched in October, 2023. These grants, which both involve a collaborative effort among several Bellevue College departments, will engage the XR Lab in important roles.

Project Title:

From Virtual to Reality in Humanities: Understanding the Story of War in Normandy

Granting Agency:

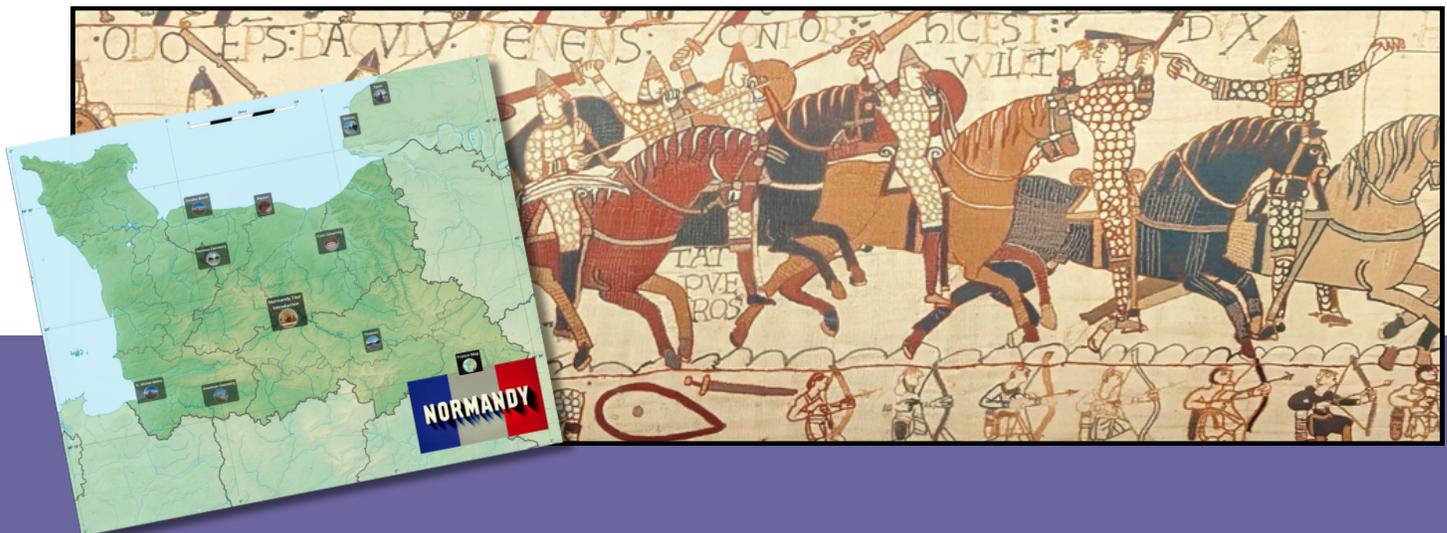
U.S. Department of State, \$35,000 - Duration: 2 years (1 year extension)
Increase and Diversify Education Abroad for U.S. Students (IDEAS)

Description:

From Virtual to Reality in Humanities: Understanding the Story of War in Normandy

This grant will involve students in building a virtual tour to recreate their travel experiences in Normandy, France, and to share these with other students unable to make the journey. This intercultural program tackles barriers to study abroad for minority and disabled students using VR tech. It aligns with the U.S. State Department's focus on Technology and Innovation, helping students see XR's broad educational potential. A trip was made to France in October to scout out and photograph destination locations for the student tour, scheduled for Summer 2025.

Bayeau Tapestry: IDEAS Normandy Project



XR Lab Federal Grants - Part 2

Project Title:

Northwest Open XR Initiative Project

Granting Agency:

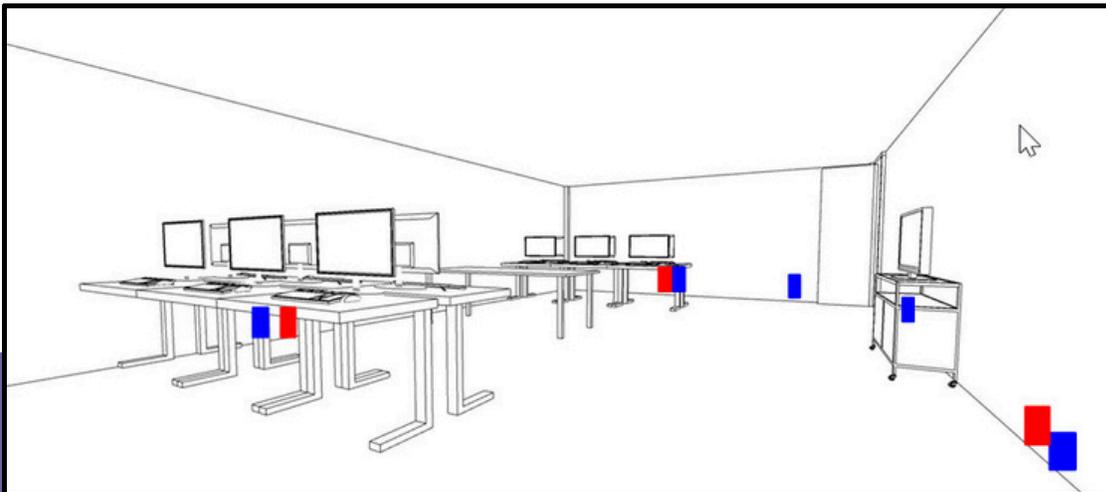
National Science Foundation \$763,482 - Duration: 3 years

