

# ARTutor & Moodle



**AR**  
Tutor

**Prof. Avgoustos Tsinakos,**

Director of **Advanced Educational Technologies and Mobile Applications Lab**

Eastern Macedonia and Thrace Institute of Technology

& Mobile Applications Lab  
E-mail: [tsinakos@teiemt.gr](mailto:tsinakos@teiemt.gr)

# The Challenge ...



## End of an ERA

We are the last generation  
being more **intelligent**  
than the existing technology

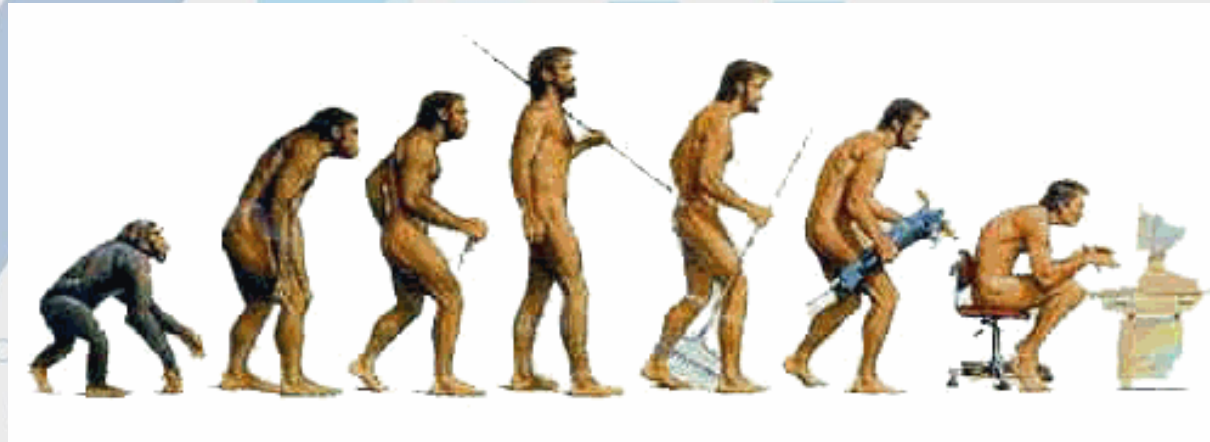


Advanced Educational  
& Mobile Applications Lab

# The Challenge ...

We 've changed...

from Homo Sapiens



# The Challenge ...

**..to...Mobo Sapiens**

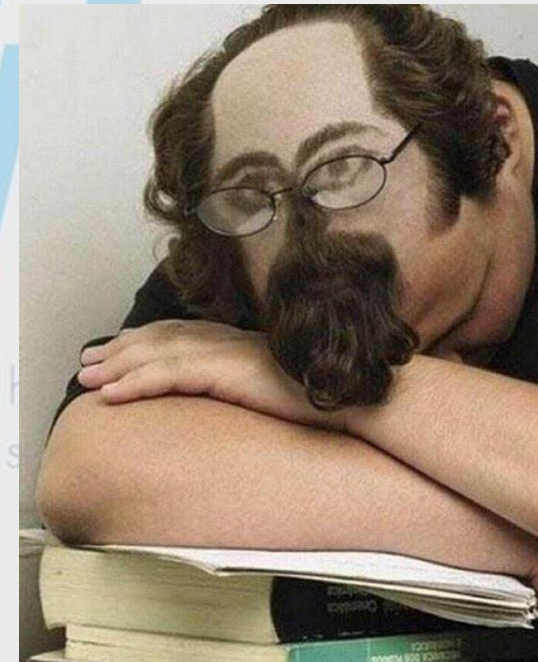


# The Challenge ...

We've changed the way we learn...  
thus, in some cases education becomes



boring



# An alternative....



# But couldn't be better?



## How about combining **Moodle** with **AR**?

ional Technologies  
lications Lab

## The ideas are ...



To **Augment** content available via Moodle

To increase user interaction with the platform

To immerse the learner into the content

Advanced Educational Technologies  
& Mobile Applications Lab



We propose the use of...

