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# From Barely Knowing What VR Was To Co-teaching a Course About It - An Interview with Adriane Pelikan

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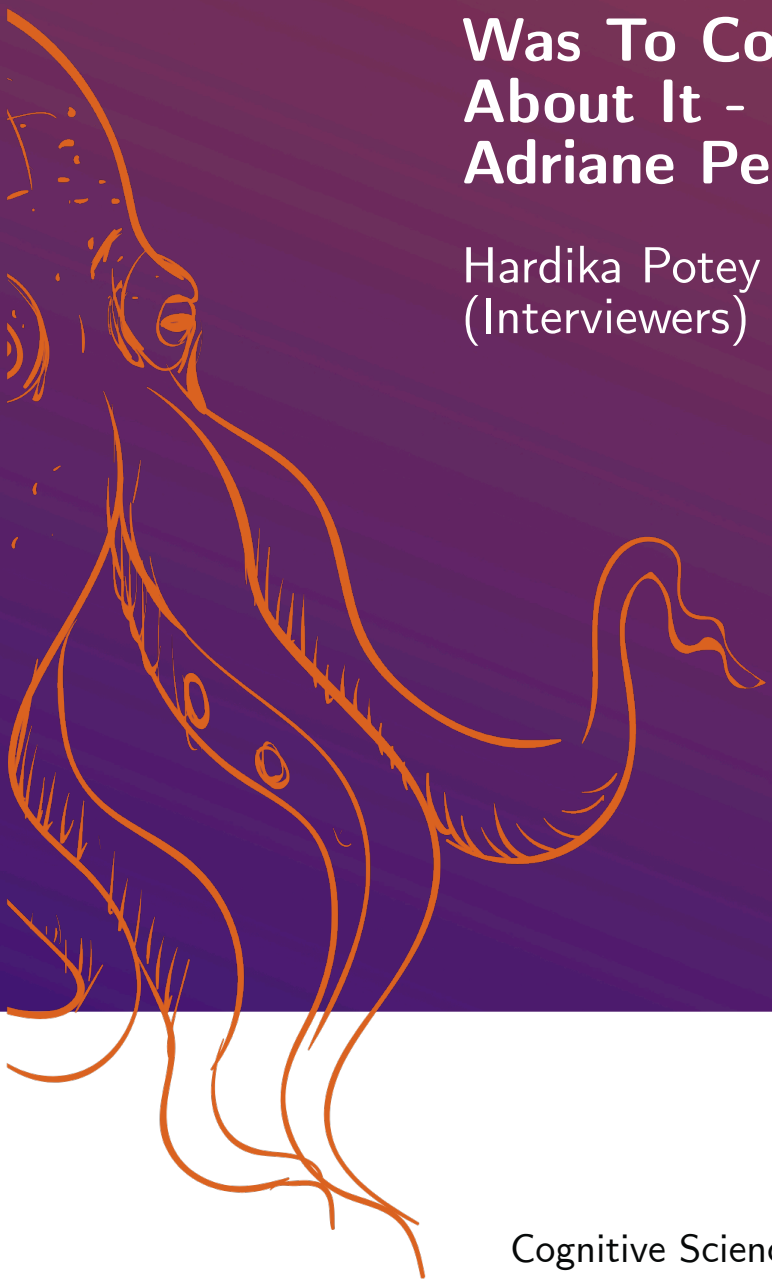
(Interviewers)



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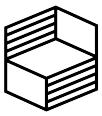

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# An interview with Adriane Pelikan

22 years old, with a knack for extended reality (XR) technologies, Adriane Pelikan is a bachelors student in Cognitive Science and a student trainee at XR HUB Bavaria. XR HUB is a project that is prepared to address queries about extended reality technology and the many uses they can be put to. Augmented reality, virtual reality, mixed reality, and all other forms of reality are collectively referred to as extended reality. Every such technology alters the human-to-computer screen interaction. One of these forms is the popular virtual reality, which immerses individuals in a virtual world. Next comes augmented reality, which enhances or augments the user's surroundings, and then mixed reality is a combination of both the real and the virtual world.

With immersive and engaging experiences, virtual reality has emerged as a tool that has the potential to revolutionize the way students learn by helping them comprehend difficult concepts and ideas. Propelled by her interest in virtual reality, Adriane looks forward to introducing extended reality technologies in the traditional German school curriculum together with XR HUB. Readers can also learn what a lesson in virtual reality looks like and the steps taken to ensure that the students have an enjoyable learning experience.

In this interview, we'll talk about the advantages and drawbacks of adopting virtual reality in the classroom, how it can improve student learning results, and possible implications for the future of education. We hope to learn from Adriane's experiences and provide guidance to educators and students on how to make the most of modern technology and enhance their learning experiences. It would be interesting to see how virtual reality is further developed and incorporated into classrooms around the world as technology develops. Hardika Potey and Anna Shapiro were talking about all of these topics with Adriane herself.

