

The data is drawn from the survey responses of 63 out of 85 university students participating in both projects during the 2020-2021 academic year. TalkTech students were enrolled in universities in the United States and Romania, while DLAB students attended universities in Spain, Belgium, Norway, Denmark and England. Their ages range from 18 to 35. The overall sample is purposive in that students were selected to participate in the projects due to their interest and expertise in digital technologies and changemaking. The 23 students who did not undertake the survey chose not to do so. Ethical approval was granted by all participating university ethics committees. the students in the DLAB project were studying initial teacher education in their respective universities, the Talk Tech project involved students on a Digital entrepreneurship module.

Participants

Bentley 26

UPT 24

Howest 1

Ostfold 0

Nordjylland 2

Northampton 4

Santiago 2

Total 59

Ages

18-20 27

21-23 33

23-30 2

30+ 1

Prior to this project had you ever used the following tools...

	Never	Rarely	Sometimes	Often
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Augmented reality creation tools	44	6	9	3
Google docs/drive	4	4	13	33
Virtual reality creation tools	44	9	9	4
Microsoft teams/ online noticeboard	36	13	10	4

Please rate the following tools (general use before project)

	never	1pm	1pw	Every day
Mobile phone		1	12	50
Search engine	1	3	16	43
Twitter	3	2	2	2
Text messaging/	8	2	9	35
online mobile chat	5	5	18	35
Video conferencing	15	11	14	19
youtube	8	7	15	24

Collaborative writing	35	7	24	18
Blog	38	12	12	1
AR	38	7	15	3
VR	37	11	12	3
Online photo album	44	5	3	2
Online games	29	7	11	7
Wikipedia	12	11	27	4
Facebook	14	4	10	26

Statements related to intercultural awareness DLAB

I'm already intercultural as I was born in the UK and now live in Spain.

Going to Bruges and working with the partner University's teachers, lecturers and ITT students provided an insight into new technologies and pedagogies to use in the classroom. It was interesting to see how learning takes place using technology in the international partner country's schools.

I have gained some awareness of what schools are like in other countries and how even things such as the weather (one of our partner schools had lots of snow on the international days!) are reacted to/approached differently. Also aspects such as how classrooms are laid out and their approach to issues such as physical inactivity. In schools in other countries, they embed physical activity breaks throughout lessons, which is generally lacking in the UK.

I don't think it has

I wouldn't know for sure if I actually developed my intercultural awareness, since I have in my family people from Belgium. I spent 3 years in Denmark. I lived with Norwegians for 6 years. Furthermore, In France you are taught from a young age about the Spanish culture since there are some similarities depending of the region you live in. Moreover, I have always been surrounded by English people. Therefore, I wouldn't know 100% that I truly developed my awareness. However, I am sure that I am gradually developing my cultural awareness through the years. Finally, I believe **the project is a great way to meet new people from different places** and learn their ways of being.

First, **I improved my English**, since this language was the one used to communicate between us. In addition, I got to know many aspects of the different cultures of the member countries, some shared and others completely different.

How did this project help you experience the culture of your international partners? Did the use of AR or VR have an impact on this?

The project didn't really do this.

It didn't really help us experience the culture of the international parties.

While collaborating with your international partners you can share different parts of your life and see the impact it has on virtual reality.

We didn't exchange much words besides work-related

I learned **more about their daily lives** by communicating with them. The VR experiences somewhat had an impact on this because their environment pictures showed us what parts of Romania looked like.

I got to see **similarities and differences** between things in America and in Romania. VR showed the similarities and differences more than AR.

yes

The project did little to expose us to the culture of our international partners. We were more focused on deadlines than exploring cultural differences.

Yes. We communicated a lot and found some similarities and so on. The use of AR helped

Being able to see the differences in the scenes was a cool way to see how a certain place changes in different countries, but other than that I didn't really get much of a taste of their culture.

No, they did laser tag, which isn't really 'cultural' as we have it here as well.

Not really, the cospaces and AR were very similar. The only thing I learned was what their university dorm rooms looked like.

