| **OrientationCompass with solid fill** | **QR audio** |
| --- | --- |

Through the preceding activities, some questions arose regarding the painting "The Bird of Mesarka"...

1. What were the main components of the materials used in the 1962 painting "The Bird of Mesarka"?

2. Can these materials give us information about the artist's technique or socio-economic status?

3. How can a cheap material be transformed into a work of art with cultural and historical value?

*Discuss the above questions in the classroom as a whole*

**How can we answer these questions?**

**Record the results of the discussion**

|  |
| --- |

| *Record the views heard  with a short video or audio recording.  Name it “1.a Problem and Solutions”* | | *QR audio* |
| --- | --- | --- |
| **ConceptualizationQuestions outline** | **QR audio** | | |

* ***Questioning***

**How can we observe item details?**

*Discuss as a whole class.*

* ***Hypothesis Generation***

*Note or draw tools we can use   
to see details of an object*

| Instruments / Devices | Selection |
| --- | --- |
|  |  |
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|  |  |
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| --- |

*Discuss as a whole class about the instrument that can give us the best results and choose it from the table above.*

| *Record the views heard  with a short video or audio recording.*  *Name it “1.b Conceptualization”* | | *QR audio* |
| --- | --- | --- |
| **InvestigationResearch with solid fill** | **QR audio** | |

* ***Exploration – Experimentation***

Use your mobile devices (tablets, mobiles, etc.) and scan the QR below.

Watch the video and download the results given by your chosen device for the painting by clicking the **"Results"** button.

****

***Discuss with the whole class the results of this particular device***

* ***Data Interpretation***
* In the first point of interest, how does the blue color look in the Optical Microscope?

| *Discuss and record the device functions with a short video or audio recording.*  *Why do we use it and what results can we get?   Name it “1.c Research”* | *QR audio* |
| --- | --- |

* In the second point of interest, how does the textile look when magnified?

| **ConclusionThought outline** | **QR audio** |
| --- | --- |

* **Why do we see three different images for the same point of interest? Can you sort them from lowest to highest magnification?**
* **Do you observe anything different in the images of the different areas of the object we focused on?**

*Write down your observations or draw the pictures below with arrows for the points of special interest.*

|  |
| --- |

| *Record your answers  in two different short videos or recordings.*  *Name them "1.d Conclusion A", "1.d Conclusion B"* | | *QR audio* |
| --- | --- | --- |
| **ConceptualizationQuestions outline** | **QR audio** | | |