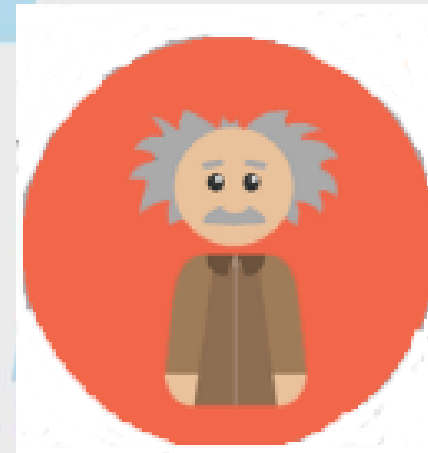


# Augmented Reality Tutor (AR Tutor)



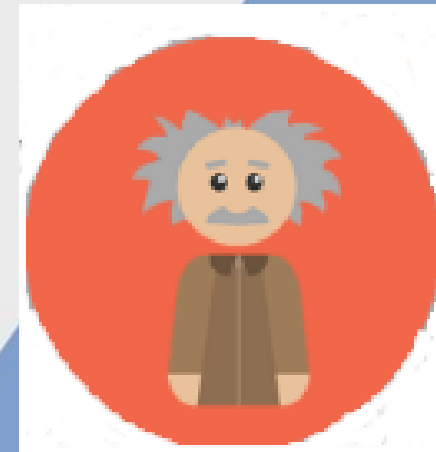
**AR  
Tutor**

Advanced Educational Techno  
& Mobile Applications Lab



We propose the use of...

- 1) AR Tutor can be used for creating Augmented enhanced content**
- 2) Has the advantage of voice interaction with the user**



# Advantages of ARTutor

- Easy to use - No special IT or programming skills are required
- Applies on books in **PDF** form already distributed via **Moodle**
- ARTutor uses the same **PDF to create the augmentations**  
(while in other platforms only image files can be used as triggers)

# Advantages of ARTutor



- All books are freely available and visible from the application
- Augmentations are common file types  
(.FBX, .OBJ, .DAE created by Maya, Blender etc or .armodel for Kudan SDK)

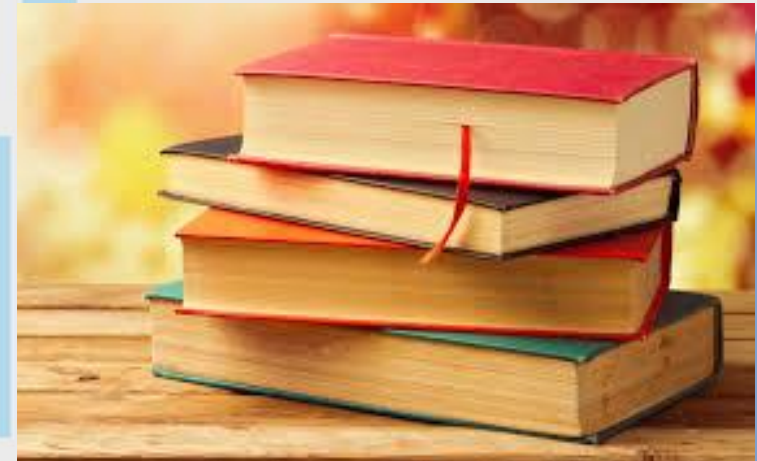
# Advantages of ARTutor

- Traditional printed books are used
- Multi-purpose



METMA

Advanced Educational Technologies  
& Mobile Applications Lab

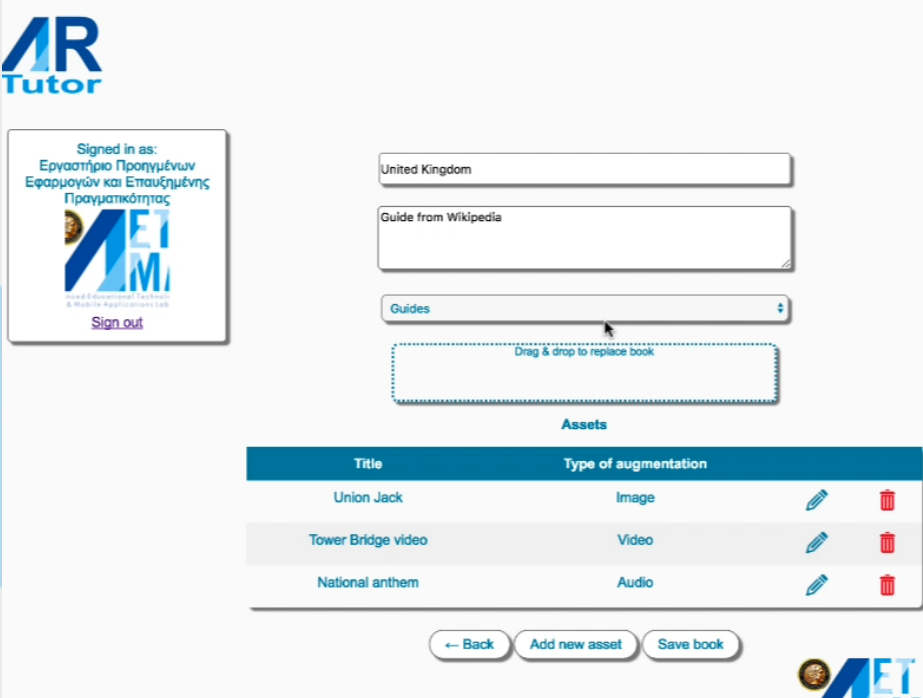
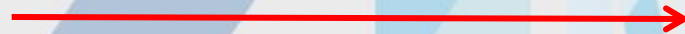