Description:

The first primary goal within the *Northwest Open XR Initiative Project* is to create a regional virtual, augmented, and mixed reality (collectively referred to as Extended Reality or XR) learning hub to serve as an XR teaching resource community for higher education institutions, especially community and technical colleges in the Pacific Northwest and beyond. The first cycle of \$1000 grants for participating faculty was awarded in Spring 2024 to 10 higher education recipients with two more cycles funded in the next two years. For this first year, the NW XR EDU network includes over 90 participants on its mailing list.

The second part of the NSF grant funds equipment for an XR production studio for Bellevue College students in the Digital Media Arts program, as well as others who are learning how to create interactive immersive XR experiences. The BCXR Lab will collaborate with the Digital Media Arts department to create a introductory XR developers curriculum.

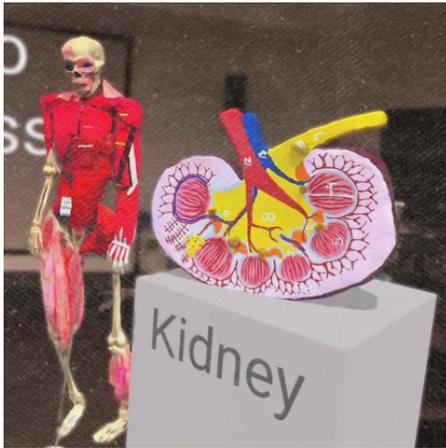
XR Design Studio Sketch Showing Production Computers



In the past two years, the BCXRLab has begun to explore the use of a variety of programs that have the following features:

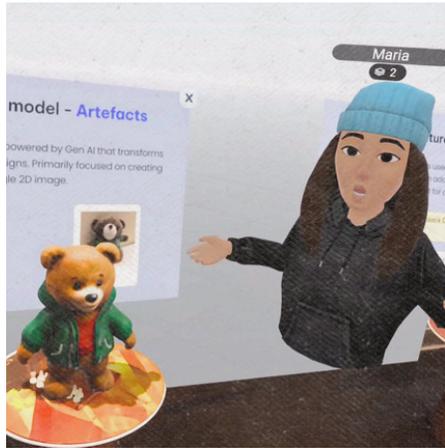
- 3D or spatial on flat screen or within immersive displays: are web-based and multi-platform
- Multiuser
- Provide world building tools
- Educational applications
- May integrate artificial intelligence

Spatial Computing Project Examples



ShapesXR

3D photogrammetry of student made human body organs displayed in a virtual gallery.



Generative AI 3D Models

Visiting scholar Maria Sanchez-Isaza demonstrates AI character generation live from Bogota, Columbia.



Spatial IO

Big Picture High School students create a virtual gallery showing information about AIDS/HIV.

