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## **TEACHING SCENARIO FOR IMPLEMENTATION OF THE INTERDISCIPLINARY PROJECT FOR STUDENTS**

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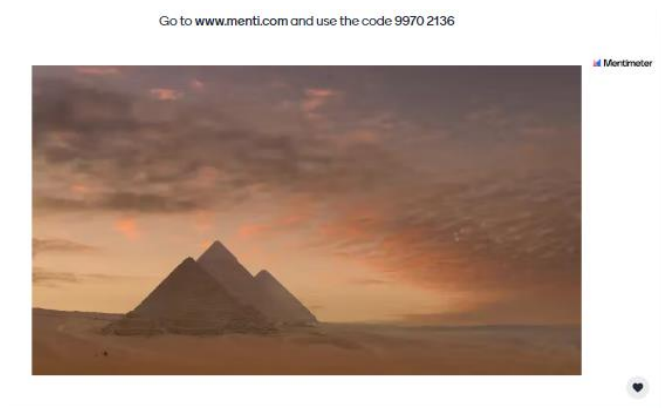
|                              |                         |
|------------------------------|-------------------------|
| <b>Project title:</b>        | The Mighty Pyramids     |
| <b>Correlating subjects:</b> | History, Math, IT       |
| <b>Key terms:</b>            | pyramids, Egypt, volume |

|                                       |               |
|---------------------------------------|---------------|
| <b>Activity title:</b>                | World wonders |
| <b>Activity duration (min):</b>       | 10 min        |
| <b>Detailed activity description:</b> |               |

Start the discussion with your students by showing them images of the seven world wonders (you can use the illustration from the History web page: <https://www.history.com/topics/ancient-history/seven-wonders-of-the-ancient-world>, accessed 5 April 2022) and ask them if they had already heard of any of them or seen images. Most of the students will probably recognize the pyramids.

Use [Mentimeter](#) to show an illustration or a photograph of the Egyptian pyramids. Change the slide and ask the students to write down everything they know about them or what they remind them of. The students can use the online tool using the numerical or the QR code. In case they need help you can guide them with questions: Where are the pyramids? How old are they? Who built them? What are they made of? Why were they built and what was their purpose?

Slide 1



Slide 2




Change the slide: on the following Mentimeter slide the students will write everything they would like to know about the pyramids (the KWL method).



Slide 3

Go to [www.menti.com](https://www.menti.com) and use the code 9970 2136

Write everything you would like to know about pyramids. 

Discuss the students' questions and answers.

**Activity adaptation for students with difficulties**

**Activity adaptation for gifted students and those willing to learn more**

|   |                         |
|---|-------------------------|
| <b>Activity title:</b>  | Where are the pyramids? |
| <b>Activity duration (min):</b>   | 20 min                  |
| <b>Detailed activity description:</b>   |                         |
| Start a discussion on where the pyramids can be found and in what surroundings they were created. Hand out the worksheet with the activity title to the students so they can fill in the blind map of Egypt using <a href="https://www.google.com/maps">Google Maps</a> or a geography atlas ( <a href="https://d-maps.com">d-maps.com</a> , accessed April 5, 2022). On the map they need to locate The Nile River, Egyptian cities and historical dig sites (Cairo, Luxor, Thebes, Karnak, Aswan) and Giza, where we can find the great pyramid of Khufu (Cheops). Based on the location of Egypt and the colours on the map the students will finish the second part of the worksheet and conclude how the characteristics of a location influence the lives of people |                         |
| <b>Activity adaptation for students with difficulties</b>   |                         |
| <b>Activity adaptation for gifted students and those willing to learn more</b>  |                         |

|  |   |
|--|---|
| <b>Activity title:</b>   | The eternal mystery: how did they build the pyramids? |
| <b>Activity duration (min):</b>  | 25 min  |
| <b>Detailed activity description:</b>  |   |
| Ask your students what difficulties builders might encounter when constructing a giant pyramid, and which problems needed to be solved for the project to succeed. Hand out the appropriate worksheet and ask them to try and solve some of the problems by looking at the map of Egypt. How did the Egyptians use the characteristics of their location to build the pyramids: for example, where did they get the material from, how did they work and transport it, how was it lifted...? |   |



The students work in pairs using the contemplate-discuss-share method. After a couple of students share their answers, the others can join in and add their ideas.