# Characteristics

AR Tutor consists of two parts :

## PART A:

- Authoring tool
  - Google account login
  - Book creation
  - Association of books with augmentations
  - Association of augmentations with commands

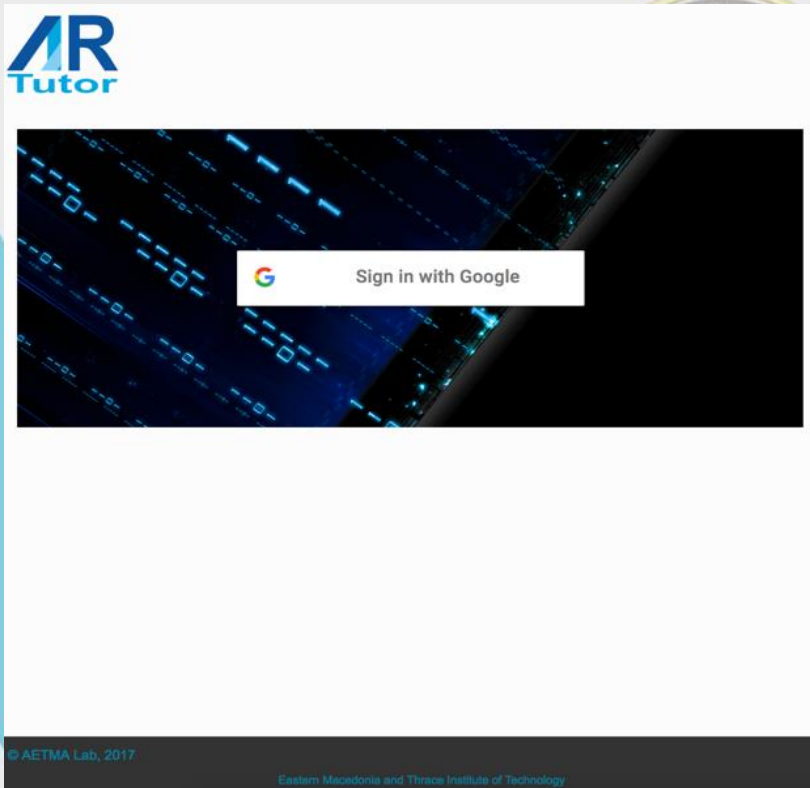


Title	Type of augmentation		
Union Jack	Image		
Tower Bridge video	Video		
National anthem	Audio		

# Characteristics

- PART B:
- Mobile application
  - Book selection
  - Page recognition
  - Augmentation presentation
  - Voice commands
  - Q&A system





