



A PUBLICATION OF THE DEPARTMENT OF HUMAN CENTERED DESIGN & ENGINEERING

DESIGNING UP

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2021



HUMAN CENTERED DESIGN & ENGINEERING
UNIVERSITY *of* WASHINGTON



DEAR HCDE ALUMNI AND FRIENDS,

Welcome to our annual Designing Up publication, where we highlight activities and accomplishments of students, alumni, faculty, and researchers from the University of Washington's Department of Human Centered Design & Engineering.

The last year's shift in how we conduct nearly every part of our department's mission has been a challenge like we have never known. At the same time, our department's focus on prioritizing the human experience in our teaching, learning, research, and work, has helped us find opportunities for innovation and adapt to the transitions of the pandemic.

HCDE instructors revised curriculum to accommodate remote learning, designing new experiences to meet our course objectives. As an example, on page 5, read about how Assistant Professor Nadya Peek adapted a hands-on digital fabrication course, reaching students at their homes as they learned computer-aided design and 3D printing.

Responding to the pandemic also opened new avenues for HCDE students and researchers to apply our unique expertise in understanding people and technology. On page 24, read about how a team of HCDE graduate students studied the design of a statewide COVID-19 exposure app, and on page 18 get an overview of five pandemic-responsive research projects supported by the National Science Foundation that include HCDE researchers.

The online spread of misinformation and disinformation continued this year at a greater pace than ever before, bringing forth a pandemic of another nature. Associate Professor Kate Starbird's research in this area catapulted her to the national stage as one of the world's leading experts on the phenomenon. On page 20, read about a project from Kate's course on trustworthy systems design, where a team of students explored what happens when misinformation is targeted to immigrant communities.

Although we were all physically distant from one another this year, HCDE students, faculty, and staff have made important strides to build a community that prioritizes diversity, equity, and inclusion. As you may have read in my public letter last year, HCDE is committed to becoming an anti-racist community. To meet this goal, our department leadership has been listening to the community, empowering students who want to create new opportunities, and revising policies and practices to become a more equitable department. You can read about specific initiatives we launched this year on page 10.

As I reflect on the past year, I am so inspired by significant and continuous empathy and ingenuity that HCDE students, faculty, staff, and alumni have



demonstrated. From student-led community-building initiatives (page 26); continuing education events organized by our Alumni Leadership Board (back cover); industry support in sponsoring research and student projects (page 12); and alumni support in establishing scholarships for HCDE students (page 16) it is clear that the strength of the HCDE community was critical in making this another exceptional year in the department.

Thank you for your support of HCDE.

Sincerely,

Julie Kientz
Professor & Chair
Human Centered Design & Engineering

Student and faculty news

INITIATIVES, AWARDS, AND ACCOLADES FROM
THE 2020-2021 ACADEMIC YEAR.



Election Integrity Partnership

Associate Professor **Kate Starbird**, PhD student **Andrew Beers**, and colleagues with the UW Center for an Informed Public collaborated on the Election Integrity Partnership, a nonpartisan coalition of research institutions that identified, tracked and responded to voting-related mis- and disinformation during the 2020 US elections. The group's final report is published at eipartnership.net.



Graduate Research Fellowships

HCDE PhD students **Jay Cunningham**, **Neilly Herrera Tan**, and **Emma McDonnell** received National Science Foundation Graduate Research Fellowships, and PhD student **Akeiyah DeWitt** was recognized with an Honorable Mention. These fellowships support the students in their research related to accessibility, privacy and personal data, and human-centered AI.



Advances in Digital Fabrication

Assistant Professor **Nadya Peek** received grants from the Moore Foundation, Sloan Foundation, and the National Science Foundation to support several different projects related to developing low-cost and accessible tools for making. Collaborators with Peek include faculty and researchers in the UW's departments of Computer Science & Engineering, Electrical & Computer Engineering, Chemical Engineering, Chemistry, the University of California Santa Barbara, and students in her research lab, Machine Agency.



New book: Flying Free

HCDE Professor **Cecilia Aragon** published *Flying Free: My Victory Over Fear to Become the First Latina Pilot on the US Aerobatic Team*, about how she overcame self-doubt, shyness, and a deep-seated fear of heights to become one of the best aerobatic pilots in the world.



Mikey Award

HCDE awarded the 2021 Mikey Award to **Daniella Kim**, affiliate instructor and UX research leader. This award, named after the co-founder of the Department, annually recognizes a leader in field and a dedicated friend of the department. The faculty awarded Dr. Kim the Mikey Award because of her student-centered approach, dedication to both the teaching and research mission of the department, her care and mentorship of students, and her advocacy for HCDE both inside and outside of UW.



New book: Anticipating Future Environments

HCDE Research Scientist **Shana Hirsch** published *Anticipating Future Environments*, a book about how the ecological restorationists working to recover salmon in the Columbia River Basin are adapting their scientific practices to deal with climate change.



Husky 100

HCDE PhD student **Jay Cunningham** was named to the UW's 2021 Husky 100, an honor awarded to 100 students across all UW degree programs and 3 campuses annually. Cunningham is a computational social scientist whose work explores the social and ethical implications of race, culture, identity, and power at the intersection of AI and ubiquitous computing.



Adobe Research Scholarship

HCDE junior **Annie Liu** was one of 15 students across North America named an Adobe Research 2021 Women-In-Technology Scholar for her work using human-centered design to create interactive lighting installations and spacial experiences. Liu also received the UW's Mary Gates Research Scholarship to support developing a framework to orient new students to HCDE's Internet of Light research project in Sieg Building, an initiative led by **Brock Craft**.

Welcome new faculty



Dr. Sucheta Ghoshal
Assistant Professor

Sucheta Ghoshal joined HCDE as an Assistant Professor in February 2021. Ghoshal is a researcher and activist who studies how grassroots social movements in the United States relate to information and communication technologies (ICTs). Broadly, her work strives to critically question ICTs in their totality for the role they continue to play in the larger systems of oppression—namely, systemic racism, class, caste, and gendered oppressions. Additionally, she is interested in uncovering ways in which we can form public means of consciousness, resistance, and

accountability against technology-mediated systemic oppression. Ghoshal was formerly a software engineer at the Wikimedia Foundation where she built several tools for Wikipedia and worked on building a community of Wikipedians in India. She has been a community organizer working in various capacities globally for over a decade. Before joining HCDE, Ghoshal completed a PhD in human-centered computing from the Georgia Institute of Technology.

Read a Q&A with Professor Ghoshal at hcde.uw.edu/ghoshal-qa.



Dr. Sarah Coppola
Assistant Teaching Professor

Sarah Coppola joined HCDE as an Assistant Teaching Professor in September 2020. Coppola is an educator and researcher whose work focuses on how technology and systems design affects people's performance and health. Coppola's research explores bias in technology and how to measure and quantify its impact. She has studied sex/gender differences caused by interface designs to better understand why women have clinically higher rates of technology-related musculoskeletal injury and pain. Her more recent work examines how healthcare

sociotechnical systems contribute to human error. She has taught a variety of interdisciplinary courses, including human factors in design. Before joining HCDE, Coppola was a postdoctoral fellow in Human Factors Engineering at the Johns Hopkins University School of Medicine.

Read a Q&A with Professor Coppola at hcde.uw.edu/coppola-qa.

Remote makers

HCDE ASSISTANT PROFESSOR NADYA PEEK DEVELOPED A NEW DIGITAL FABRICATION CURRICULUM TO HELP STUDENTS MASTER COMPUTER-AIDED DESIGN AND 3D PRINTING SKILLS FROM HOME.

