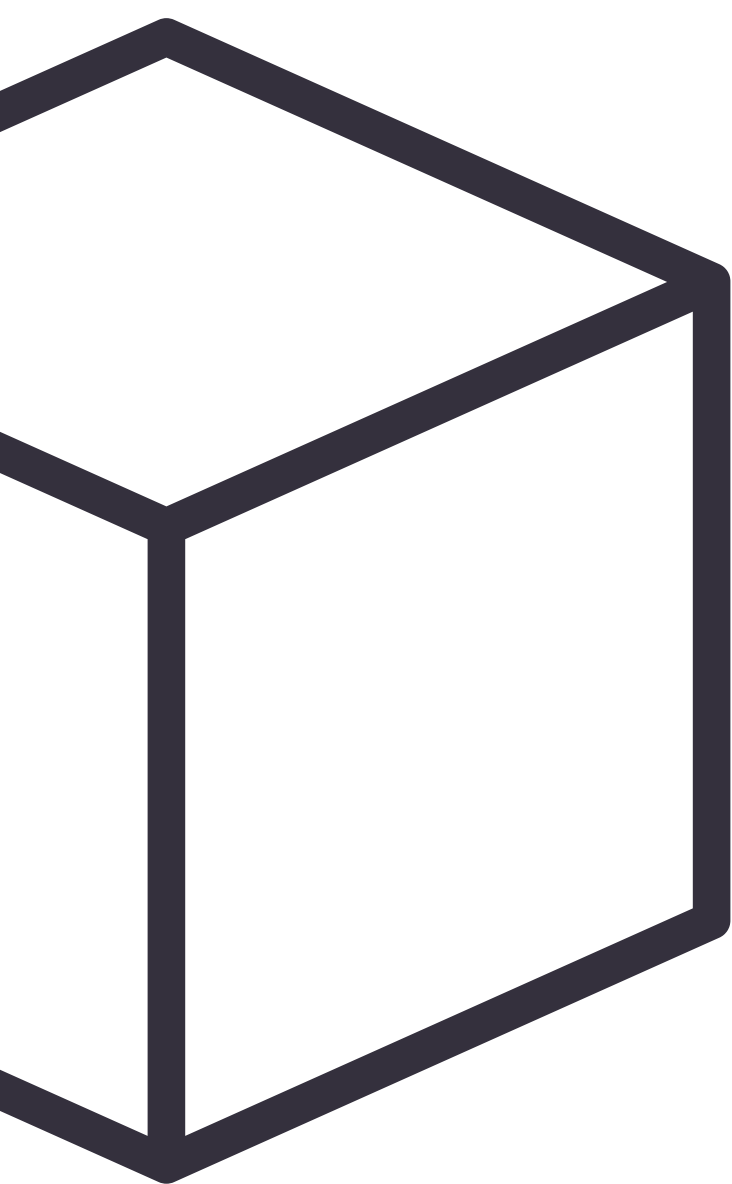A micro-training course by Vanessa Günther

EXPLORING NEW HORIZONS: THE MERGE CUBE AS AN EDUCATIONAL TOOL IN THE CLASSROOM

CONTENTS

01 WHAT CONSTITUTES A MERGE CUBE?

1 The source:

From toy to teaching tool, the Merge Cube began as a groundbreaking device enabling manipulation of digital content in the physical realm. Its appeal and versatility have swiftly established it as a valuable asset in the educational sphere.

2 Functionality:

- Design and technology: The Merge Cube features a intricate code pattern that can be detected by mobile device cameras to display AR content on the cube.

- Interacting with the Cube: Users engage with the Merge Cube by holding and rotating it while an app on a smartphone or tablet scans the codes and shows interactive 3D models.

- Necessary equipment: Utilizing the Merge Cube necessitates a compatible smartphone or tablet and the installation of designated AR applications.

02 POTENTIAL APPLICATIONS IN EDUCATION

The Merge Cube introduces innovative technology to educational settings, offering opportunities for interactive and engaging learning. Here are various ways to integrate the Merge Cube into your curriculum:

Business Informatics

Investigating data flow models:

- Students can observe the data flow within a corporate network by rotating the Merge Cube to visualize how data moves between various departments. This aids in comprehending intricate IT architectures and their security needs.

Human Resource Management:

Visualizing team structures and communication flows is essential.

- The Merge Cube enables the visualization of organizational structures and communication channels in a 3D environment. Learners can interact directly to comprehend how information flows and the impact on team dynamics.

3. Right:

Making contract structures tangible:

- Legal documents and contract structures are visualized through the Merge Cube, aiding students in comprehending various clauses and their connections, fostering a more profound grasp of legal documents.

4. Marketing:

Clearly depict the product life cycle.

- The Merge Cube demonstrates the product life cycle from inception to market exit. Users can rotate and inspect each phase to assess marketing tactics and consumer trends.

5. Geography:

Comprehending economic geography and globalization:

- The Merge Cube demonstrates global trade patterns and economic interconnections in a three-dimensional model. Users can physically grasp the world and comprehend how local occurrences can impact the global stage.

6. German:

Literary analysis and creative writing activities:

- In German lessons, students have the opportunity to utilize the Merge Cube to delve into literary characters from a novel or drama. Each side of the cube symbolizes a distinct aspect of the narrative. Character (e.g. background, motivations, relationships, conflicts) that students can rotate and explore to develop a deeper understanding of the character.

Narrative Structure Visualization:

- The Merge Cube facilitates the visualization of narrative structure. By rotating the cube, students can investigate various narrative elements like exposition, buildup, climax, and resolution, enhancing their comprehension of storytelling mechanics.

Office space design:

Office layout visualization:

- In the realm of office design, individuals can utilize the Merge Cube to simulate various office layouts in three dimensions. Through interactive manipulation of the cube, they can observe firsthand the impact of layout modifications on workplace ergonomics and communication dynamics.

Simulation of work environments:

- The Merge Cube enables the simulation of various office environments, considering factors like light, noise, and traffic patterns. This aids students in comprehending how environmental elements can impact productivity and wellbeing in a work setting.

03 EDUCATIONAL GOALS

Encouraging discovery learning:

- Objective: Encouraging students to learn and discover independently through direct interaction and manipulation.
- Methods: Utilizing the Merge Cube to investigate intricate models, ranging from historical artifacts to scientific diagrams, students are prompted to learn through curiosity and exploration.

Supporting diverse learning pathways:

- Objective: Adapting the learning process to meet the individual needs and abilities of students.
- Methods: The Merge Cube enables various methods and learning paces, empowering students to delve into subjects at their individual speed and based on their personal interests.