Login screen

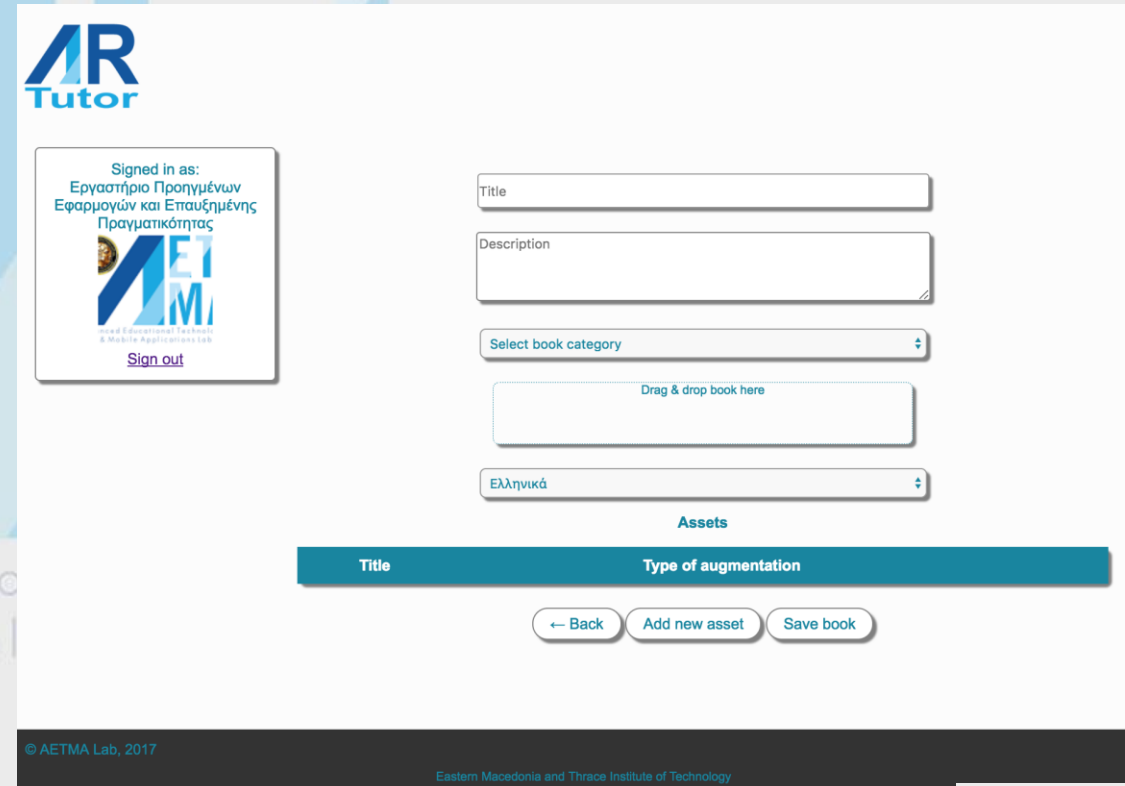


Main screen



# Book creation

- Books have a title, a description, and a category
- The book's language is also specified
- PDF files are uploaded with drag-and-drop
- When a PDF file is uploaded, the content is extracted and it is saved in a separate text file

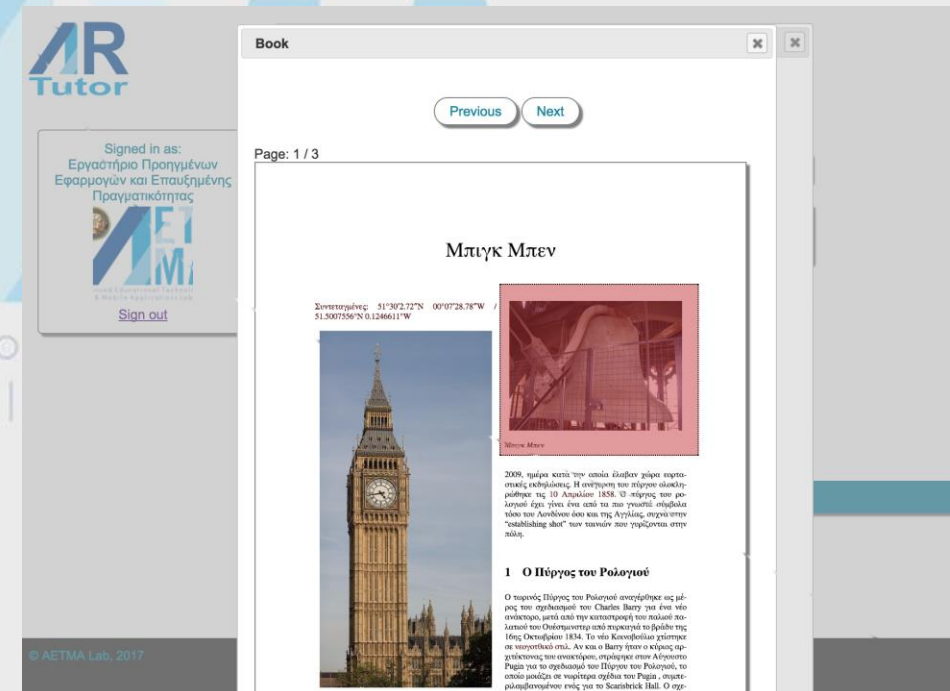
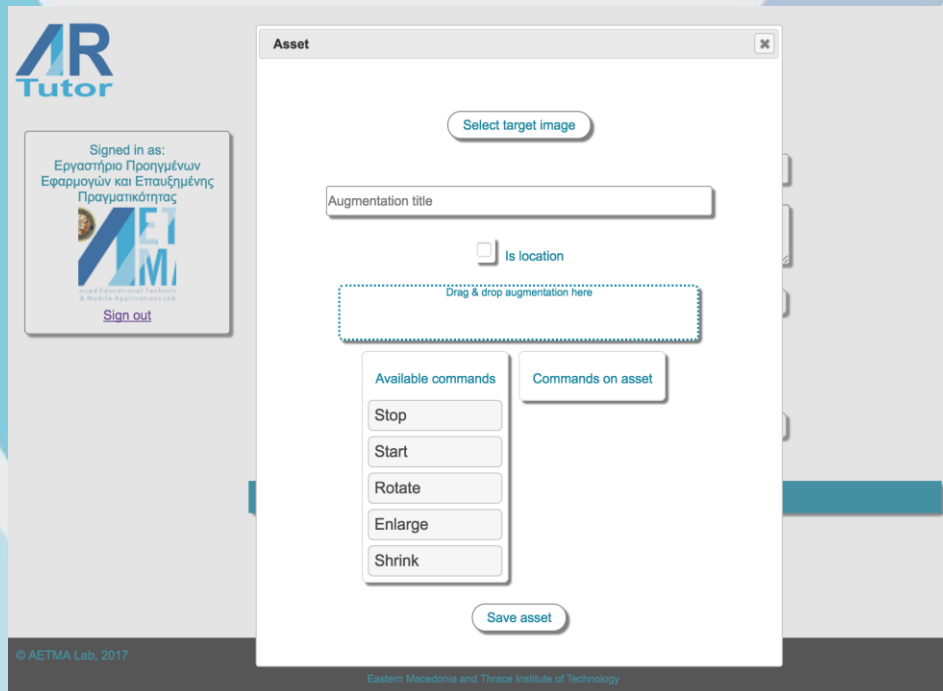