"My main hope and expectation is that students learning with virtual reality will remember what they learned better, because the lessons will be more practical. Learning by doing is so important." - Adriane Pelikan

**Nice to meet you, Adriane. You have quite the resume: as a Bachelor student of Cognitive Science here in Osnabrück, you are also working for XR HUB Bavaria, hosting a blog about Extended Reality on their website and are even going to teach a course about one aspect of it, virtual reality, yourself, which we will talk about later. How did you come to be so interested in extended reality technologies?**

At the beginning of last year, I participated in a business competition for students by Huawei, called "Digital Seeds". The task was to develop a startup idea around the topic of "metaverse". Before this, I didn't have any contact with any of those topics and barely knew what Virtual Reality was. But as I was partaking in this competition and had to develop new ideas, it led me to read up on it more. I became amazed by the possibilities of the field.

**So that prompted you to search for hands on experience in the area. How did you go about that?**

I definitely wanted to do an internship because I was missing that practical aspect while studying Cognitive Science. You get to know so many things, but just in theory, and I was really lacking information on what I can use my knowledge for. A lot of the times, I just studied and asked myself "Where will I ever use this topic that I'm learning?" This is why doing an internship was so important for me.

**You say that you often questioned the relevance of what you were learning. But do you feel that there were certain courses which helped you and prepared you for your work with XR HUB?**

The module I learned the most from for my work was actually Cognitive Psychology. I always get back to this knowledge, because I think a lot about how we perceive the world around us. Understanding perception is crucial in the immersive aspect of extended reality. The module also helped me gain knowledge on how we learn. It's foundational knowledge that I often go back to. The most valuable thing I learned while studying Cognitive Science in general is to be really open minded to different disciplines, to combine cross disciplinary knowledge. This is really useful, especially because extended reality can be applied in so many different areas.

**Could you explain to us what extended reality stands for and what its aspects are?**

Extended reality as a term is a combination of virtual and augmented reality. That is to say, it's an umbrella term for both. With virtual reality, you can enter a virtual world, obviously, in a really immersive way. But as for augmented reality, it is not the case that you are completely immersed. That is the interesting thing about augmented reality, that you are able to combine the virtual and the real worlds, so you generate digital objects inside your reality. This merge of the real and the virtual world is a huge benefit.

**Would you say that, when you consider both virtual reality and augmented reality, augmented reality is something that you find more interesting for yourself?**

No, definitely not. I think both have completely different uses and benefits. Virtual reality offers great enrichment in many fields, such as training or even education, as it is very immersive. You are completely immersed in another world, so you can learn and understand many things in a completely different way. However, I don't know if there will be a future in which everyone will use virtual reality glasses privately in everyday life. For augmented reality, this could be different. I think that it really

has the potential to be part of everyone's life in the future, mostly because of the "blend" with the real world. Considering the digitalization all around us currently, we work a lot with two-dimensional things despite living in a three-dimensional world. Our whole perception of the world is meant to be three-dimensional. This is currently a limitation, and augmented reality is something that will help in bridging this gap in the future.

**As you say, the world is becoming more digitalized. Education is becoming more digitalized, as well. Then, would you say that adapting to technologies such as virtual reality and augmented reality is going to become a necessary future skill, especially within the education system?**

I think not only the future, but already the present is digitalized. It is a fact that we live in a digital world with computers everywhere that you have to be able to deal with. In teaching, it might even become necessary in some areas. Applications exist for every school subject, because there are definitely benefits of using it in every subject. It just depends on the teacher, whether or not they are comfortable using it. For the children, it is definitely important to get acquainted with all things digital as early as possible. I feel that I could have benefited from that as well, to have fewer struggles with programming in university. You don't even need another subject to introduce computers to children early on. Computers or XR Technologies are tools, you could use in every subject. I think that the use of virtual reality and augmented reality is going to be bigger and bigger, as well.

> "Basically, there are endless possibilities that you can use virtual reality for."

**Can you give us an example of virtual reality use in education?**

A few weeks ago I participated in a 9th grade school lesson on ISS, the International Space Station. The students wore virtual reality glasses and got to experience life inside the ISS through an application where the whole ISS is rebuilt in detail. Their task was to figure out how the astronauts eat, sleep and work up there. I found the subsequent transfer of the virtual reality experience to other subjects particularly interesting. In German class, the students subsequently conducted a fictitious interview with an astronaut, and in ethics class, the question: "What role do we humans play in the infinite universe?" was discussed. Because this experience in virtual reality is done by each student individually and the social part is something really important for humans, you have to make sure to close the virtual reality lesson by discussing and reflecting with the students. But I think with time more of these experiences will be socialized, so that you can participate with more people in the same application.

**What was the general idea behind this virtual reality-assisted lesson?**

The lesson was in the subject of ethics, and so it sought to answer questions like "Who are we?" "What kind of role do we play in the infinite universe?" I think this experience helped the students

to see our Earth from far away in space and put things into perspective. I also want to point out a benefit. There is a quote that says "You learn the most about nature when you really go into nature". I think this is the benefit that virtual reality can provide you with as you can experience all those things that you could not normally. I mean, you can actually go into the life of a cell and see all the proteins working around there. I think when you experience it yourself, it's really helpful. Basically, there are endless possibilities that you can use virtual reality for.