> " AUGMENTED REALITY ALLOWS STUDENTS TO HAVE NOVEL LEARNING EXPERIENCES BY PROVIDING DISTINCT IMPRESSIONS COMPARED TO TRADITIONAL IMAGES. THIS TECHNOLOGY ENABLES ALL STUDENTS IN A LEARNING GROUP TO ACCESS MODELS SIMULTANEOUSLY, RATHER THAN BEING LIMITED TO ONE OBJECT PER CLASSROOM.
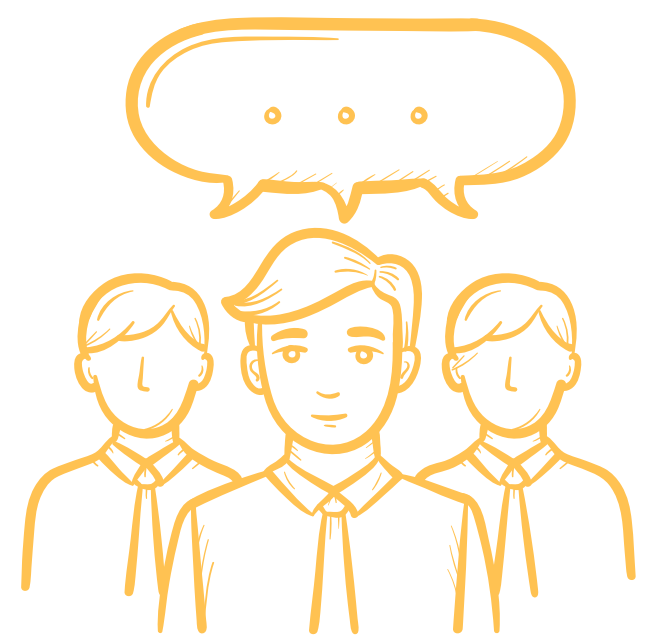> DR. ULLA HAUPTMANN "

03 EDUCATIONAL GOALS

Enhancement of teamwork and collaboration:

- Objective: Training students to effectively collaborate in teams, a crucial skill in the contemporary professional landscape.

- Methods: By engaging in group projects with the Merge Cube, students develop their communication skills and collaborate on finding solutions.

Enhancing digital competency:

- Objective: Equipping students with the skills necessary for success in an ever more digitalized world.
- Methods: Utilizing the Merge Cube to impart fundamental knowledge of new technologies and foster comprehension of augmented reality.

Critical reflection suggestion:

- Objective: To empower students to critically assess information and formulate their own conclusions.
- Utilizing the Merge Cube for analyzing and assessing scientific models and historical scenarios fosters critical thinking.

Resilience training involving the Merge Cube.

Introduction:

- At Heinrich KG, a resilience initiative was implemented in response to heightened workloads.
- Issue: Escalated workload from recent projects leading to heightened stress levels and increased sick leave.
- Objective: Creating a resilience-building program utilizing the Merge Cube and showcasing it in the Ideas Room.

Implementation of the project:
- **Informationsphase:**
  - Research on stressors in typical office environments.
  - Enhancing the seven pillars of resilience.
- **Planning stage:**
  - Selection and detailed elaboration of specific resilience pillars.
- **Decision and implementation phase:**
  - Designing and implementing Merge Cube presentations.
  - Utilization of CoSpaces for practical application.
- **Phase of control and evaluation:**
  - Presentation of results in the "ideas room" and collecting feedback.

Interactive Student Outcomes: Exploring Resilience in Practice
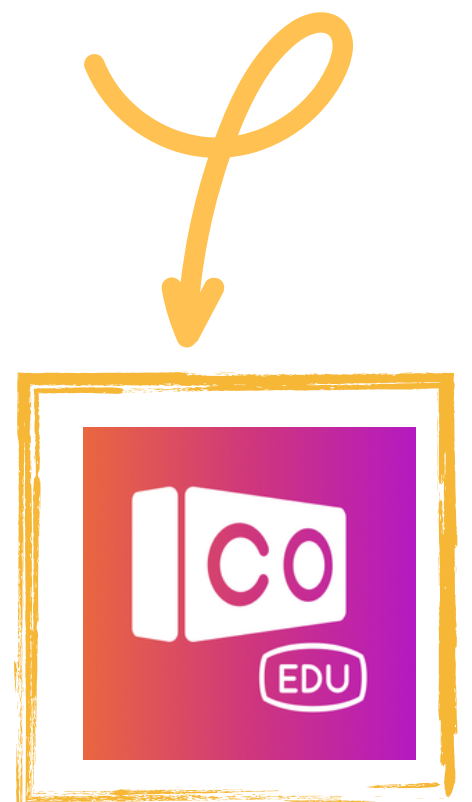
The trainees have created innovative presentations on the seven pillars of resilience. Use your smartphone camera to scan the QR codes and explore the students' creative work to grasp how resilience can be fostered in the workplace.

PLEASE DOWNLOAD THE COSPACES EDU APPLICATION TO ACCESS THE RESULTS.

SCAN ME

SCAN ME

SCAN ME

SCAN ME

04 PRACTICAL ILLUSTRATIONS

Interactively experience the freedom of contract.

Context:

The Merge Cube serves as an innovative educational tool for illustrating the intricate concept of contractual freedom.

Problem:

Mr. Müller and Mrs. Heinrich stand in front of a restaurant that is closed unexpectedly.

Goal:

The actors should acknowledge the diverse aspects of contractual freedom and contemplate its impact on daily choices.

THESE STEPS ARE INTEGRAL TO THE DESIGN THINKING PROCESS, WHICH FOSTERS SYSTEMATIC CREATIVITY!

Implementation of the project:
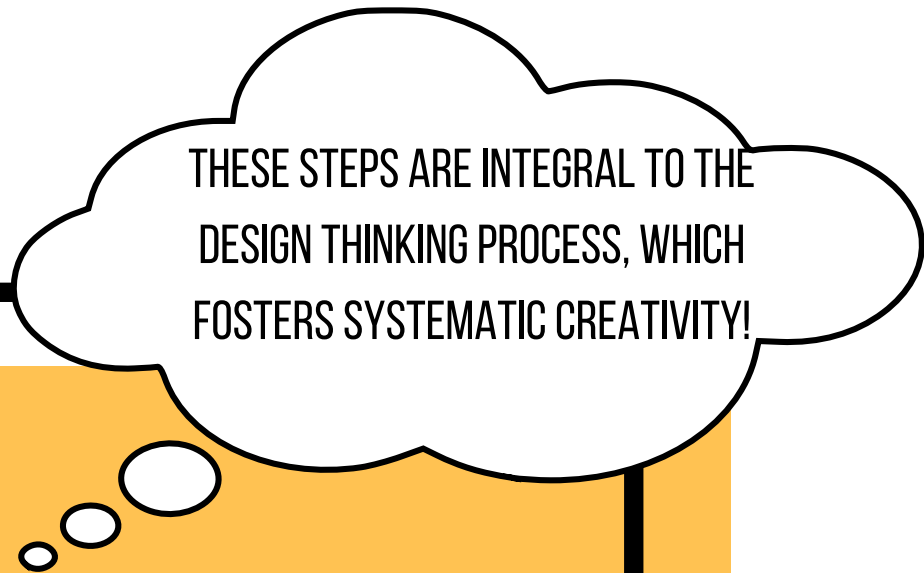- **Investigating the formulated scenario:**
  - Students analyze the scenario created by the instructor on the Merge Cube to grasp the basics of freedom of contract.
- **Creating Scenarios:**
  - Design merge cubes representing various facets of contractual freedom.
- **Presentation and discourse:**
  - Presentation and discussion of prototypes.