The screenshot shows the AR Tutor book creation interface. It features a sidebar with the AR Tutor logo and a user profile card for 'Εργαστήριο Προηγμένων Εφαρμογών και Επαυξημένης Πραγματικότητας'. The main form includes fields for 'Title', 'Description', a 'Select book category' dropdown menu, a 'Drag & drop book here' area, and a language dropdown menu set to 'Ελληνικά'. Below the form is an 'Assets' table with columns for 'Title' and 'Type of augmentation'. At the bottom, there are three buttons: '← Back', 'Add new asset', and 'Save book'.

Title	Type of augmentation
-------	----------------------

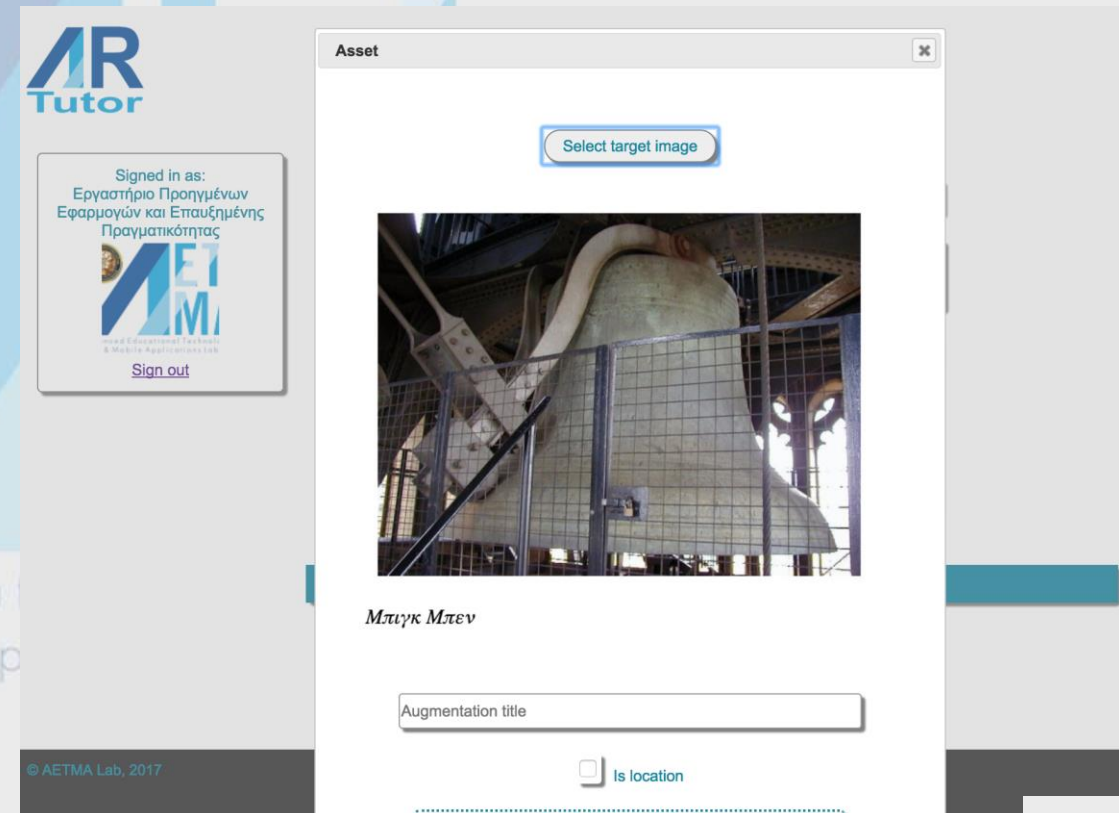
# Augmentation creation (1)

- Each book can be associated with multiple augmentations
- The user selects regions in various pages and associates them with augmentations



## Augmentation creation (2)

- After region selection, the actual augmentation is uploaded
- Accepted types:
  - Image
  - Audio
  - Video
  - 3D models

