FEEL YOUR PAIN

KALEB BEAVERS

From the Editorial Desk:

The following is a collection of responses, critiques, and meditations on New England State University's (NESU) recent decision to allow for the use of fully immersive, pain enabled virtual training environments (VTEs) in medical classrooms. This collection has been put together and edited by a team of student journalists to capture the wide range of feelings the campus community has surrounding the University's decision. New England State University is the first academic institution in the world to allow pain enabled VTEs to be integrated into medical training.

Previous iterations of VTEs relied on visual and auditory cues, limiting user mobility, and context within the virtual environment to convey experiences of pain and other symptoms to users. These earlier versions were heralded as effective tools to cultivate empathy in clinicians. Students from a range of medical disciplines utilized this technology to better understand what their patients were experiencing. Pain enabled VTEs use haptic feedback suits and headsets to mimic a wide range of symptoms, including but not limited to, pain, nausea, and dizziness. Users within fully immersive, pain enabled VTEs are able to physically experience symptoms associated with a wide range of disabilities, illnesses, and diseases.

Recently, this project has taken on an unanticipated urgency, as NESU's administrators debate the suitability of pain enabled VTEs on campus. Less than a week ago, an unnamed student experienced a grand mal seizure while they were in a VTE. While campus administrators have not responded to requests for comments, the editorial board feels that this collection is an important component for the President, Provosts, and Board of Trustees to take into account as they consider the future of pain enabled virtual training environments at New England State University.

Olivia Andrews, first year medical school student

I'm really worried about the VTEs. And I'm kinda mad too. I don't want these to be a required part of med school, but it seems like people kinda want it to be. I mean, the coursework is already so much. I feel like I'm drowning half

the time. The last thing I need is a school requirement that I subject myself to a dozen different types of pains and symptoms. But so many of my peers are excited about the prospect and a lot of professors are encouraging us to do the trainings. So I'm really worried that if I set a boundary and don't do the VTEs, I'll fall really far behind. And I'm scared to speak up about this because I'm worried that people will think I'm less committed to medicine. But it's just a really big ask and I want to respect my own boundaries. I mean, I barely have any boundaries with school anyways, so this one feels almost symbolic. Like, no, this is a line I won't let school cross. It's concerning though, because like I said, I feel like I'm in the minority of people feeling this way in the first year cohort. A lot of them see the VTEs as part of the appeal of being at NESU. I'm the opposite, I'm wishing I'd gone to a less prestigious school that doesn't want to put me through hell. Or at least not that type of hell. If it becomes a requirement I really don't know what I'll do.

From the transcript of an interview with Dr. Kaiya Singh, Assistant Professor of Neurology, conducted for NESU's Future Physicians Association's semester kick-off meeting.

Interviewer: Jasper Blackwood, president, Future Physicians Association

Interviewee: Dr. Kaiya Singh

Blackwood: Dr. Sing, thank you for being here. What do you think about the adoption of fully immersive, pain enabled VTEs on campus?

Dr. Singh: Straight to the big campus question. [laughs] No, it's a good question. And I know it's sort of like the question of the year, maybe longer. So I get that you all, students, want to hear from professors about it.

Blackwood: It's definitely something that feels sort of [pause] tense.

Dr. Singh: And it should. This is a very new thing, a very serious thing. But I think—I really think that there is so much potential here and that these virtual trainings have the potential to fundamentally change medicine for the better.

Blackwood: How so?

Dr. Singh: Over the past few decades the public has lost a lot of faith in the medical establishment. You can trace some of that erosion of trust back to the Covid pandemic in the 2020s and it's just gotten worse since then. And it's not without reason, a lot of people have good reasons to sort of, you know, not feel

like they can trust—not be at ease in hospitals and other medical settings. I think the real potential of the pain enabled trainings is to build back some of that trust, to make patients feel like their doctors and nurses are, you know, in their corner.

Blackwood: Can you elaborate on how these new VTEs will build trust with patients?

Dr. Singh: Sure. So some of this is drawing from research on older versions of these VR symptom simulators, you know, ones that relied on more rudimentary stand ins for patient experience. But the research showed that students and clinicians trained on those simulators felt more empathy towards their patients. And further research showed that patients, ones who didn't know their care providers had undergone VR symptom simulation training, rated the care they received really highly. Much higher rating than surveys from patients who received care from people who hadn't got symptom simulator training. So yea, you know, I think that this, what some people are calling [finger quotes] high fidelity symptoms simulation is just going to jack up the level of sympathy medical professionals feel for their patients. And that will directly translate into patients feeling like their care is better.