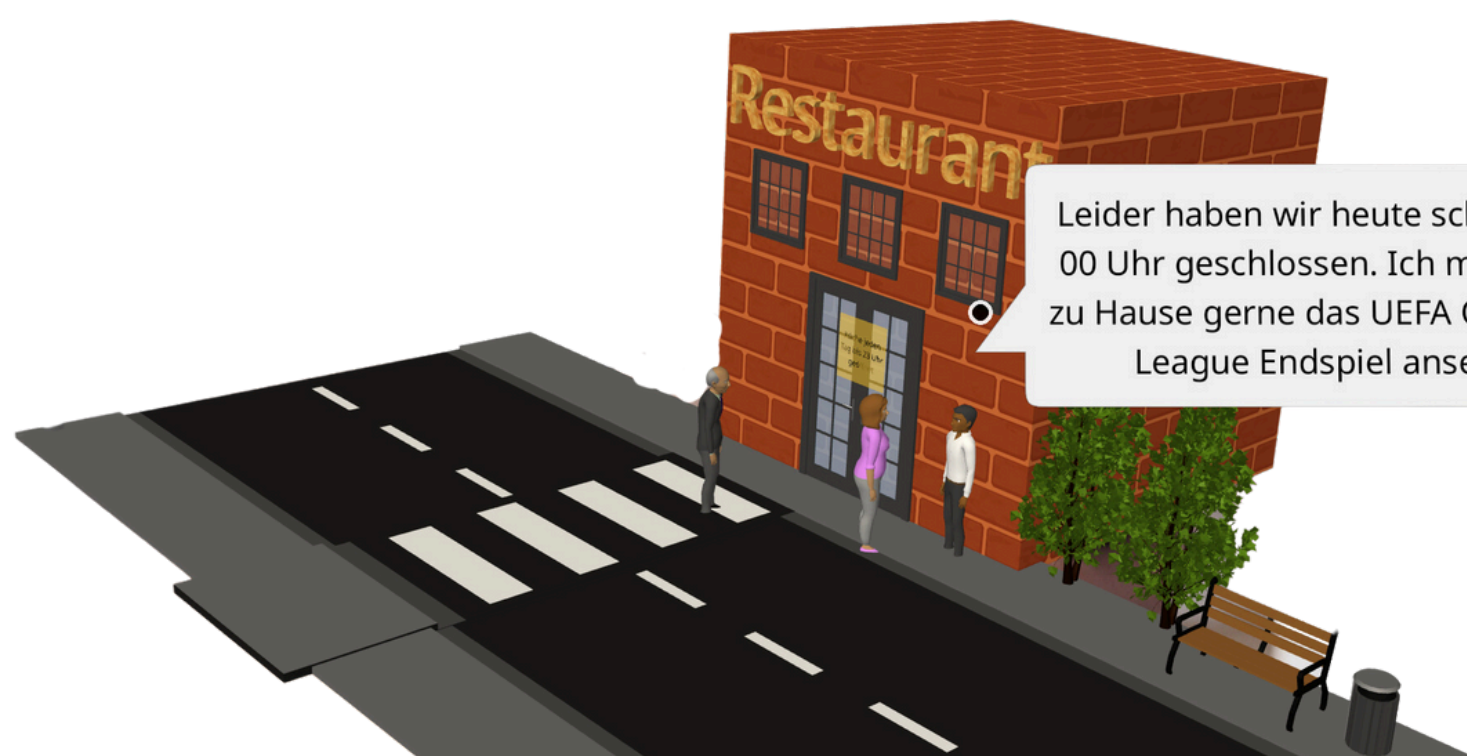**The initial scenario: Mr. Müller and Mrs. Heinrich standing in front of a closed restaurant.**

The Merge Cube offers a superb platform for interactively demonstrating the abstract concept of freedom of contract. Through the cube, students can explore the scenario involving Mr. Müller and Ms. Heinrich in front of a closed restaurant, enabling them to experience the repercussions of legal decisions in daily life. This approach fosters a practical comprehension and enhances involvement with the subject matter, resulting in a learning process that is both efficient and memorable.

PLEASE DOWNLOAD THE COSPACES EDU APPLICATION TO ACCESS THE RESULTS.

SCAN ME

NLF
MKG

CO
EDU

Restaurant

Leider haben wir heute schon ab 19. 00 Uhr geschlossen. Ich möchte mir zu Hause gerne das UEFA Champions League Endspiel ansehen..

Initiating CoSpaces: Crafting a Merge Cube

CoSpaces Edu provides access to a realm where education and technology interse[ct] in captivating ways. This guide will walk you through the initial steps to craft a Merg[e] Cube using CoSpaces Edu, serving as a three-dimensional educational tool in the classroom.
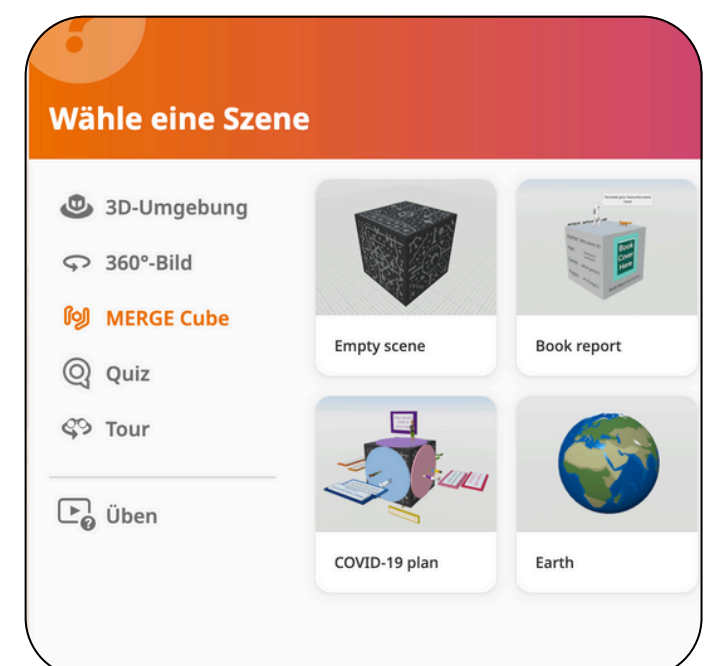
Step 1: CoSpaces Edu Orientation

