DIMPAproject
Digital Innovative Media Publishing for All

EXPLANATORY SHEETS: COSPACES EDU FOR VR

Reminder: These roadmaps will allow a better understanding of the workflow of digital interactive contents production through practical recommendations and testimonies of professionals.
In that way, we intend to support learners and teachers in their learnings but also after the training, in their practical working life.

1. About the technology

The technology used	Co Spaces Edu to develop Virtual Reality
Final objective and result	For this model, we have used CoSpaces.edu to design a VR scene and we want to show how it is easily possible to implement VR and mix it with pedagogical objectives. To view and experiment the tool in VR, you will need to download the Co.spaces.edu app on your smartphone and use a VR headset. It can be a mobile VR headset or any kind of VR headset. However, note that you can still view the scene in 2D on your computer, in case you don't have a VR headset. It won't be VR anymore, but if you like it, you know you can invest in a Vr headset.
Description of the tool	CoSpaces Edu enables content creation of 3D environment and make it possible to create our own VR and AR experience with coding features. CoSpaces Edu is also implementable with class management.
Medium used (computer, tablet, phone)	We have used a computer to code and develop the tool. Developing VR is always easier with a computer versus a phone or a tablet because you have more feasibility with the mouse in terms of moving elements in the (x;y;z) space. Nevertheless, the result can be observed in any browser and with a VR headset or smartphone with a google cardboard (or similar)

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Where will it be accessible (app, platform, website…)	It will be accessible from the internet, on Co Spaces and in every browser and platform, every Android phone, and iPhones above iOS 11.
How long did it take to develop this tool?	To develop this tool it took us 45 minutes: - 5 minutes to create an account - 10 minutes to be familiarize with all the functionalities - 5 minutes to create our scene - 15 minutes to code and implement the quiz. - 5 minutes to test and modify - 5 minutes to share and test.

2. Used software

Name of the software	CO Spaces Edu https://www.cospaces.io/edu/
Name of the company	Delightex. CoSpaces Edu was created by Delightex, a company working towards offering innovative technologies that contribute to transforming Education.
Copyright status (cc, proprietary system, etc)	All the content: objects, environment we have used is available for free in the platform. If you need to add sound or images, make sure you have the correct license for.

In case you have used additional resources for the content of your tool, please describe them below:

To view the scene in VR on the smartphone, it is necessary to download the Co.Spaces.edu app.

3. Cost

Cost of the creation of this tool	0€ We have used the free version which allows us to create 2 CoSpaces. The basics of Co Spaces Edu are for free but most of the features and functionalities are only available when PRO package is activated.
General pricing plan	The Basic Package includes: Invite up to 29 students Create up to 2 CoSpaces Create 1 class Create 1 assignment Upload up to 10 external files Code with basic CoBlocks While the pro includes the below elements and price depends on the number of seats: (5 seats = USD 74.99) All CoSpaces Edu features and 3D objects Invite students and teachers Add co-teachers to your classes Publish to the CoSpaces Edu Gallery Remix CoSpaces from the Gallery Code with all CoBlocks or script languages Use the built-in Physics engine

In case you have used additional resources for the content of your tool, please detail their cost below:

To view and experiment the tool in VR, you will need a VR headset. It can be a mobile VR headset or any kind of VR headset.

4. Steps of production

Please describe each step of the production of the tool
Design phase

Why did you create this tool?	This tool aims at showing that Co Spaces Edu gives the possibility to develop a very basic scene in VR and integrate educational content in it. In this tool, we are immersed in a virtual world where characters are moving when you click on it (interaction)
What functionalities does it have?	This scene allows the introduction of quizzes, questions, and other actions. For the free package the quality of interactions is very limited, but still the tool is convenient and efficient.
What will be its purpose? (pedagogical, communication, games, etc.)	The purpose is pedagogical but also to have fun. When developing the tool, the coding part is very interesting and requires a lot of observation and practical sense. When experimenting the tool, the quiz bring some added value in terms of pedagogy.