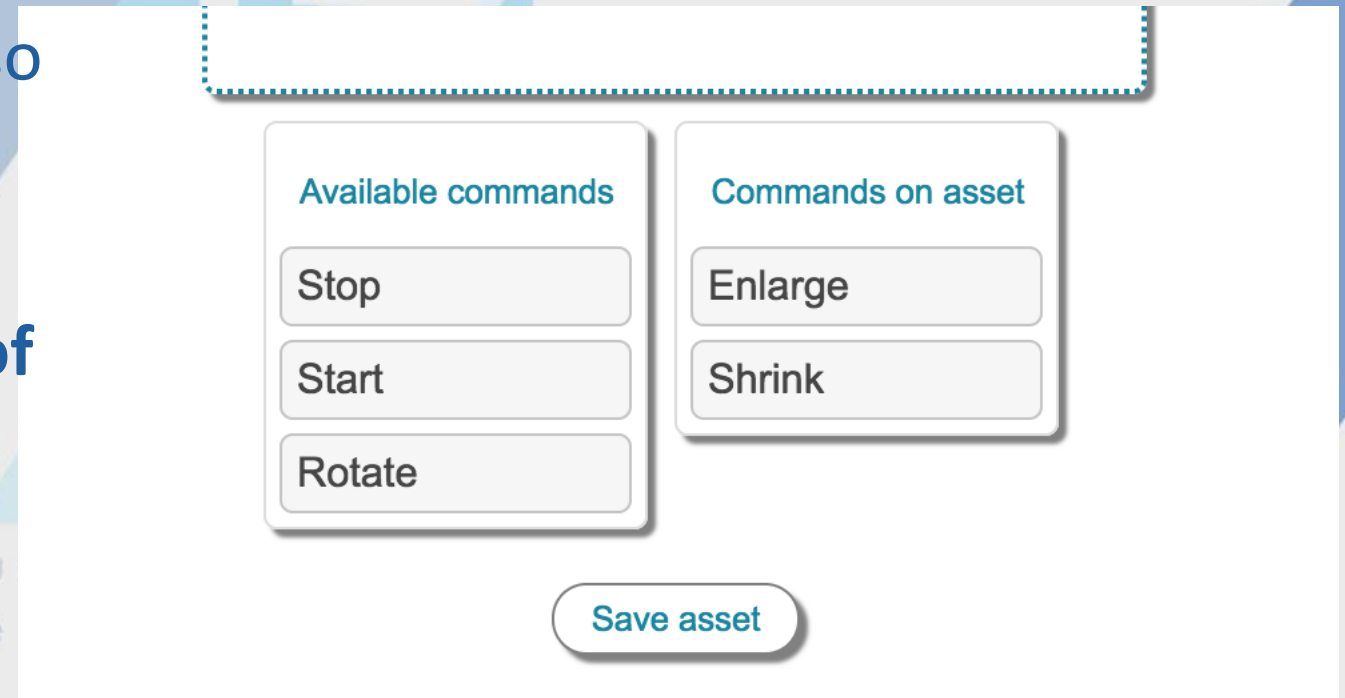


# Augmentation commands

- Depending on the augmentation type, each augmentation can also be associated with commands,
- which allow **voice interaction** of the user and the augmentation



Advanced Edu  
& Mobile



The screenshot displays a user interface for configuring augmentation commands. It features two columns of buttons:

- Available commands:** Stop, Start, Rotate
- Commands on asset:** Enlarge, Shrink

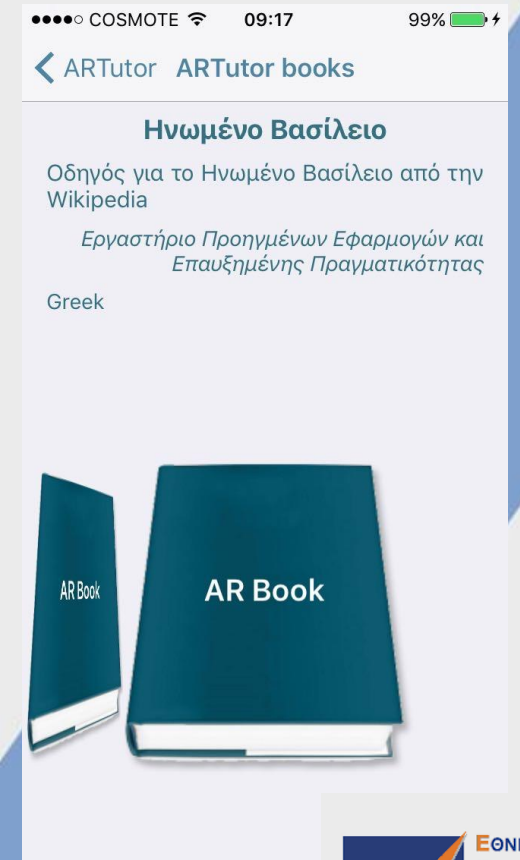
A **Save asset** button is located at the bottom right of the interface.