* ***Questioning***

**What do we need to do to get more information   
about points of interest?**

*Discuss as a whole class.*

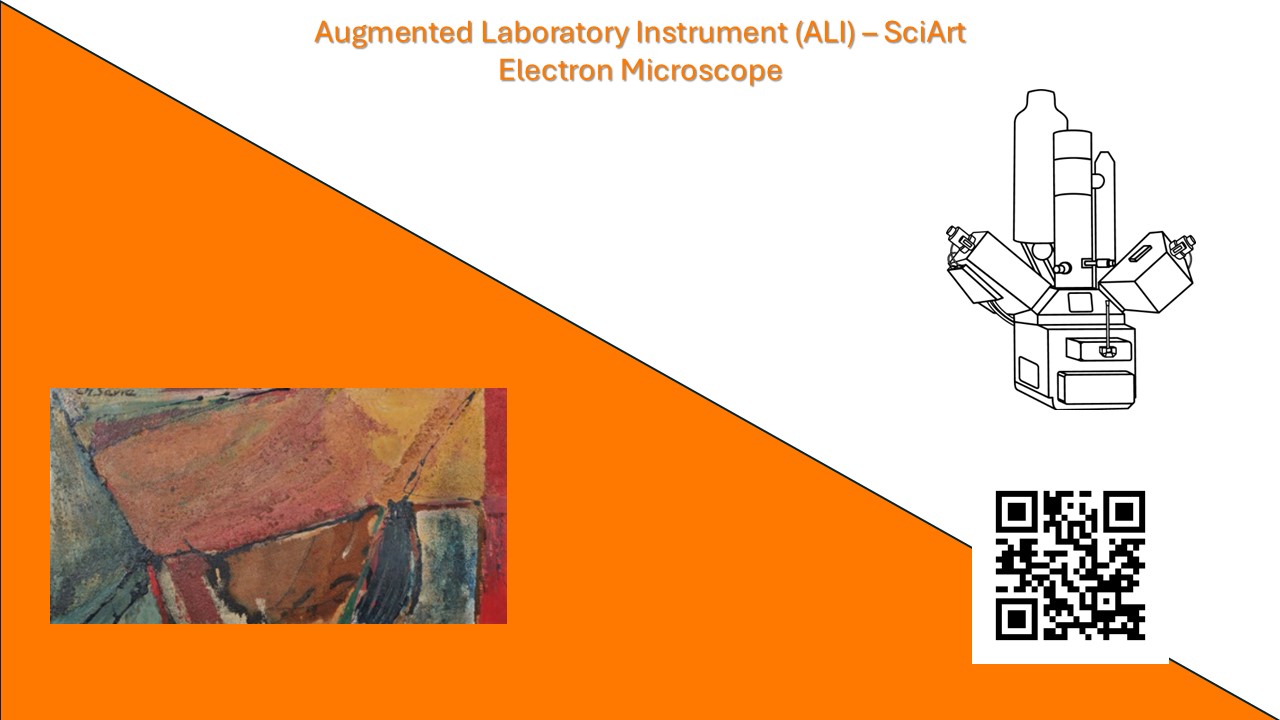
* ***Hypothesis Generation***

| *Record the views heard  with a short video or audio recording.*  *Name it “2.b Conceptualization”* | | *QR audio* |
| --- | --- | --- |
| **InvestigationResearch with solid fill** | **QR audio** | | |

* ***Exploration – Experimentation***

Use your mobile devices (tablets, mobiles, etc.) and scan the QR below.

Watch the video and download the results given by the device for the painting by clicking the **"Results"** button.

****

***Discuss with the whole class the results of this particular device***

* ***Data Interpretation***
* In the first point of interest, from the sample taken from the blue color of the painting, what do you observe in the SEM image? What does the blue layer look like? Can you measure its thickness? How are pigment grains visualized?
* In the second point of interest, the sample taken from the textile fibers of the panel, what do you observe in the SEM image? What do textile fibers look like in SEM and what material are they made of?

| *Describe how the device works and what we use it for with a short video or audio recording.*  *Name it “1.c Research”* | *QR audio* |
| --- | --- |

| **ConclusionThought outline** | **QR audio** |
| --- | --- |

* **Which one of the two different points of interest, scanned with the SEM method, has the highest magnification? How can we find it?**
* **Why do we get black and white images?**
* **Comparing the SEM image of the textile and the data from the table, what do you conclude about the material of the textile?**
* **What conclusion do we draw from the insect’s presence in the painting’s textile fibers? Has the textile been used for food storage before?**
* **What do we observe in the images? What might they mean for our subject? Can we conclude the components in the points of interest (blue color and textile fibers)?**

| *Record your answers  in five different short videos or recordings.*  *Name them "2.d Conclusion A", "2.d Conclusion B",  "2.d Conclusion C", "2.d Conclusion D",  "2.d Conclusion E"* | | *QR audio* |
| --- | --- | --- |
| **ConceptualizationQuestions outline** | **QR audio** | |