**Activity adaptation for students with difficulties**

**Activity adaptation for gifted students and those willing to learn more**

**Activity title:** Build duration and size of the pyramid

**Activity duration (min):** 60 min

**Detailed activity description:**

Watch the short FlexClip video ([Pyramids](#)) showing available data on when the pyramids were built. Start a conversation and entice your students to solve the task which will show how difficult an endeavor it must have been, requiring plenty of workers and top-notch organization. Divide students into groups and task them to calculate, based on the number of blocks and the duration of the construction, how fast they should place stone blocks in order to build (just one) Great pyramid of Giza in the span of 20 years. Since the data on the number of work hours in a day is unreliable encourage them to make several different calculations considering possible variations based on non-working days and work time during the day. Therefore, it is possible to calculate that they worked for 16 or more hours a day and guess how many days a year they worked. Did they work all year, all 365 days, or did they have some days off? Have the students decide on their own and try a couple of different calculations.

At the beginning of the second activity task your students with moving the pyramid to a different location and calculating how many trucks they would need for that. Ask them to estimate the number of trucks. You can do it through a poll in Mentimeter.

Divide the students into groups and give them the tasks. First, they have to research the size of the pyramid in order to calculate its volume. Have the students watch a short video on calculating the volume of a pyramid ([link](#)). Then they need to discover the volume of material a single truck can carry and the length of the truck, and how many such trucks we would need for the entire pyramid. Finally, have them calculate the length of the line of trucks we would create if we wanted to move the entire Great pyramid at once.




At the end of the activity compare the results of different groups discuss how such a build had to be really well organized.

**Activity adaptation for students with difficulties**

**Activity adaptation for gifted students and those willing to learn more**



|  |             |
|--|-------------|
| <b>Activity title:</b>   | Pyramid Ltd |
| <b>Activity duration (min):</b>  | 40 min      |
| <b>Detailed activity description:</b>  |             |
| <p>Lead a discussion with your students on what the building process used to be like in the past (How were the pyramids built? Which tools were used? How many people were needed? How long did the construction last?) and what it looks like today (How are big buildings being built today? Which tools/machines are used? How many people are needed? How long does construction of one building take? etc.).</p> <p>Have them imagine a modern building company that builds pyramids. How would they name it? What would the logo look like? Which machines would it need? How many employees would it need?</p> <p>The students' task will be: Think of a name for your pyramid building company and use a computer tool to create its logo (Paint/Paint 3D/<a href="#">Autodraw</a>).</p> <p>After they think of a name and create a logo do a revision on how to write an e-mail (e-mail subject, how to address the recipient, writing style etc.). Explain to your students that similar writing is used for official offers when selling/offering services.</p> <p>Students then use Word to write an example of a business offer to build the Great pyramid. The offer must contain the name and logo of their company in the header or footer, the instructed text format (decide on the font, size, alignment etc.), and price projection based on listed expenses.</p> <p>The construction price will depend on the calculation of the necessary quantity of material, required machinery and manpower (material price + current gas prices + hourly wages x the number of hours). The students will upload the finished offer into a OneNote notebook/OneDrive or some other cloud-based system.</p> |             |
| <b>Activity adaptation for students with difficulties</b>  |             |
| <p>Students with difficulties can think up a name and logo for the company and write a simple e-mail with the pyramid construction offer but without the mathematical calculations. (Take note of the writing style and text formatting – Greeting, content, farewell, and signature.)</p>   |             |
| <b>Activity adaptation for gifted students and those willing to learn more</b>   |             |
| <p>Students can use Excel to create a cost estimate for the pyramid construction that uses formulas and the input of pyramid measurements to calculate the expenses and final price of construction (quantity of material + number of machines + workforce and hourly wages). The finished spreadsheet is also uploaded to OneNote/OneDrive or some other cloud-based system.</p>  |             |