### How were the students' reactions to this lesson?

The reactions were really nice to see. Because, of course, they were amazed by this experience. But actually, they also said things like, "I wouldn't want to live there." That was probably because it was too unorganized. Some of the kids said they would get bored and that they can't imagine what they should do out there for so many months. I think that if they were to be shown a movie or something more theoretical instead of being given this tool, they would not have gotten the feeling of really being inside. This is the biggest benefit they can actually get from virtual reality, to experience the feeling of being there.

### That is a great benefit indeed. On the other hand, have you observed the students facing any challenges with extended reality?

Usually, most of the students are really excited about it and seem more motivated to go to class. But some students - typically one out of twenty - experience anxiety and fear with regards to using extended reality. There are some medical reasons, for example, if a student has a chronic head injury. The devices are improving, such that less and less users experience motion sickness, but some students have already had bad experiences with motion sickness which deters them from wanting to use it. With regards to how challenged the students are while using it, I have observed that it really depends on the individual. If there's a student that is into PC gaming in their free time, you can actually see it: they press all the buttons, intuitively know how to get around in a virtual world. And then there are other students that need to be safe and stand against a wall to seek out a connection to the real world. Because it is a fact, when we use virtual reality, the connection to the real world fades.

### What challenges have you encountered then, in pushing for more implementation of virtual reality?

In my opinion, the main struggle is a lack of imagination. This is actually the most recent concern I have faced, during one of the seminars for teacher trainees that was about digitalization in schools. During the seminar, one of the trainees asked, "Where do I use this technology? I can't imagine scenarios where this could be useful for me." This is also something I have seen with the companies; they don't use it, not because they don't want to, but because they are unable to imagine all the ways it can be employed. This is exactly the driving motivation behind my blog, to show teachers all the possibilities for application and how to approach the fine details. Many teachers are very anxious about using virtual or augmented reality because they never learned how to deal with digital media, and how to teach with digital media during their training. I want to give the teachers really detailed instructions, so that they can have a safe place and have something to fall back on. Additionally there is a huge problem from the organizational side of things. I had an interview with someone who said that there's a big issue with getting these devices to schools in the first place. Sometimes it takes ages until the technology gets to the school, because of all the bureaucracy and whatnot.

**What are some of the hopes that you have for the future once these issues are resolved?**

My hopes for the future are that almost every school has around fifteen to twenty eyeglasses, but it depends on how much they can afford. My ideal scenario is that it's easy for teachers to just book or rent them. I just hope that a lot of teachers see the potential and have the motivation to use extended reality in school. I think it really helps the students to learn things better.

**If you imagine this ideal world where almost every school has access to virtual reality, and they're able to use it, how would you say that the students are going to learn; will there be a switch in learning style?**

My main hope and expectation is that students learning with virtual reality will better remember what they learned, because the lessons will be more practical. Learning by doing is so important. You just remember things better when you do them yourself. This is a benefit that virtual and augmented reality can give you. It helps you visualize things in an even better way, such that they stay in your memory longer. In order for this type of learning to be possible, it's important to get acquainted with the technology and be aware of the types of applications it can provide.

**That is definitely something that should be taken advantage of. And you will be doing your part in raising awareness by teaching a course yourself! What was your motivation for it?**

The reason why I wanted to do the course "Einführung in die virtuelle Realität" in the upcoming summer term at Osnabrueck University, is because I saw a lot of universities providing courses on virtual and augmented reality, especially considering that both of those technologies are really upcoming and future-oriented. There are no options like this at our university at the moment, and I wanted to change that.

**So, what is the focus going to be? Are you going to be doing theory, practice or both?**

It's going to be just in German and only open to bachelor students. We are two students, actually, that are going to give this course next semester (summer semester 2023). We want to show the students different application areas of these technologies. It is a mix of examples on our end and host lectures that will be held by companies that currently work with extended reality. There will be eleven lessons, and each lesson will consist of two parts. The first part will focus on theory, while in the second part, the last thirty minutes, students will have the chance to "experience" what we talked about during the lecture. We believe it is really important for the students to be able to explore these applications in every lesson. It is open to bachelor students of all disciplines, so as a result of that, no programming skills are required. Since programming usually requires a lot of effort, it can often pose as a big hurdle and can get in the way of the students' learning. They will learn how to build their own virtual world and design an environment related to a topic that interests them, all using a no-code interface.

**It has been a pleasure talking to you, thank you for sharing your insights with us and our readers, Adriane. The final question is: how can people reach you if they have questions or if they're interested in what you do and want to learn more?**

Thank you too! I will happily respond to all inquiries sent my way on LinkedIn or via mail.

# About the Journal

The 'Cognitive Science Student Journal' aims at giving its readers an insight into current research and cutting-edge topics at our institute from a student perspective as well as students a platform to publish their work. Its editorial board consists of seminar participants and instructors of the Institute of Cognitive Science.

Cognitive Science is taught as an interdisciplinary research field at University Osnabrück, investigating cognition and the mind as a joint research effort of Artificial Intelligence, Neuroscience, Computational Linguistics, Psychology, Neuroinformatics, and Philosophy of Mind.

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