Normandy Tour: Blockade Labs and SeekBeak Apps



Virtual Reality: Design and Communication

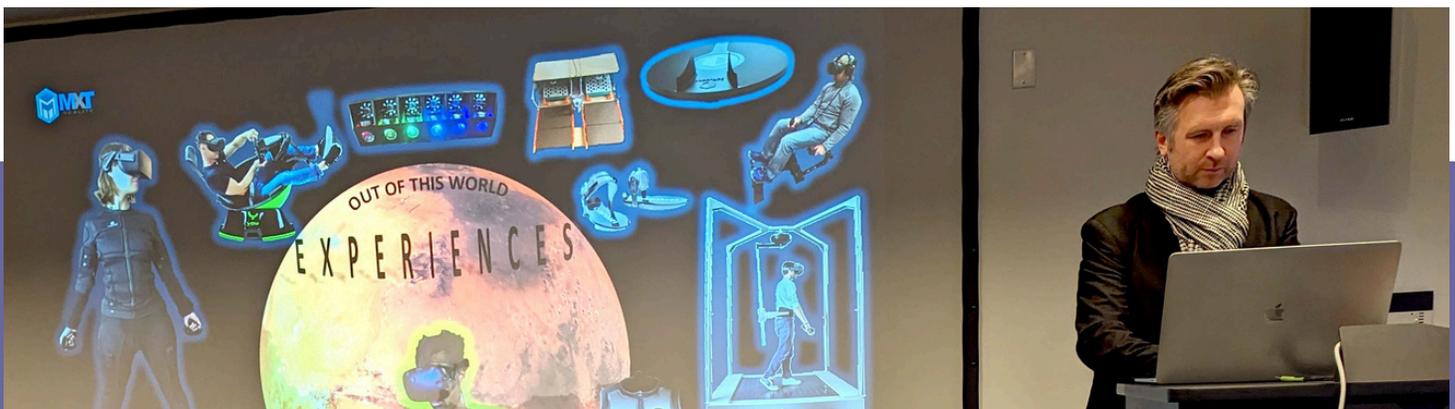
Every Winter Quarter the XR Lab hosts the 5 credit CMST 116 course called *Virtual Reality: Design and Communication*. In this course, students learn all about virtual reality (VR) and the variety of virtual worlds that can be experienced using this technology. The course covers the history of VR, the relationship between VR and other mixed reality technologies, design considerations, communications, artificial intelligence, hands-on projects as well as social and ethical implications of immersive technologies.

One of the main features of this course are weekly presentations from a variety of XR technology experts, including simulations creators, game programmers, hardware marketers, psychologists, scientific visualizations designers, AI engineers, and other industry professionals. Many of these guest speakers appear remotely from locations outside of Washington State though a live video projector presentation screen in the XR Lab theater classroom.

In 2024, the BC XR Lab made these guest presentations available as a live and recorded lecture series that was viewed not only by audiences at Bellevue College but as far away as Africa, where visitors were up at 3AM in the morning to participate in sessions!

CMST 116 integrates hands-on learning together with up-to-date exposure to the latest developments in the XR industry. The course is taught by Bellevue College instructor Bruce Wolcott and visiting University of Tasmania scholar, James Riggall. This 5 credit course runs with the support of the Communication Studies Department at Bellevue College.

MXTReality CEO Jeff Rayner explores interactive XR

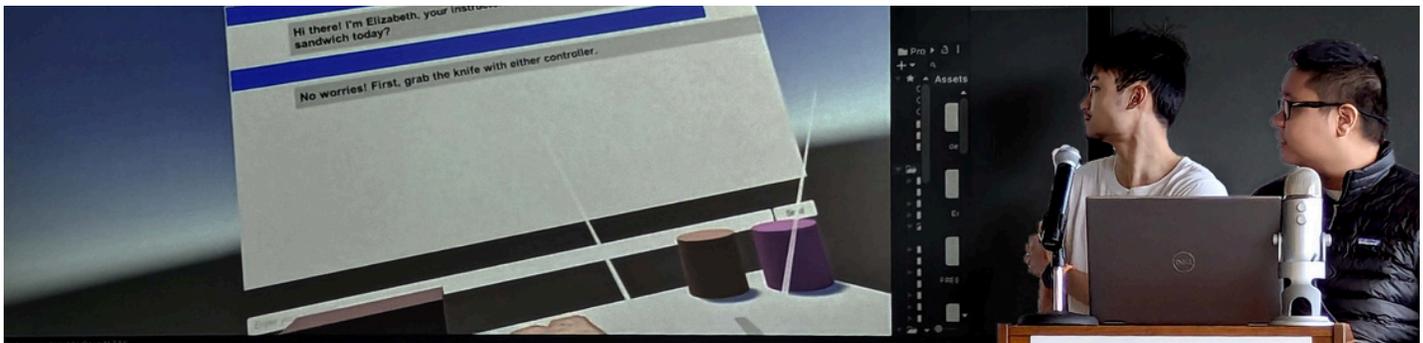


Project Collaborations: 2024

The BCXR Lab along with the Bellevue College Computer Science department continues to build upon a successful capstone project concept that was initiated in Winter/Spring 2021. This concept puts students who are working in capstone project teams under the mentorship of an industry partner - in this case Seattle-based VR company MXTReality where they must complete 6 month project-based solutions for real-world scenarios.