5. Creation phase

Please name and describe below the different steps of the creation of the tool (min 5)

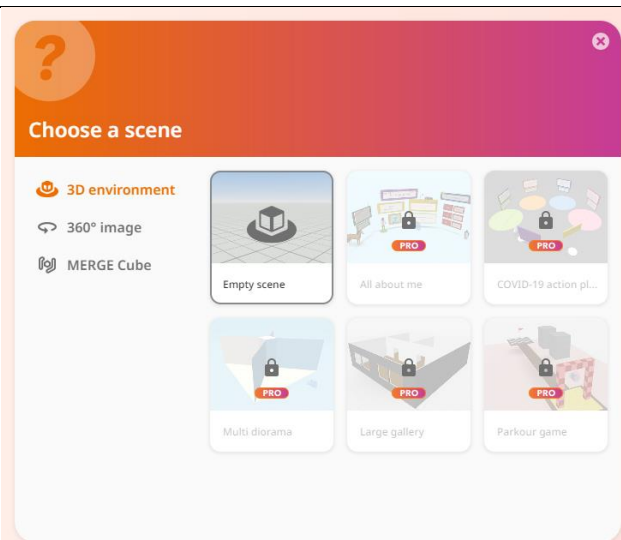|	
CREATE YOUR ACCOUNT ON CoSpaces.edu	https://edu.cospaces.io/Auth Once you account is created, you will have 4 TABS: - Gallery: Here you can see projects that have already been developed and that are share with the CoSpaces community. You can access the code and play some games for free. It is always interesting to see what other people have developed so you can probably find some inspiration for your own tool.
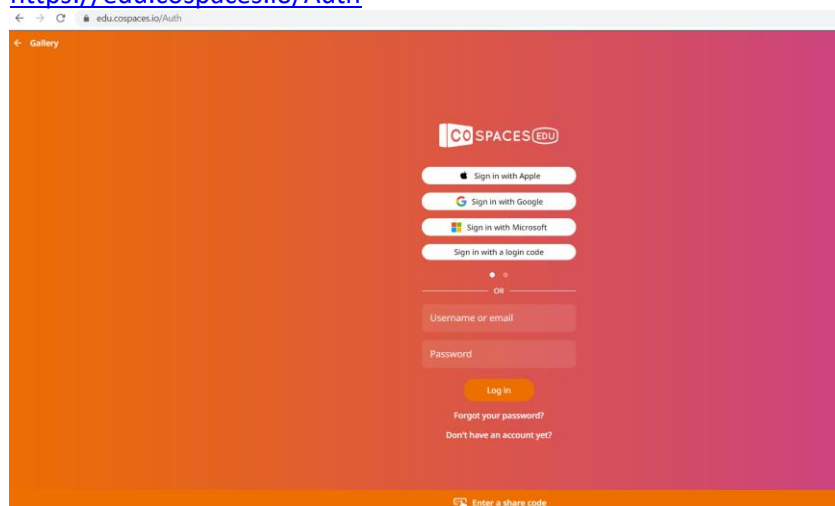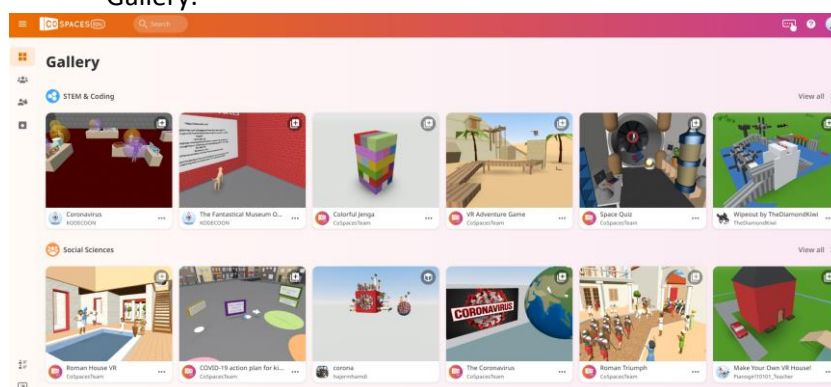
	- Classes In this tab, you can create and share projects with your class, give assignments and follow the progress of the learners. - CoSpaces This tab is where all your creations are gathered. You will find all your projects. In the free version, it is only possible to have two (scenes/projects). - Archive As it is mentioned in the name, it is for archive 😊
CREATE YOUR SCENE	 Chose 3D environment. To upload an already existing 360° environment: Click EDIT and select the environment you like.

We have chosen a savannah landscape.