* ***Questioning***

**What do we need to do to find the components   
of the points of interest of the artifact we are studying?**

**What should we recognize?**

*Discuss as a whole class.*

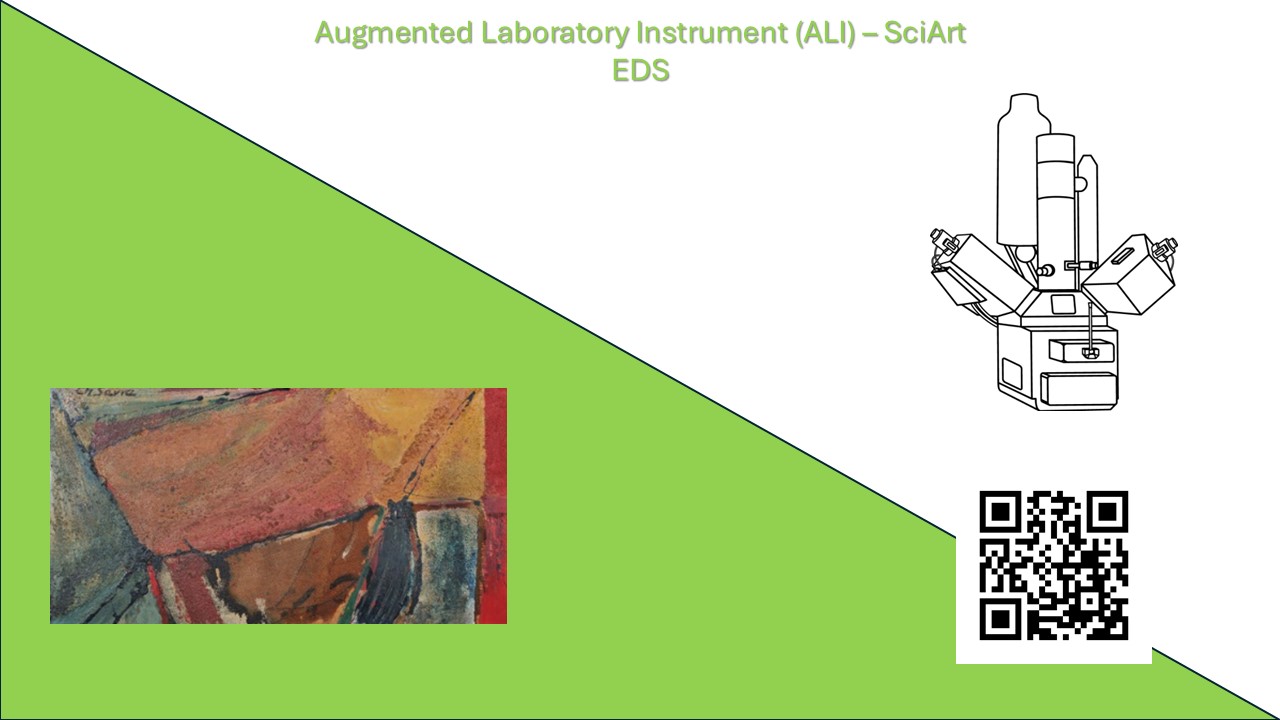
* ***Hypothesis Generation***

| *Record the views heard  with a short video or audio recording.*  *Name it “1.b Conceptualization”* | | *QR audio* |
| --- | --- | --- |
| **InvestigationResearch with solid fill** | **QR audio** | | |

* ***Exploration – Experimentation***

Use your mobile devices (tablets, mobiles, etc.) and scan the QR below.

Watch the video and download the results of the method for the painting by clicking the **"Results"** button.

****

***Study in your group and then discuss with the whole class   
the results of this particular method***

* ***Data Interpretation***
* In the first point of interest, from the sample taken from the blue color layer, what do you observe in the EDS spectrum? What elements does it consist of?
* In the second point of interest, from the sample taken from the textile fibers of the panel, what do you observe in the EDS spectrum? What elements does linen, as an organic material, consist of?

**Look for materials containing the elements found in our artifact in the source given below (QR) and list possible materials.**

**QR link to the database**

***Discuss with your class the results of your investigation from the database.***

| *Discuss and record how the method works with a short video or audio recording.*  *What results did it give us? What else did we have to do?*  *Name it “3.c Research”* | | *QR audio* |
| --- | --- | --- |
| **ConclusionThought outline** | **QR audio** | | |

List the materials in which the elements are found in our sample in the table below.

| **Points of interest** | **Chemical Compounds** |
| --- | --- |
| Blue paint on the painting board |  |
| Textile fibers of the painting |  |

| *Record your answers  in a short video or audio recording.*  *Explain how you got there.*  *Name them "3.d Conclusion"* | | *QR audio* |
| --- | --- | --- |
| **ConceptualizationQuestions outline** | **QR audio** | | |

* ***Questioning***

**Is the evidence found in more than one material?   
If so, is there any difference between the materials you can observe in the database?**

