

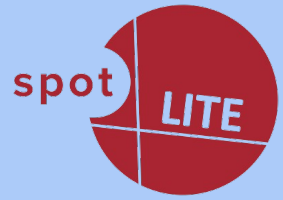
Addressing Barriers to Acceptance and Use of VR in Teaching



Dr Gabriel Jones

spotLITE workshop, 29 October 2024





Introduction and context

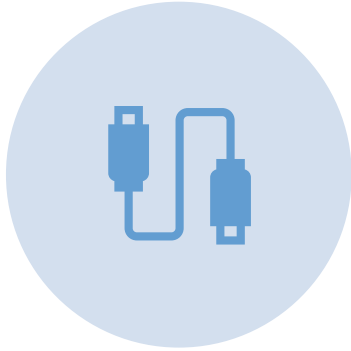


My LITE project and me

- Little prior personal experience with VR.
- Took part in third-party trials and in-house pilots while working in FMH.
- Background in musical academia.
- Applied for LITE fellowship in immersive learning in July 2023.
- Concluded primary research in September 2024.



Research rationale



Opening of HELIX
innovation hub



Stabilisation of DEE
teams



Growing international
significance

Research aims

1

To improve and maximise effective engagement with University of Leeds XR infrastructure.

2

To foster a connected community of XR practice at the University.

3

To encourage innovative, sector-leading use of immersive technology in teaching.



Research questions

- 1 What are staff attitudes towards VR at the University?
- 2 What are the barriers to adoption and use of VR in teaching?
- 3 How might these barriers be addressed?
- 4 What role can Digital Education Enhancement (DEE) teams play?

Mixed methods research design



Quantitative survey for all
teaching staff



Semi-structured interviews
with expert practitioners

Live survey!


Go to **vevox.app**

Enter the session ID: 180-191-720

Or scan the QR code



Overview

 Survey report

 Hands-on demonstration

 Break

 Understanding use cases

 Understanding benefits

 Understanding and addressing challenges (activity)

 Planned initiatives and the future of XR in HE

What will you gain?



Better understanding
of staff attitudes
towards VR and XR



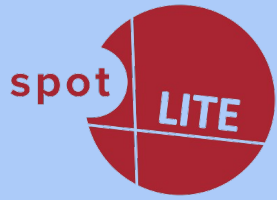
First-hand
experience of an in-
house VR resource



Awareness of
insights from our
leading experts



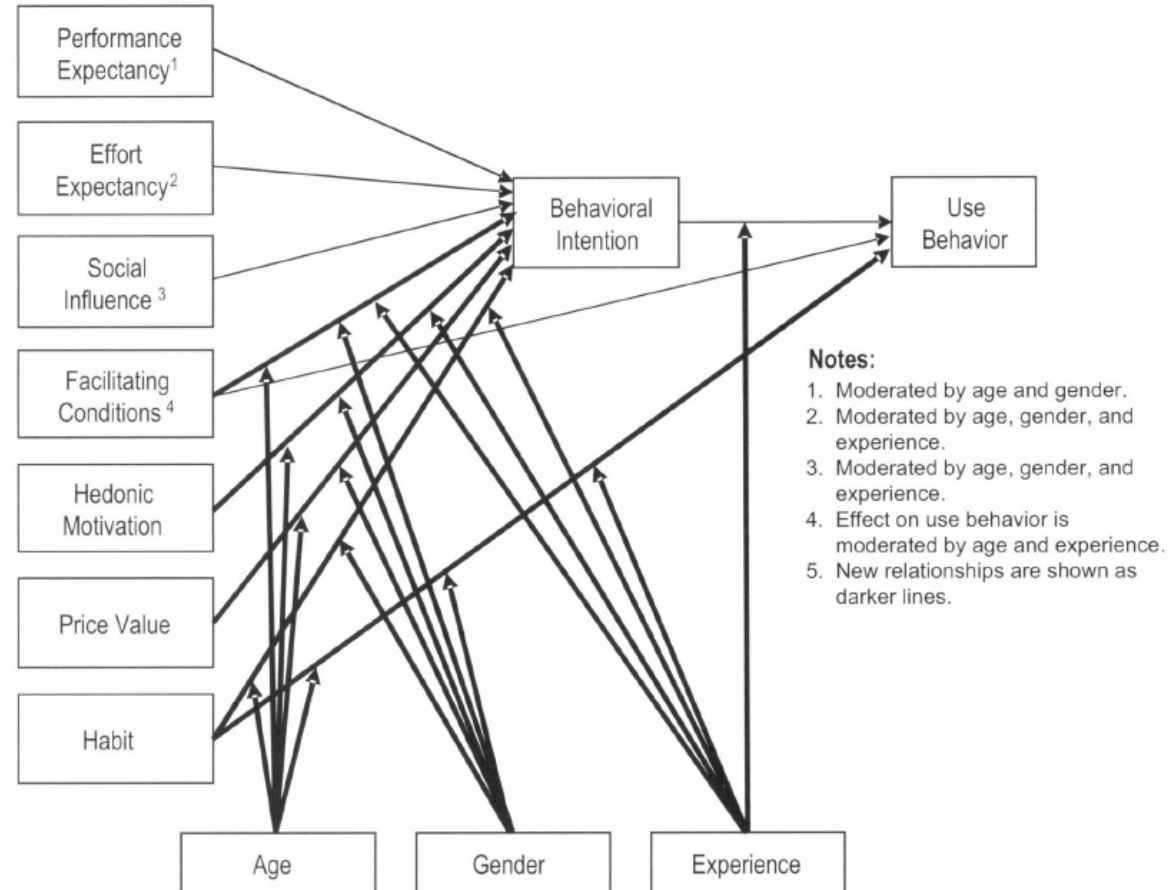
Opportunity to share
ideas and develop
actions for positive
change



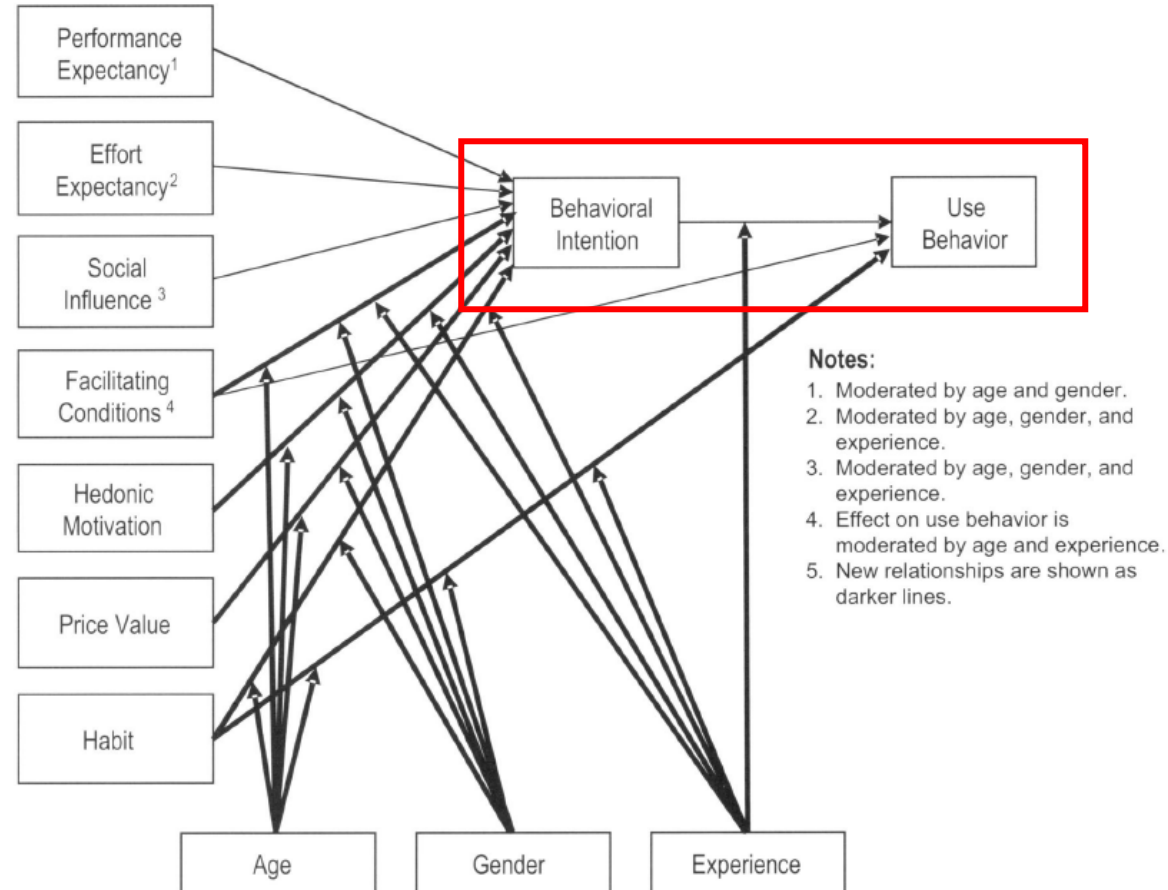
Survey design



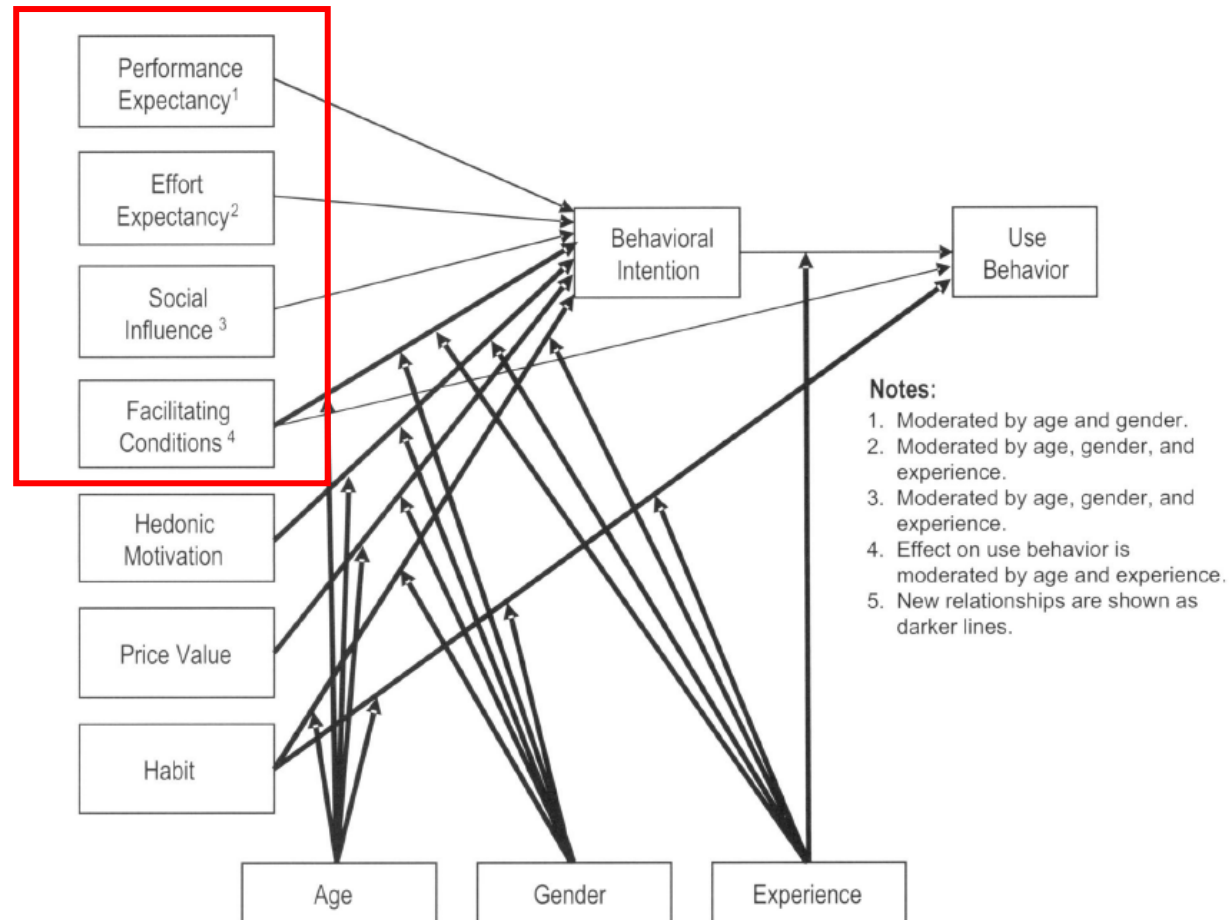
The Unified Theory of Acceptance and Use of Technology (UTAUT2; Venkatesh et al. 2012)



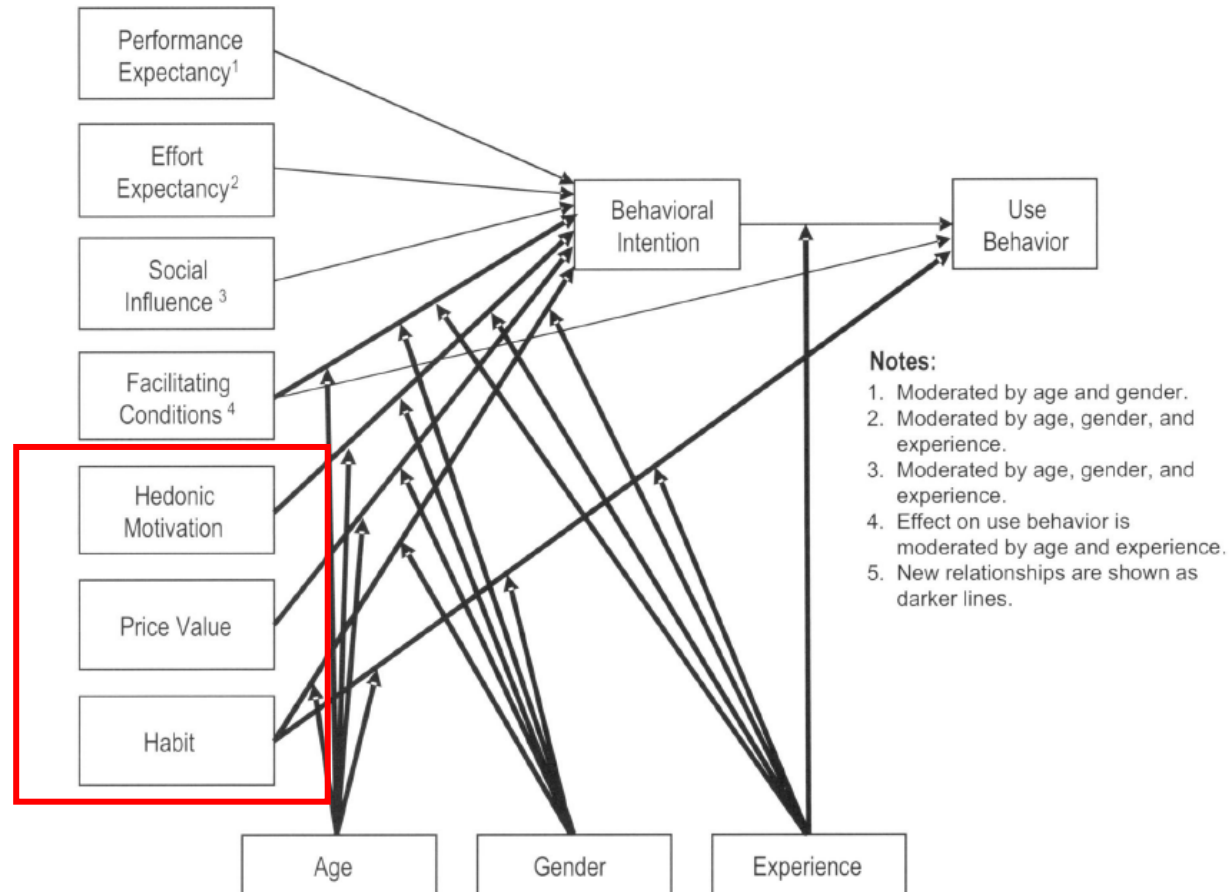
The Unified Theory of Acceptance and Use of Technology (UTAUT2; Venkatesh et al. 2012)