For the most part, it seemed like our two projects were very similar, showing us that some things are not all that different between the two countries.

This project helped me learn about our partners' cultures through seeing their VR examples and what houses in Romania look like.

I was able to see an image from Romania which showed me their culture.

When other groups presented we got to see photos of different places in Romania that are a part of their culture.

The use of VR allowed us to get a view of the inside of a Romanian library. This showed us how Romania and America aren't that different despite being halfway across the world from each other.

I think if anything this project made me see how similar I can be to people across the world. The use/knowledge of AR and VR saw that the Romanians and I were basically on the same page.

No, I don't think I learned much about Romania from this project.

This project has minimally helped me experience the culture of Romanian because our partners were not interested in talking for very long. The use of AR/VR did not impact this other than I got to see a picture of Romania in one of their scenes.

I really didn't experience much Romanian culture during this project. I guess I saw what their malls look like, and compared it to the malls we have here, but they both look the same.

It was cool to see the 360 images of our international partners' cospaces.

Learned about tourism in Romania, the VR really helped in showing that more closely

We did not really experience the culture of our international partners because it did not really come up in the discussion of our topic.

I learned that Tennis has a much stronger presence in European sports culture than in America

We got to see part of Unirii Square through their VR experience, which gave us insight as to what Romania is like. We got to see the architecture, which was very different from the architecture here. The VR increased our positive experience, because it made the whole scene more immersive, and the talking characters were useful in informing us about Unirii Square.

I am a student at UPT

How did this project help you experience the culture of your international partners? Did the use of AR or VR have an impact on this?

Topicul nu a fost unul pentru a experimenta cultura lor

-

I make new friend and learn new tehnologies

With AR and VR I was able to learn and see information about the church and park. It was easier this way than simply Google it.

It had only a small impact. We made the project about the same store and the differences between our stores was only about the location. Other details about life in America were discovered during whatsapp conversations.

-

I see different opinions about what adverstining means to the American team. Yes.

mi-a oferit posibilitatea de a vedea unele locuri de acolo

Not.

It did not helped

da, prin comunicarea cu ei

Nu prea am descoperit foarte multe despre cultura lor, foarte putin din AR si VR, am mai dedus unele lucruri

It didn't helped.

Nu au avut un impact.

Nu consider că am învățat mai multe despre cultura lor, din AR și VR. Însă am învățat din conversațiile avute

-

I found out that the differences aren't so big as I expected.

This project helped me understand some of the difference between the Romanian and the American cultures with help from my international partners.

Da, cu siguranță.

It helped me because we had a common, interesting and fun subject to talk about from the beginning.

The experience was preatty much visual. The AR app helped a bit, due ro the video inserted, where as the VR app hasn' t helped at all.

Nu chiar .

We saw on AR or VR something that in Romania don't exist.

Not, really AR or VR, only the fact that we had to communicate.

Not really

By talking to them we saw what it's like for an American student and we saw the differences between out 2 cultures. Also, by seeing their VR scene we learned what a college dorm looks like.

We talked about each other and exchanged some cultural elements. Not really, the AR and VR didn't affect our cultural experience.

No

Statements relating to what the participants have learnt from the project TECHNOLOGY

I've learned how important it can be for your students to integrate technology in your lessons. In general I've learned a lot of technology.

Working together over the Internet and using VR technology.

I gained an awareness of new technologies and their uses in education.

1. I have learned how to use a myriad of tools that I had never considered using before and I have found ways to integrate this into the classroom to support learning. 2. I have discovered new capabilities for tools that I was familiar with - such as PowerPoint.

I wouldn't say that I learned anything in terms of technology. But I did develop my knowledge and use of VR tools and the use of technology in sport.

1: technology can be used to a range of different activities. 2: through the use of technology we have been able to communicate with our partners

The wide range of existing technological tools and how to use them.

Asking for help Choosing the right technology for the right tasks

List the two most important things you learned from this project, from a technology point of view:

1. block coding is very easy and efficient for beginners 2. What augmented reality is

The most important things that I've learned from this project is how to utilize and create AR and VR from a business perspective.