Blackwood: Yea, that makes sense. Have you gone through any of these pain enabled VTEs yourself?

Dr. Singh: I have.

Blackwood: Could you share what that was like?

Dr. Singh: [sighs] Yea, you know it was hard. Before these got rolled out on campus I did a migraine VTE. It was really painful. Some of the people who were in the study with me threw up. I got to experience how the pain fluctuated in the VTE with exposure to light and noise. I definitely feel better equipped to talk to patients who experience migraines now. I really think I can provide better care. And since that experience, I'm planning on enrolling in more pain enabled VTE programs to expand my understanding of what patients are going through. And I encourage my students, and all of you here today for that matter, to do the same. We owe it to our patients.

Select responses from NESU's patient feedback system. These responses are recorded as part of voluntary, anonymous surveys from patients at NESU's teaching hospital.

Response One

I think it's actually insulting to think these virtual experiences somehow make doctors understand my condition. I was diagnosed with early onset rheumatoid arthritis when I was twenty six. I've been living with it for twenty five years. Some doctor thinking he knows what that's like after what, twenty minutes of virtual simulation. Ridiculous. My boys play army video games, and they don't think they know what it's like to be a soldier. They get that those are fake games. And I guess that is not getting through these doctor's heads. I read that these simulations are what, twenty minutes long max. That is just not anything like my experience. Twenty minutes is nothing compared to twenty five years. And it's insulting to say it is.

Response Two

The first time I was pregnant, a doctor told me that he understood what labor was like because he had recently passed a kidney stone. When I told my sisters after that appointment we laughed and laughed about that. I laughed even though I'd never given birth before. I just knew how silly the comparison was. He was a well meaning man though, but what a silly comparison to make! As if my pregnancy was just about the pain of labor. And as if passing a kidney stone somehow gave him insight into me creating life and raising a child. He didn't even have kids!

So anyway, a few years go by. You know, I've heard a bit about the new more advanced VR stuff in hospitals and what not, but I'm not thinking about it much. But then recently, I was in the store grocery shopping, and who do I run into but Mr. Kidney Stone, MD! And he sees me, recognizes me after a second. Great big smile, comes right over and asks how I'm doing, how's the kid and so on. And as we're wrapping up he gets real serious. "I want to apologize," he says, looking all ashamed like. I'm confused as all get out, ask him "what for?" He hesitated a bit, awkwardly moved some of the stuff in his grocery cart around. "Well," he says, "I recently underwent the new pain enabled virtual reality training. I was part of a study. A group of male doctors, most of us OB/GYNs, all underwent virtual labor. It was... quite the experience. And when I was done with the experience, I felt horrible for

having compared my kidney stones to your pregnancy. I am very sorry." Well I'll tell you what, I didn't know what to say. I wasn't really holding a grudge. Like I said, he was always professional and well meaning. When I told my sisters later on, I had to admit, it felt good to see him squirm a bit! We laughed about it, still do really. Mr. Kidney Stone, MD, tail tucked between his legs at the grocer. But I suppose that's a good thing. I suppose that these trainings are making doctor's more thoughtful, you know, more experienced.

Response Three

Pain is a part of my experience, sure. I've been dealing with complex regional pain syndrome for the last two years, so yea, pain has become a part of my day to day. I feel a level of relief that the tech companies like Living Technologies have collected information and it sort of validates my experience to an extent. I've had a lot of doctors be really dismissive of what I'm going through. Until there was the biometric data to back up what people with CRPS were experiencing, doctors didn't always believe us. One of my new doctors, who did the CRPS virtual training, he's been the best. I don't think it's the training though. He's just kind and he listens and takes me seriously. And there's a lot about my condition that isn't the pain. Well it is, but it's not just feeling the pain. It's the randomness of it, the not knowing when or why. And not being able to work, having to put big life events on hold. It's not being able to take care of my grandbabies, not being able to help my husband around the house. Some days I can't drive. The pain is bad, sure. But... well I don't know, it's not everything.