- Access your CoSpaces Edu account and navigate to the homepage.
- Choose the CoSpaces option from the primary navigation bar.
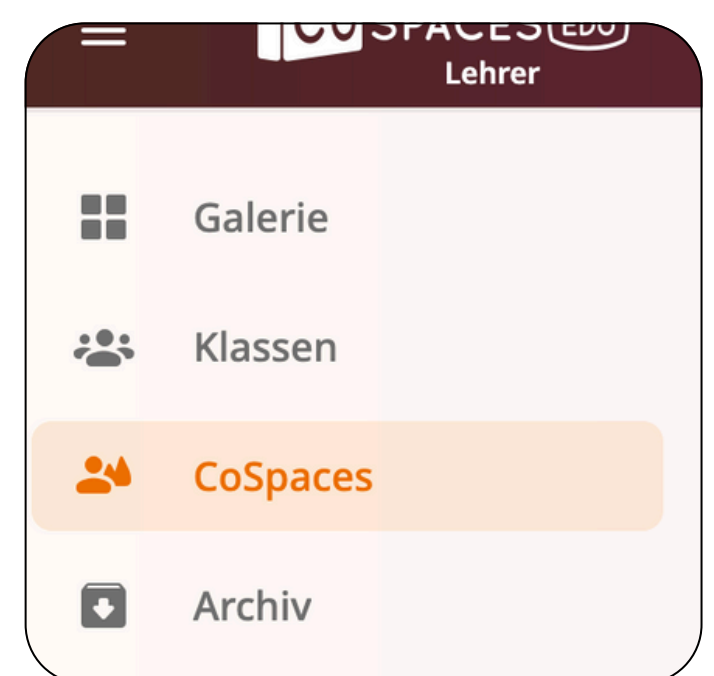
Step 2: Establish a fresh CoSpace.

- Choose the "+Create CoSpace" button.
- Choose "Merge Cube" as the project category to initiate your three-dimensional educational material.

Step 3: Establish your workspace.

- Acquaint yourself with the interface: the Merge Cube positioned in the center, the object library to the left, and the properties and settings options to the right.

Step 4: Incorporating and personalizing items

- Initiate your design process by dragging items from the library on the left and positioning them on a surface of the Merge Cube located at the center of the screen.

- Positioning: Click on the object and drag it to the desired location on the cube.

- Resizing: Choose the object and utilize the scaling options to adjust its size, ensuring that the object remains proportionate and visible.

- Utilize the rotation tools to adjust the object around its axes until it is properly aligned.

- To attach an object, choose the desired object, right-click, and opt for "Attach". Next, click on one of the light blue highlighted points to secure the object to the chosen cube side.
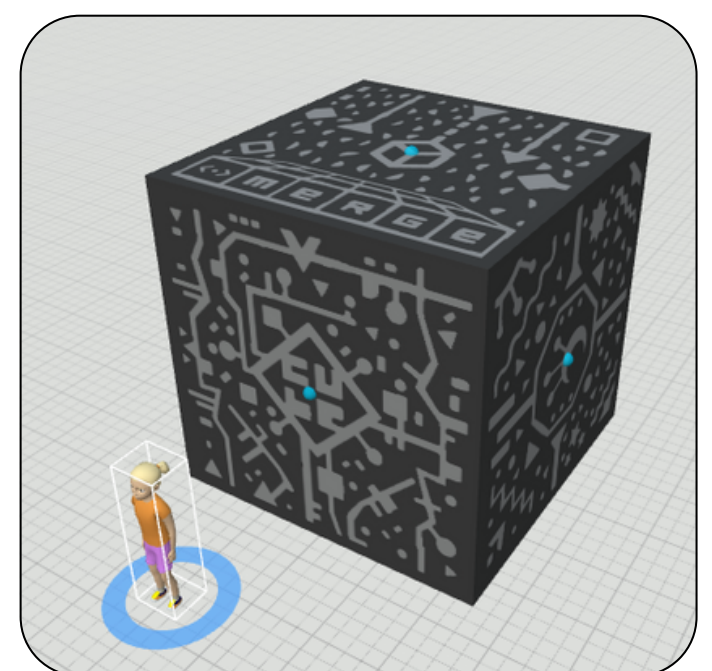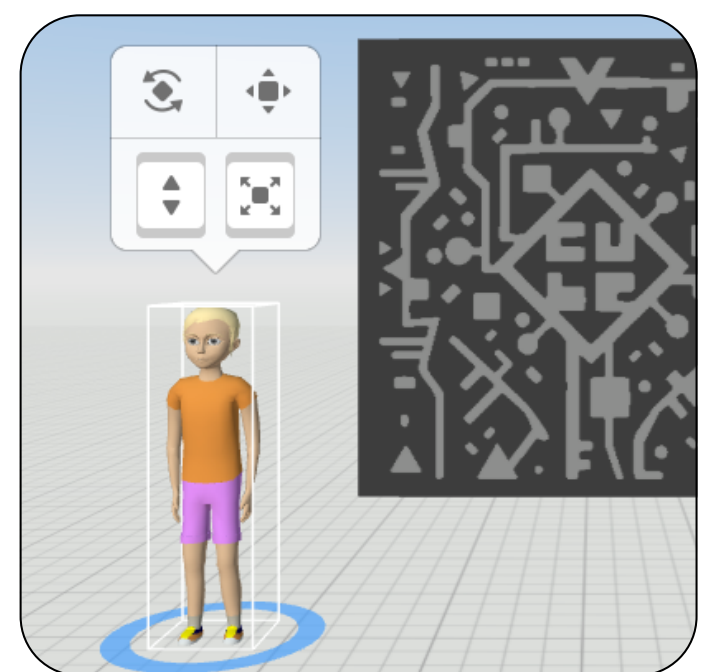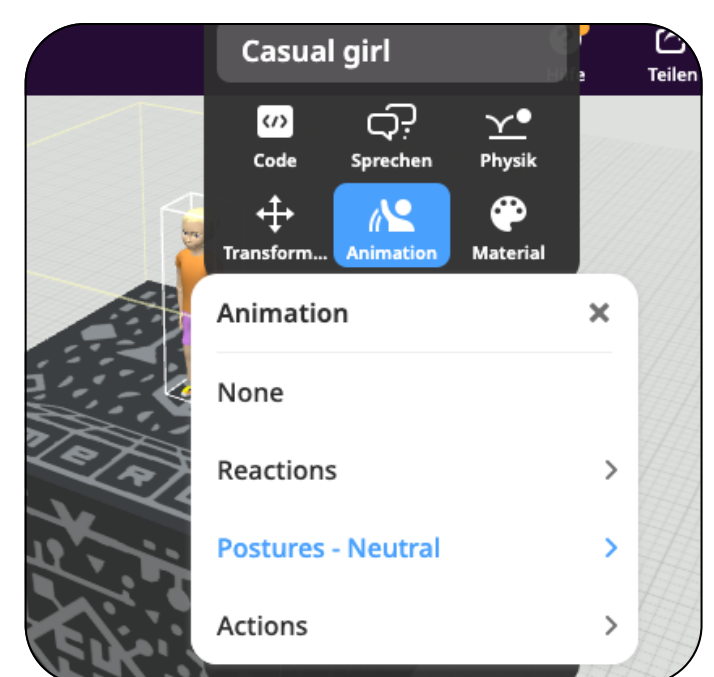
**Step 5: Incorporate interactivity and animation.**