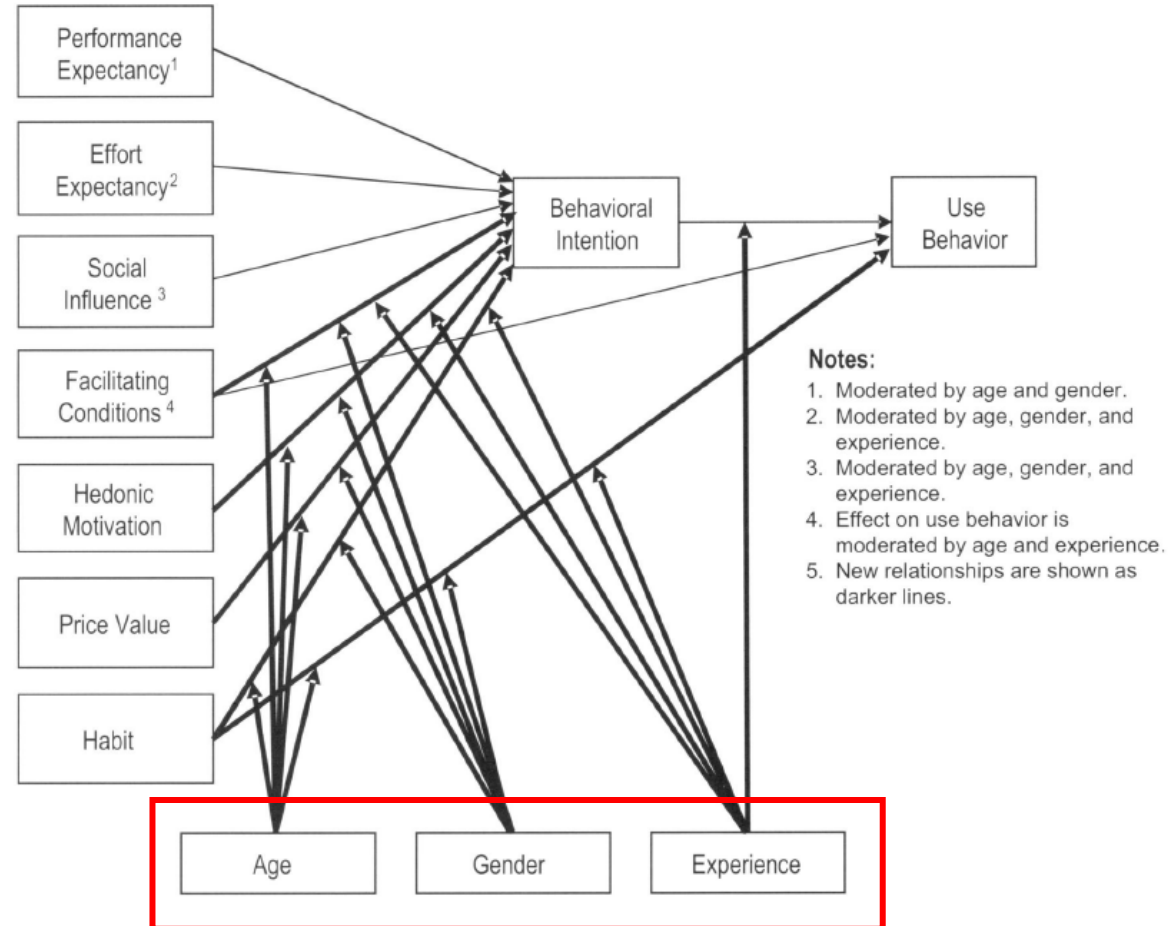
The Unified Theory of Acceptance and Use of Technology (UTAUT2; Venkatesh et al. 2012)



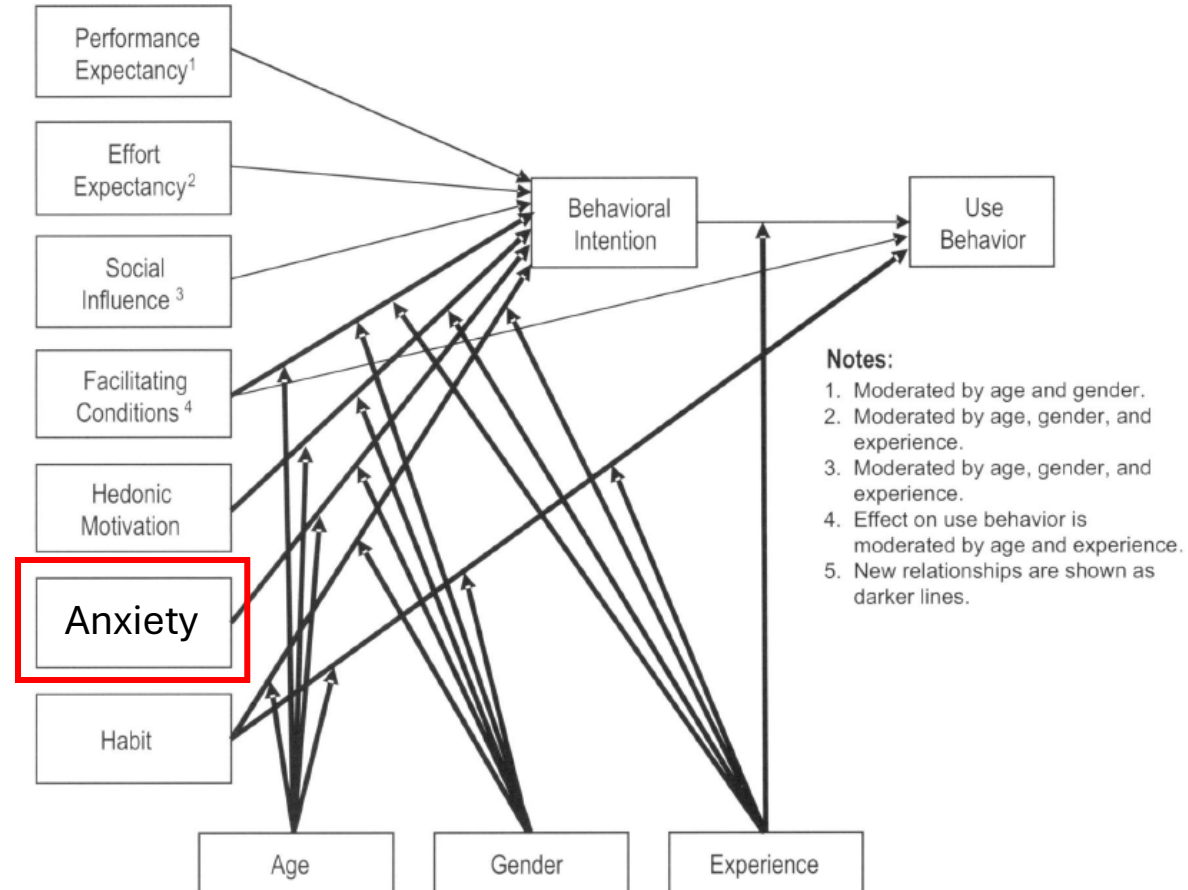
The Unified Theory of Acceptance and Use of Technology (UTAUT2; Venkatesh et al. 2012)



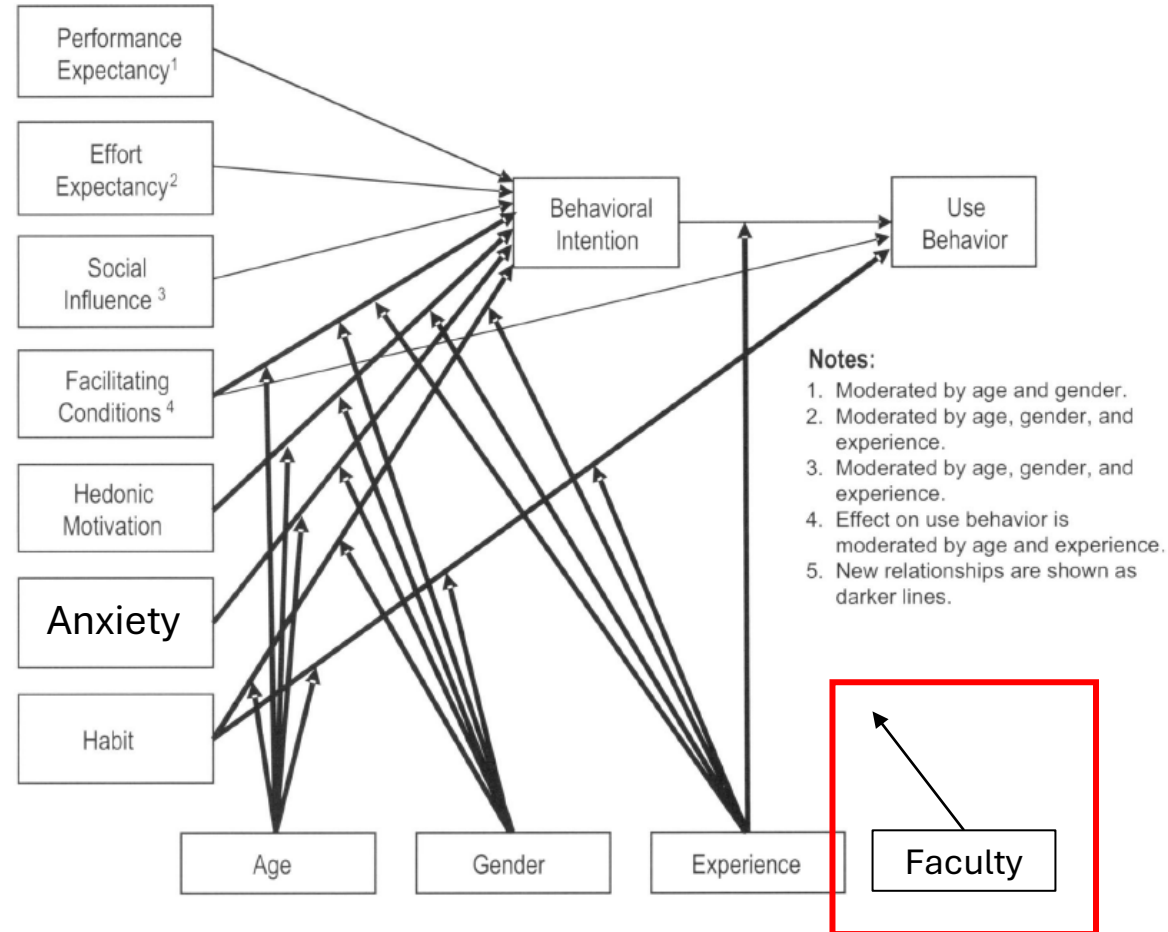
The Unified Theory of Acceptance and Use of Technology (UTAUT2; Venkatesh et al. 2012)