Between winter and spring quarters in 2020, when the pandemic forced UW instructors to reimagine all facets of their in-person courses, HCDE Assistant Professor Nadya Peek had two weeks to figure out how to teach her scheduled course on digital fabrication remotely.

Peek's course on digital fabrication is usually held in campus makerspaces, where students can access 3D printers, laser cutters, CNC mills, CAD software, and many other tools for making. A core objective of the course is for students to understand machine workflows, equipping them with skills for rapid physical prototyping.

Peek has extensive experience setting up makerspaces all over the world, including in resource-constrained environments. She quickly put

together a cost-effective bill of materials that would enable students to learn digital fabrication safely from home using hobbyist materials and would still fulfill the course's learning goals.

Understanding that the course would come with a higher technology fee for students, Peek worked with the HCDE leadership on a plan to reduce the burden on students for whom the fee would create a hardship. Some students purchased the equipment for themselves, and others used on-loan equipment from the department that went back into the department's makerspace toolkit once the course was over.

Throughout the 10-week course, students created many different artifacts by developing custom

fabrication processes for their machines. In this new form of learning, students lived with their 3D printers, used them on a daily basis, and created objects for personal use with them. Peek saw students engage deeply in learning, design, testing, iteration, and peer support. She also found that students got to know the machines better than they may have in the campus makerspace, gaining a deeper understanding of their machine's maintenance and experimenting with fine-tuning to create new outputs.

"From all accounts, the execution of the makerspace-at-home learning plan was incredibly successful," said Julie Kientz, Professor and Chair of HCDE. "Nadya received very high course evaluations from students, who raved about their ability to learn and take ownership of making at home. Many students have shared stories with me about how her class is a model for distance learning and being innovative with teaching when unique constraints are imposed. As a result, Nadya's class has enabled us to think more about our other classes that have materials work and set a model for how we manage classes with material components from an equity perspective."

In June 2021, the University of Washington recognized Professor Peek with the Distinguished Teaching Award for Innovation with Technology for her work developing the new curriculum. This recognition is awarded annually to a faculty member from the UW Seattle, Tacoma, or Bothell campus



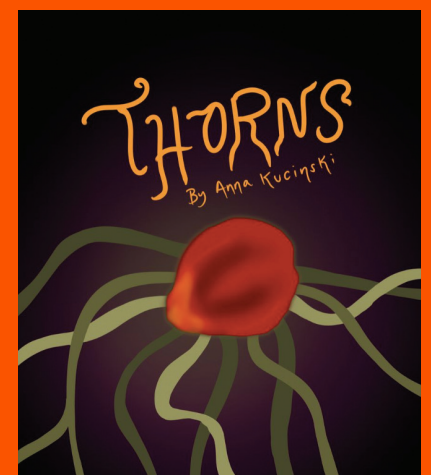
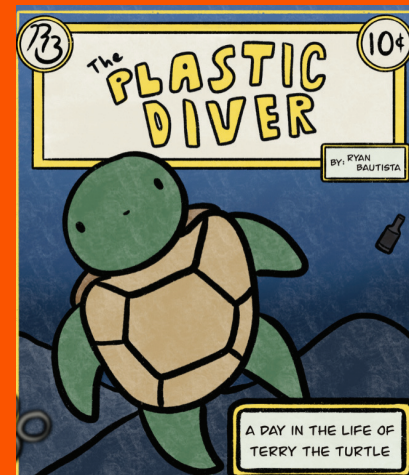
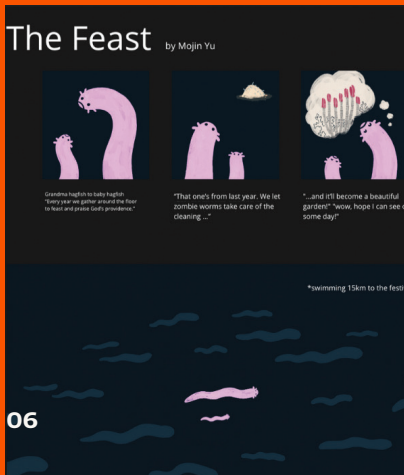
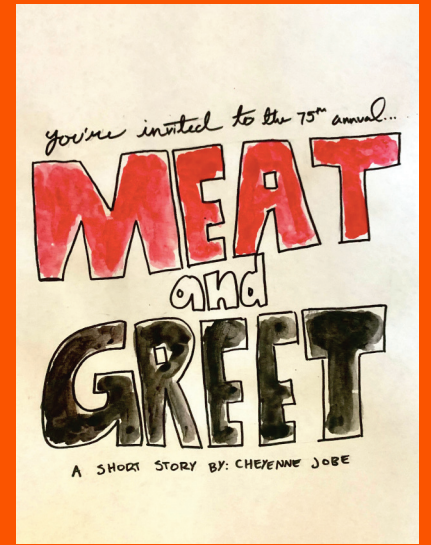
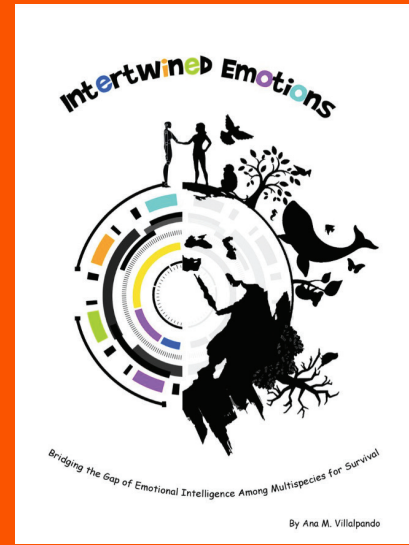
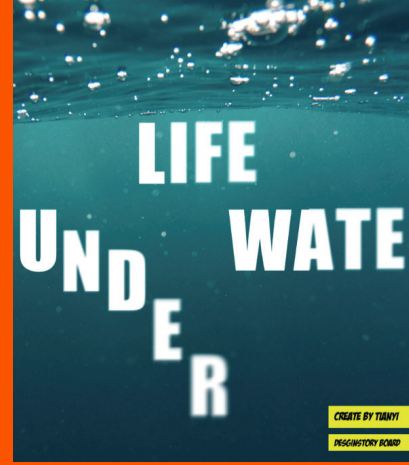
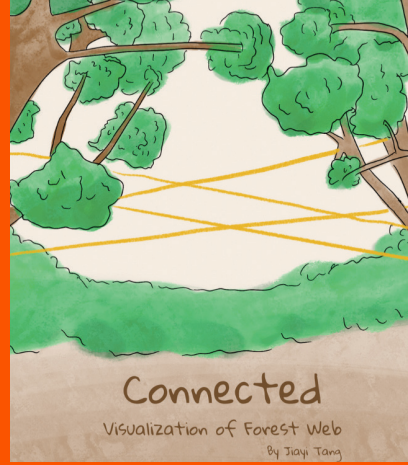
NADYA PEEK, ASSISTANT PROFESSOR

who has improved student learning or engagement through an inventive use of technology.

"Dr. Peek has always been truly innovative in how teaching happens with technology, and even more so among the backdrop of the pandemic at a time of true need for our students. We are very fortunate to have her as a part of HCDE, and UW is very lucky to have her teaching for our students and our cross-cutting programs," said Kientz.