I learned the applications of virtual reality not just in the automotive industry but also in any industry. I also learned about the difference between augmented and virtual reality.

How to create AR and VR experiences and learn how they both work

Augmented reality can help enhance products. Virtual reality can also be applied in almost any industry.

Virtual and augmented reality are not that hard to make and they can be very useful in education.

technology and Romania

I learned how to create a VR experience and how to create an AR experience using a base image.

How to use applications for making augmented reality and virtual reality.

Communication was a large factor in working on this project and getting experience communicating with international students was a learning experience I valued greatly.

- how to use co-spaces- how to create my own AR experience

I learned a lot about cospaces and coding the objects within that, such as using a loop. I also learned that there are public domain websites to find 360 degree images.

It is possible to create VR and AR on your own to create really cool content. It is best to plan ahead to see which type of technologies would be most appropriate for certain situations.

I learned how AR builds off base images and also how to use skype for video calls or conferencing.

I learned that virtual reality has many uses and can be very helpful. I also learned that automotive technology is driven by new technology.

-AR and VR are not as difficult to make as they seem.-AR can be implemented into everyday life

I learned how to create an AR and VR application. Though I'd used both of them in the past, I had no idea it could be so simple to create these forms of technology. Additionally, I hadn't had a lot of experience with the blog format of OpenVM, so I learned how to post and upload things on that.

I learned how to use AR apps like Blippar and also learned how to use VR sites like CoSpaces.

1) How to use Cospaces2) More about AR/VR that I didn't know before

I learned about how easy it is to make my own AR pieces, and how there are several programs out that assist beginners with coding.

I learned that VR and AR are developing industries and important in the future, and I learned how to use CoSpaces.

How to create my own augmented reality and virtual reality

Practical uses of AREase of using VR

I learned how to create a very basic AR and VR experience. While creating the VR scene, I learned basic coding principles.

I learned how to create AR/VR scenes, and learned how to use a web-based project site like OpenVM.

I learned how to use a 360 camera to take images and videos. I almost learned how to use cospaces and ZapAR to make AR and VR scenes

I am a student at UPT

List the two most important things you learned from this project, from a technology point of view:

Utilitatile AR-ului si VR-ului

I learned that a VR application needs to run at minimum 45 fps in order to fool the brain. I learned about new technologies in AR side like the one which can follow the eyes in order to provide a more realistic experience.

vr and ar

I learned how to take 360 pictures and how to make AR and VR scenes

I learned what augmented reality and virtual reality mean (until this project I didn't know anything about AR and VR). I learned how to create AR and VR.

Usor de utilizat, foarte util

taking an AR using a mobile application and taking a VR using cospaces

-realitatea virtuală -realitatea argumentată

The use of AR is also of the cospaces.

Using AR and VR in our implementation

ar and vr

Am invatat sa lucrez cu aplicatii noi si am invatat mai bine cum sa imi organizez timpul

Applications of VR Applications of AR

- realizarea unui anunt folosind AR- modul de folosire a unei aplicatii care foloseste aceste tehnologii

Am învățat care e rolul AR-ului, dar și al VR-ului Am învățat să mă adaptez nevoilor partenerilor

Nothing

- How to make alive a 360 photo- Working with AR/VR Technology

1. the importance of both Augmented and Virtual Reality in our society
2. how to use an AR App as well as CoSpaces

1. Importanța aplicațiilor de VR și AR, respectiv cât de utile și ușor de utilizat pot fi. 2. Din punctul de vedere al temei pe care l-am avut, cât de important este să transmitem în clar informațiile cele mai relevante prin aplicațiile de AR și VR.

- to work in CoSpaces and create a VR scene- to work in Blippar

Creating a QR code Working in Cospaces

Este o tehnologie usor de folosit si de ajutor in multe domenii, mai ales cel educational .

How to use the new technologies like AR and VR

- can help you to crate a nice ads- can help you to buy what you need

How to create an ar experience
How to make a 360 photo

AR is a very simple and quick way to find general information about a property with just a simple search/scan on your phone. VR can be used to show more in depth what an empty scene would look like, by filling it with objects, people and animating it.