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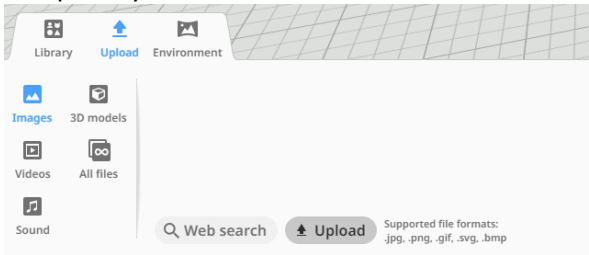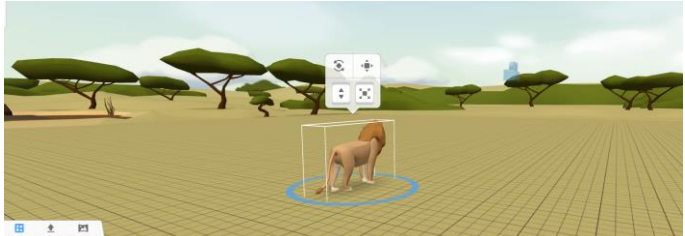
UPLOAD YOUR OWN ENVIRONMENT	If you already have a 3D environment (developed on UNITY for instance) you can upload it here: To upload your own environment:
INSERT SOME OBJECTS	As you can see, the camera is already in the scene, you can manipulate it, make it move, make it bigger, smaller, rotate… To insert some elements, click on LIBRARY and drag and drop the object you want. In this example, we have selected and dropped a lion in our scene. To move your objects, click on it and check the different functionalities: rotation mode, translation, drag to lift and drag to scale. When you click right on your object you have more features: You can rename the object, add code, speech, physics, transform and many more… Animation is a cool one, you can select the kind whether the lion is eating, sleeping, running, roaring… each object has a series of animation possible (bird fly, human run…) Make some tests, experiences on your own to feel comfortable with the tool!
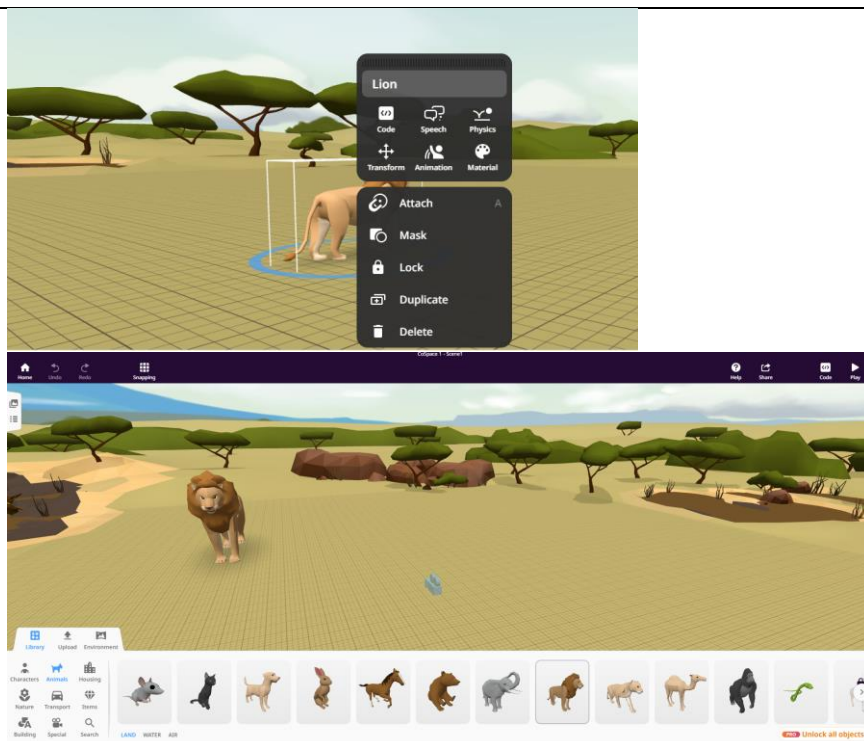
When you hit PLAY on the top right corner, you will see the scene with the camera view. For this, always make sure your camera is well located.

And just for fun, we have placed the lion on a skateboard and added some speech:

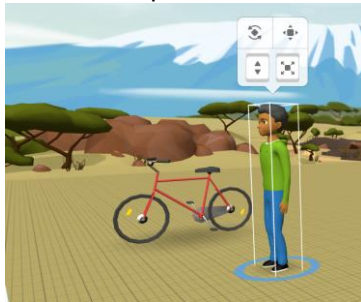To delete an object, just click on it and hit the suppr key.
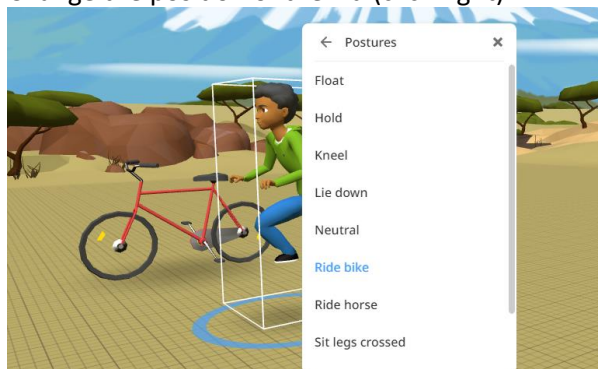
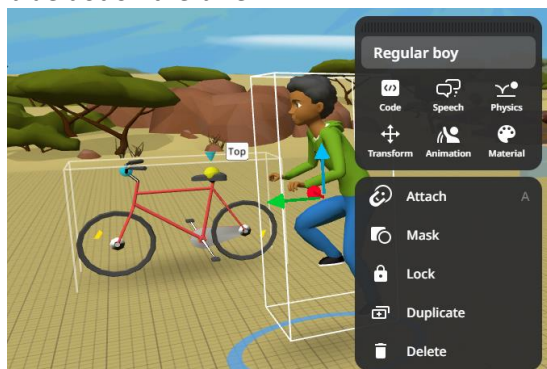| TO LINK TWO OBJECTS TOGETHER	Insert two objects: In this example we insert a bike and a kid. Change the position of the kid (click right): Then you will attach the kid to the bike, click right, ATTACH, and click on the blue dot on the bike: And the kid will be attached to the bike. Don't forget to click on GROUP to have your two elements grouped.
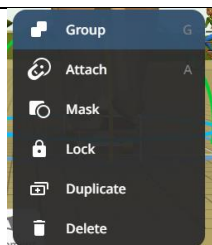
If you add an animation to the bike: pedalling forwards, when you hit play you will see the kid ridding the bike
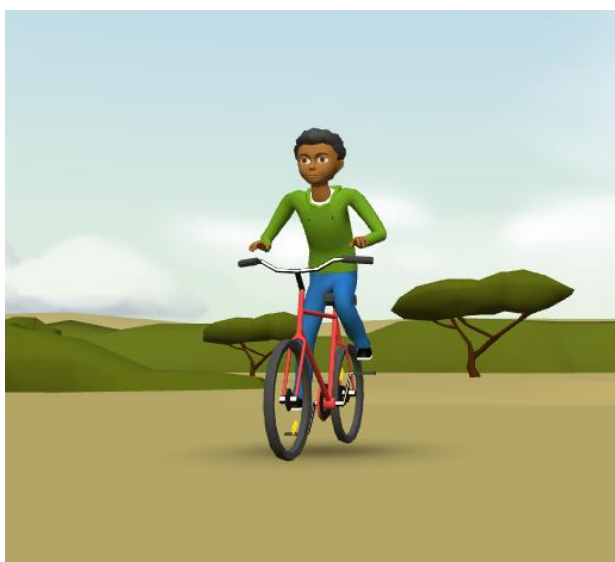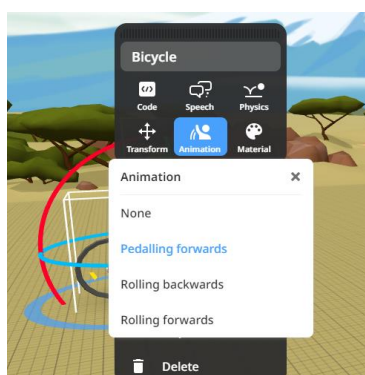
We have done the same for the lion and the skateboard.
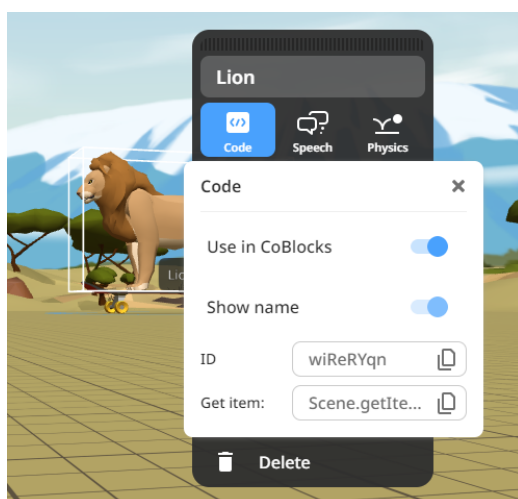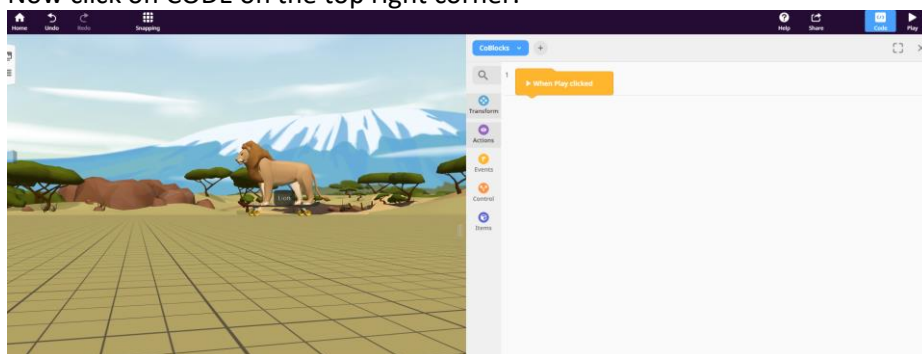
INSERT SOME CODE	To be able to insert some code and develop some movements and interaction, you first need to click right on the element and allow "Use code in CoBlocks" and "Show name" If you have several similar elements, it is always better to give them specific names (lion1 – lion2 …) Now click on CODE on the top right corner:

| CREATE YOUR CODE	On the left part of the Code section, you have 5 tabs:
	- Transform (for movement, turn and rotation) - Action (if you want to implement speech, change colors or insert quizzes to your objects) - Events (when the element is clicked – it is more or less the trigger) - Control (wait for, repeat…) - Items (when you have groups objects) You need to drag and drop the blocks and adapt them to your scene to be able to have interactive objects: In this scene we want: The lion to be clickable. When clicked the lion will come closer and say Hello. Then the lion will show a short quiz. If the answer is correct, then the Lion will give more information. If the answer is wrong, the lion will turn blue. Now let's do it: 1. When played clicked is a default event. 2. We want our lion to move when clicked, so we insert : when "lion" is clicked ➔ Say hello and then
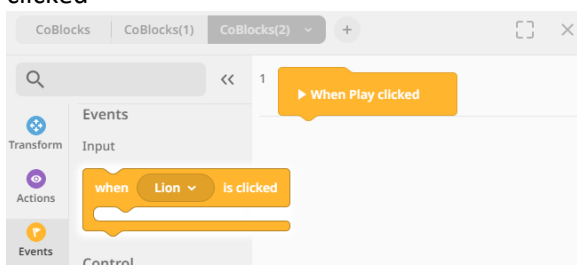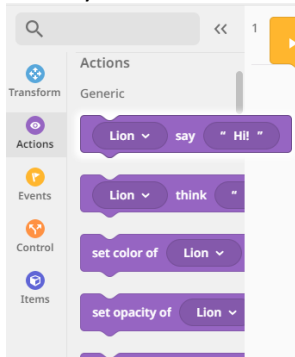
➔ Move the skateboard in front of the camera (22 meters in 4 second – to find this, you need to try several combinations)

3. When the lion is here, said hello, we click again and have a quiz:

➔ Go to action and select "show quiz panel with question"

➔ Edit the question and answers:
Where is the biggest wildlife park?
Answer 1. Africa -> correct
Answer 2. Asia -> wrong