- **Animate figure.**
  - Right-clicking on the character allows you to access the properties menu where you can choose the Animation option.
  - A selection of predetermined animations like running, waving, or cheering will be displayed. Choose an animation.

- **Display speech bubble.**
  - Select the object and choose "Speak" from the right-click menu.
  - A dialog box appears allowing input of the desired text for the speech bubble.
  - To showcase thoughts, opt for the "Thinking" alternative. Typically depicted by a thought-bubble-like bubble.
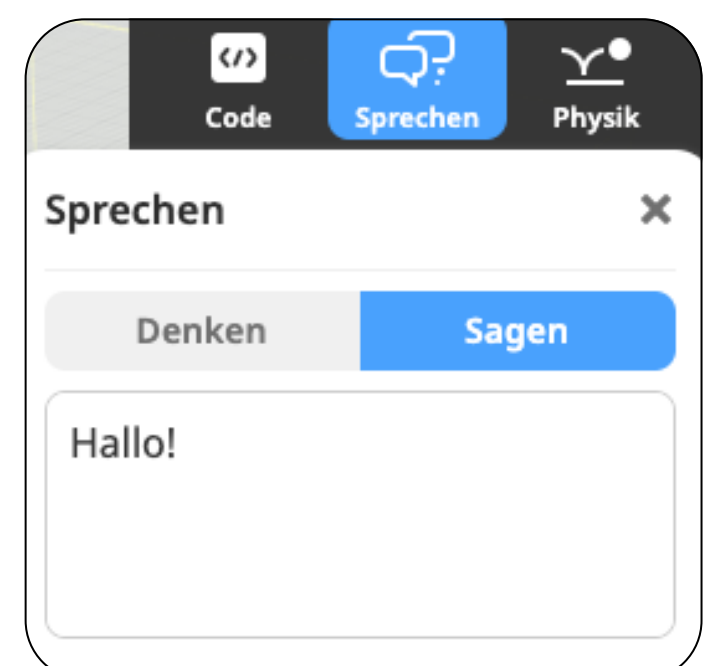
To activate the animation or speech bubble through an interaction, proceed to step 6.

## Step 6: Basic Programming with CoBlocks

CoBlocks represent the visual programming language within CoSpaces, enabling the addition of behavior and interactions to objects. It employs intuitively structured building blocks to define flows and actions.

- **CoBlocks Preparation:**
  - If utilizing CoBlocks for the initial time, you must activate the feature in your project. To accomplish this, navigate to "Code" and select "CoBlocks".