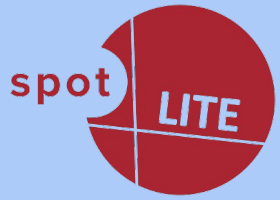


My extended UTAUT2 framework



My extended UTAUT2 framework





Survey findings

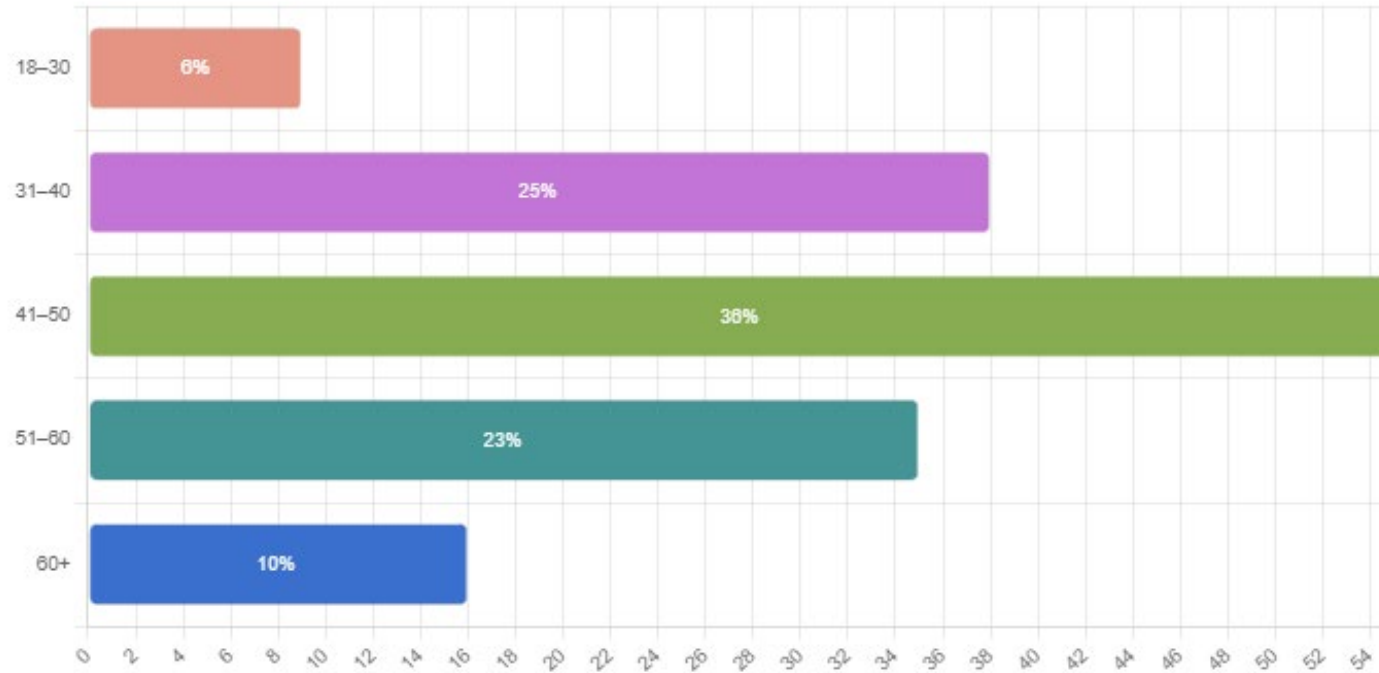


Response rate

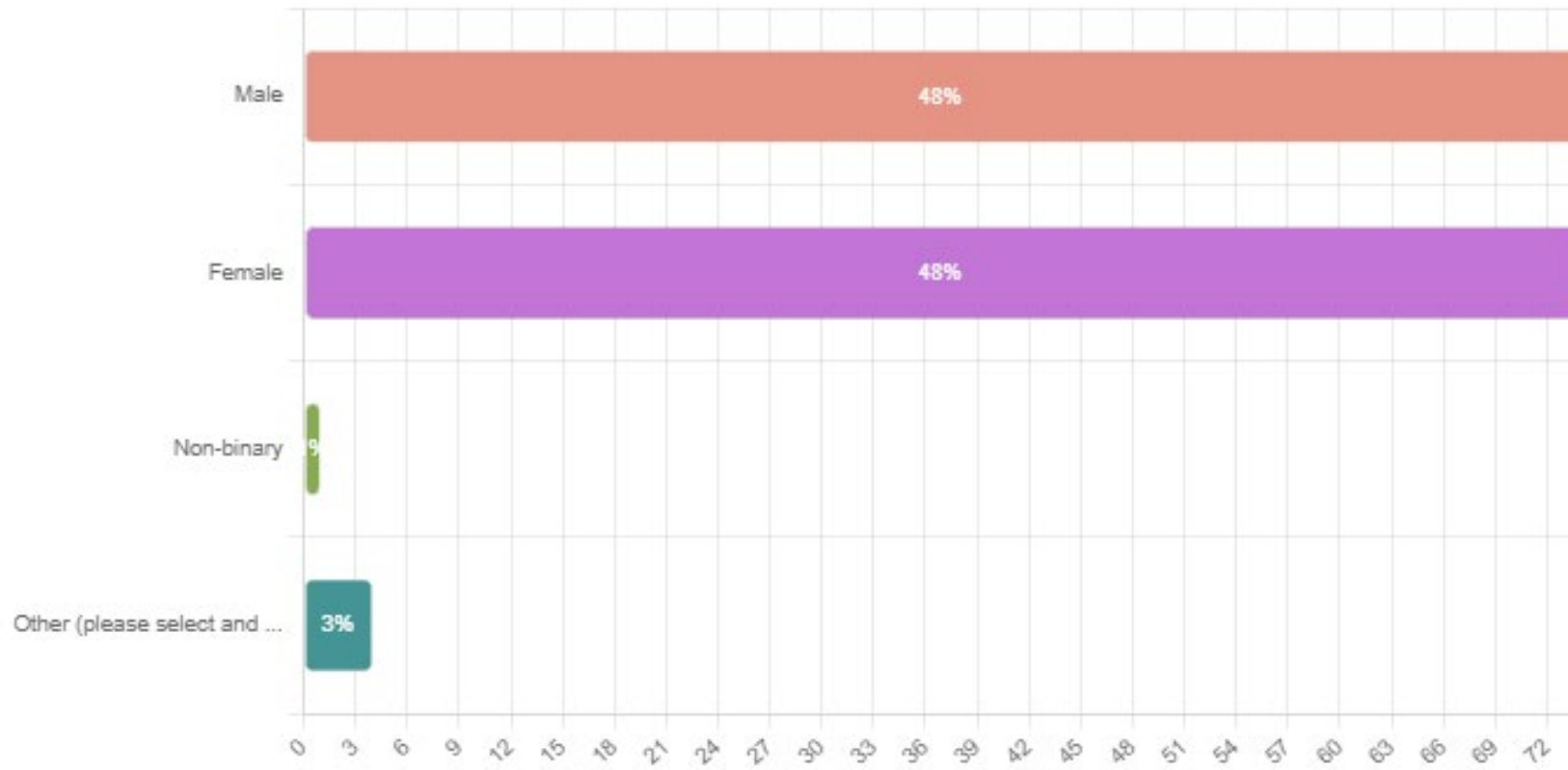
153 responses
from 7 faculties



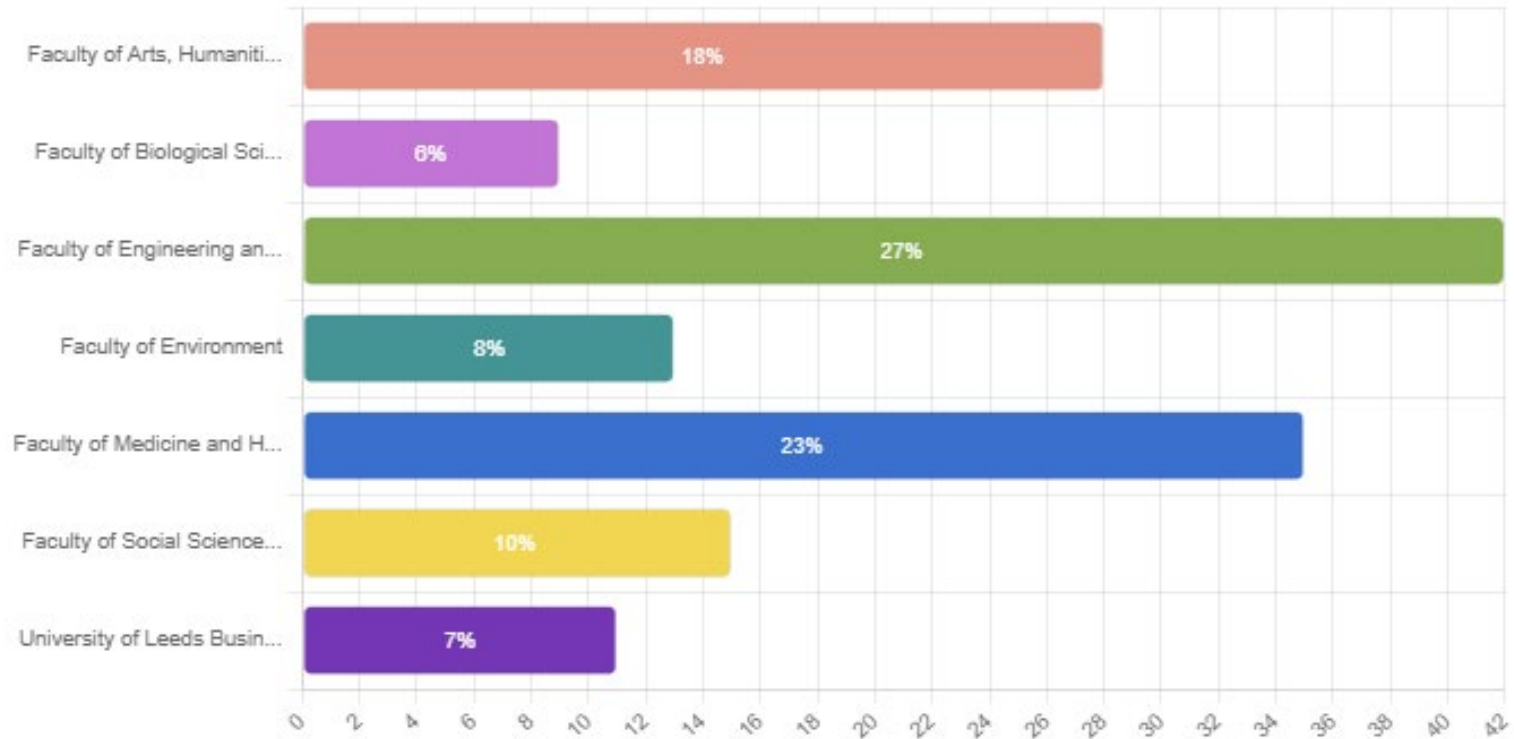
Age



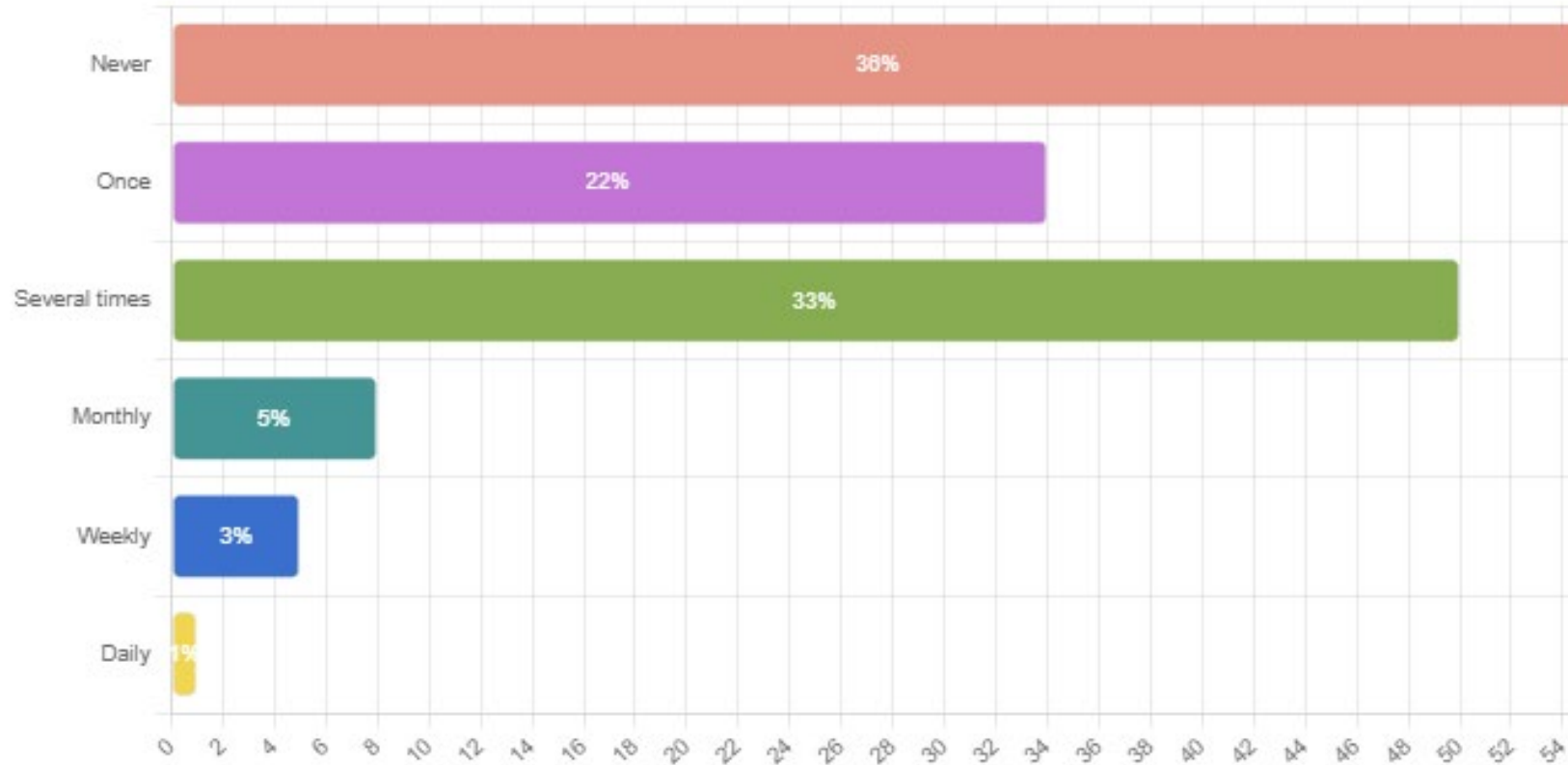
Gender