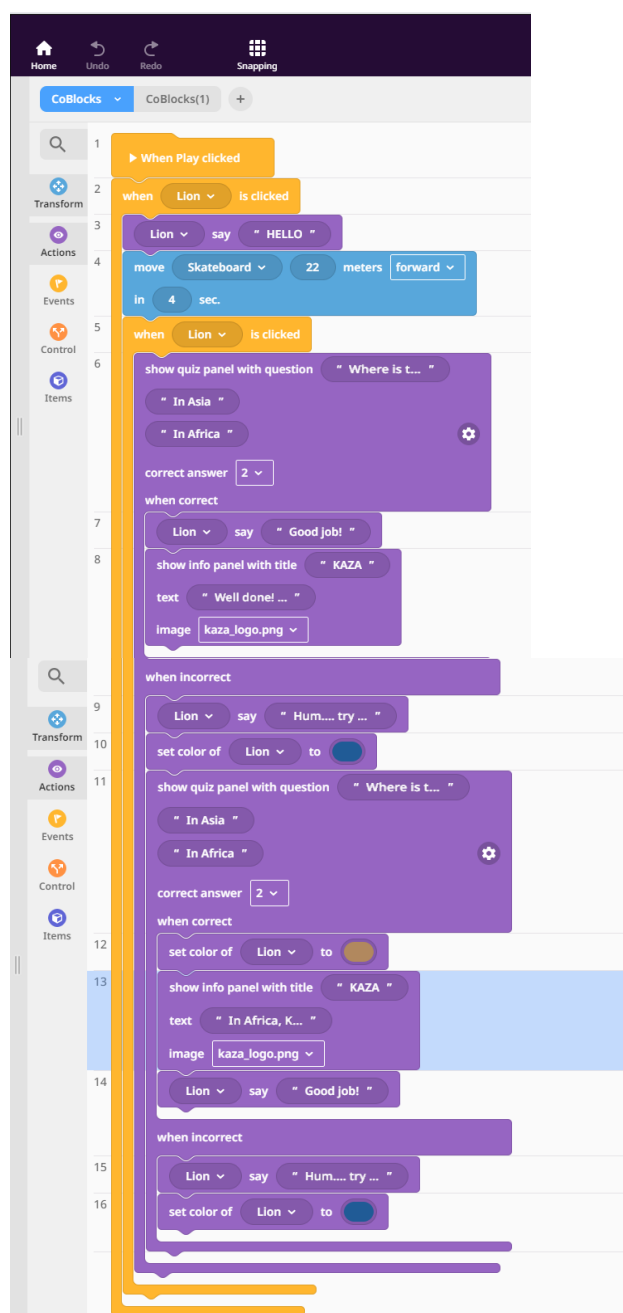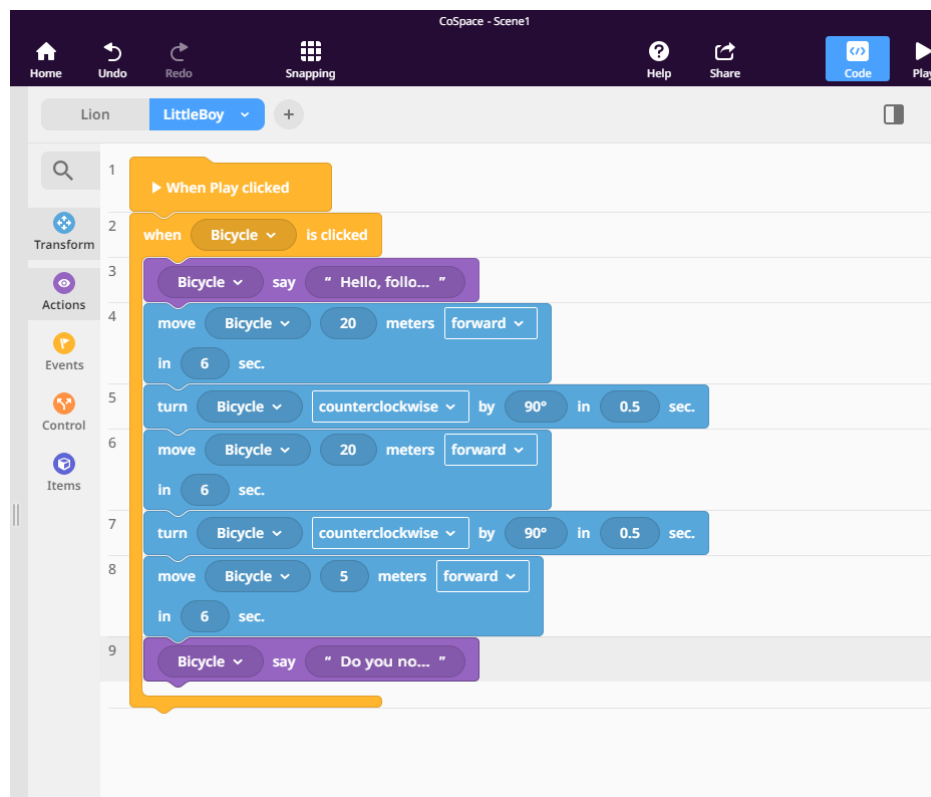You can add some images, text, sound if you want.

The Entire coding sequence is:

| ADD ELEMENTS | Just to use our little boy on the bicycle, we have created a second CoBlocks, and we have named our tabs not to be confused.