I now know more about VR and AR I finally used a 360 camera

AR & VR

Which of these skills did you develop during this project...

Skill	Developed	Important
Planning	23	54
Strategizing	20	38
Critical Thinking	25	25
Collaboration skills	35	45
Negotiating	20	26
Persistence	28	33
Tech Savviness	37	22
Risk taking	18	9
Resourceful	32	33
Competitive edge	16	7
Creative	30	47
Hard working	21	46

Things that they have enjoyed

All the people and activities we did together, I will never forget the people I've met through this project. I also really liked the meetings/ brainstorming, such as nice cool ideas that came from these moments.

Travelling and meeting different people.

The travel and international communication (learning about other cultures) and learning about new technology.

1. I have thoroughly enjoyed working with such an interesting and diverse group of people who all bring different skills and expertise. We have been able to share our work and learn from each other. 2. I have enjoyed developing my repertoire of digital skills and technologies. I have continued to develop this alongside the project.

Collaboration Teaching new technology

1. Meeting new people 2. Working hard about something I am passionate (breaking boundaries - going outside of normality/using creativity to teach)

1: collaborating with new people. 2: gaining a better understanding of technology

Meet people from other cultures and apply projects developed with other countries.

The planning

List two things which you enjoyed the most about this project

Poza 360

First thing and the most important one is the opportunity to meet and to talk with new people. Secondly was the opportunity to create amazing experiences in both AR and VR domains

the team and the experience

I was so amazed seeing the same 'title' for the project with 2 different results. It was nice learning about their church and park. I loved the fact that we were free to explore tools for VR and AR and be creative.

I socialized with new people (colleagues in America were very open for discussing other things, not just about the project). I learned what AR and VR mean and what they can be used for.

Comunicarea cu persoane din alta tara, invatarea de lucruri noi

communicating with other people from different places and using technology in an interesting way.

-a fost ceva diferit fata de ce am facut pana acum la facultate-faptul ca am cunoscut colegile

Team members I was a part of and working at CoSpaces.

Interacting with students from other continent Learning new things

construirea de imagine ar si vr

Experienta per totala pe care am dobandit'o in urma acestui proiect si invatarea unor noi programe de folosit

The experience to work in an international team Learning about VR

- comunicarea cu studenti straini pentru realizarea unui obiectiv comun- realizarea scenelor din proiect

Mi-a plăcut faptul că am putut cunoaște oameni cu o cultură diferita de a noastră și să le aflu viziunea Mi-a plăcut să folosesc CoSpaces

—

- Working as a team- Making something cool in Cospaces

1. getting to know new people 2. learning how to create my own AR and VR experiences

1. Tema proiectului pe care am ales-o. 2. Partea de VR a proiectului, respectiv crearea scenei a fost partea mea preferată.

- I made 2 new friends- I learned interesting things about AR and VR

Applicability of VR in real life
Creating a QR code

Sa comunicam cu alte persoane pe care nu le cunoastem .Sa folosim CoSpaces.

The team was awesome. I liked working with people from another region or continent.
You make new friends you can change thoughts.

- friendly teammates- the opportunity to collaborate with people from America

Making the ar experience
Working in cospaces

Meeting our partners from America and seeing a bit what college life is like for them.
Animating the 360 photo.

I learned more about new technologies and I found them easy to use I enjoyed working with your partners, they were probably the best partners we could have asked for

Learning new things
Cospaces

Helen's comparison summary:

Comparing DLAB and TalkTech questionnaire data

Links to questionnaires:

DLAB

<https://forms.gle/rvHiJeu9xk5PvH3Q6>

<https://docs.google.com/forms/d/10sPiVhiL4beUiABjr696JFUGEyDOB9K-1qyxfvWPzIM/edit>

TalkTech

https://docs.google.com/document/d/1kyFUUbwmGrgNVzO9dbZ2_CsRvYopI-Yj/edit?dls=true

Summary of responses (DLAB in black, TalkTech in red)

Previous knowledge of tools

General lack of familiarity with AR/VR/Teams/videoconferencing/collaboration tools/blog prior to project.