+ RELATED PAPER:
REMOTE LEARNERS, HOME MAKERS: HOW DIGITAL FABRICATION WAS TAUGHT ONLINE DURING A PANDEMIC BY GABRIELLE BENABDALLAH, SAMUELLE BOURGAULT, NADYA PEEK, & JENNIFER JACOBS PROCEEDINGS OF THE 2021 CHI CONFERENCE ON HUMAN FACTORS IN COMPUTING SYSTEMS [TINYURL.COM/REMOTE-MAKERS](https://tinyurl.com/remote-makers)

1



POST(-) HUMAN HAZMAT

THROUGH VISUAL STORYTELLING, UW STUDENTS EXPLORE MORE-THAN-HUMAN CONCEPTS, HUMAN RELATIONSHIPS WITH OTHER SPECIES AND THE NATURAL WORLD, AND FUTURE SCENARIOS OF COLLABORATIVE SURVIVAL.

As the pandemic swept through 2020 and people rapidly adjusted to new norms, HCDE student Michael Beach began wondering what life will look like on the other side. "I am immunocompromised, and I started thinking, how am I going to make it back on campus? Am I going to need to be in some kind of elaborate bubble? I started seeing these contemporary hazmat-style helmet

designs for everyday living and was fascinated thinking about these concepts that explore what it means to be human, and how these designs could extend to care for non-human species as well," Beach described.

A third-year PhD student in the Department of Human Centered Design & Engineering, Beach researches how more-than-human

perspectives can update design methods and theories, especially those commonly used in computing fields, to enhance the way we approach problems.

"In HCDE, we are designing things for people. And it's important that we maintain our focus on equity and justice, but that we expand that work to non-humans as well," said Beach. To do so, Beach believes we need to expand the human-centered design process by including methods and tools from other fields, such as feminist science (fiction) studies, process philosophy, and post-humanism. "Incorporating these more-

than-human concepts and theories in the design process helps us ask new questions," said Beach. "And for the big, wicked problems we face – things like climate collapse – I wonder if we can address these problems with the same methods and tools that we've been using so far, or if we need new ones."

In autumn quarter, Beach designed and led a Directed Research Group (with support from Tyler Fox, an assistant teaching professor in HCDE) for UW undergraduates and master's students to explore concepts of post-humanism and collaborative survival in a cataclysmic climate future.



It becomes a hub tree in the forest connected with several other trees. They share nutrients and water.

IN CONNECTED: VISUALIZATION OF FOREST WEB, JIAYI TANG EXPLORES THE COOPERATIVE, INTERDEPENDENT RELATIONSHIPS IN THE FOREST. WHEN HUMANS BRING IN WEARABLE TECHNOLOGIES, THEY CAN HELP TREES IN DANGER. BUT AT THE EXPENSE OF WHO OR WHAT?



IN BREAKOUT, KYLER MENGE LOOKS AT TENSIONS BETWEEN FUNGUS AND HUMANS, FUNGUS AND PLANTS, AND PLANTS AND HUMANS. MENGE ASKS, SHOULD HUMANS USE FUNGUS IF IT KILLS OTHER ORGANISMS? AT WHAT POINT ARE HUMANS AND FUNGUS CONSIDERED A SINGLE ORGANISM?

Throughout the quarter, the students developed more-than-human value scenarios in the form of comic strips and curated the narratives into a final zine. "We chose to focus on a zine, which is a kind of creative, science fiction artifact, because there isn't a ton of work out there that translate these relatively new 3rd wave theories into practice," said Beach. "Storytelling is a good way to work with these concepts and put them into value scenarios that we can explore and reflect upon."

The group began by discussing the concept of hazmat, or literally hazardous materials. "We brainstormed what's needed in a hazmat suit for human-made hazards, as well as natural hazards like erupting volcanoes," Beach described. "We dove

into the hazmat concept and started talking about hazmat as protection from something. We brainstormed concepts such as 'protections from anxiety' and 'protections from capitalism!' From there, we did design activities to begin to visualize these concepts."

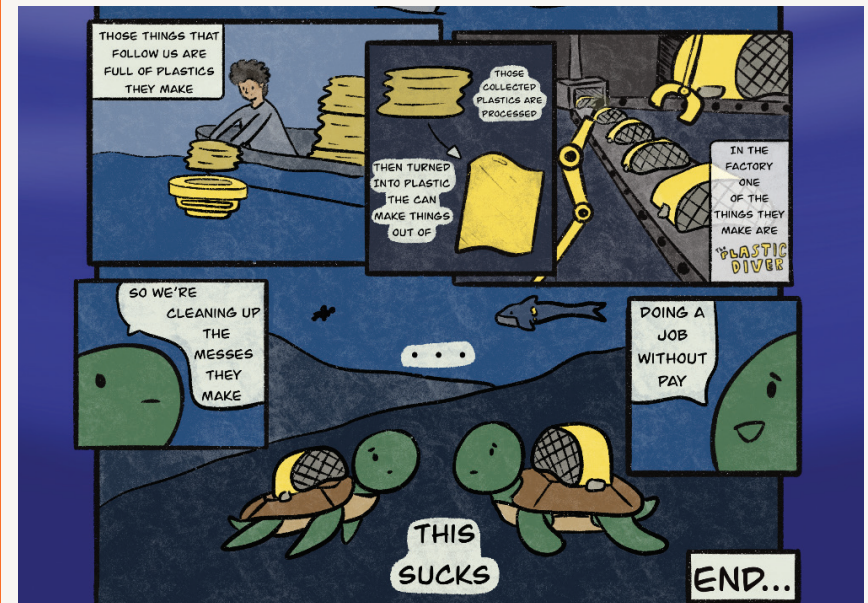
Throughout the course, assigned readings looked at various methods such as value-sensitive design, speculative design, discursive design, critical design, and multispecies ethnography. In each meeting, the students would discuss a theory introduced in the readings and do a design activity to get comfortable incorporating the theory into practice.

Staying with the Trouble, a book by Donna Haraway, provided guidance and inspiration to the group. Beach

advised students away from being techno-centric and solution-oriented and instead encouraged them to ask questions about who or what is being designed for, and who or what is not being designed for. "If we don't ask these questions, then it's really easy to come up with solutions. Your stakeholders or your funders may get exactly what they want. But who is left? Who is marginalized? And that's the importance of 'staying with the trouble,'" said Beach. "Through the workshop activities and critique, students would help one another identify pain points and uncover new tensions in their designs for the next iteration."

At the end of the quarter, the students presented their stories from the zine and process work in a course showcase for the HCDE community. "These are really creative stories, and we hope that they will encourage readers to think differently about the types of effects and relations we are entangled in with non-humans, the nonliving, and the natural world," said Beach.

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VIEW THE FULL ZINE ONLINE AT
[MICHAELWBEACH.COM/
POSTHUMANHAZMAT](http://MICHAELWBEACH.COM/POSTHUMANHAZMAT)



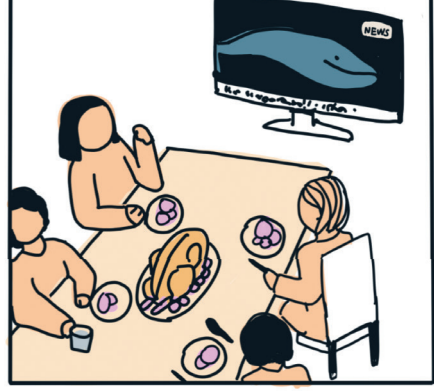
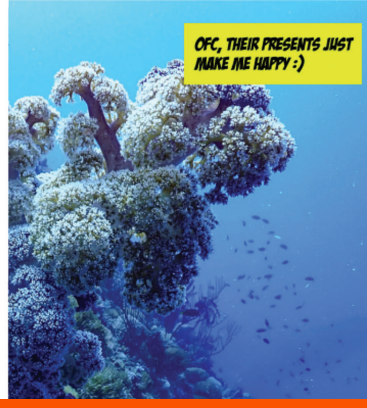
IN THE PLASTIC DIVER, RYAN BAUTISTA EXPLORES THE RELATIONSHIP HUMANS HAVE WITH THE UNDERWATER ENVIRONMENT AND ETHICS AROUND DESIGNS FOR CLEANING HUMAN-MADE POLLUTION.