**What do you notice different and what should we identify   
to limit the materials?**

*Discuss as a whole class.*

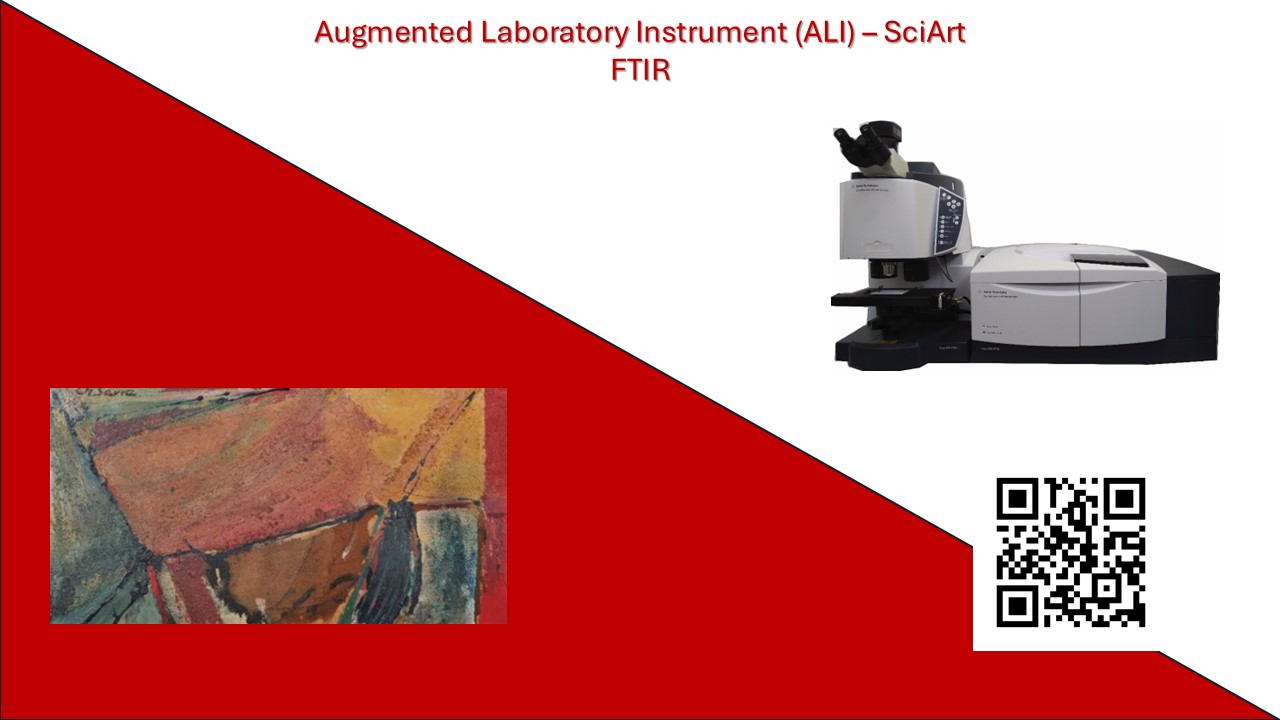
* ***Hypothesis Generation***

| *Record the views heard  with a short video or audio recording.*  *Name it “4.b Conceptualization”* | | *QR audio* |
| --- | --- | --- |
| **InvestigationResearch with solid fill** | **QR audio** | | |

* ***Exploration – Experimentation***

Use your mobile devices (tablets, mobiles, etc.) and scan the QR below.

Watch the video and download the results of the method for the painting by clicking the **"Results"** button.

****

***Discuss in the whole class the results of this particular method***

* ***Data Interpretation***
* In the first point of interest, the sample from the blue color layer, what do you observe in the FTIR spectrum?
* In the second point of interest, the sample from the textile fibers of the panel, what do you observe in the FTIR spectrum? What type of fiber is linen fiber?

| *Discuss and record how the method works  with a short video or audio recording. What results did it give us?*  *Name it “4.c Research”* | | *QR audio* |
| --- | --- | --- |
| **ConclusionThought outline** | **QR audio** | | |

* **Which compound was identified for the blue pigment?**

|  |
| --- |

* **Which compound was identified in the textile by FTIR?**

|  |
| --- |

| *Record your answers  in a short video or audio recording.*  *Explain how you got there.*  *Name them "4.d Conclusion"* | | *QR audio* |
| --- | --- | --- |
| **ConceptualizationQuestions outline** | **QR audio** | | |