From an op-ed written by Susan Lennings, MD and Associate Professor of Pathology

A concern, and an understudied one, is that the prevalence of virtual training environments in medical school settings will end up "virtualizing" real patients. The robust ties between VR technology development and the gaming industry come with an uneasy "gamification" of medicine. This gamification of medicine has escalated as VTEs become more widely utilized and popular. In fact, many of these training simulations are referred to by users, as well as developers, as "serious games," a term that has been commonly used since the inception of VR training technologies. This labeling of medical training as some sort of "game," albeit a "serious" one, is a horrible dilution of the profession. It's tantamount to the reduction of medical school

into one big game, where saving lives equates to a high score. I make it very clear to my students, and I urge my colleagues to follow suit, that we are not playing and our profession is not a game. The people we work with as medical professionals are just that: people. I am deeply concerned that as more and more classroom and clinical hours become virtual interactions, students will be ill equipped to interact with real patients. This "gaming" language has no place in medical settings, and it's ludicrous to think that virtual settings can adequately stand in for real experiences.

From Rachael Kliney, fourth year pre-med student

I mean, I am mostly trying to go to conferences with Living Technologies' VTEs. I don't think I'd make a real effort to attend one that doesn't have VTEs as a big part of the experience. I just know that I won't get as much out of them. I want to feel what my patients are feeling. I think it's the best way there is to put myself in their shoes. Like, the first time I got to experience the vision loss and hearing loss VTEs it was like, wow. I mean I saw my grandma go through that when I was a kid. But I didn't get it and now I do. So in my career, I'll know what people losing their vision and hearing are going through. And I want to go through more trainings so that I can relate to other types of patients better. And Living Technologies' simulations are the best out there. Honestly it's a big reason why I wanted to come to New England State for school, because of the partnership with Living Technologies. So yea, it's a priority for sure.

Written statement from Larry Mulligan, Professor of Philosophy

This technology will have widespread reverberations in a myriad of scholarly contexts, not just medicine and bioethics. It's upending how we know what we know and what we know about who and how we are. Epistemology, our ways of knowing, and ontology, our ways of being, are being fundamentally altered through these immersive VTEs. More so than ever before, someone can experience the physiological realities of another person, and those experiences can profoundly alter one's way of thinking. Fully immersive VTEs are, some might argue, making ontological experiences transferable. I've come to think of it as a sort of ontic fungibility. However, it is a slippery slope. While the VTEs are built on data collected from real patients with real conditions, algorithms, perhaps with the aid of a data analyst, end up finding the most common threads and weaving them together. There ends up

being one VTE accounting for hundreds of people's experiences. In other words, you have a digital actor—the algorithm—distilling the experiences of real people into a singular, virtual experience. The idea that these training environments can instill people with more empathy for their patients hinges on the abilities of digital and virtual actors. It brings to the fore whether or not we can continue to think of these realities as being "virtual." If these digital actors and virtual realities are capable of facilitating epistemological and ontological shifts in human beings, then the humanities and social science will be joining medicine in a truly dramatic paradigm shift. In what is likely a complete accident on the administration's part, NESU has just become one of the most interesting academic institutions in the country, not only for medical professionals, but for humanists and social scientists too. For me, the really delicious question here becomes, what counts as "real" or "lived" experience?

Written statement from Violet Alvarez, DNP and Professor of Nursing

Empathy is an admirable trait, and it is also fraught. There's no way to get around empathies' self-referential structure. It's easier to feel empathy for people you like, people you can see yourself in. Empathy, despite it being aimed at others, is always generated within the person feeling it. Training clinicians to be more empathetic towards their patients isn't a bad thing by any means, but it also isn't the medical silver bullet that a lot of practitioners want it to be. I've been on NESU's bioethics committee for years and one of the most challenging issues we navigate as committee members is empathy. I immediately feel a connection to patients who are nurses, because I relate to them. I want nurses who enter our hospital as patients to receive the highest possible standard of care. That feeling is, in many ways, limiting. Being a nurse shouldn't inherently grant someone a higher quality of medical care. Because of empathy though, nurses who I've treated in the past absolutely have received a higher level of attention than some of my other patients. I think what we should be focusing on the most as medical professionals and medical educators are the basic tenets of medical principlism: autonomy, beneficence, non-maleficence, and justice. Empathy does not inherently bolster those principles, so I have my doubts regarding the role empathy can, and should, play in healthcare.