THIS IS THE VIEW FROM MY BEDROOM. SOMETIMES IN THE MORN, YOU CAN SEE IN SO CLEAR EVEN ME!



HERE IS OUR NEXT DOOR NEIGHBOR. THEY DECOMPOSE WASTE FOR THIS COMMUNITY AND THEY CLEAN UP OUR WINDOWS SOMETIMES TOO!

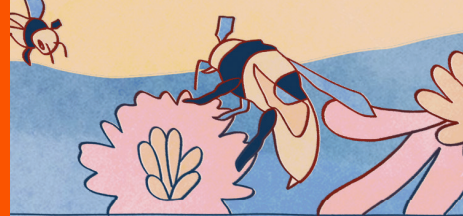
OFC, THEIR PRESENTS JUST MAKE ME HAPPY :-)



News host: "Today marks the 10th year since the last whale has been spotted..."



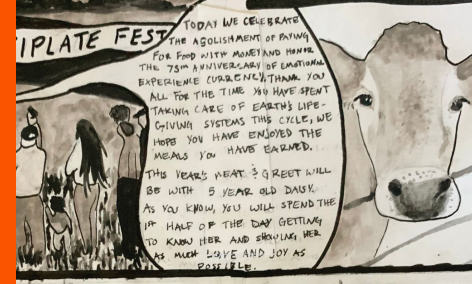
...ating flowers— important job! The pay is ok...



...rough the jobs that need filling... bulls are in high demand up and the jobs will get a bit easier...



Aw good morning... big day, you've made it to your last j



COME TO NEW HEAVEN!

After a few years, in the new city! ...

Welcome!



Building Belonging



HCDE LAUNCHES NEW INITIATIVES SUPPORTING
DIVERSITY, EQUITY, AND INCLUSION IN THE DEPARTMENT.

In 2019, the Department of Human Centered Design & Engineering adopted a strategic plan to align the department's initiatives around shared goals for the following five years. One of the identified strategic goals is to advance and sustain diversity, equity, and inclusion (DEI) across HCDE's work and communities.

Advancing DEI as a priority in the department includes everything from understanding the current state of DEI across HCDE's programs and processes to identifying and implementing new practices and policies to make HCDE a community where everyone belongs.

"Anti-racism and equity work is vital to our evolving department culture and affects every aspect of the work we do." said Daniela Rosner, associate professor in HCDE and current chair of the department's diversity committee.

The following objectives for the department have been informed by input from the HCDE community – community discussions, the faculty and staff departmental retreat, and meetings with student leadership.

UNDERSTANDING HCDE'S STRENGTHS AND WEAKNESSES

College of Engineering Climate Assessment

HCDE has been participating in a DEI climate assessment facilitated by the

College of Engineering Dean's office. The climate assessment will help inform HCDE leadership about the current state of equity and inclusion within the Department, and identify areas for improvement. The results of the climate assessment, expected to conclude later in 2021, will inform future strategic initiatives for the department.

LISTENING AND EMPOWERING

Receiving feedback

In autumn 2020, HCDE Professor and Chair Julie Kientz created a Chair's Student Advisory Board to have a direct line of communication with representatives from all of HCDE's degree programs. The HCDE diversity committee also welcomed four student representatives to the committee, to ensure that concerns and priorities of students are integrated into departmental initiatives. In addition, the diversity committee is creating a process to enable students, faculty, and staff to share their experiences and suggestions with the Department in a safe and supported way.

Student Resource Groups

The HCDE Student Associations (undergraduate and graduate) developed student resource groups to build community, connect one another to resources, and advocate on behalf of traditionally underrepresented communities. The following student resource groups host events

and connect students across the department and the University:

- + HCDE Spectrum (LGBTQIA+ & Allies)
- + HCDE Able (Dis/Ability)
- + HCDE WMN (Women)
- + HCDE URM (Underrepresented minority students)
- + HCDE INTL (International students)

DEI Mini Grants

The HCDE diversity committee launched a mini grant funding mechanism to support DEI-related efforts proposed by anyone in the HCDE community. Grant funds can support initiatives such as supporting speaker honoraria, to travel costs for a community-building event, to compensating participants from vulnerable groups in student course projects. Funded projects in the first year of the mini grant program include a community-wide screening of the film Coded Bias and an hour-long conversation with the director Shalini Kantayya; a Design-a-thon for Social Good, in which HCDE students explored barriers to mental health resources experienced by people in underrepresented communities; and support for a Decolonizing Design Toolkit, a research project aimed at encouraging students to identify and critique practices in human-computer interaction reinforced through pedagogies that seek to uphold unquestioned and dangerous societal norms.

IMPROVING DEI IN OUR TEACHING, LEARNING, AND OUTREACH

Workshop for faculty & staff

HCDE welcomed an external consultant to run two workshops with staff and faculty to discuss departmental culture and focus on supporting and listening to all members of the Department community effectively. HCDE faculty continue to discuss how to diversify course content, such as revising syllabi and incorporating new curricular materials.

Sustained Dialogue in HCDE

In 2020, HCDE began planning a dialogue program, under guidance from the Sustained Dialogue Institute. With support from a grant from the UW Resilience Lab, 25 HCDE students, faculty, and staff, underwent a 16-week training to learn how to facilitate discussions using the Sustained Dialogue method of communicating “peacefully, justly, and productively” about difficult conversation topics, inequity, and oppression within organizations. Individuals trained as moderators will lead small group discussions for members of the HCDE community beginning in the summer quarter.

REVISING HIRING AND ADMISSIONS PROCESSES

Examining and revising practices around recruitment and admissions

The HCDE curriculum committee is examining current admissions practices, and working to develop new practices that will mitigate bias and holistically evaluate applicants to HCDE’s academic programs.

Student retention

HCDE has introduced two fellowships to support graduate students in the department: the Neon Blackboard Term Fellowship that supports students with a demonstrated commitment to DEI; and the Graduate Opportunities and Minority Achievement Program Matching Fund that supports students with a supplemental award based on financial need and merit. Students facing financial hardship can now apply for help with unexpected expenses from the Kientz and Patel HCDE Student Emergency Support Fund (learn more on page 14).

Setting priorities and adapting to community needs is an ongoing process for HCDE faculty, staff, and students. The department leadership is committed to continual prioritization of DEI work to listen, learn, and take action against systemic bias.

"OUR WORK IS ONLY SCRATCHING THE SURFACE OF WHAT NEEDS TO BE DONE. BUT EVERY STEP WE TAKE TOWARD DISMANTLING INSTITUTIONAL EXCLUSIONS AND INEQUITIES IS CRITICAL. WE NEED TO BUILD THE CONDITIONS FOR A MORE JUST AND EQUITABLE WORLD"

-DANIELA ROSNER, HCDE ASSOCIATE PROFESSOR, DEI COMMITTEE CHAIR

The connective power of gaming

WITH SUPPORT FROM MICROSOFT'S GAMING DIVISION AT XBOX, HCDE FACULTY AND STUDENTS ARE STUDYING HOW PEOPLE CONNECT, FORM RELATIONSHIPS, AND BRIDGE DIVIDES THROUGH GAMING.



