

BRIEFING

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Item # 11.3

Community Services Briefing to

Executive Committee
2023 May 23

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Council Innovation Fund - Virtual Reality Fire and Life Safety Education Pilot

PURPOSE OF BRIEFING

This Briefing provides Executive Committee with a final update on the Virtual Reality Fire and Life Safety Education Pilot (PFC2020-0784). Preliminary results show that over three quarters of pilot users said they would recommend the virtual reality fire safety experience, that they will tell others what they learned and that it is more impactful than other fire safety education experiences.

SUPPORTING INFORMATION

In August of 2020, Council approved the Innovation Fund Application for the Virtual Reality Fire and Life Safety Education Pilot and the Calgary Fire Department (CFD) received \$75,000 to develop this program to improve accessibility to fire safety education.

CFD has used a variety of experiential learning models in the past to help Calgarians learn about preventing and managing emergencies, but the presentations were focused on English speakers and were only seasonally available. CFD saw the need for expanding the scope of its education programs as a result of an upward trend in fire incidents and injuries due to fires, with vulnerable Calgarians at greatest risk for fires and fire-related injuries in their homes. Approximately 30 per cent of fire injuries in Calgary result from kitchen fires.

Populations like new Canadians, who may not speak English as a first language, children, and seniors are at increased risk of fire injury because they often react differently in a fire emergency compared to the rest of the population. Research has shown that people from these groups often underestimate how fast smoke and fire spread and misjudge how to respond appropriately. Interactive education delivered through virtual reality is effective at increasing learning and changing behaviours and can address these limitations.

Funding from the Council Innovation Fund, along with \$60 000 in sponsorship funds from ConocoPhillips supported the development of the Virtual Reality Fire and Life Safety Education Pilot. The pilot was meant to address these known gaps in CFD's experiential education programming, offering more inclusive education experiences in a variety of languages and settings such as classrooms and community spaces. During the virtual reality development, CFD worked directly with local Calgary vendors Red Iron Labs and VizworX, along with teams from City of Calgary Information Technology, Web Services, Communications and Law to create innovative infrastructure, safety and learning precedents for this pilot and for future use of virtual reality. Multilingual City staff from business units across the organization supported translation efforts.

Launched to the public in 2023, the primary virtual reality application allows a user to learn to spot common hazards in a bedroom and experience the shock of discovering a kitchen fire in a typical Calgary home, then encourages the user to safely extinguish the pan fire with a lid, turn off the stove and then exit the home, emphasizing education about having a family meeting spot.

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The primary module is offered in some of the most common languages spoken in the home in Calgary, including English, Spanish, Arabic, Tagalog, French, Punjabi and Cantonese. This is in direct response to the challenges CFD faced delivering in-person education to Calgarians who are not fluent in English. Other modules currently available in English include second floor bedroom egress practice; fire extinguisher practice and a fire hose game educational challenge. With about 19 per cent of the city's population speaking a language other than English or French at home, offering this experience in multiple languages is key to outreach.

CFD worked with Community Strategies and the Indigenous Relations Office to connect with community groups, newcomer and immigrant societies and learning and language experts to test the primary virtual reality module for usability, learning experience and to ensure translation was accurate and reflective of actual language use. CFD received feedback from more than 11 targeted community groups and more than 100 users. This feedback was used to adjust language translation and ensure the modules were appropriate for all levels of technical competency as most participants had never used virtual reality before.

By engaging with several key interested parties, CFD was able to measure learning outcomes and demonstrate the opportunities and learnings of developing a virtual reality education program. A full list of groups CFD engaged with is included in Attachment 2.

CFD research has shown that after experiencing virtual reality education, participants reported being more prepared and less anxious to face fire-related emergencies and were more able to identify potential fire hazards in their homes. More specifically, 86 per cent of users said they would recommend the virtual reality fire safety experience; 75 per cent of users said virtual reality is more impactful than other fire safety education experiences such as presentations or demonstrations; and 75 per cent said they will tell others what they learned during the virtual reality education. In addition to traditional survey feedback, virtual reality uses interactive behaviour analysis, with preliminary results showing that the virtual reality educational design demonstrates positive outcomes for learning behaviour.

NEXT STEPS

By developing this program, CFD aims to increase fire and life safety education opportunities for Calgarians. CFD plans to continue engagement and testing with vulnerable Calgarians, develop future simulations that address other life safety hazards Calgarians may encounter in their homes, and continue to translate modules into other languages including Blackfoot and develop future accessibility features including use of American Sign Language.

CFD is also working with the vendors to commercialize these modules in order to provide unique virtual reality fire education opportunities to other fire departments throughout North America and will be attending two internationally recognized fire conferences as presenters in May and June of this year. The presentation deck for the National Fire Protection Association conference is attached (Attachment 1) to this briefing to provide additional visuals, information and statistics.

ATTACHMENTS

1. Enhancing Fire Safety Education with Virtual Reality: Presentation to the National Fire Protection Association June 2023
2. List of Engaged Parties