# Mobile application

- Developed for the iOS and Android platforms
- The user initially selects one of the preset book categories
- The application fetches the corresponding books from the server

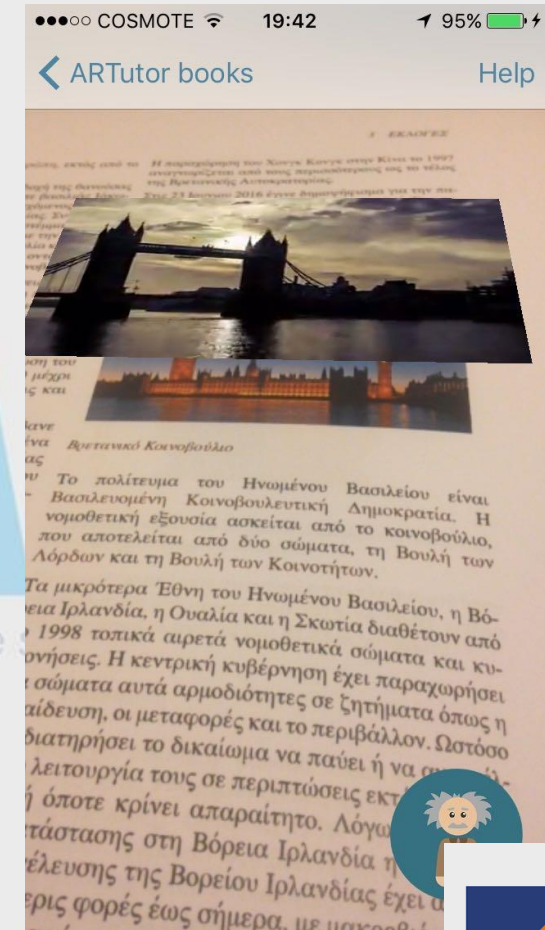


Advanced Educational Technologies  
& Mobile Applications Lab



# Displaying augmentations

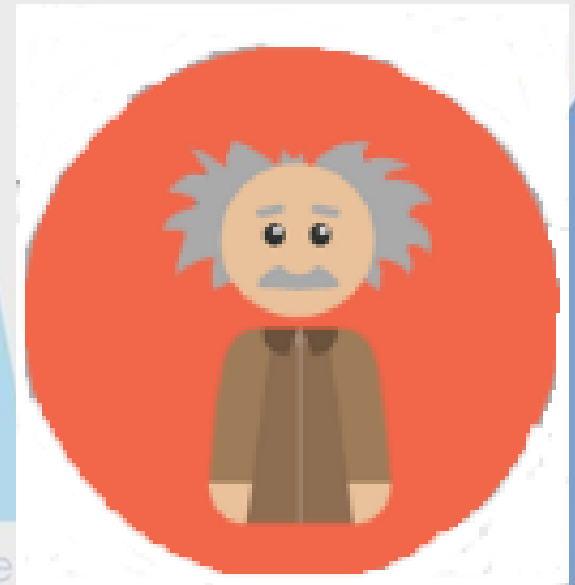
- After book selection, the book assets (augmentations) are downloaded on the device
- Camera searches for active regions in the printed version of the book



# Voice commands

- Users can interact with the augmentations **using gestures** (pinch to zoom, tap to start/stop, slide to rotate)
  - Based on the specified commands for each augmentation
- Commands can also be used for interaction **using speech recognition**
  - When an augmentation appears, the user can tap on the ARTutor icon and utter a command

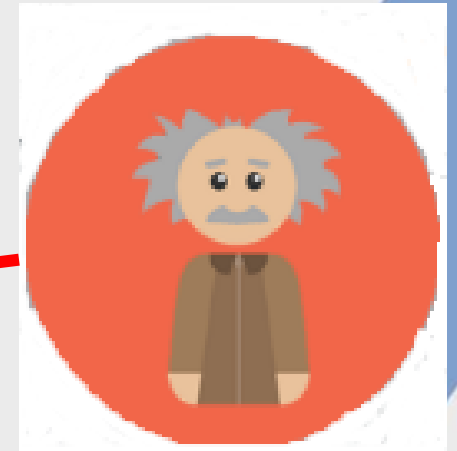
- Tap on the ARTutor icon **initiates speech** recognition
- To differentiate between commands and questions, the user needs to utter the word “Question” before formulating the question





## Q&A system

- The question is sent to the server and the terms are searched in the PDF
- When a match is found, the sentence containing the terms is returned to the device, and is displayed on the screen and pronounced using the **Text To Speech** function

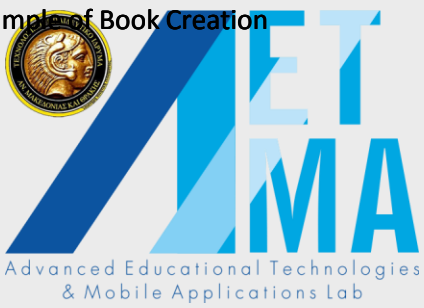


## Demo video

- Creating augmentations
- Displaying augmentations
- Voice commands
- Q&A system