Play is a fundamentally human activity that connects people over a shared experience. The act of playing a game with another person can reach across divisions—across race, across gender, and across socioeconomic barriers—and helps people build new connections and deepen existing relationships. With the global pandemic increasing social isolation nearly across the world, more and more people are finding gaming an important way to connect with others.

Phil Spencer (BS '90), Executive Vice President of Gaming and Xbox at Microsoft, and his team are bringing new energy around gaming to HCDE by supporting initiatives focused on the connective power of gaming.

Haiyan Zhang, Chief of Staff at Xbox, has been working with two teams of HCDE students on capstone projects aimed at exploring ways gaming can connect people in equal and meaningful ways.

The undergraduate capstone team of Emily Readey, Taylor Toman, Alex Argyle, and Hannah Mei are working with the Xbox team to focus on improving the experience of forming new connections through gaming, specifically for college women. "We have found that there are many women experiencing gaming for the first time because of the pandemic, and we are looking to find ways to help those people form new connections through the hobby," described Argyle.

The team is studying the experience of

building connections across multiple gaming platforms and products. Using a combination of interviews and surveys with female college students, they are working to identify needs and pain points in trying to build connections through gaming. "Our end goal is to create a prototype of a product that can help facilitate building those new relationships," described Argyle.

The HCDE master's capstone team of Ivan Khrulenko, Linda Martinez, Aryan Porwal, and Anton Sirotin are working with the Xbox team to explore how gaming can bring distributed work teams closer together. The shift to remote work has made it more difficult to connect on a personal level with teammates, although remote or hybrid work models are likely here to stay. The HCDE students are exploring how the connective power of virtual gaming might be applied to remote work environments.

"The focus of our solution will be on a fun way for teams to connect and is not meant to be an extension of work," Martinez described. "Our vision of a solution would entail a virtual environment that serves as a kind of lobby from which teammates can connect and play games with their coworkers. Our research will uncover what this virtual lobby experience would consist of and the type of games that would be best for teams to play together to foster interpersonal connection."

In another initiative supported by

Microsoft, HCDE Professors Julie Kientz and Beth Kolko are leading students in a year-long directed research group to explore how gaming can bridge divides across age differences. The research team is particularly studying what design features of games encourage or hinder intergenerational play—that is, gaming between people aged 15 years or more apart—and how new features might be able to better support that play.

"Our group has been very inspired by our conversations with Phil Spencer and his passion for gaming, and how the Xbox team considers the role gaming can play in society," said Kolko. "We are grateful for this thought partnership with Microsoft and this fantastic opportunity to do some really high-quality work."

The directed research group is launching a study of intergenerational pairs of game-players around the world. By observing the game play and interviewing the participants about elements of the game, the researchers hope to discover what key elements of a game design create engaging experiences, and what designs impede those.

"Through these projects, we are lighting a spark on a topic that has been simmering in the department for a long time," Kolko said. "We have seen tremendous interest from our students and our colleagues, and we believe this momentum is there to make gaming a significant research area within HCDE."

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INDUSTRY PARTNERS CONNECT WITH HCDE THROUGH THE CORPORATE AFFILIATES PROGRAM, WHICH PROVIDES A DIRECT LINE TO HCDE STUDENTS AND FACULTY. LEARN MORE AT [HCDE.UW.EDU/CAP](https://www.hcde.uw.edu/cap).



ALUMNUS PHIL SPENCER (BS '90), EXECUTIVE VICE PRESIDENT OF GAMING AND XBOX AT MICROSOFT, TO THE HCDE CLASS OF 2020:

"Something we talk a lot about at Xbox is the power of play to bring people together. We anchor on the ideas of social contact theory, which is a decades-old social science hypothesis about how facilitating contact between people of different social and racial groups, under the right circumstances, will create more empathy between them. For gaming, this means more diversity of stories, characters, representation, reducing toxicity in our communities, and empowering players to create the environment they want to play in."

VIEW PHIL SPENCER'S GRADUATION ADDRESS AT [HCDE.UW.EDU/2020-GRAD-ADDRESS](https://www.hcde.uw.edu/2020-grad-address).

HCDE Emergency Student Support Fund

HCDE IS SEEKING GIFTS FOR A NEW EMERGENCY FUND TO SUPPORT STUDENTS FACING URGENT FINANCIAL HARDSHIP.

In 2020, HCDE Professor and Chair Julie Kientz and her husband Shwetak Patel, Professor in the Paul G. Allen School of Computer Science & Engineering and the Department of Electrical & Computer Engineering, established the Kientz & Patel HCDE Student Emergency Support Fund to aid HCDE students facing near-term financial hardship.

When deciding to create this fund, Kientz reached out to her peers in the academic community to ask for examples of ways to support students during this time. "I saw numerous comments from people who have seen emergency funds like this make the difference between students staying afloat and having to drop out of school," she said. "Students who cannot make a rent payment may

struggle with housing security, or one unpaid bill can begin to collect fee upon fee, quickly making payment completely unattainable." Given the economic impacts of the COVID-19 pandemic, emergency aid became crucial to help students remain in HCDE.

In a recent survey of HCDE students, 37% reported being "often" or "very often" worried about finances as a result of the COVID-19 pandemic. Thanks to the contribution of numerous donors, every student requesting aid this academic year has received funds to address emergent situations, such as unexpected health care costs, car repairs, legal fees, and housing insecurity. The Department thanks everyone who has contributed to the fund so far.

HCDE continues to ask that the community support this effort to support students facing near-term financial hardship.

To make a contribution to the fund, you can contribute online at hcde.uw.edu/give or contact Zoë Bartholomew, Assistant Director of Advancement, at zfinnb@uw.edu.

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SUPPORT HCDE STUDENTS FACING FINANCIAL HARDSHIP BY MAKING A DONATION TO THE HCDE EMERGENCY SUPPORT FUND. DONATE ONLINE AT: [HCDE.UW.EDU/GIVE](https://hcde.uw.edu/give)

"THE COVID-19 PANDEMIC HAS MAGNIFIED THE ALREADY EXISTING INEQUITIES ACROSS OUR COMMUNITIES. IN HCDE, OUR STUDENTS OF COLOR AND LOW-INCOME STUDENTS HAVE ALSO BEEN DISPROPORTIONATELY AFFECTED. YOUR DONATION TO THE HCDE EMERGENCY STUDENT SUPPORT FUND PLAYS A CRITICAL ROLE IN RELIEVING FINANCIAL BURDENS BEFORE THEY COMPOUND, GIVING STUDENTS THE FREEDOM TO FOCUS MORE ATTENTION ON THEIR EDUCATION."

—JULIE KIENTZ,
HCDE PROFESSOR
& CHAIR

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HCDE THANKS THE FOLLOWING INDIVIDUALS FOR THEIR FINANCIAL SUPPORT OF DEPARTMENTAL SCHOLARSHIPS AND STUDENT OPPORTUNITIES IN THE 2020 CALENDAR YEAR.

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The impact of a scholarship

TWO HCDE GRADUATES DESCRIBE HOW ALUMNI-CREATED SCHOLARSHIPS HELPED SUPPORT THEM WHILE IN SCHOOL.



Gifts to the Department of Human Centered Design & Engineering support scholarships, new programs, and opportunities for students to learn and innovate.

Receiving a scholarship can make a real difference in the life of an HCDE student. HCDE scholarships help break down barriers to engineering, lessen financial strain of education-related expenses, and help students concentrate on getting the most out of their time at UW.

Two HCDE graduates who received scholarships launched by departmental alumni describe how the scholarship supported them while in school, and what they have gone on to do since graduating.