I. VR Simulations. Computer Science capstone teams worked on interactive virtual reality projects.

- **Faculty Lead:** Pete Ophoven (Computer Science)
- **Industry Client:** Jeff Rayner, CEO of MXTReality
- **XR Lab Advisor:** David Wikstrom of MXTReality

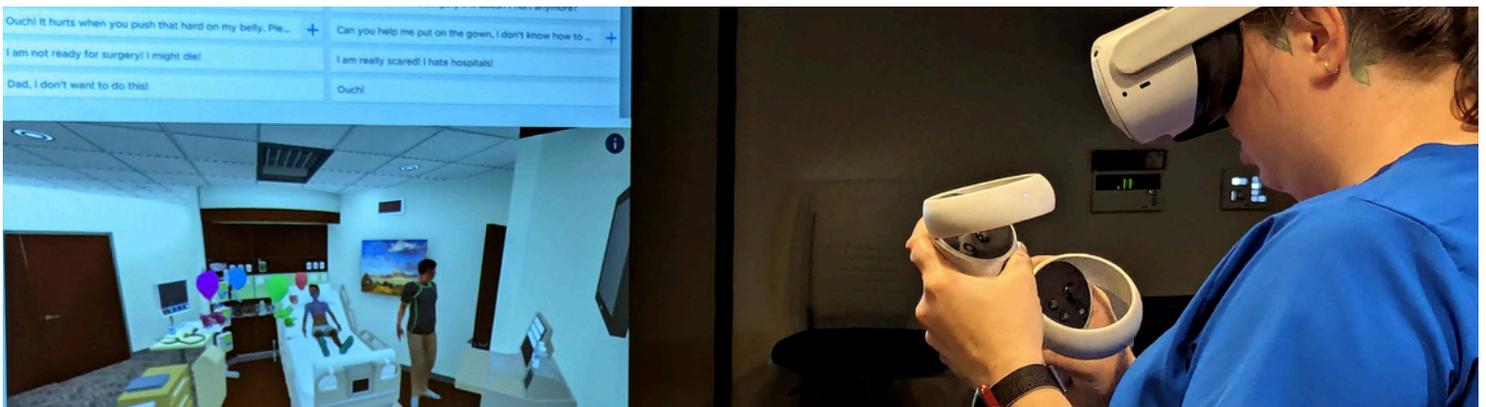


Capstone Team demonstrates a VR program presenting their XR application called “PB&J”

II. Nursing Care Hospital Room Simulations

The XR Lab collaborated with the Bellevue College Nursing Department, where nursing students were trained to respond to a variety of patient care scenarios within immersive walkthrough virtual environments, using VR headsets with the SimX application.

Faculty Lead: Teassa Chism - Bellevue College School of Nursing



Bellevue College nursing student experiences an immersive patient care scenario

An important foundation for the XR Lab is the role of student initiative and engagement with running the XR Lab. Active participation on the part of students either as part-time hires or work-study employees is vital to the lab's success. We're always on the lookout for highly motivated students who 1) have a passion for virtual reality technologies, and 2) proactively participate in the day-to-day operations of the facility. We've had great success so far using this formula for new team recruits.

One of the primary responsibilities of our student team members is managing the organization and activities of the Virtual Reality Student Club on campus. They promote the club's events, and host weekly gatherings. XR Lab assistants Aung Thaung, Berke Can helped boost interest and participation in the XR Lab by building membership in the VR Student Club. The club received funding for 2024-2025,

Aung Thaung VR Club President



VR Club Demo



This annual report is unable to fully capture all of the BCXR Lab events for the year 2023-24. Instead, we've pulled together some snapshots of events to show a variety of activities that take place at the lab.



The BCXR Lab along with faculty members Eva Norling (far left) and Li Liu (2nd from left) visit the game learning lab at the University of Caen in France. On the far right is Jerome Legrix-Pages who manages the lab along with his graduate students who are studying the application of game design for learning.



The BCXLab and Bellevue College faculty member Li Liu meet with faculty from the Chinese Academy of Art in Hangzhou, China. The plan is to send a group of Bellevue College staff and faculty to the Chinese Academy of Art as part of a cultural exchange program.



A group of women students from Nagoya College in Japan, visit the BCXR Lab to experience immersive virtual reality first-hand, and to find out more information about the educational applications for XR technologies.



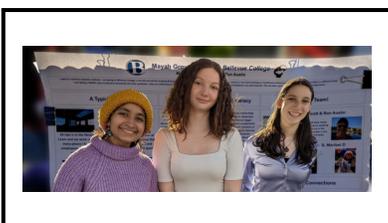
The BCXR Lab hosts a variety of guests from its Studio Q media production room. Here Ron Austin and Jon Thaler from the BCXR Lab host a podcast interview with Disney comic book artist John Lustig.



Drew Stone, BCXR Lab Coordinator introduces an immersive XR program called CurioXR to a Bellevue College marketing staff member.



Two students from the Winter Quarter *Virtual Reality: Design and Communication* 5 credit class participate in hands-on XR training sessions where they learn how to navigate through and interact with a variety of virtual experiences.



Three student interns from Big Picture High School complete a virtual worlds gallery project using Spatial IO focused on HIV and AIDS education. Information used in the exhibit was derived from first-hand connections with the Fred Hutchinson Research Center in Seattle.