From a lecture given by Ethan Thompson, Professor of Surgery

Somehow, empathy has taken over the whole of medical ethics. You know what I think? Every hour my students are "learning empathy" in these VTEs is an hour they have lost honing their technical skills. My patient who needs his appendix removed doesn't give a rat's ass if his surgeon is on the same wavelength as him. He wants an expert, someone who knows his profession inside and out. These virtual trainings reached the point of diminishing returns decades ago. Practicing surgical procedures in VR? Useful and practical. The results were empirically verifiable. This empathy training stuff? Fluff at best. All the data is qualitative. I don't think it has any teeth at all. They're evaluating people's emotions and perspectives. Half of the people they're talking to are just caught up in the excitement of new technology.

Recorded statement from Emma Chen, Director of the Digital Scholarship Program at NESU's Library, Technology, and Information Services

I don't mean to diminish the ethical conundrums these VTEs pose on a surface level, but what I really can't stop thinking about is the data. I mean Living Technologies, through their contract with NESU, just gained access to a huge set of biometric data. And they already had partnerships with hospitals, so it's a major expansion of an already vast dataset. These haptic feedback vests and VR headsets are tracking heart beats, breath rates, eye movement... I mean almost everything. The University has been awfully quiet about the data collection and privacy issues that come with these fully immersive VTEs. And the whole process of Living Technologies and how they compiled data to build these programs... It was shady, at best, from the get go.

Essentially, they found low income patients experiencing the diseases they wanted to build VTEs around and told them they'd cover medical expenses in exchange for the patient's cooperation. So understandably, people who are staring down the barrel of six figure debt are eager to accept the offer. Then Living Technologies comes in with these book length contracts, teams of lawyers, and a blank check. And the deal is, basically, sign here, put on this vest, these biometric trackers, fill out these surveys.

The patients who agreed to this did whatever dance Living Technologies asked them to. So then Living Technologies is collecting biometric data from hundreds, maybe thousands, of people experiencing any given disease. And they end up with a pretty comprehensive picture of what

people are going through physiologically. These datasets, plus some of the qualitative information they collect in interviews, is what they used to build VTEs for specific diseases and illnesses.

So now though, Living Technologies must be just foaming at the mouth for this new dataset. Now, they'll get to put people through these VTEs and see how their bodies react, because all the VTE technology is monitoring everything. Plus the people who participate in the VTEs have to hand over their whole medical history. I mean the amount of biometric information these programs will create is just staggering. Who knows what use that data will be put to, but it's something that makes me really uneasy. Call me crazy, but Living Technologies doesn't strike me as the most... virtuous company ever. I guess we'll see what happens, for better or worse.

From Living Technologies "About Us" page

Here at Living Technologies, we are committed to pushing the boundaries of science and medicine. Our team consists of pioneers who are on the frontier of their fields. We are changing the game of how technology shapes medicine. Our haptic feedback suits, immersive headsets and sensory transmitters represent the bleeding edge of fully immersive virtual reality and its full medical potential.

Through our fully immersive, pain enabled virtual training environments, doctors, nurses and other clinicians can gain critical insight into the battles their patients face. Fully immersive, pain enabled VTEs remove the guesswork. Now, doctors can know exactly what a patient is going through, allowing them to respond quickly in high stress environments. Our technology will allow medical training to reach new heights. Our training systems allow doctors to achieve a new level of mastery over physiological processes by experiencing them first hand. Living Technologies is committed to expanding the realm of knowledge and equipping medical professionals with tools they can deploy in the real world. We are confident that our wide ranging technologies, pain enabled VTEs included, are propelling doctors towards the world's next generation of cures.