Miranda Nicole Washington, BS '20

DAVID FARKAS ENDOWED FUND FOR UNDERGRADUATE STUDENT SUPPORT

As a student in 2018, Miranda Nicole Washington received a scholarship from the David Farkas Endowed Fund for Undergraduate Student Support, a fund established with an initial gift from alumna James Prekeges (BS '84), in honor of retired HCDE Professor David Farkas.

In HCDE, Washington served on the HCDE Student Association as Secretary, participated in the HCDE Diversity Committee as the undergraduate representative, worked

as a research assistant, and developed and led courses on diversity, equity, and inclusion with Professor Cindy Atman and Dr. Lauren Thomas. During her time in HCDE, Washington co-authored three publications and presented her team's research at several conventions and symposiums.

According to Washington, receiving the The David Farkas Scholarship supported her in being able to: afford continuing her education at UW, purchasing valuable UX Design software to further develop her design skills, and attending the 2019 HCDE study abroad program in London.

Since graduating in June 2020, Washington continued her efforts in teaching diversity, equity, and inclusion at the Seattle Attorney General's office and worked as a post-bac research assistant for Professor Cindy Atman. Most recently, Washington launched her long-term career by accepting an offer to work at Microsoft as a UX Designer on the Xbox Research & Design team. According to Washington, HCDE's scholarships, alumni network, and supportive community gave her the resources she needed to make progress towards her academic and career goals, while gaining valuable life experience.

Washington would like to give a special thank you to Phil Spencer, Professor Cindy Atman, and Irini Spyridakis for encouraging her to follow her dreams regardless of how unachievable they might seem.



Terrence Duenas, BS '15

DONNA M. SAKSON ENDOWED
SCHOLARSHIP FOR EXCELLENCE
THROUGH DIVERSITY

As a student in 2013, Terrence Duenas received a scholarship from the Donna M. Sakson Endowed Scholarship for Excellence through Diversity, a fund established by alumna Donna Sakson and her husband, Jonathan Mark.

In HCDE, Duenas worked independently on a web application that helps users find top restaurants in cities and paired those results with tagged photos from Instagram users.

In his senior capstone group, Duenas worked with his team to create a game called Feedback Factory, which helps

4th- and 5th-grade students learn to give useful feedback to peers.

For Duenas, receiving the scholarship helped alleviate some financial stress and supported him in his journey to completing the HCDE BS degree.

Since graduating, Duenas has gone on to work as a contract User Experience Designer for HP, Inc. for the last six years. As a UX Designer with HP, Duenas has worked on many design projects that aimed to resolve enterprise customer requirements, as well as innovative projects that helped HP stay at the forefront of enterprise customer printing.

For alumna Donna Sakson and her husband Jonathan Mark, establishing a scholarship was a great way to stay connected University of Washington and HCDE.

"We established this scholarship to encourage more diversity and inclusion in our field and considered this endowment and long-term investment is supporting students. Our hope was to remove financial obstacles for students seeking an education," said Sakson. "It has been meaningful for me and Jonathan to meet students through the years at the annual luncheon and witness the students' passion." she said.

Support the next generation of HCDE graduates

**GIVING OPPORTUNITIES
TO MATCH WHAT YOU
ARE MOST PASSIONATE
ABOUT**

Gifts to HCDE in any amount, big or small, have an impact on the department and can inspire others to donate.

Depending on your passions and interests, you can establish a new scholarship fund, make a donation to an existing endowment, or support the HCDE Emergency Student Support fund. HCDE also offers named giving opportunities beginning at \$25,000 and estate planning.

To learn more about how you can support HCDE's giving priorities, please contact **Zoë Bartholomew, Assistant Director of Advancement**, at zfinnb@uw.edu.

Pandemic responsive research

IN THE WAKE OF DRAMATIC SHIFTS TO EVERYDAY LIFE CAUSED BY THE COVID-19 PANDEMIC, FIVE PROJECTS LED BY HCDE RESEARCHERS RECEIVED RAPID-RESPONSE RESEARCH GRANTS FROM THE NATIONAL SCIENCE FOUNDATION TO STUDY IMPACTS OF THE PANDEMIC AND TO DEVELOP RESILIENT STRATEGIES FOR GOING FORWARD.





Risk communication and decision making

HCDE Research Scientist Sonia Savelli is studying how people make decisions based on complex risk information, and how communication about risk can help people make more informed decisions.



Family life and technology

HCDE Professors Julie Kientz and Sean Munson, with collaborators in the iSchool, are studying how American families are adapting to new ways of working, managing child and elder care, and facilitating remote learning experiences.



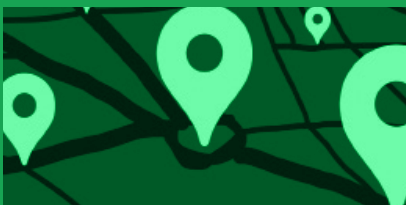
Remote work for individuals and organizations

HCDE Professor Charlotte Lee is studying how organizations and individuals are adapting to remote work, and developing guidance about how to support such shifts in the future.



Spread of pandemic-related misinformation


HCDE Professor Kate Starbird and collaborators with the Center for an Informed Public are studying how scientific knowledge, expertise, data, and communication affect the spread and correction of online misinformation about an emerging pandemic.




Community impact on the Seattle region

HCDE Research Scientist Scott Miles and collaborators in the Department of Civil & Environmental Engineering are studying the impact of the COVID-19 pandemic on the Seattle region by conducting repeating street view surveys across a broad cross-section of Seattle.

FIND DETAILS ABOUT THESE PROJECTS AT
[HCDE.UW.EDU/RESEARCH/COVID-19](https://hcde.uw.edu/research/covid-19)



BUILDING TRUSTWORTHY SYSTEMS



IN HCDE'S COURSE ON DESIGNING TRUSTWORTHY SYSTEMS, A TEAM OF MASTER'S STUDENTS EXPLORED A MULTICULTURAL EDUCATION STRATEGY FOR COMBATING MISINFORMATION.



The prevalence of misinformation, disinformation, and strategic manipulation in online environments has become so pervasive that in 2020 the World Health Organization coined the term infodemic to describe the current crisis.

Kate Starbird, an associate professor in the Department of Human Centered Design & Engineering, has been researching how rumors spread online during crisis events for more than a decade. In recent years, Starbird's research has focused on the online spread of misinformation and disinformation. In 2019, Starbird joined colleagues from the Information School and the School of Law to co-found the Center for an Informed Public, with a mission to resist strategic misinformation, promote an informed society, and strengthen democratic discourse.

In Autumn 2020, Starbird provided HCDE students hands-on experience in this emerging space by leading a new course on trustworthy systems design. Dr. Tom Wilson, a recent PhD graduate from HCDE who researches the dynamics and structure of disinformation, co-designed and taught the course with Starbird.

"Taking this course at the height of the US election, and during the pandemic, we were able to explore this problem as it was right in front of us," said Patriya Wiesmann, an HCDE master's student. "Kate and Tom brought in guest speakers from social media platforms to speak about their evolving

policies on misinformation, as well as PhD students in HCDE who shared their deep knowledge in this field. It was incredibly valuable to hear from these experts, and at the same time eye-opening to realize that even the experts don't have all of the answers right now."

Every week, the students read new material to gain a holistic overview of the history and current reality of misinformation and disinformation worldwide, and discussed what these phenomena mean for online systems today and in the future.