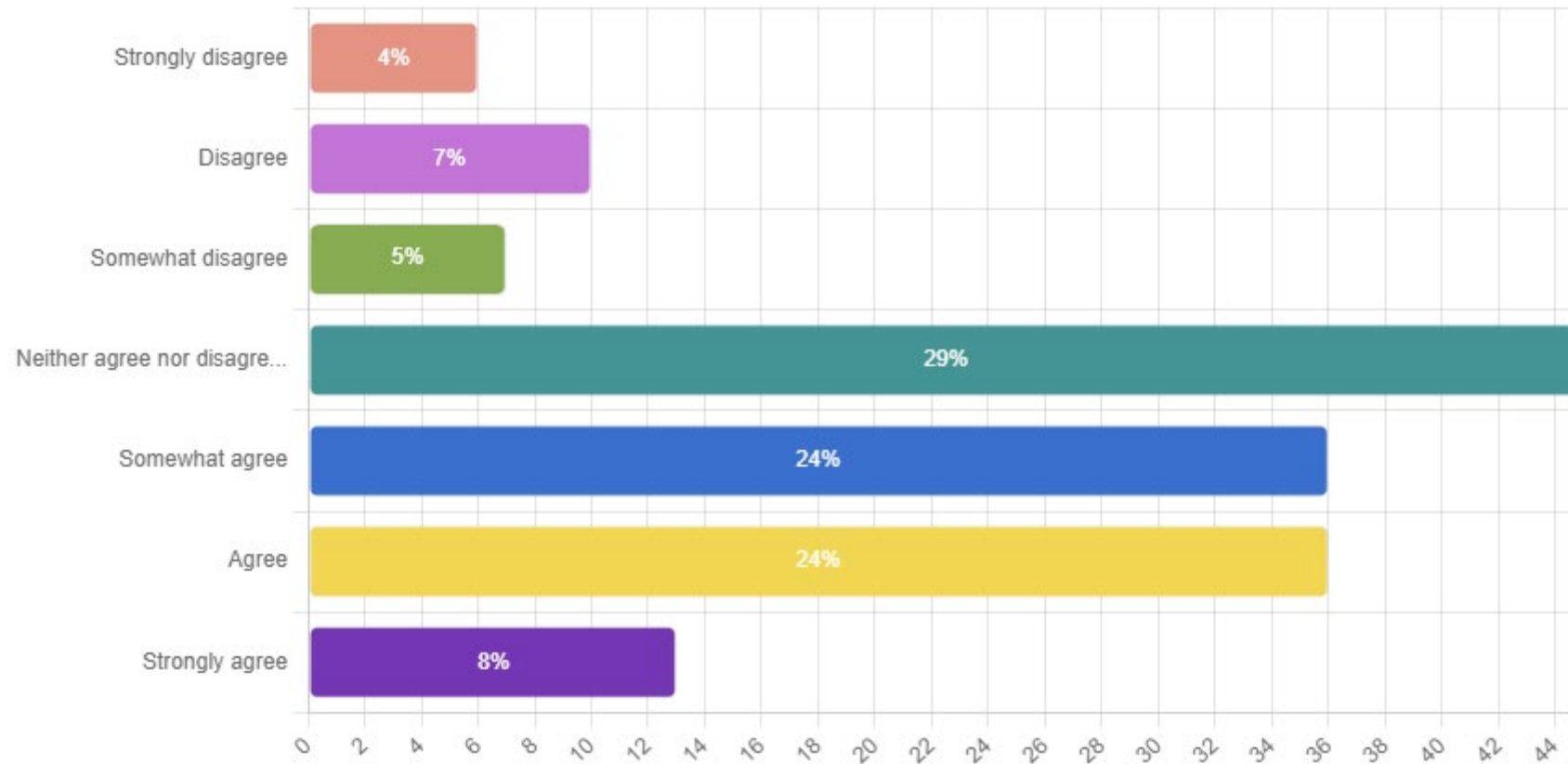
Faculty



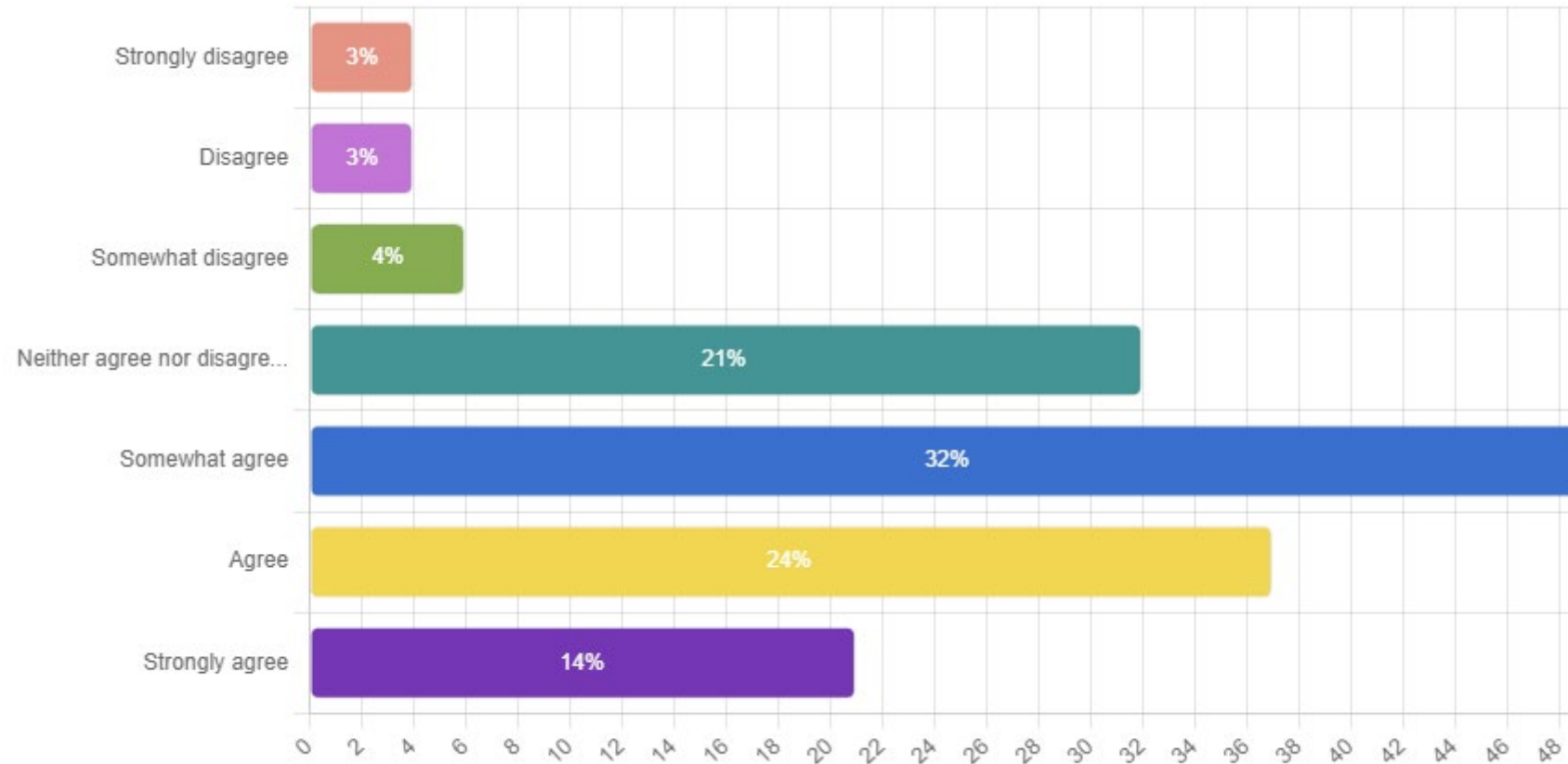
Personal experience of using IVR



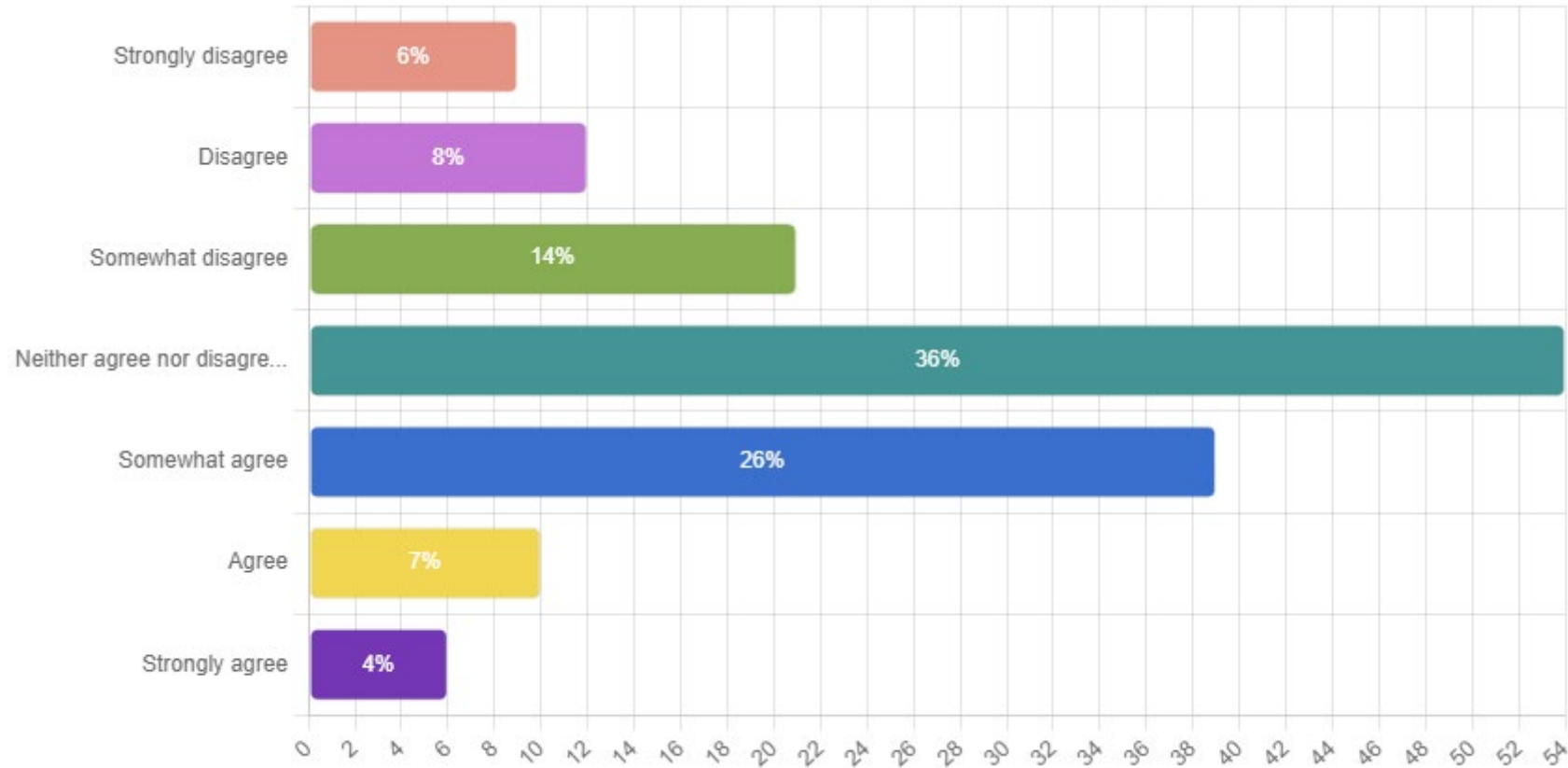
Immersive VR can enhance the quality of my teaching



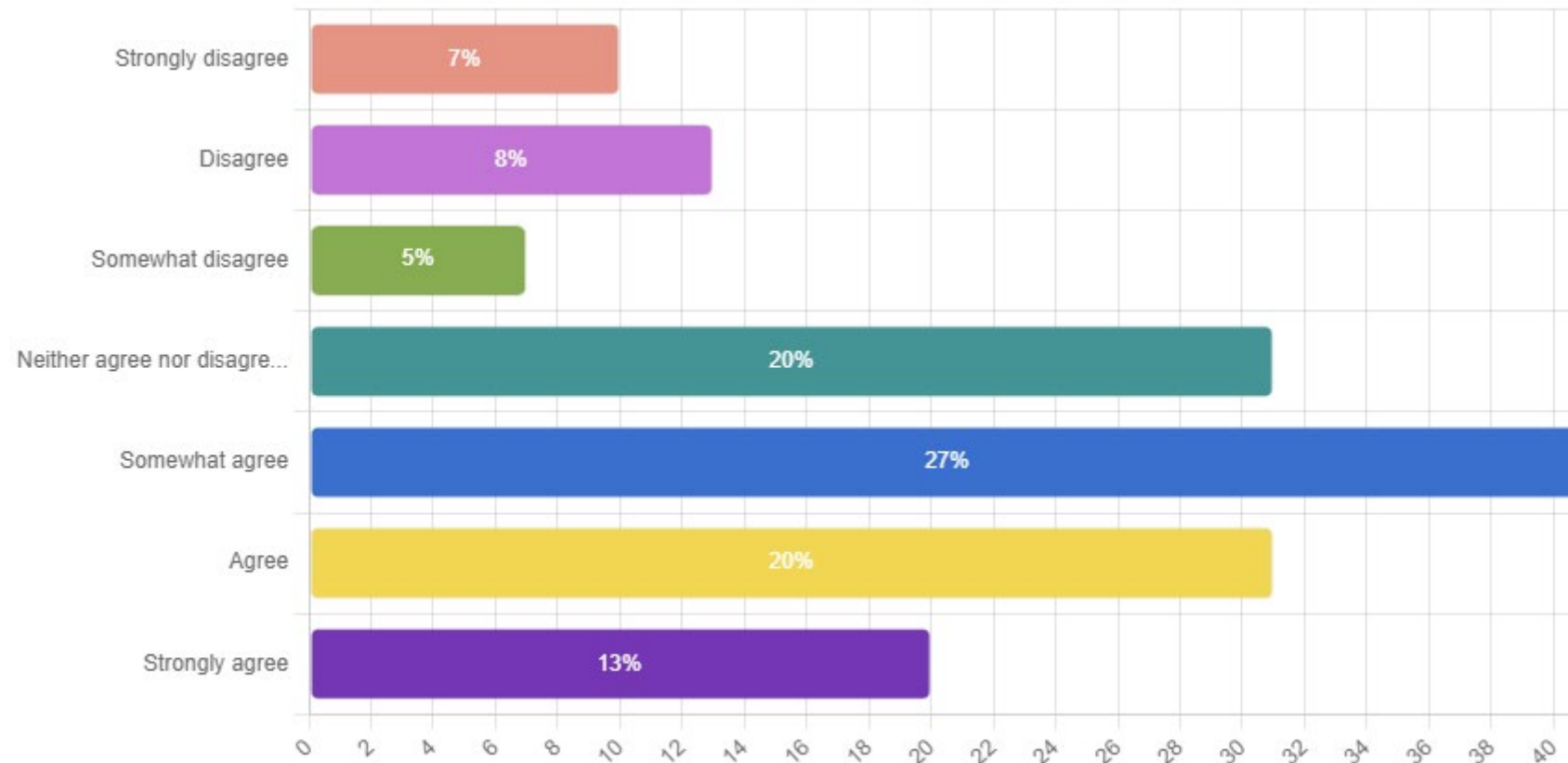
Immersive VR can improve student engagement with course materials and relevant concepts