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| <b>Activity title:</b>   | Exploring the pyramids |
| <b>Activity duration (min):</b>  | 15-20                  |
| <b>Detailed activity description:</b>  |                        |
| <p>Create an interactive treasure hunt for your students by using <a href="#">Actionbound</a>.</p> <p>Have the students answer the questions and solve the treasure hunt in pair or by themselves – <a href="#">Exploring the pyramids</a>, (To start the activity use the link to display the QR code to the students)</p> <p>The treasure hunt has 4 levels:</p> <p>Level 1 has 4 questions that need to be answered</p> <p>Level 2 has two tasks with coding and decoding hieroglyphs using the online tool <a href="#">Hieroglyphic typewriter</a></p> <p>Level 3 tasks the students with searching for and scanning QR codes and answering questions.<br/>NOTE: before beginning the activity you need to place the 7 QR codes around the space where the treasure hunt will take place – classroom, playground etc. (QR codes can be found in this document; codes are generated with free online app: <a href="https://goqr.me/#t=url">https://goqr.me/#t=url</a>)</p> <p>Level 4 contains a crossword you need to print out for the students (can be found in this document), and they have to input the final solution into the app. Crossword solutions are the answer students got from scanning QR codes, and the final solution is extrapolated from the letters marked in red.</p> <p><b>Solutions:</b> 1-Pyramid, 2-Sphinx, 3-Nile, 4-Twenty, 5-Pharaoh, 6-Africa, 7-Mummy</p> <p><b>Final solution:</b> Horus</p> <p><b>QR codes:</b></p> <div style="display: flex; justify-content: space-around; align-items: center;">    </div> |                        |



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| <b>Activity adaptation for students with difficulties</b>  |
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| <b>Activity adaptation for gifted students and those willing to learn more</b>   |
| -  |

|  |           |
|--|-----------|
| <b>Activity title:</b>   | Evaluate! |
| <b>Activity duration (min):</b>  | 20 min    |
| <b>Detailed activity description:</b>  |           |
| Give the students the same titled worksheet where they express their opinion on whether the pyramids deserve the status of a world wonder. The students will fill in the pros/cons table and write the argument for their answer. That way they will show what they have learned and finish the KWL from our first activity. |           |
| <b>Activity adaptation for students with difficulties</b>  |           |
| -  |           |
| <b>Activity adaptation for gifted students and those willing to learn more</b>   |           |
| -  |           |