The code of the little boy is:

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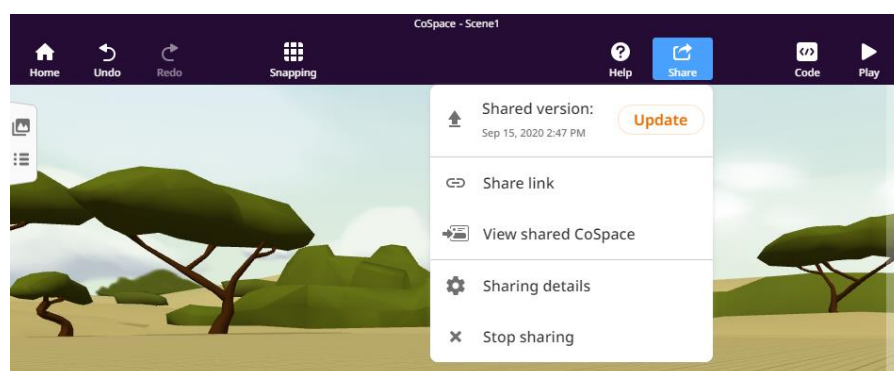Digital Innovative Media Publishing for All
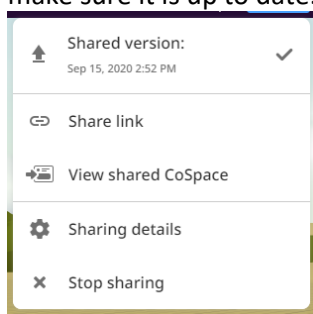
| SAVE AND SHARE	Once you have tested that everything works correctly and that you are done with your scene, you have to save and share. Saving is automatic. For sharing, you have several options: 1. Make sure that the shared version is up to date. If you have made some modifications, click on the Shared version to make sure it is up to date. You need to have the grey tick.

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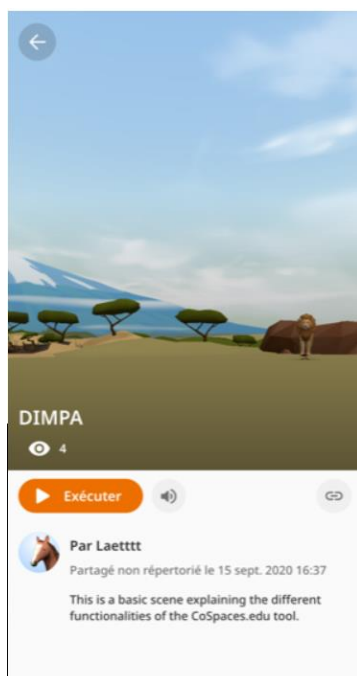2. You can choose to share on CoSpace, this means, people from CoSpace will be able to view and play your project:
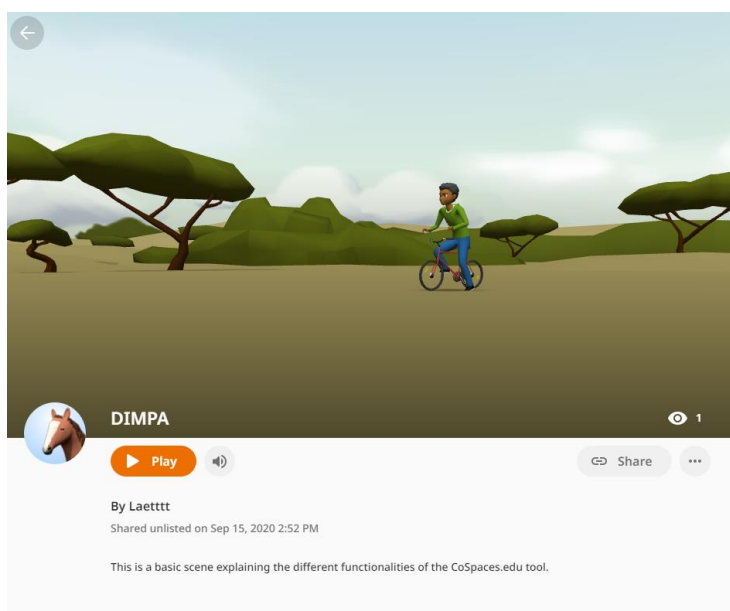
3. Or you can choose to:
Share on social media (mail, Facebook, twitter…)
Generate or download a QR Code (flash it or download it),
Share a code
Share link or even embed the code:

![DIMPA project - Digital Innovative Media Publishing for All]
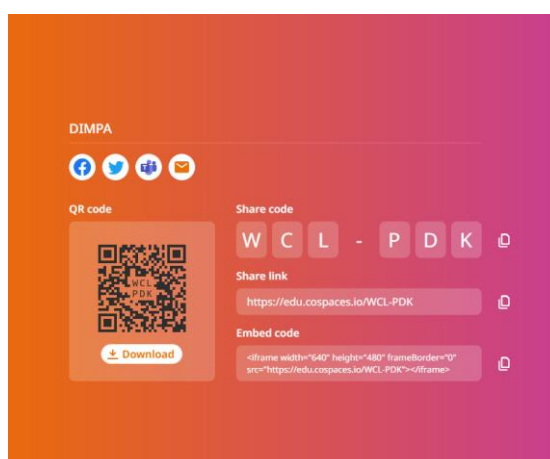
RUN YOUR CREATION	To view your scene in VR, you need to download the CoSpaces edu app. Once you have download it, you can enjoy your creation!
	On your phone, on the app, you will see your project and be able to hit play (executer in French)
	To put the screen in VR Mode you need to click on the headset logo on the bottom right corner. You can also navigate with the arrows on the bottom left corner.

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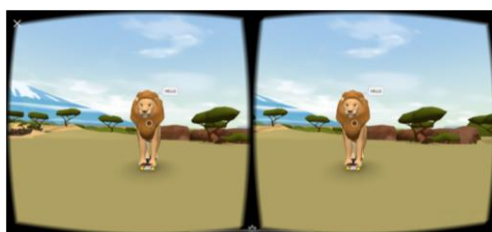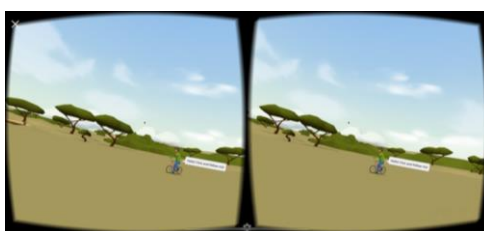
Then in VR you will see your scene and every time we have coded: "when click on '*object*' do" you will have a pointer that will turn your object into a clickable one.

When you will see the pointer getting bigger, it means it recognizes a clickable element and an action/interaction is possible.

Depending on the VR headset you have you can also change the screen so it fits with your headset: cardboard 1 – cardboard 2 – Homido – No distortion
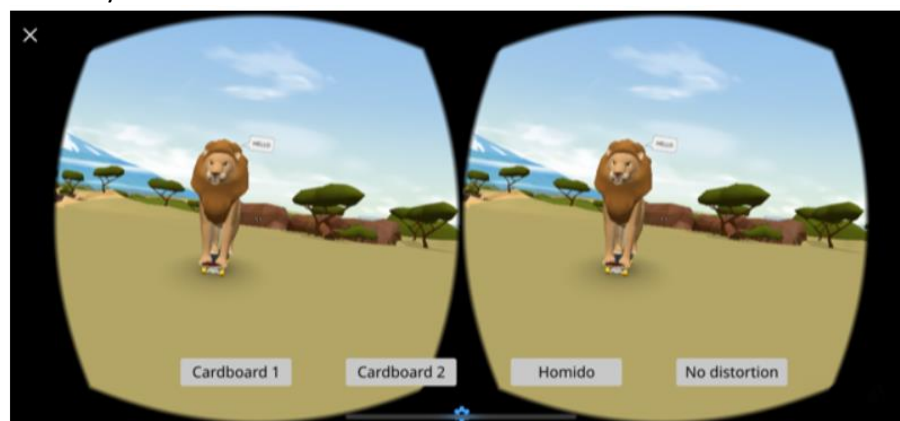
And now, turn around, click, follow, do the quiz and enjoy 😊
And don't forget to interact, duplicate, improve, and last but not least, share your content with us. We can't wait to see your creations!

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Release

Where did you publish the tool?	This scene will be published in the CoSpaces Community as well as on DIMPA MOOC. It is possible to generate QR code of the experience or share it on social media or even embed it in an already existing content (mooc, Moodle, WordPress)
Why?	To make it accessible to all and encourage other to try and use this tool.
Have you encountered any difficulties in this step?	None
If yes, please explain	

6. Inclusive approach

What action did you implement to make this tool inclusive to as many users as possible?

The tool is made fully with open source software and tools, it is cross-browser, it works on every Android phone and iPhones above iOS 11, and computers.

7. Good / bad practices

Would you recommend this software to the users?	Definitely! The basic package already gives access to a large quantity of assets, tools, objects…
Please explain	The way the software is developed makes it very simple and easy to understand how to do a specific action. In addition, there are a lot of tutorials available online and the CoSpaces Community is very large and helpful.

What recommendation would you give to people creating such tool or creating content on this technology?

Whenever you have a doubt or need help, do not hesitate to check some tutorials on YouTube or on CoSpaces platform.

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