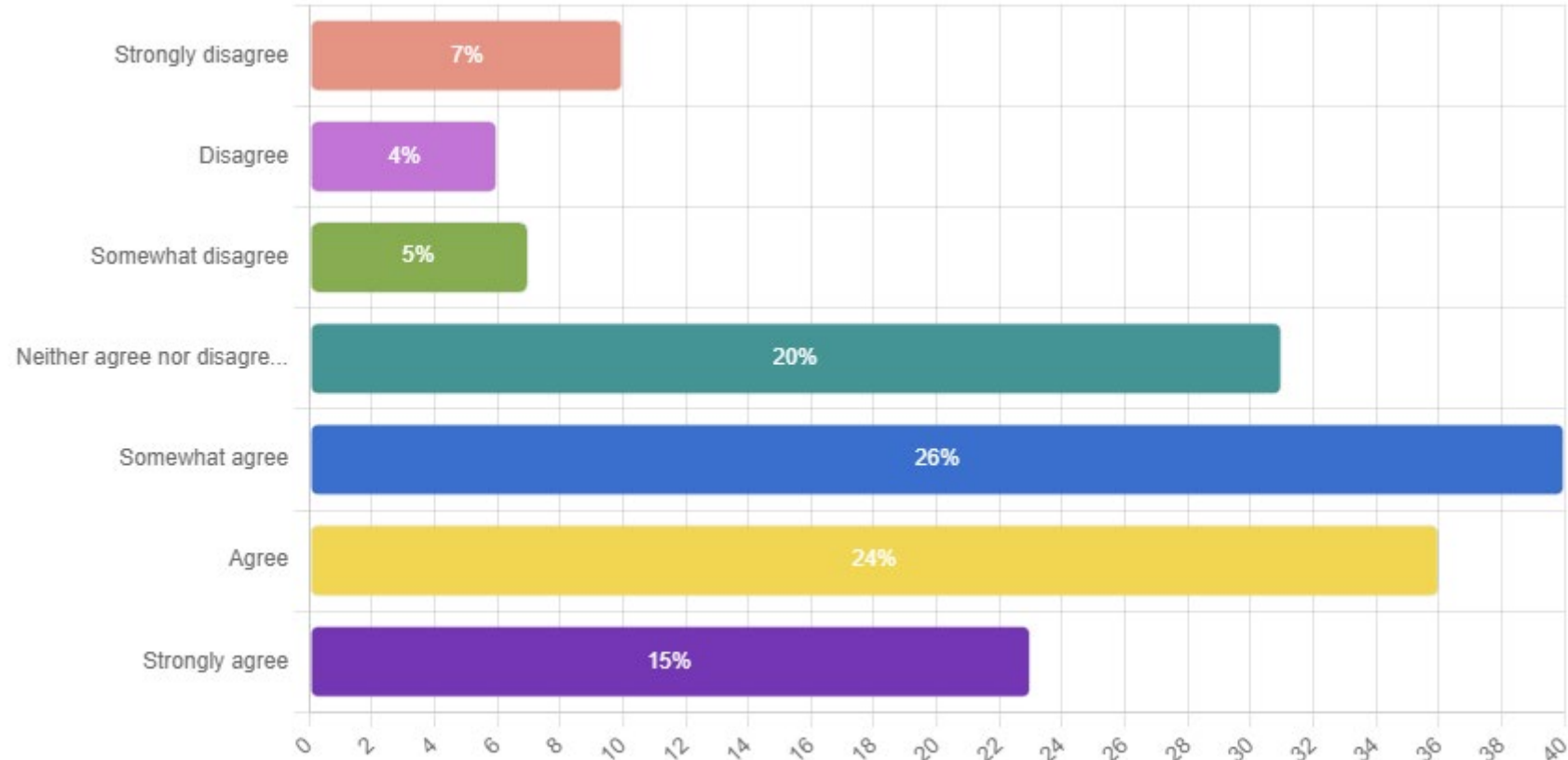
Immersive VR can hinder inclusivity and accessibility in my teaching



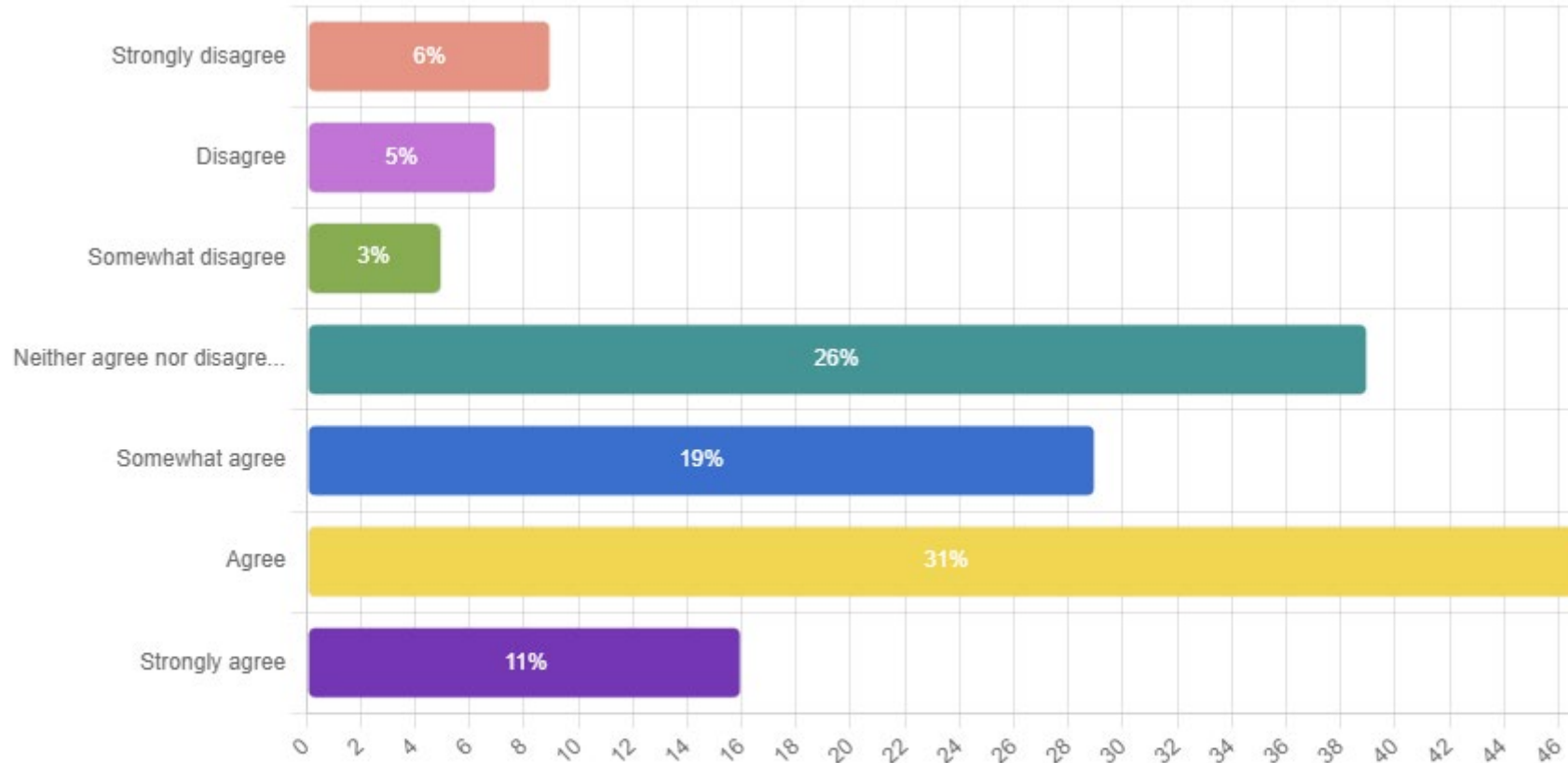
Access to the HELIX innovation hub makes me more likely to use immersive VR in my teaching



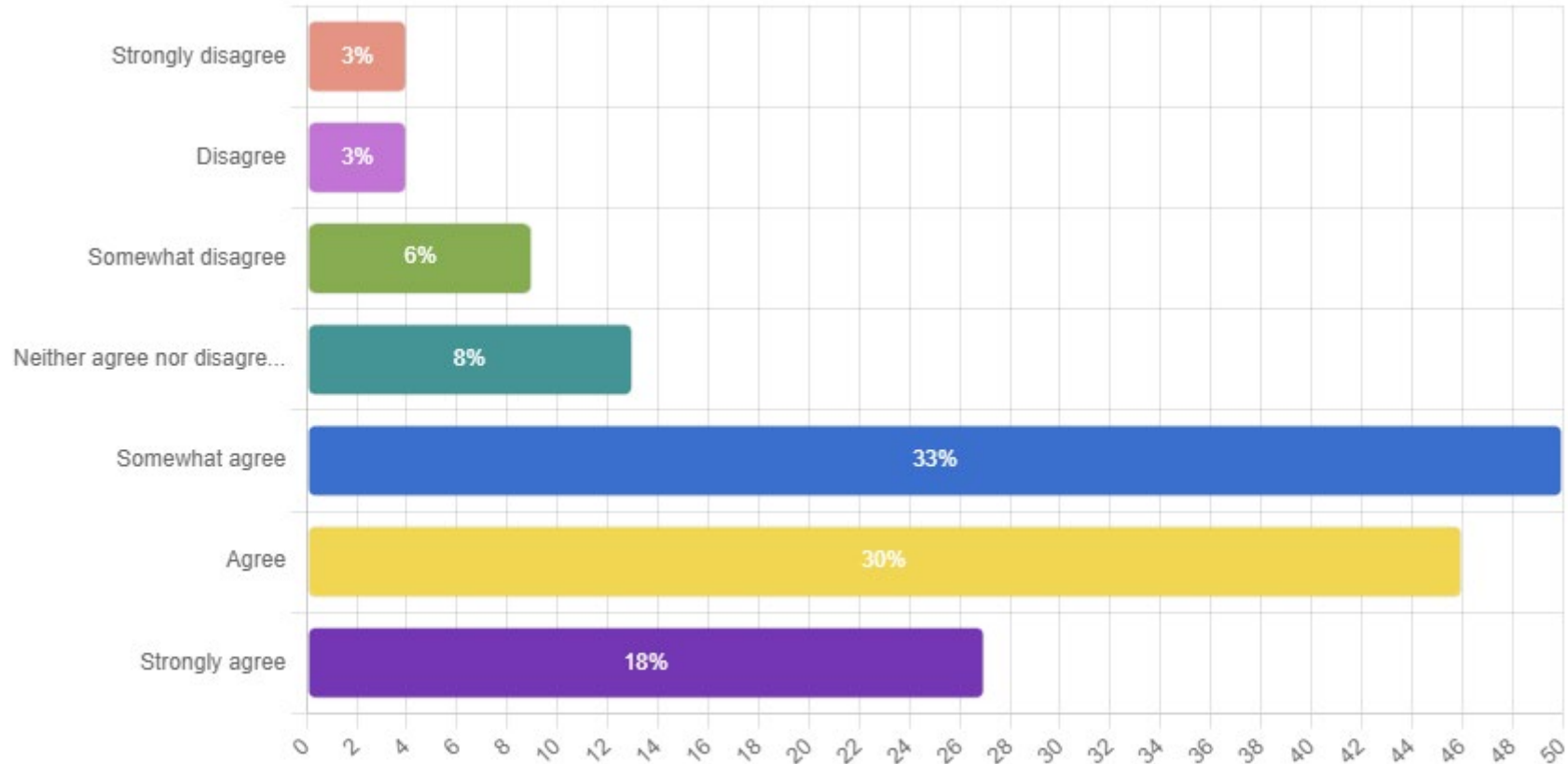
The support of my Digital Education Enhancement Team (DEE) makes me more likely to use immersive VR in my teaching



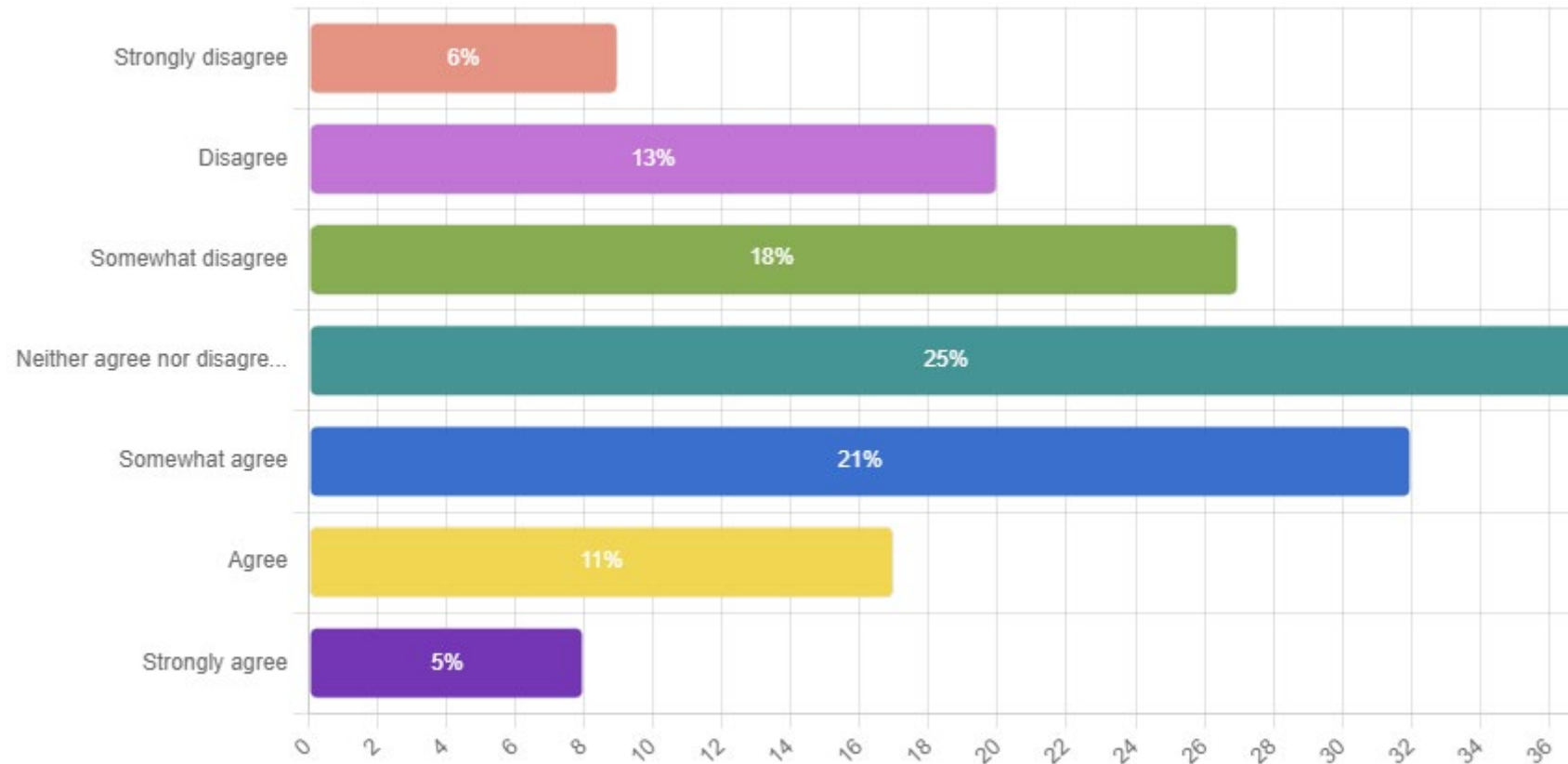
The support of staff in HELIX makes me more likely to use immersive VR in my teaching