From an interview with Dan Kempf, fourth year medical resident at NESU

Patients don't trust doctors. The general public is having a crisis of faith in this country's medical system. And they are absolutely right in feeling

that way. Lots of patients leave hospitals feeling disrespected and objectified. Not to mention that patients leave hospitals neck deep in debt. The unfortunate reality is that hospitals are run like businesses and that's not changing anytime soon. That structure negatively impacts patients and clinicians, but barring a miracle it's a structure that's here to stay. So what do we do? Personally, and I know I speak for a lot of my colleagues too, I have been at my wits end since I started working in hospitals. With the VTE trainings though, I see some hope. The businefication of hospitals has had the unfortunate effect of sucking the joy out of medicine for medical professionals. Everything is a box to check, a form to fill. The system makes it almost impossible to keep sight on what matters, which is caring for your patient. I think these trainings are going to shake things up. I think that it might take a literal jolt of pain to get things back on track. You know what else I think? I think that every paper pusher and administrator should be required to undergo these VTEs alongside medical professionals. At this point, I think things need to be really shaken up. Because we've been in a tailspin for decades. I don't know, maybe, hopefully, we've hit the bottom. Regardless, at this point, anything is worth trying to improve morale, not just for patients but for professionals too. And I think these VTEs might have a part to play in that, by reminding us that we're working with human beings. To remind us that we're human beings too.

From a Parents Against Pain Enabling (PAPE) letter to Joseph VanDerwood, President of NESU

To President Joseph VanDerwood, Provosts, the Board of Trustees, and the NESU Community,

We, the Parents Against Pain Enabling (PAPE), write to voice our vehement objection to the use of pain enabled VTEs at New England State University. The implementation of this practice is inhumane, backwards and puts students in harm's way. As parents, we send our children to college with the hope that they will be inspired and educated; that their experiences at school will lay a strong foundation for their growth and their careers. As parents, we worry about the trials and tribulations our kids might face being away from home. Until this decision though, we did not have to fear that universities would actively encourage our children to subject themselves to pain and harm. Some may consider our demands to remove pain enabled VTEs from campus as a sign of helicopter parenting and an overstep into our adult children's lives. However, we refuse to remain silent on this issue. We

demand that President VanDerwood take immediate action to stop these ludicrous trainings. These VTEs are crippling our children's ability to thrive in college. We will not stand by as out of touch academics and administrators put our kids through these backwards simulations.

Statement from Jack Murphy, fifth year pre-med student

The experience was pretty wild. As an able bodied person, I appreciated getting to see what disabled people live like. I'm gonna keep doing them. I think it's valuable, plus people are saying it's gonna be a resume booster. Especially if you want to go into biotech. Which I totally do. Working for Living Technologies would be a dream. It'd be wild to work for them. The things they're doing, so cool. It is hard to fit them into the schedule though. Like, in one class we could do VTEs for a little bit of extra credit. One of my buddies ended up doing like, four in a day because he was behind. He was pretty messed up after that. The people who help out with the equipment tell you about cyber sickness and how you can get nauseous and stuff. But my buddy was more kind of emotionally shook up. It didn't seem like the cyber sickness I've had, of just being, like dizzy, having a headache. He took the next day off. So, I totally get people's worries, but it's just a matter of time management and knowing your limits, you know.

Statement from Clark Gabel, Custodian at NESU. Mr. Gabel reached out to the editorial team to share his statement

Well yes, I was the one who found her. Spread out and twitchy. Awful sight really, just awful. I came into the library as I always do around seven o'clock in the evening. Started doing my rounds. Made it to the virtual rooms, flicked on the lights. Saw a bit of blonde hair on the floor. Couldn't see much though, because the big VR chairs were between us. Thought that was odd though, hair spread out over the ground like that. I rounded the corner. There she was. On the ground, arms and legs spread out and twitching around. So I dropped my things. Knelt down, checked her pulse. I don't know. I panicked. I thought I was watching this poor girl die right there in front of me. Felt some relief cus' I felt her pulse and it felt strong. I hollered for help, thankfully someone was nearby and heard me. Rung the police. Tried to keep the girl's head from bouncin' off the ground in the meantime, those VR room floors are hard. No carpets so they're easy to clean. Which is good, fair amount of kids throw up in there. A few people came into the room. We were all just shocked

dumb, looking back and forth at each other. Nobody knew what to do. So we waited, someone wadded up their sweatshirt and we put it under her head. After what felt like a long while, the girl stopped shaking and twitching. Didn't come around until the medics showed though. I don't think I'll ever forget how scared she looked as they wheeled her out of there.

ABOUT THE AUTHOR

Kaleb Beavers lives in Providence, Rhode Island. He loves science fiction and graphic novels. In his free time, he enjoys reading, baking, and gardening.