- **Enabling CoBlocks for an object:**
  - Choose the object you wish to program in your scene.
  - Select "Coding" from the context menu by right-clicking the object.
  - In the window that appears, enable the "Use in CoBlocks" option.
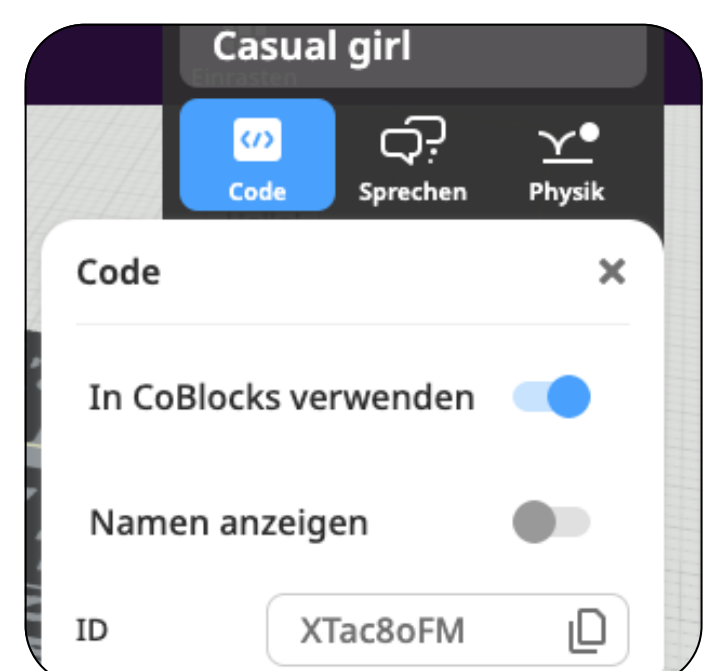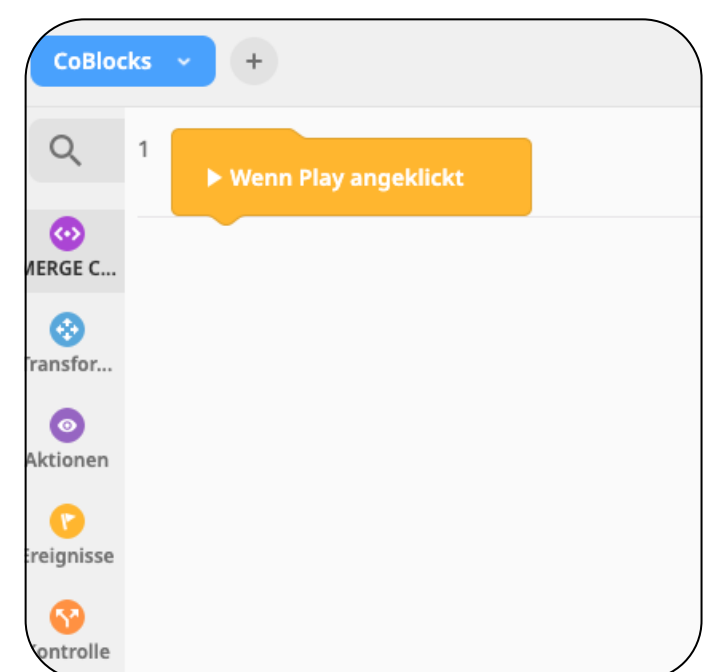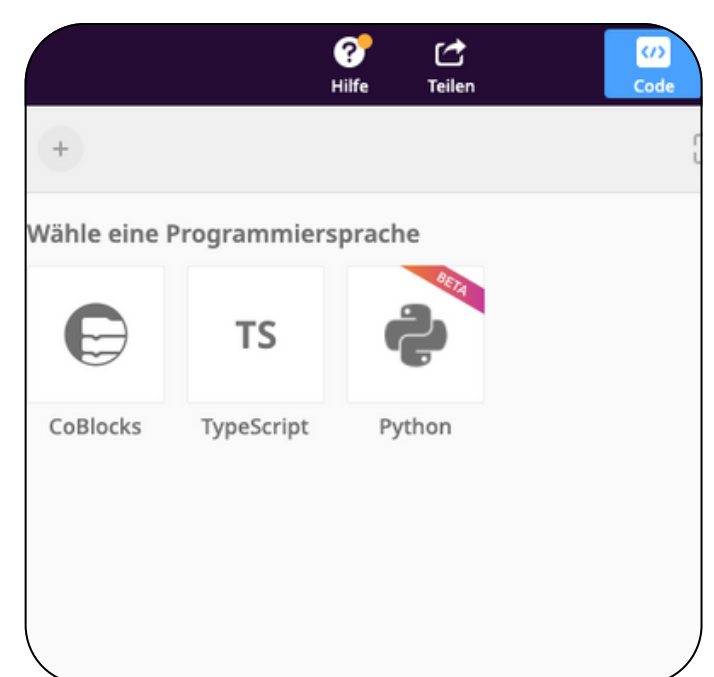
- **Programming interaction:**
 - **Establish trigger event.**
    - In the Events category, incorporate the When this object is clicked block into your workspace.
  - **Incorporate verbal animation.**
    - From the "Actions" category, choose the " [Object] say "Hello!" block and connect it to the event.
    - Enter the desired dialogue for the object to speak in the text field.
  - **Object animation programming:**
    - Move the "disable animation of [object]" block from the corresponding section and position it beneath the "Speak" block.
    - Choose the animation you wish to execute upon clicking the object from the provided list.
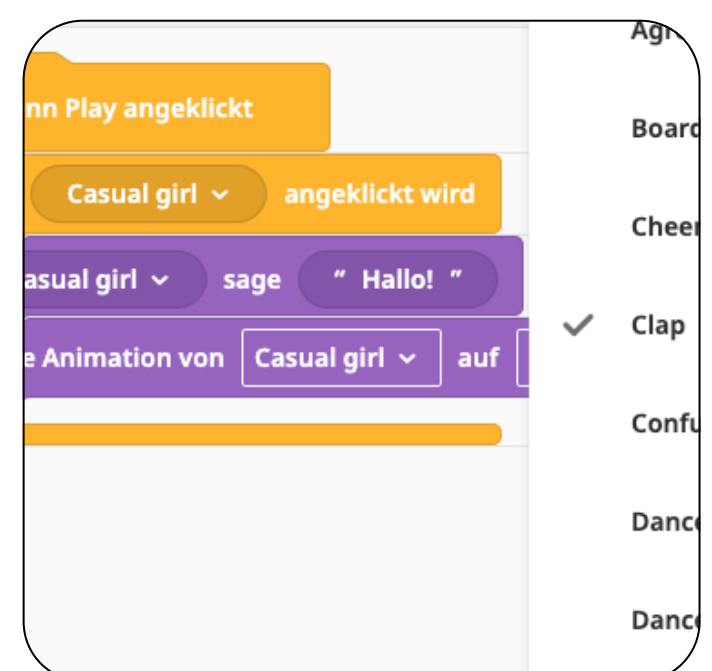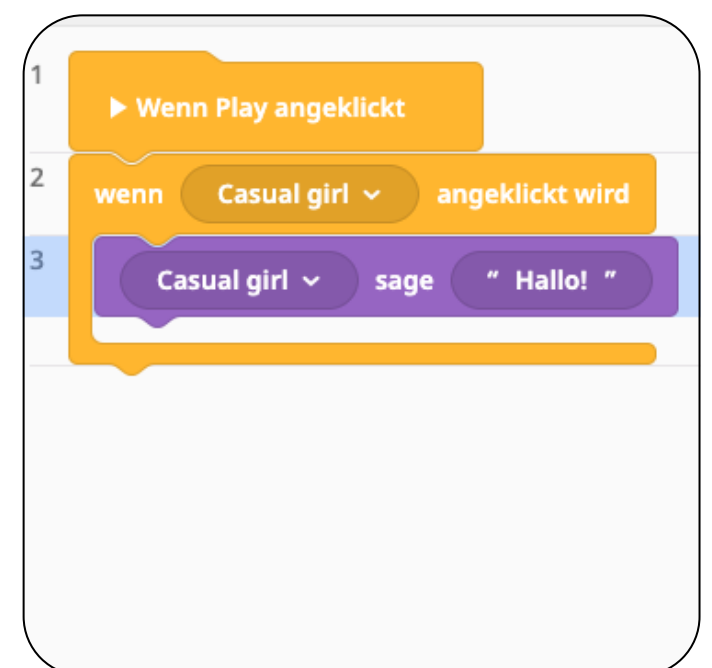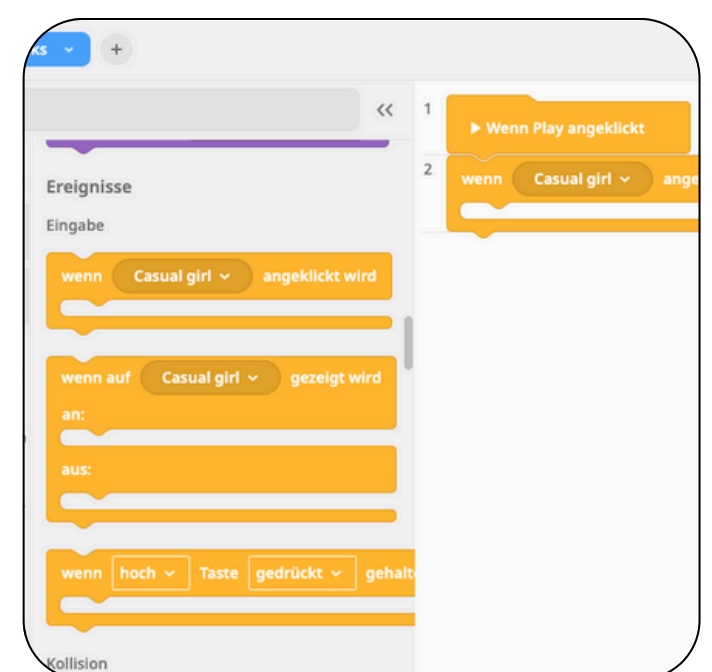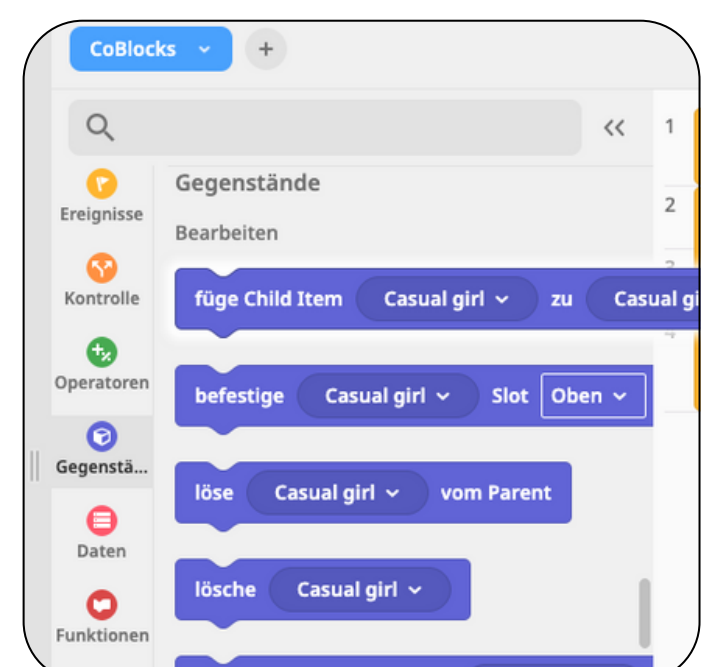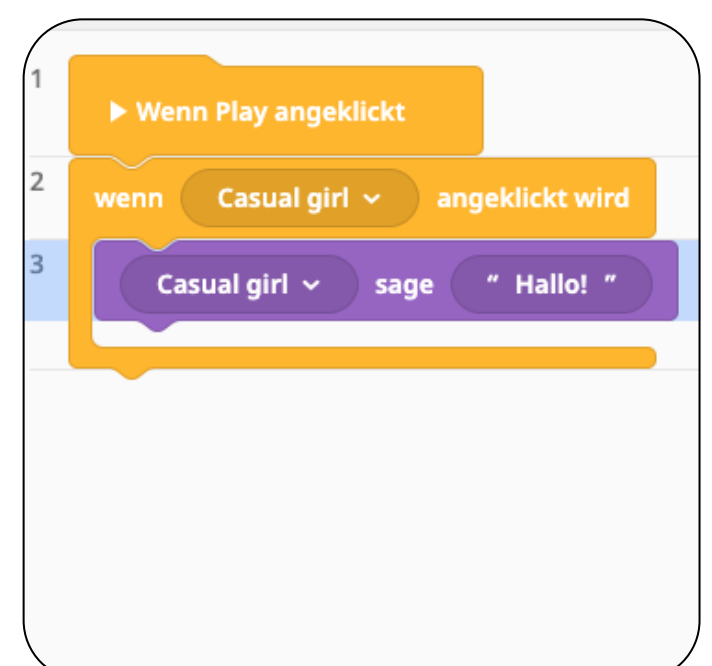
05 INITIAL PROGRESS