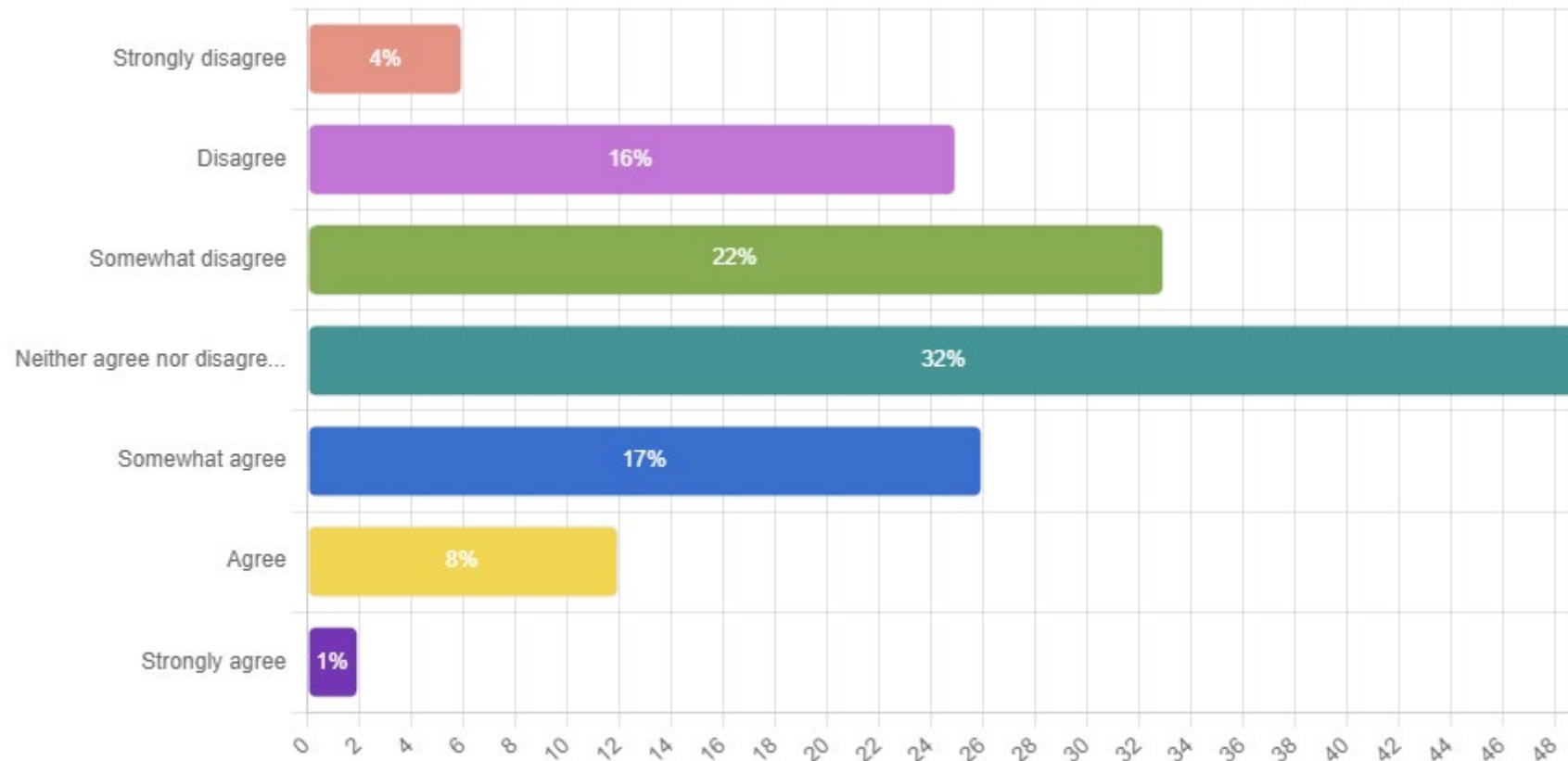
Using immersive VR in my teaching will be challenging



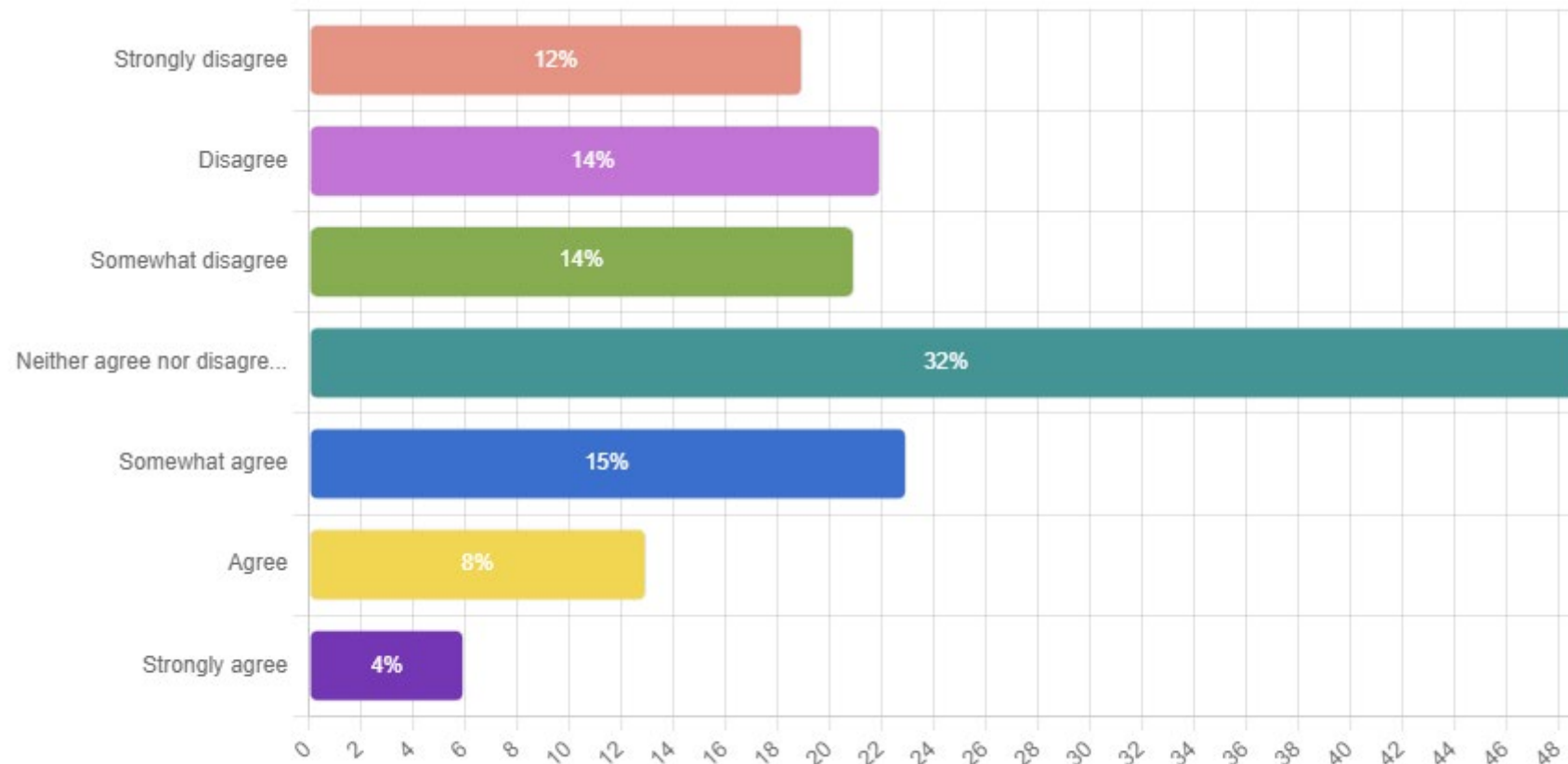
Using immersive VR in my teaching will be easy for me to understand



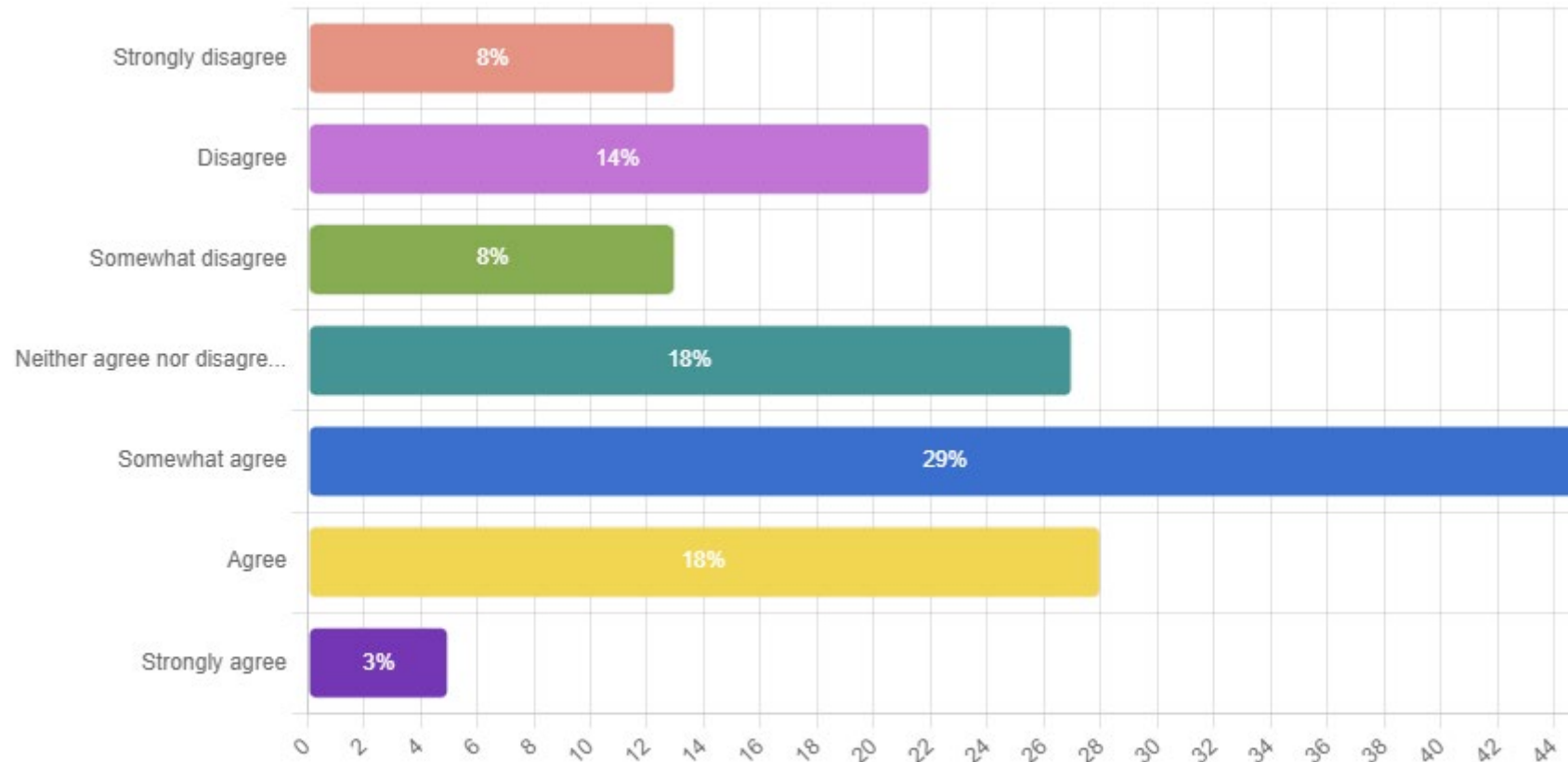
Using immersive VR in my teaching will be difficult for students to understand



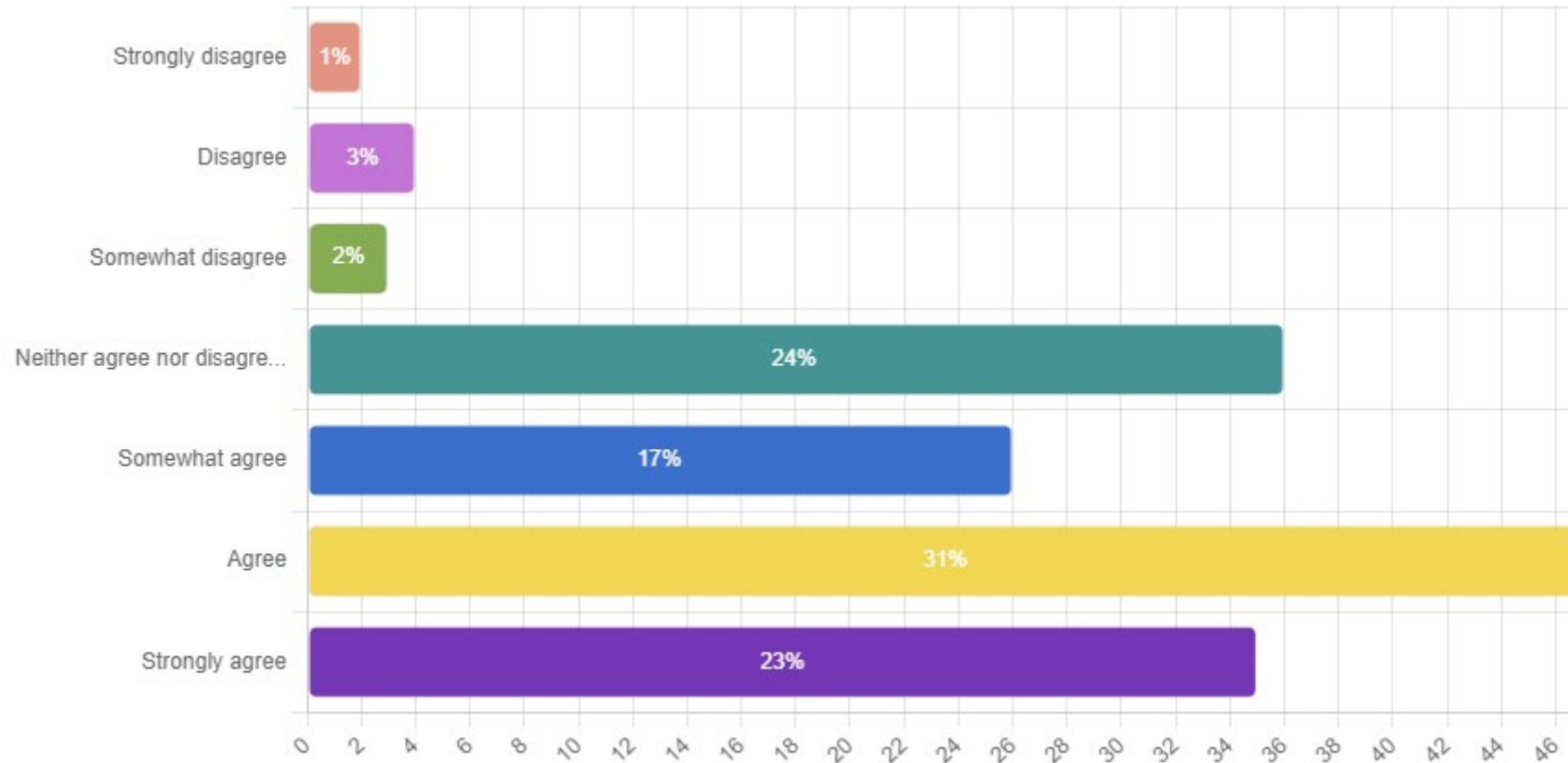
Using immersive VR in my teaching will be well supported