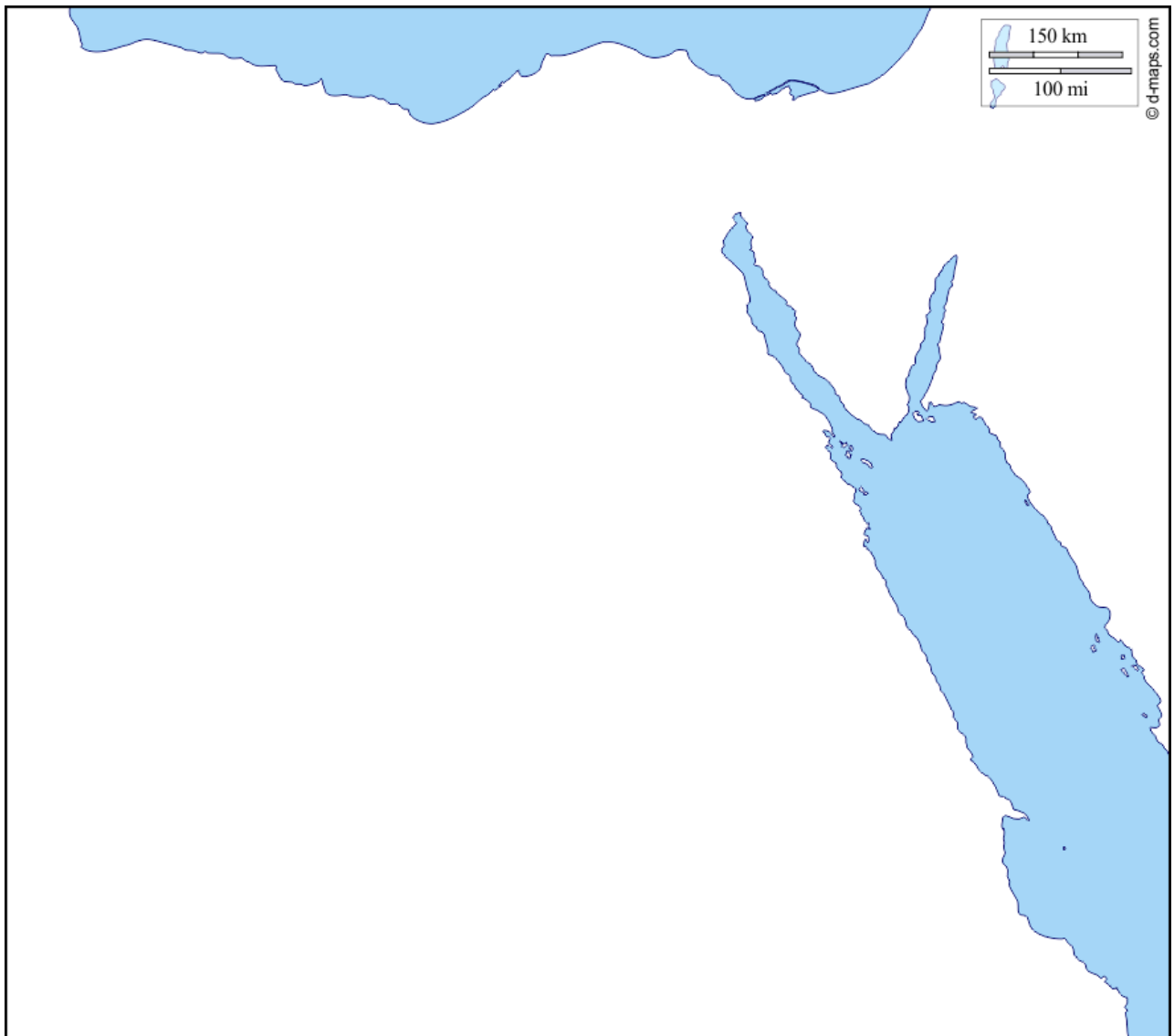
## ATTACHMENT 1

### Activity: Where are the pyramids?

#### Task 1

Use your atlas or Google Maps (<https://www.google.com/maps>) to mark where on this blind map you can find:

- The Nile River
- cities Cairo, Luxor, Thebes, Karnak, Aswan
- The Giza plateau where you can find the Great pyramid of Khufu
- write the name of the continent where Egypt is located
- write the names of the seas surrounding Egypt



Source: d-maps.com ([https://d-maps.com/carte.php?num\\_car=910&lang=en](https://d-maps.com/carte.php?num_car=910&lang=en), accessed April 5, 2022)





## Task 2

Look at the colours on the map. What do they represent?

Based on the geographical position of Egypt deduce:

- what is the climate like in Egypt?
- what did ancient Egyptians do?
- what were they using the river Nile for?
- what were their food, clothes and homes like?



Source:

<https://www.google.com/maps/place/Egipat/@27.2761147,28.4038231,1362442m/data=!3m1!1e3!4m5!3m4!1s0x14368976c35c36e9:0x2c45a00925c4c444!8m2!3d26.820553!4d30.802498>

**ATTACHMENT 2**

**Activity: The eternal mystery: how were the pyramids built?**



You are an engineer and the Pharaoh asked you to build him a pyramid.

What are the problems you will come across?

Think about the entire process. What will the terrain where you will start your construction be like? Which material and tools will you need? How will you organize transport and workforce requirements?

Study the terrain on the map of Egypt and try to solve some of your problems using the geographical characteristics of this area.