- **Testing and adjustments:**
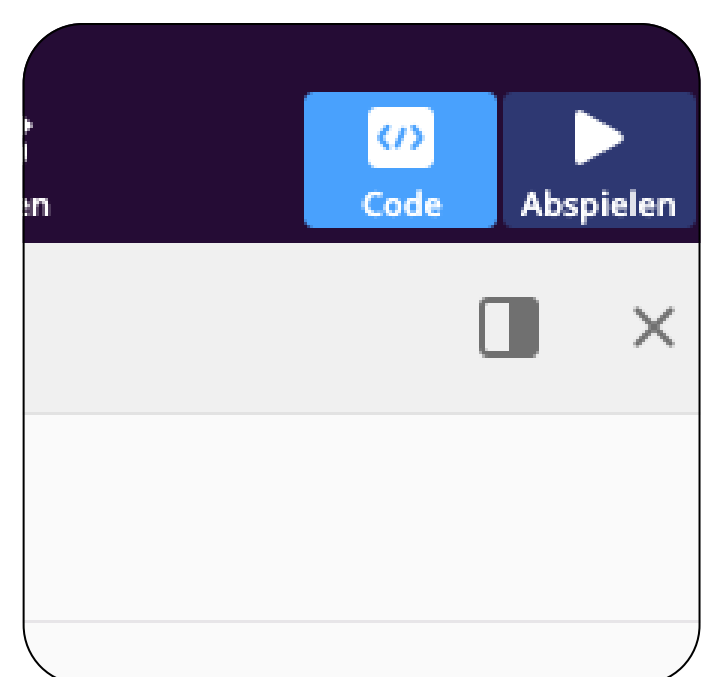 - Verify the functionality in test mode by selecting the "Play" button.
  - Interact with the object and observe the programmed sequence.
- **Increase interactions.**
  - Similarly, additional interactions can be incorporated, like opening an information window or playing a sound.
  - Utilize a distinct block for each new interaction and logically connect it to the event block.

**Step 7: Incorporate design elements and multimedia into CoBlocks.**

After programming the fundamental interactions, you can enhance the Merge Cube with design elements and multimedia to further enhance the learning experience.