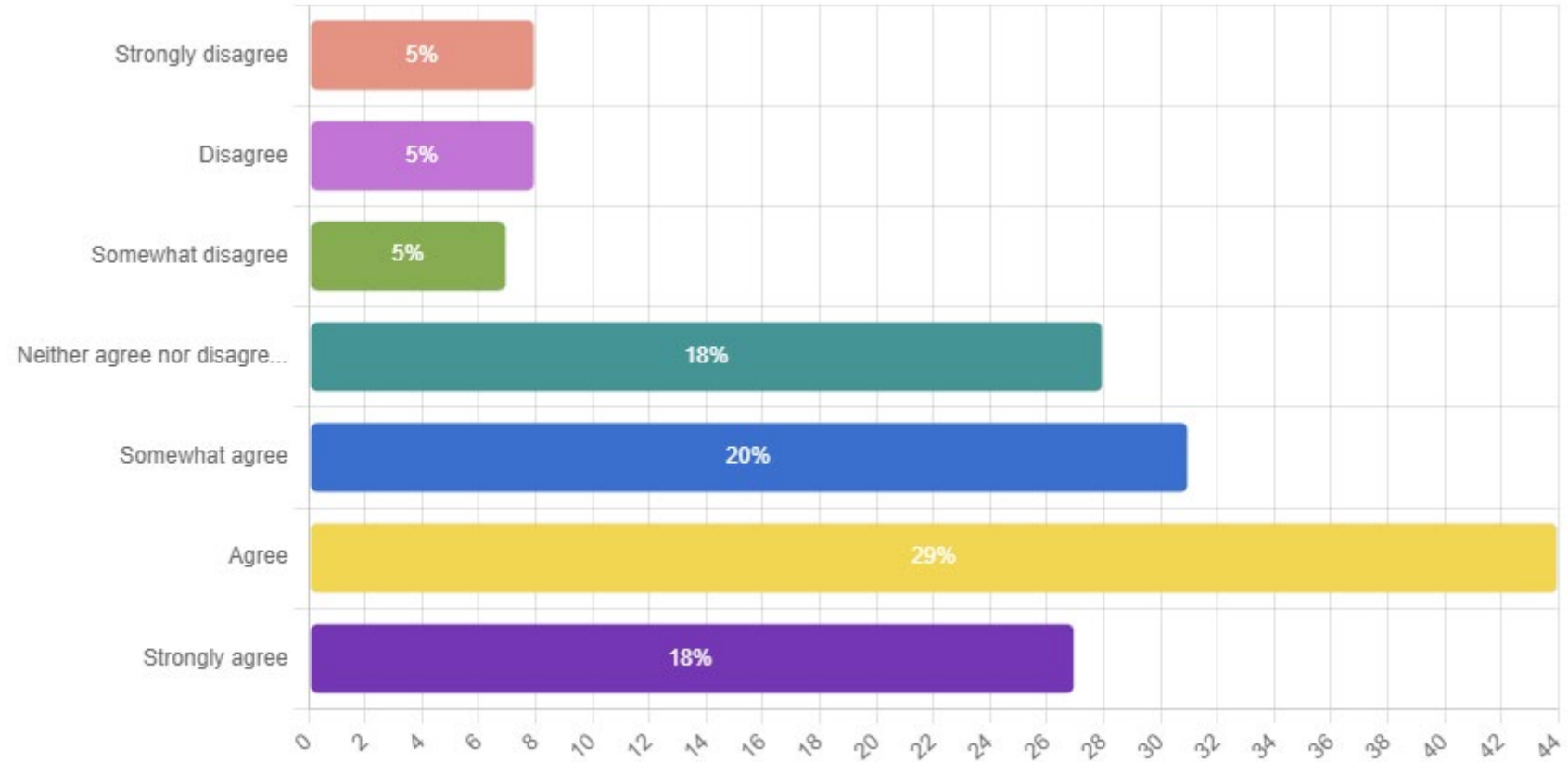
I am likely to use immersive VR in my teaching if my peers are doing so



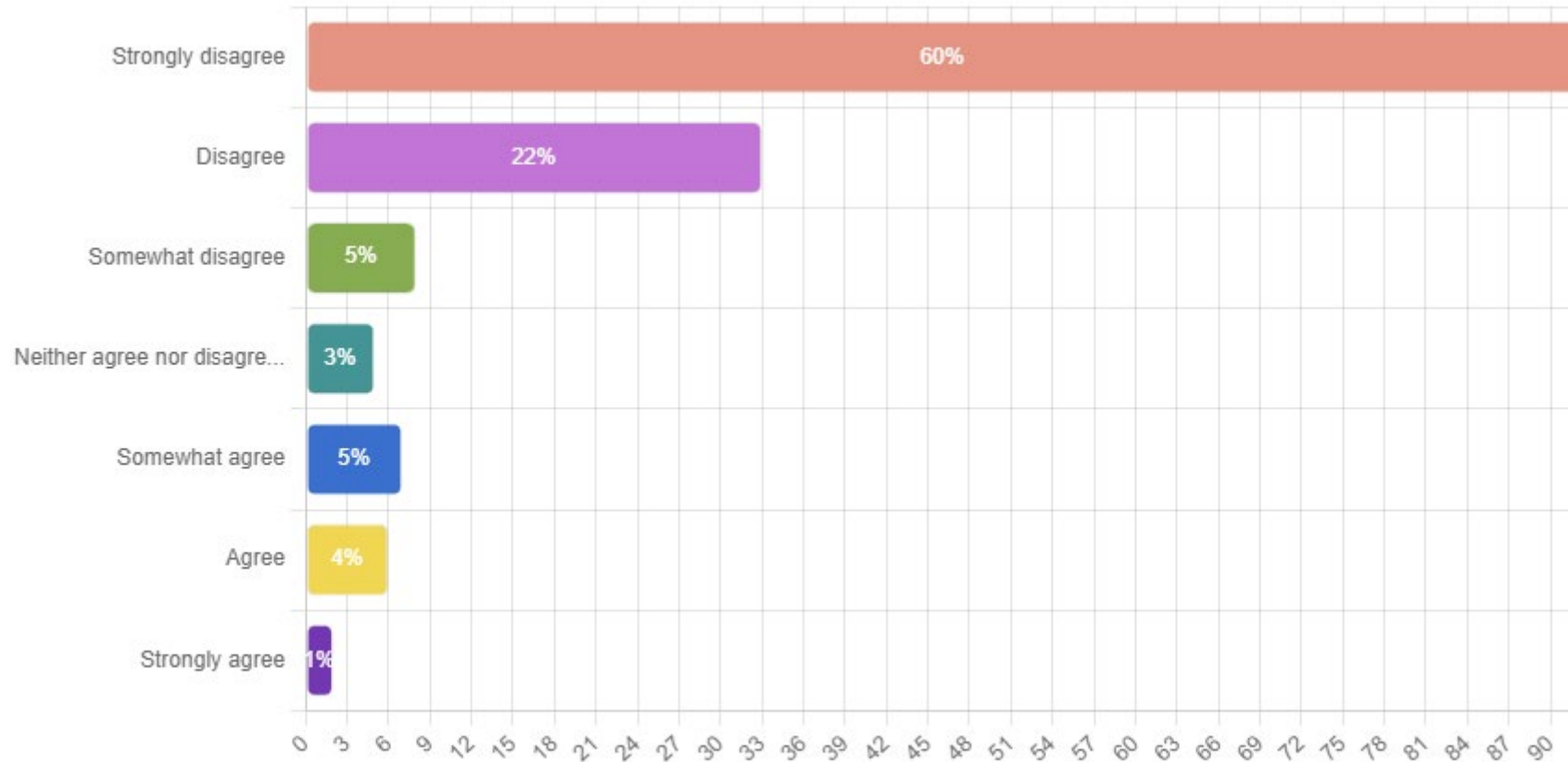
My superiors do not expect me to use immersive VR in my teaching



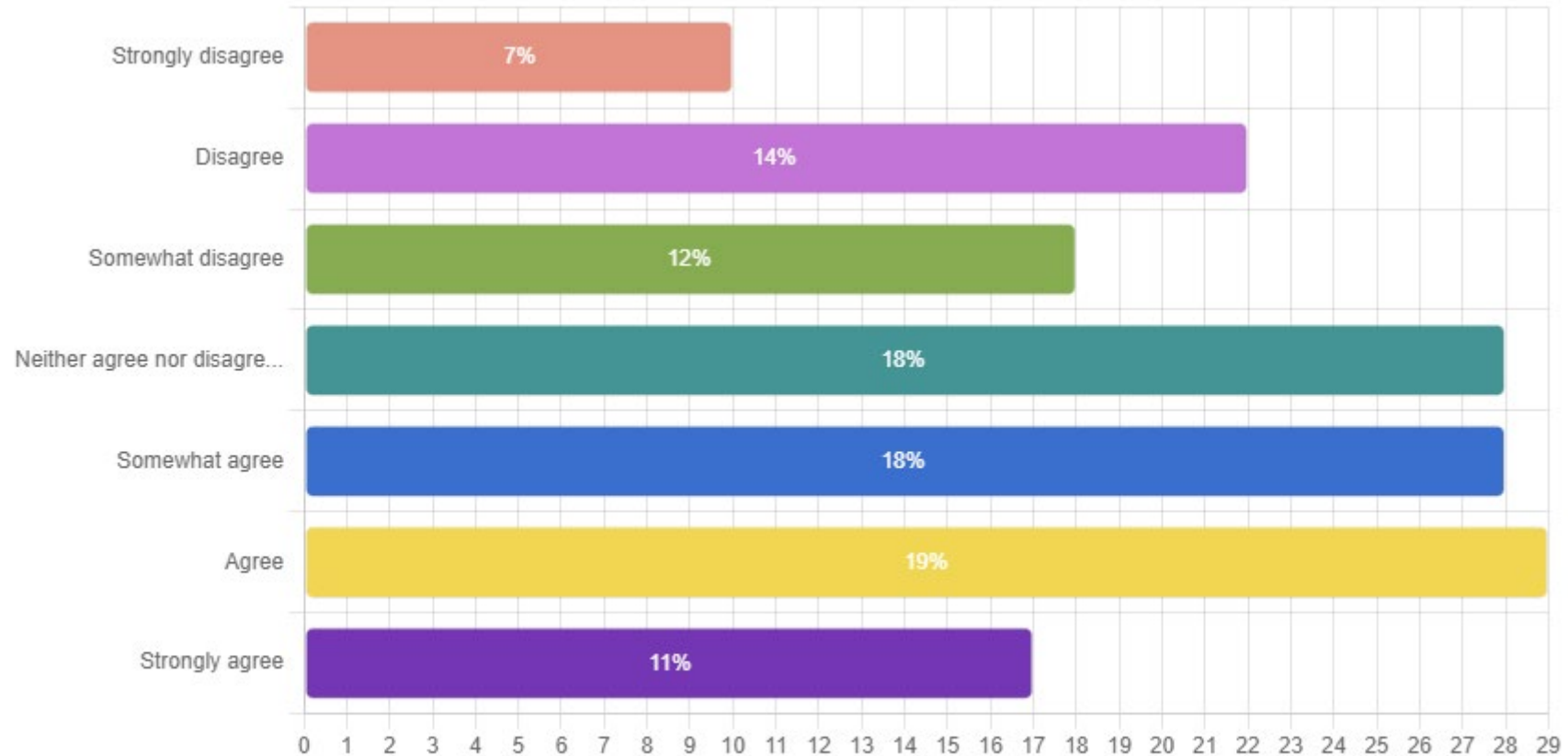
I find the idea of using immersive VR in my teaching fun



I am used to using immersive VR in my teaching



I am concerned about the pedagogical relevance of using immersive VR in my teaching



Intention to use



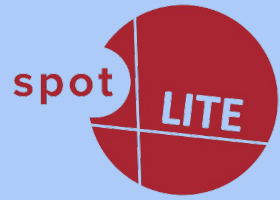
Option	Count	Percentage
I intend to use immersive VR in my teaching before June 2024	4	3%
I intend to use immersive VR in my teaching during the 24/25 academic year	16	10%
I intend to use immersive VR in my teaching at an undefined point in the future	87	57%
I have no intention to ever use immersive VR in my teaching	46	30%



Key takeaways

1. Active use of VR in teaching and in personal life still very low.
2. Generally positive attitude towards perceived benefits.
3. Concerns regarding difficulty of implementation.
4. Facilitating conditions recognised as encouraging factors.
5. Lack of understanding of support provisions.
6. Fun factor is highly motivating.
7. Mixed confidence in pedagogical relevance.
8. Low institutional expectations for use.





Hands-on demonstration



The Ilkley Moor virtual field trip: principles

- Virtual supplement to in-person geological field trip to Ilkley Moor.
- Allows students to 'return' and reassess the site in VR.
- Allows those that could not attend to partake in the experience.
- Combines 360 images, 360 videos, traditional videos, and drone footage.
- Produced using Cenario VR.