However, they are daily users of some technologies: internet, phones, social media.

Similar results from TalkTech.

Attitude towards technology tools used in project

They found AR, VR and YouTube the most creative tools used.

CoSpaces was used the most for AR.

A range of tools was used for VR.

They found AR and VR clear and understandable, productive and educational, making learning easier. They would use them for work or school as well as fun.

Similar results from TalkTech.

Project communication tools included live talk, email, use of mobiles and social media.

General themes from text comments about AR/VR:

Different ways of learning, direct experiences, motivating, easier to learn, across the curriculum, supporting physical activity

More emphasis on education in DLAB, more emphasis on business in TalkTech (see Q36 on VR/AR and industries

Both projects positive about VR/AR

AR/VR and cultural understanding

General themes from text comments about using AR/VR to understand other cultures:

Seeing inside schools, see each other's spaces, importance of talk, meeting in Belgium, different ways of teaching, helped children understand cultures

Students learnt more about the cultures from direct meeting in Belgium and subsequent conversations, however children learnt more through the AR/VR.

They agreed that the project helped them learn to integrate several technologies. They found it easy to meet online and to communicate regularly. They learnt a good deal about international project work and found that this was a positive experience to work together at a distance. They agreed that they learnt about each other's cultures through the project.

Both projects emphasise communication and acknowledge the challenges and benefits of working internationally

How did technology support international collaboration?

What was the impact of collaborating on a technology project? (in terms of SDG 4.7/Changemaker attributes? Alden Rivers, 2015. 14 Changemaker attributes: how are these demonstrated in the data?). What role does technology play a) in facilitating collaboration, b) in enabling the development of cultural understandings, c) in providing an authentic context for international project work? Can we argue that DLAB focuses on education and TalkTech on employment? *'It was cool to see how we could apply this technology to the real world and actually make it useful.'* *'The team was awesome. I liked working with people from another region or continent. You make new friends you can change thoughts.'* (TalkTech p.29)

Authenticity in DLAB came from working with school pupils and seeing the potential impact of VR/AR in their future teaching. Changemaking was an explicit aim of the DLAB project.

However, some felt that they were already interculturally aware as Europeans who are used to mingling with other cultures or have lived in other countries.

Some pointed out differences in attitudes towards the weather, physical activity in schools, classroom layout, uses of technologies and classroom pedagogies.

Across all of the responses there was a recognition that a range of changemaker skills were important to completing the project. Most felt that they had developed this range of skills.

Thinking about the technology, they placed importance on communication, learning new applications of VR, new tools for learning, choosing technologies for tasks.

From an education point of view they learned about transcultural learning through technology, found children innovative, how other countries teach, communication skills, professional development in relation to technology.

Both projects acknowledged the potential of AR/VR in sharing 360 images, and there were some insights highlighting similarities and differences between countries. However developing cultural awareness was not the main aim of the projects from the students' point of view and it tended to come about more from direct communication.

'Other details about life in America were discovered during whatsapp conversations.' (TalkTech p.60)

What did you enjoy the most?

What they enjoyed the most: collaboration, new people, understanding new technology, using creativity, breaking boundaries, new skills, meeting people from other cultures, sharing ideas, the planning, the international communication.

What were the challenges?

Difficulties: talking in front of an audience, time management, working with schools, lack of available technology, pandemic, lack of experience, communication, speaking English, coming to a shared understanding

Improvements

Improvements: more talk, more detailed planning, document storage, overall communication, not using Teams

Overall

Lots of general positive comments about the project at the end. Emphasis on meeting new people, collaborating professionally, learning new things, cultural awareness, CPD.

Key responses to analyse:

Prior experience of tech tools compared with knowledge/perceptions of tech tools gained through the project

Impact on future behaviour (DLAB in teaching/TalkTech in industries/business)

How tech supported communication in both projects

How the international project work built intercultural understandings and the role of tech in this