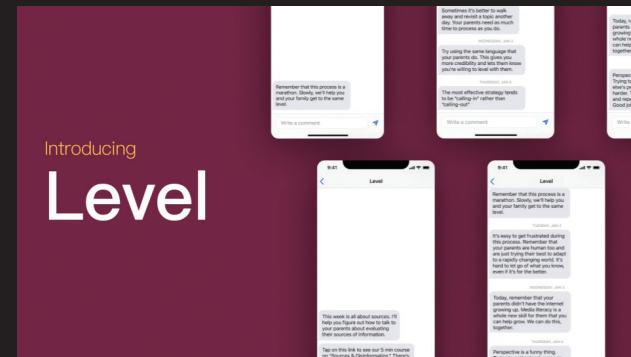
"The class was really an exploration of a problem space," said master's student Ryan Alli. "It wasn't like, 'today we're learning about this or that,' but rather let's come together as designers and researchers, folks in tech, and explore what is here. What opportunities do we see, understanding the context is that online systems are vulnerable to false information spreading."

According to Honson Ling, an HCDE master's student in the course, conversations about these dynamic problems cannot happen in a vacuum or within one discipline. "The composition of class helped us talk about these issues really broadly," Ling said. "In class with us were graduate students from the Information School, the Master's in Human-Computer Interaction and Design program, and the School of Law. That helped bring in insights from people who specialize in big data, or ethics in data privacy, legal policies, UX, or product design."

SUPPORT TO GET ON THE SAME LEVEL

For a group project in the class, Wiesmann, Alli, and Ling teamed up on a project close to their hearts –

supporting immigrant families in identifying false and misleading information.



"We wanted to focus on micro-interactions," Ling said. "You often hear about viral misinformation in the widespread setting, where a policy change puts a blanket 'fix' on everything. But there is an area that's not well explored—and it is what our discipline can bring to this space—that is looking at the experience within the human-to-human interaction."

Ling, Alli, and Wiesmann are all children of immigrants. Through their early group discussions, they discovered that they shared similar experiences talking about misinformation with their families. "We started talking to friends and family members about the problem to see if it actually was a problem, and everyone was corroborating our experiences—almost identical stories across the board," said Alli.

"We were seeing in real time how different immigrant communities were being targeted by disinformation campaigns," said Wiesmann. "We were really surprised by how false information was localized and targeted so specifically at these communities to try to shift their thoughts."

The team interviewed children of immigrant parents, and a second-generation immigrant parent, to gather an understanding of the experience of having these conversations across generations.

"AFTER TAKING THIS CLASS, MY EYES ARE OPEN TO HOW MINUTE CHANGES TO A PIECE OF FACT CAN BE TAKEN TO CREATE RIPPLING WAVES OF INFORMATION. IT'S A BUTTERFLY EFFECT. IF SOMEONE WITH A STRATEGIC OBJECTIVE TAKES A PIECE OF INFORMATION AND SPINS IT IN SUCH A WAY, ENTIRE FAMILIES AND COMMUNITIES CAN BE CONVINCED TO DO SOMETHING THEY MIGHT NOT HAVE DONE OTHERWISE."

– RYAN ALLI, HCDE MS STUDENT

Through their interviews, the students uncovered themes of cultural and linguistic barriers. They found that cultural and family dynamics play a role in how children can affect their parent's existing beliefs, and that those in older immigrant social circles often rely on a culturally homogenous community for information. They also discovered how these conversations can be emotionally taxing for both the child and the parent.

To address their findings, the team designed Level, a texting service to help young people in immigrant families talk to their parents and grandparents to help them identify online misinformation. Designed to communicate directly with the child, Level provides educational content in the form of a video or a quiz, and delivers a conversation starter to help the child start the dialogue with their parent. Because these conversations can be emotional, Level supports a healing process by delivering mental health check-ins after difficult conversations.

The team hopes to continue exploring this research area, expanding it to other cultures and languages, and exploring what the parent-side of a texting service could look like.

"After taking this class, my eyes are open to how minute changes to a piece of fact can be taken to create rippling waves of information – it's a butterfly effect," Alli said. "If someone with a strategic objective takes a piece of information and spins it in such a way, entire families and communities can be convinced to do something they might not have done otherwise. In Kate's class, we learned the solution is not going to be as simple as slapping up a fact-checking algorithm and calling it a day. It's our job to figure out how to build in the context of these problems. In HCDE, we have been pushed to get face-to-face with people, learn about them and what they need, and go out and build something with them."

MEDIA LITERACY LECTURES AND TRANSLATIONS

Tap on this link to see our 5-min course on "Sources & Disinformation." There's also a helpful translation guide with tips on expressing this topic in Chinese: www.examplelink.com

INTERACTIVE COMPONENTS TO FOSTER CONVERSATION

Today, challenge your parents to this 5-minute quiz to see who can recognize more unreliable sources? You may be surprised by the results yourself: www.examplelink.com

AFFIRMATIONS FOR PARENTS AND CHILDREN

Today, remember that your parents didn't have the internet growing up. Media literacy is a whole new skill for them that you can help grow. We can do this, together.

COMMON TACTICS JUST FOR YOU

One strategy that works well is tag-teaming. Try bringing in other family members to help reduce the burden from your shoulders.

COVID-19 exposure notification project

IN HCDE'S COURSE ON USABILITY STUDIES, A STUDENT TEAM LED A STUDY OF WASHINGTON STATE RESIDENTS TO UNDERSTAND REACTIONS TO AND EXPERIENCES WITH THE WASHINGTON STATE EXPOSURE NOTIFICATIONS TOOL.

In HCDE's graduate-level course on usability studies, students focus on usability testing and usability research as a user-centered design strategy. Students learn how to define an audience and issues, design and administer a usability study, analyze the results, and report the findings. Industry sponsors regularly propose projects for the study, and at the end of the quarter students provide the sponsors with a report of their findings.

In the Winter 2021 usability studies course, led by Assistant Teaching Professor Sarah Coppola, HCDE master's students Elisabeth Fonden, Jin Jeon, Dana Langseth, and Emily Stensland teamed up on a project sponsored by the Washington Department of Health to study the Washington State Exposure Notifications tool—also known as WA Notify.

WA Notify is a smartphone tool that alerts people if they may have been exposed to COVID-19. The tool works as an app on Android phones and within the systems menu on iPhones, using bluetooth technology. If a WA Notify user tests positive for COVID-19 and adds that information to the tool, other WA Notify users who have been nearby within the last two weeks will receive a notification that they have had a possible exposure to the virus.

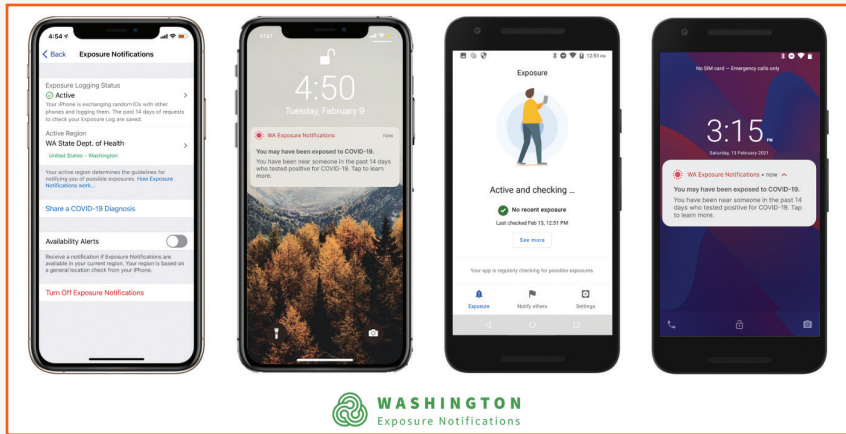
"This project was really interesting to work on, because the exposure app seemed like it may have just been

a public health effort, but it was a partnership between the Washington State Department of Health, the Clinical Informatics Research Group at UW, Apple, and Google," Langseth said. "I appreciated seeing these teams from very different fields come together to create an impactful system for everyday people. And, the fact that they came to us in HCDE to connect with actual users of the tool demonstrates a commitment to the human element of the platform."