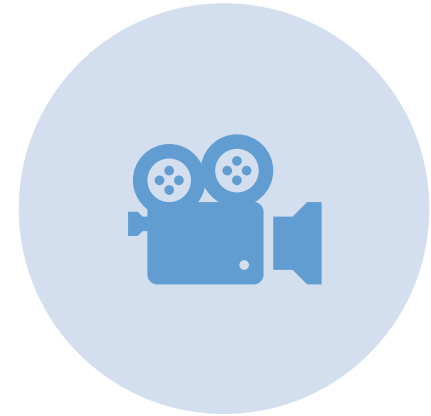
The Ilkley Moor virtual field trip: collaboration



Subject matter expert



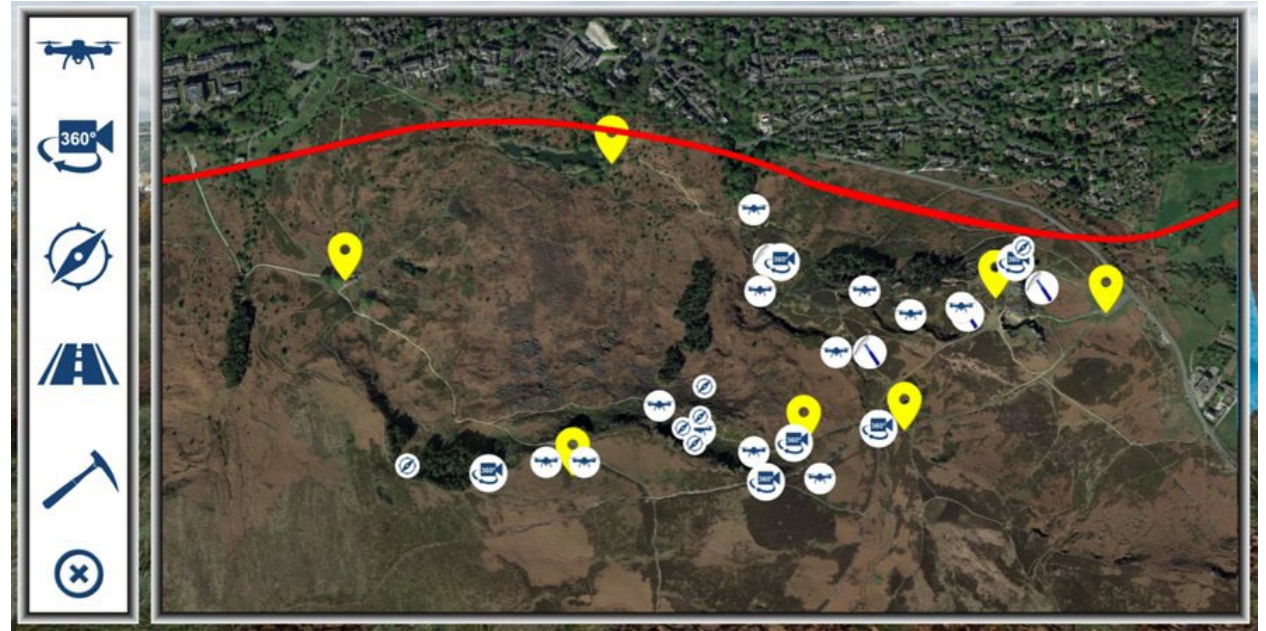
DEE team

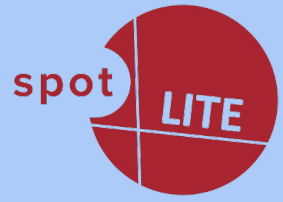


P&C team

The Ilkley Moor virtual field trip: demo navigation

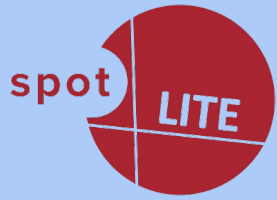
- Watch the introductory video.
- Visit the bath house.
- Use the map to orient yourself.
- Find and view one 360 video, one drone flight, and one geological action point.
- Consider starting at the rocky valley.





Break 10 minutes





Introducing the semi-structured interviews



Interview overview



Nine expert practitioners from across the University



Approximately hour-long semi-structured interviews



Recorded from July to September 2024

Interview themes



Personal
experience



Use cases



Benefits



Challenges



Future
predictions

Interview themes



Personal
experience



Use cases



Benefits



Challenges



Future
predictions

Interview themes



Personal
experience



Use cases



Benefits



Challenges



Future
predictions

Interview themes



Personal
experience



Use cases



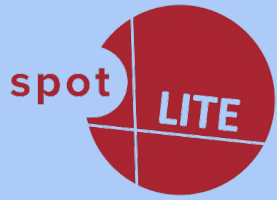
Benefits



Challenges



Future
predictions



Understanding use cases



Common use cases



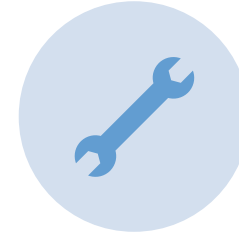
Virtual field trips



Lab tours



Soft skills
training



Hard skills
training



Physical
modelling



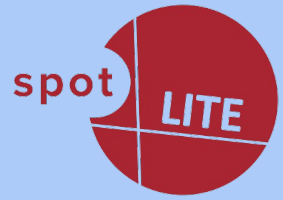
Collaboration



Arts and design



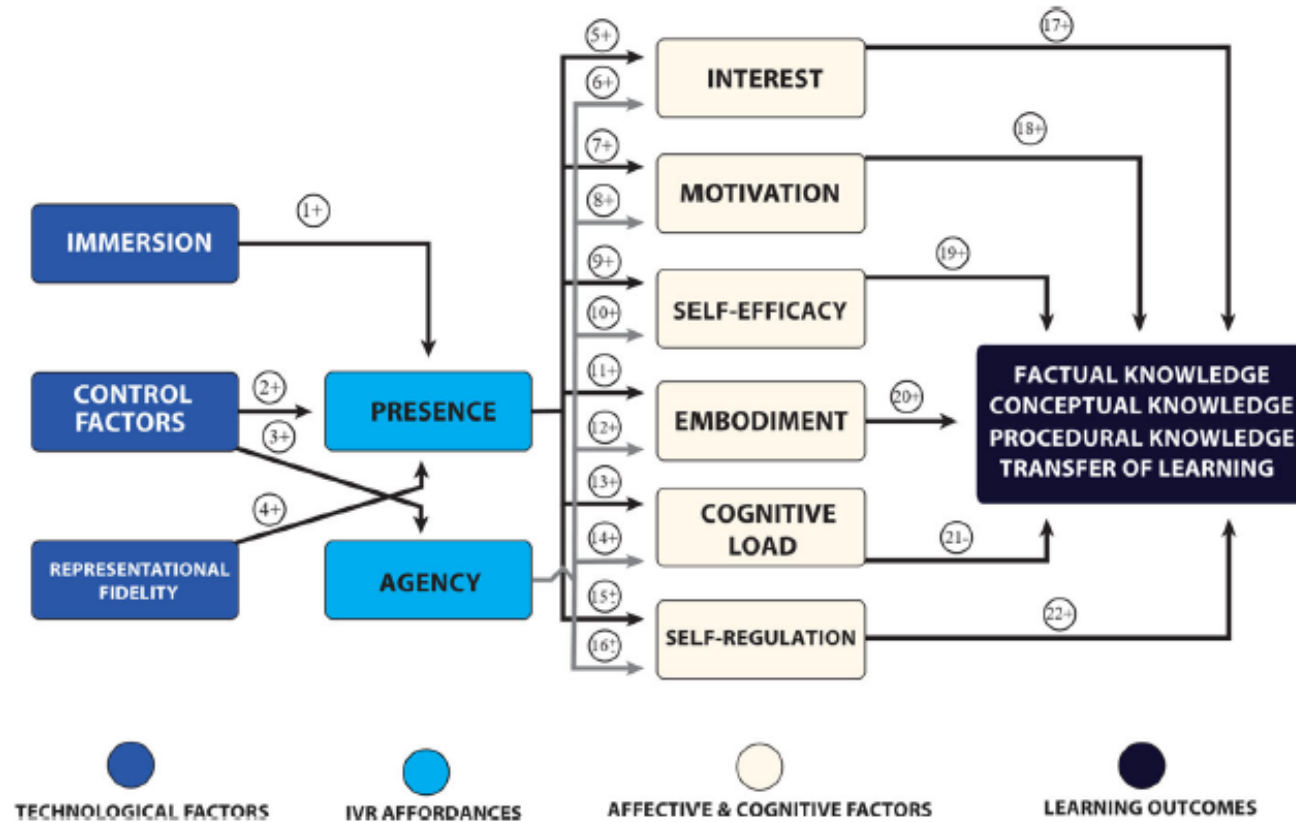
Empathy



Understanding the benefits



The Cognitive Affective Model of Immersive Learning (CAMIL)



Makransky & Petersen, 2021

Interview responses



One benefit of learning it in higher education is that when you go out and these things are being used in real life you have an idea about it. If I was an employee, I would [be surprised] If you never used VR, if you have never used chat GPT. Exposure should be provided in doing your education.

Interview responses



There's [often] something that you may want to show students quickly to help them visualize and maybe you can do that without having to drive somewhere in the field. So, it's about bringing more case examples to them to help with understanding, rather than replacing complete field experiences.

Interview responses



As long as you have access to headsets, there's no reason why I can't deliver a lecture with a headset on in location X, and other people in location Y with a headset on can have me doing it in real time [...] The way of breaking down boundaries for education to reach across the globe is pretty far reaching.



Interview responses



One benefit would be for those who have some difficulties with interacting in the class or when presenting their ideas in front of everyone. They might feel more relaxed when they are in VR because [...] they don't perceive it to be real, which is good. So, this feeling might boost their level of confidence, allowing them to express their ideas differently [...]

Interview responses



[...] This is what we observe in the collaboration sessions that we introduced to our students, so those who tend not to talk or share anything in the class because they are a bit anxious by nature [...] they were more relaxed.

Interview responses



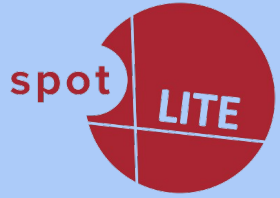
One of the arguments in the clinical domain is that you can get people to just keep on practising and practising in safe environments [...] I think more and more in the next decade or so, you might see [students] actually having those headsets at home and then practising and revisiting content and trying out different things.

Interview responses



[It's] actually really good for empathy. So, some experiences that we've used around autism, ADHD, or visual impairment [are] actually really excellent [with regards to] empathy because you're so much more in someone shoes and their experiences than you might be just looking on the screen [...] you're much more kind of in that place.





Pathways to production and acquisition



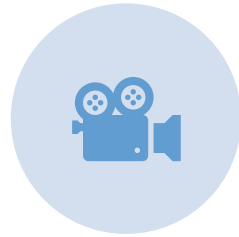
Pathways to production and acquisition



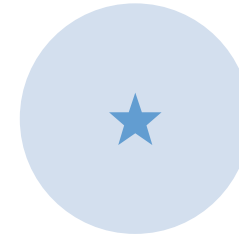
Third-party
resource



DEE team
production



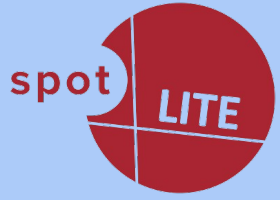
P&C production



Specialist
production
(short term)



Specialist
production
(long term)



Understanding and addressing challenges



Activity: Phase one (20 minutes)

1. Divide the anonymised quotes from University of Leeds XR experts among your group.
2. Take it in turns to read the quotes aloud.
3. Work together to summarise each challenge in 1–8 words.
4. Write summarised headings on blue post-its.
5. Where appropriate, group related quotes under the same heading.
6. When you have finished, spread your yellow post-its across your paper.

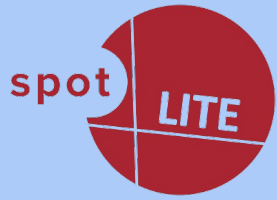
Activity: Phase two (25 minutes)

1. Discuss possible ideas, approaches, initiatives, and actions to address each challenge.
2. Write these on yellow post-its and circle around blue post-its.
3. Think inside and outside the box without concern for finance, time, or institutional feasibility.



Activity: Phase three (15 minutes)

1. Remove all the post-its.
2. Flip your paper over.
3. Place your yellow post-its on the axes of effort versus value.
4. Discuss what role you each might play in implementing your ideas.
5. On a green post-it, note your position and one action you will take before the end of the academic year to address a specific challenge.



New initiatives and the future of XR in HE



New initiatives

HELIX XR symposium

- Showcase of staff and student XR practice and research.
- Winter, spring, and summer events held in HELIX.
- Led by HELIX innovation technologies specialist (Josh Gregg) in collaboration with DEE and student XR society.
- Opportunities to network and share ideas and resources.

Staff VR inductions

- Induction sessions for staff wanting to know more about VR in teaching.
- Opportunity to try VR in meaningful context.
- Introduction to pedagogic principles.
- Introduction to pathways to implementation and access to support provisions.
- Run by DEE teams in collaboration with HELIX.



The future of XR in HE



I would say that it'll remain a niche technology for five or ten years. I don't think it'll be widely adopted until it's easier to adopt it and I don't know what that looks like.

The future of XR in HE



I think it'll have a part on most programs. But I think I don't think it's gonna take over a lot of our traditional activities. I think it could be a useful supplement.

The future of XR in HE



There's too much going on within the sector for [staff] to engage and embrace something fully [like] this. I think it's going to be local school program level, school level champions who get a bee in their bonnet about wanting to do it and just go and do it.



The future of XR in HE



I hope we're not still having this conversation another ten years from now. If you look out there on LinkedIn, high schools are adopting VR all over the place. FE colleges are adopting VR all over the place. We are going to be driven by the people that are coming to us, by their expectations.



The future of XR in HE



Moving forward in five to ten years when [students] join the university, they would be expecting that sort of setup because they are using it already. So that's something I think universities need to be ready for, something we need to consider as part of digital transformation.



The future of XR in HE



Don't forget the generation gap [...] The young generation [...] are more familiar with [XR] than any other generation. So that's something we need to understand and see that XR [will] be shaped based on their needs.

The future of XR in HE



The future is bright in terms of XR coupled with AI. I think we are going to see in the next five to ten years that generative AI will shape how we navigate, how we interact [with] and how we control objects in VR, AR, MR, and also haptic, multisensory devices.

The future of XR in HE



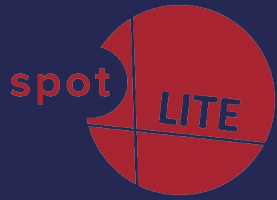
XR [isn't] gonna replace or change every element of HE, but it is an extremely powerful tool, and it is a tool that the world outside of HE is only going to use more in lots of areas. So therefore, there's an argument to be made that if they're using it in industry, we should be too, even just from the side of upskilling and making people ready for that world.

The future of XR in HE



I think we're well positioned [...] to really take the lead on this. We've been dealing with many different types of implementation challenges over the years. And these case studies will not only be relevant to the University of Leeds. They'll be worth shouting about to the rest of the UK and higher education subsections globally as well, right?





UNIVERSITY OF LEEDS

Thank you for coming!



Please take time to
provide feedback



Dr Gabriel Jones

g.j.jones@leeds.ac.uk