- **Include photographs:**
  - Choose "Upload" and then "Pictures" to add a photo from your library.
  - Resize and position the image on the cube as needed.
- **Embed videos:**
  - Choose the "Video" selection under "Upload."
  - After uploading, you can position the video directly on one side of the cube.
  - Videos can be scheduled to play upon clicking an object, akin to the prior animations.
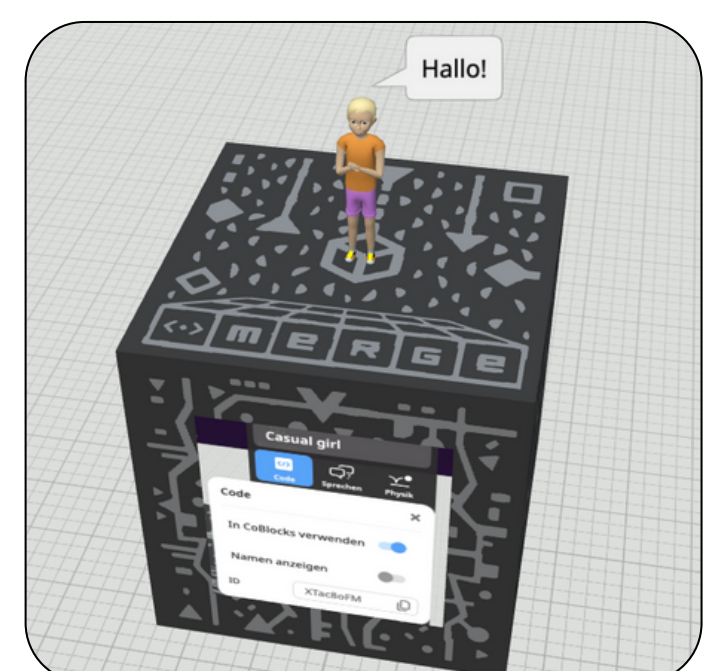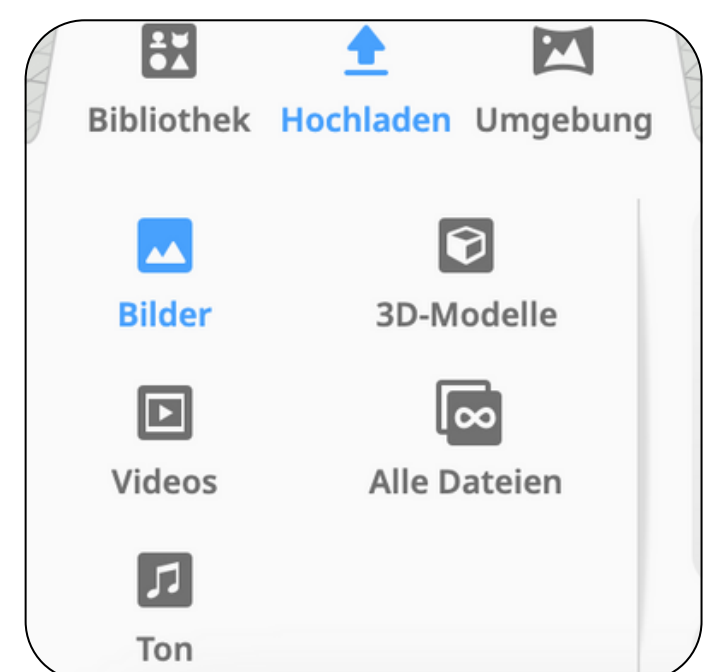
06 STRATEGIES AND TECHNIQUES

In this concluding chapter, you will discover practical tips and suggestions on effectively incorporating the Merge Cube into your teaching approach to enhance your students' educational experience.

Tip 1: Supply initial resources

Offer students comprehensive tutorials and sample projects prior to commencing their own projects. This approach will aid in their comprehension of technology usage and ignite their creativity for project development. A german *step-by-step instructions for your students can be accessed using the QR code provided.*

Tip 2: Prioritize experience over creation.

Students should begin by exploring current Merge Cube projects. By assuming the role of users initially, students can assess usability and the learning experience from an end-user standpoint. This comprehension is vital for their subsequent cube design, enhancing the quality and significance of their projects.

Tip 3: Cooperative Learning Class Code

A class code enables the instructor to oversee and assess students' work.
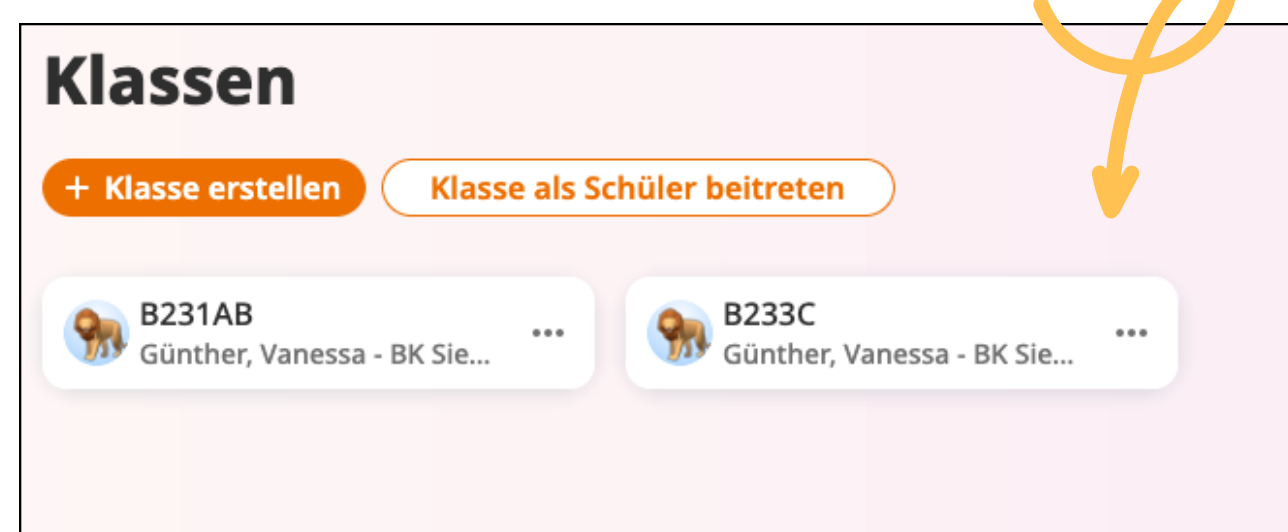
Tip 4: Integration of physical and digital components.

Integrate the Merge Cube with physical objects or activities. For instance, it could be incorporated into a broader project where students construct physical models enhanced by AR elements on the cube, fostering a holistic comprehension of subjects by blending the physical and digital realms.

Tip 5: Assessment Tool

Utilize the Merge Cube as a creative assessment tool for students to showcase their acquired knowledge by presenting it on the cube. This offers an alternative assessment approach that surpasses conventional testing methods.

License terms and fees for CoSpaces Edu in conjunction with the Merge Cube

To effectively utilize the Merge Cube in the classroom, the CoSpaces Edu platform is essential. Below is a summary of the licensing options and related expenses.

- A single CoSpaces Edu Pro license, which includes the Merge Cube add-on, is priced at 55.00 euros annually. The base license is 50.00 euros per year, with an extra 5.00 euros for the Merge Cube add-on.
- Additional licenses, if needed, are priced at 7.50 euros annually, with each extra license incurring an added cost of 0.50 euros.

THANK YOU FOR YOUR INTEREST!

"I CAN EMBRACE FAILURE, AS IT IS A COMMON EXPERIENCE. HOWEVER, WHAT I CANNOT TOLERATE IS THE LACK OF EFFORT."

MICHAEL JORDAN

08 SOURCES

- **fobizz. (n.d.):** Merge Cube - Experience and design AR in the classroom. Available online at: https://plattform.fobizz.com/fortbildungen/552-merge-cube-ar-im-unterricht-erleben-und-gestalten (last accessed on May 10, 2024).

- **CoSpaces Edu. (n.d.):** Pricing. Retrieved from: https://cospaces.io/edu/pricing.html (accessed on May 10, 2024).