As project sponsors, the WA Notify team asked the HCDE students to study a few features of the WA Notify tool. They were curious what users experience as differences between interactions on the iPhone and Android platforms, what first reactions people have when installing the tool, and how people process the information provided on the web-based resources.

The students recruited 11 study participants of both iPhone and Android users from across Washington State. They built web-based prototypes and interviewed the study participants remotely.

"We created prototypes in Figma, which is a web-based prototyping platform. We designed both an Android lookalike and an iPhone lookalike, so our study participants basically saw a phone displayed on a web browser," described Stensland. "We had them go through a series of tasks we pre-defined, and we talked with them about initial



THE STUDENTS CREATED WEB-BASED PROTOTYPES IN FIGMA SO THEY COULD CONDUCT A REMOTE STUDY OF PEOPLE USING THE WASHINGTON STATE EXPOSURE NOTIFICATION TOOL.

reactions, feelings, and pain points they experienced as they navigated through the tool."

To reduce a bias toward one of the two operating systems, the students had half the study participants begin the tasks on the iPhone, half start on Android, and then switch. "One thing that surprised us was that one of our initial goals was to figure out differences between the tool on iPhone and Android, and which one users liked better," Fonden said. "Our study results were basically split down the middle as far as that question went. We expected one to be more popular, but we definitely found biases based on which type of phone people already had."

The students did pinpoint several opportunities for simplifying

information presented in the tool and the web-based resources. In a final presentation to the WA Notify sponsors, the students recommended that the tool clarifies terminology that can come across as jargon, highlights a clear call to action when someone is exposed, and reorganizes areas of dense text on the website.

A key recommendation the students made was to incorporate more sensitivity in the notification message that alerts someone they may have been exposed. "We found that users experience feelings of panic when they receive an exposure notification, and the instructions of what to do next were difficult to understand and are not very personal," Jeon said. "So we recommended making that information more empathetic and clear."

The WA Notify sponsors had already been considering how the exposure notification messages were perceived, and they took the students' suggestions to heart. "Not long after our presentation, the sponsors let us know they were already making some updates to the exposure notification message, and they asked us for our feedback to see if that was in line with what we had seen in our study," Langseth said.

"It feels good to be able to provide the sponsor with evidence-based solutions—that's really the value that HCDE brings to these organizations," Fonden said. "By talking to the people who are using this tool we are able to save the sponsor money in the long term. And hopefully, we are contributing to making the product more beneficial for the people it's designed for."

"Instead of being seen as a one-way thing, where the government is communicating with the individual, we brought our experience as HCDE researchers to prioritize the emotions and feelings of the actual communities who are using this tool," Jeon said. "Incorporating feedback directly from the users helps make this more of a two-way system that benefits everyone."

Propose a usability study

Do you have a product or service that could benefit from a usability analysis? HCDE welcomes project proposals from industry and academic partners. If your project is accepted, students will formulate an appropriate usability study, design and execute that study, and analyze and report on their findings.

Project proposals are accepted annually in autumn quarter. Learn more at hcde.uw.edu/usability-study

Streaming from home



THE HCDE GRADUATE STUDENT ASSOCIATION FOUND INSPIRATION FROM GAMING STREAMERS AND HOSTED "AMA" STREAMS WITH HCDE FACULTY DURING THE REMOTE YEAR.

In Winter 2021, the HCDE Graduate Student Association led an initiative to build community within the department by introducing HCDE faculty to students in a fun and informal way.

"Among some first year students who had not had any in-person engagement with HCDE faculty, we were recognizing the feeling of loss of strong connection with the department," described Ethel Xu, vice president of the Graduate Student Association.

The lack of in-person, casual conversations that used to happen organically outside of the classroom prompted the GSA officers to look for new ways to foster engaging conversations.

"We looked to the gaming industry, where streaming on platforms such as Twitch and YouTube has been very popular," described Xu. "We figured, why not take that concept and introduce our faculty to our students in a more casual and lively way?"

Through a series of weekly conversations hosted by Graduate Student Association Officers Honson Ling, Patriya Wiesmann, and Ethel Xu HCDE students spoke with HCDE faculty about their backgrounds and interests..



The faculty stream conversations included the following HCDE faculty members:

- + Professor Cecilia Aragon talked about her experience as a pilot on the US Aerobatic Team, and about the process of writing a memoir.
- + Associate Teaching Professor Tyler Fox talked about his experience in the army, studying abroad with the Bonderman Travel Fellowship, and gave a tour of his chicken coop.
- + Professor Beth Kolko talked about entrepreneurship and her experiences as a CEO of a medical technology company.
- + Assistant Teaching Professor Sarah Coppola shared her expertise as a human factors researcher by overviewing ergonomic work-from-home setups.
- + Assistant Teaching Professor Kristin Dew gave a tour of the barn where she boards her horses and introduced students to several animals on the farm, including her horse Riblet.
- + Professor Mark Zachry, with his dog Bailee, talked about the career that led him to becoming a professor and changes to his teaching and research as a result of the pandemic.
- + Professor and Chair Julie Kientz, with her dog Luna, shared all the odd jobs she has had since she was in high school, and described lessons on leadership she is learning from her role as department chair.

"There was so much we learned about everyone, and they all shared so many great experiences that and just fun things for us to know about," said Xu. "The GSA is grateful for the participation from HCDE faculty, and thank them for taking time to generously share part of their personal lives."



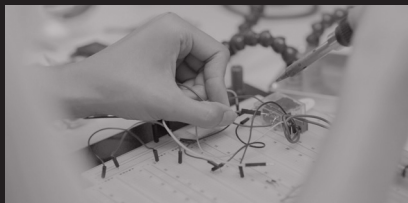
HCDE Academics

HCDE STUDENTS LEARN TO PRIORITIZE HUMAN NEEDS AND INTERESTS AS THEY DESIGN AND BUILD SOLUTIONS TO GLOBAL CHALLENGES.



Bachelor of Science in HCDE

The Bachelor of Science in HCDE enables students to build a strong foundation in designing user experiences and interfaces, creating information visualizations, conducting user research, designing for the web, and building web technologies through a deep understanding of people and their contexts. Students graduate from the program with engineering degrees. More at hcde.uw.edu/bs.



Master of Science in HCDE

The Master of Science (MS) in HCDE prepares students for professional and leadership roles in user experience research and design, interface design, interaction design and prototyping, product design, human-computer interaction, human centered engineering, and program management. HCDE MS courses are offered in the evening to accommodate a diverse cohort of full time and part time students. More at hcde.uw.edu/ms.



Certificate in User-Centered Design

The User-Centered Design (UCD) Certificate is an evening, graduate-level program for professionals who want to explore a wide range of issues in user-centered design. Students learn methods for planning and developing intuitive, user-friendly product designs. This four-course certificate focuses on usability studies, user-centered design theories, visual communication and information visualization, and web design. More at hcde.uw.edu/ucd.



Doctor of Philosophy in HCDE

The Doctor of Philosophy (PhD) in HCDE provides unparalleled depth and experience for students interested in studying the conception, design, implementation, evaluation, and effects of technologies. The HCDE doctoral program prepares students for careers as scholars and researchers through relevant coursework, mentorship from faculty, and collaboration with peers. More at hcde.uw.edu/phd.

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