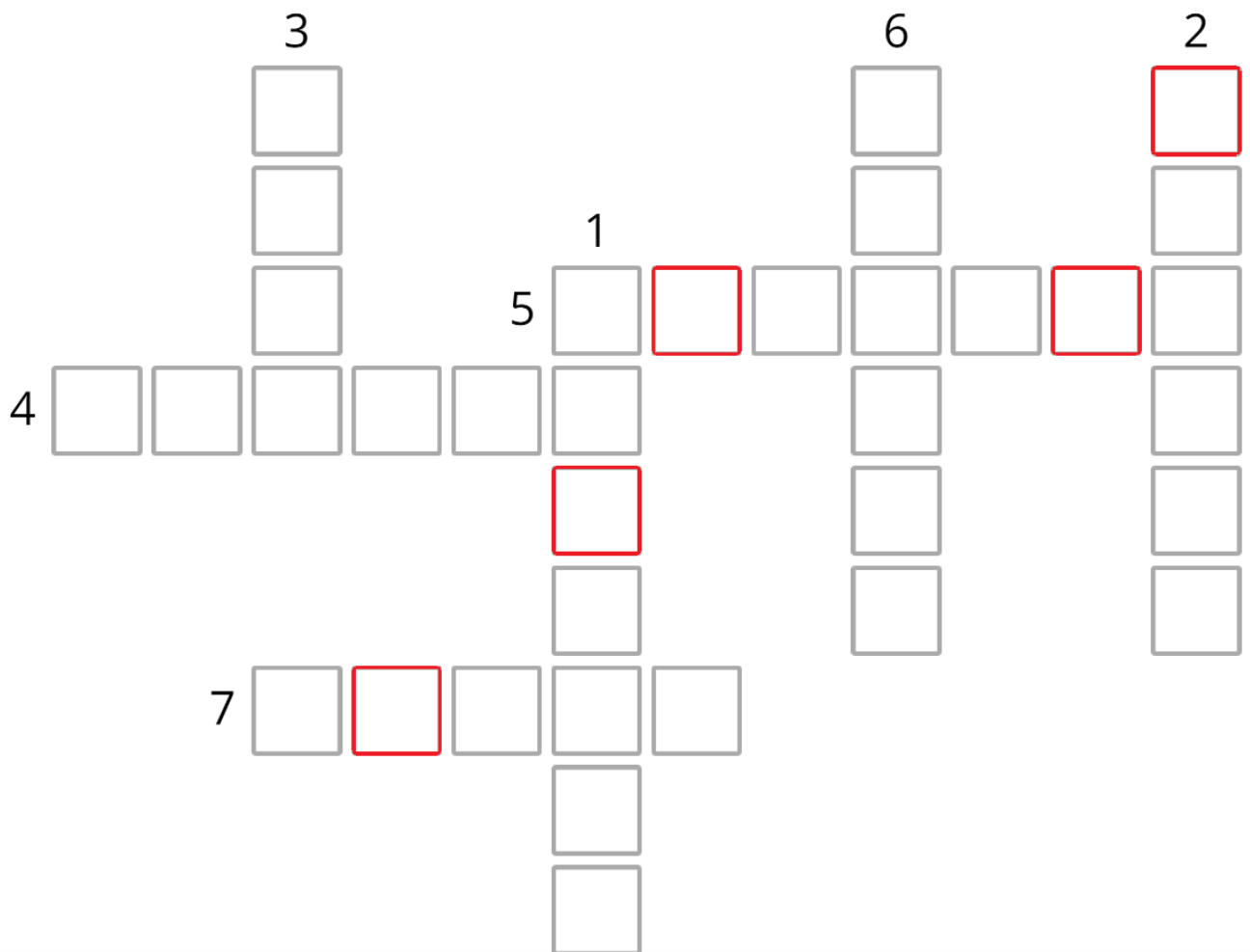
| Material | Transport, tools | Workforce |
|----------|------------------|-----------|
|          |                  |           |



**ATTACHMENT 3**

**Activity: Exploring the pyramids**

Crossword Puzzle:





#### ATTACHMENT 4

#### Activity: Evaluate!

Statement:

**The Egyptian pyramids deserve their status as a world wonder.**

**Task 1:** write a list of arguments why you agree/disagree with the statement above. Use all the knowledge you gathered on the pyramids.

| I agree with the statement because... | I don't agree with the statement because... |
|---------------------------------------|---|
|                                       |   |

**Task 2:** clarify your opinion on whether the pyramids deserve world wonder status in a couple of sentences. Use full sentences for your answer and use specific arguments to support your conclusion.

*I think that*

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