METMA  
Advanced Educational Technologies  
& Mobile Applications Lab



# Demo video



## Sample of Book Creation (VIDEO)

Advanced Educational Technologies  
& Mobile Applications Lab

# Current developments ...

- Information retrieval algorithm
  - Handle natural language questions
  - Improve search results
- Book searching and downloading portal
  - Browsing available books
  - Downloading books for printing

## Conclusions ....



### ARTutor and Moodle

- The authoring tool can be a Moodle activity
- Augmented books
  - Developed by the teacher or the students.
  - Shared access with students participating in the course
    - Collaborative development of the augmented book

## Conclusions ....

### ARTutor and Moodle

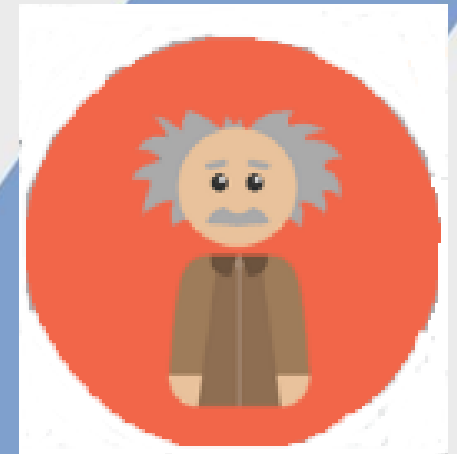
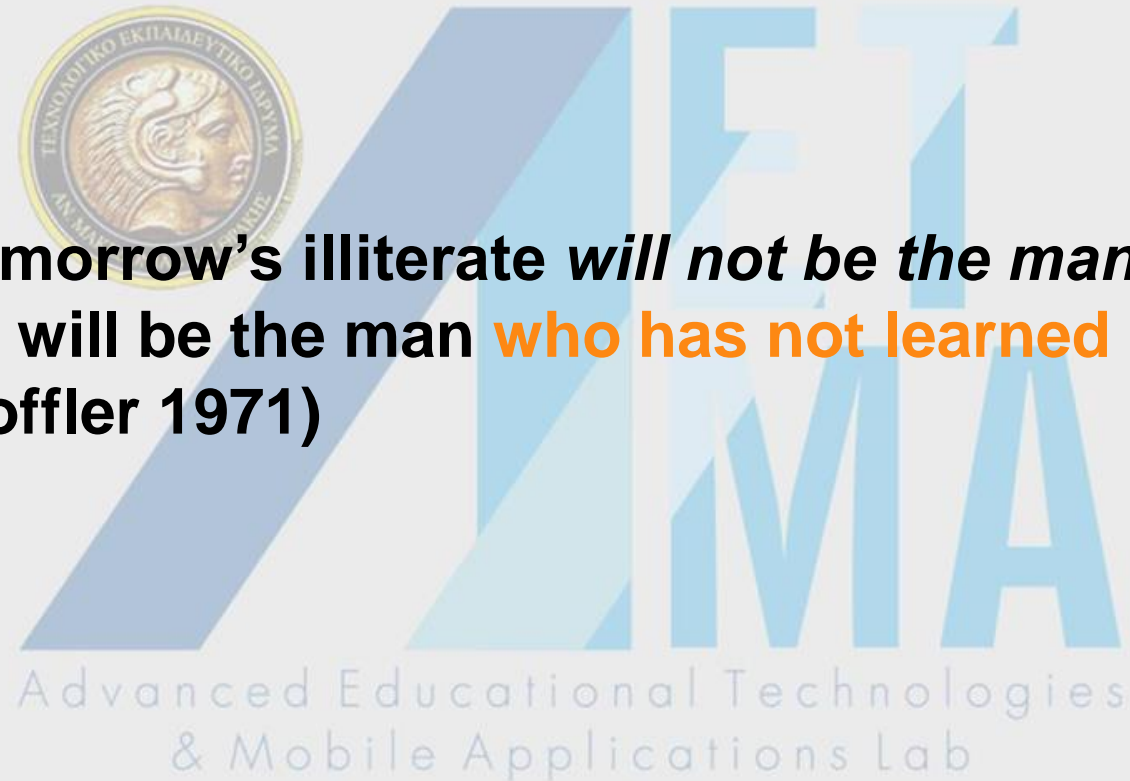
- So the end user will be immersed in the Moodle and
- Moodle itself will fly to another level!



# Thank you



Tomorrow's illiterate *will not be the man who can't read;*  
he will be the man **who has not learned how to learn.**"  
(Toffler 1971)



**Prof. Avgoustos Tsinakos,**

Director of **Advanced Educational Technologies and Mobile Applications Lab**

Eastern Macedonia and Thrace Institute of Technology

E-mail: [tsinakos@teiemt.gr](mailto:tsinakos@teiemt.gr)

Athens, 22–23 May 2018