* ***Questioning***

**What difference does the XRD method give for the points of interest?***Discuss as a whole class.*

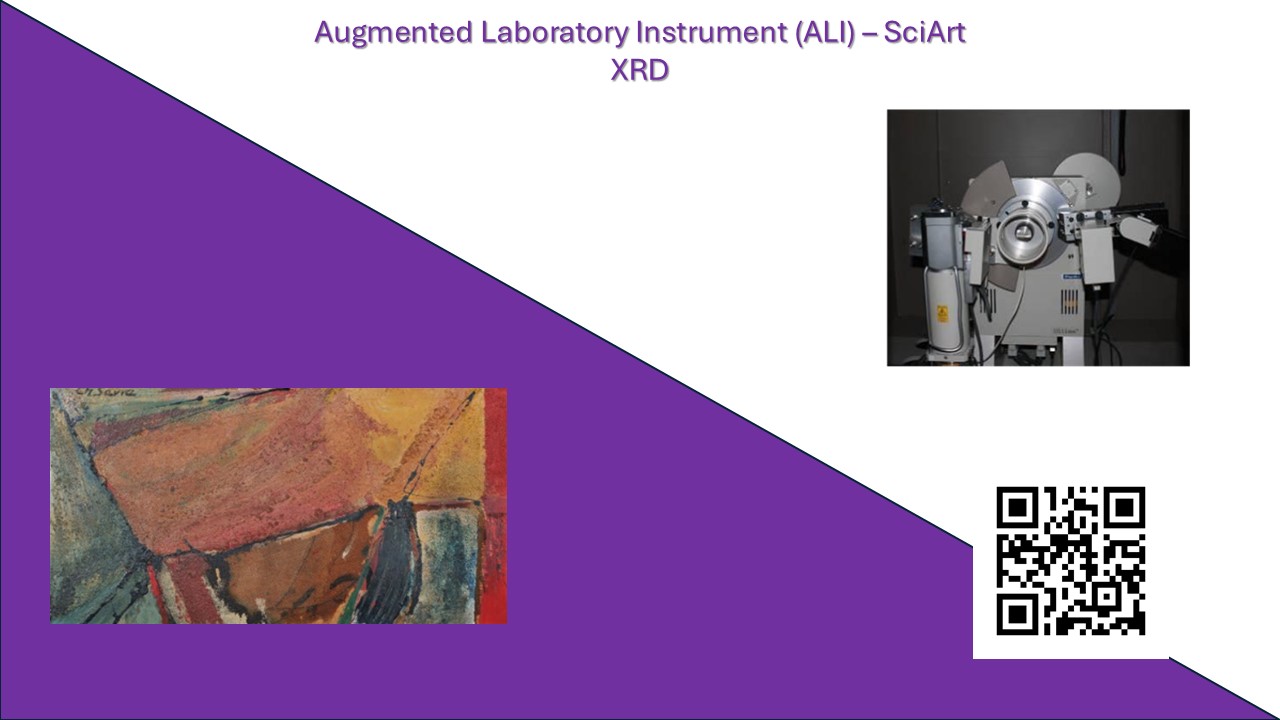
* ***Hypothesis Generation***

| *Record the views heard  with a short video or audio recording.*  *Name it “5.b Conceptualization”* | | *QR audio* |
| --- | --- | --- |
| **InvestigationResearch with solid fill** | **QR audio** | | |

* ***Exploration – Experimentation***

Use your mobile devices (tablets, mobiles, etc.) and scan the QR below.

Watch the video and download the results of the method for the painting by clicking the **"Results"** button.

****

***Discuss in the whole class the results of this particular method***

* ***Data Interpretation***
* In the first point of interest, the color blue, based on the XRD pattern, can you identify the minerals that make up this particular natural ultramarine and their percentages?
* On which continent is the particular natural ultramarine of the painting's blue color mined?

| *Discuss and record how the method works  with a short video or audio recording.*  *What results did it give us?*  *Name it “4.c Research”* | | *QR audio* |
| --- | --- | --- |
| **ConclusionThought outline** | **QR audio** | | |

* **In the table below, summarize the information you have obtained about the mining area of this particular natural blue color ultramarine and the basic material from which all plant-based textiles are made, such as linen.**

| **Points of interest** | **Chemical Compounds** |
| --- | --- |
| Blue color |  |
| Textile |  |

| *Record your answers  in a short video or audio recording.*  *Explain how you got there.*  *Name them "4.d Conclusion"* | *QR audio* |
| --- | --- |

**Back to the initial questions…**

1. What were the main components of the materials used in the 1962 painting "The Bird of Mesarka"?

2. Can these materials give us information about the artist's technique or socio-economic status?

3. How can a cheap material be transformed into a work of art with cultural and historical value?

| **ConceptualizationQuestions outline** | **QR audio** |
| --- | --- |

* ***Questioning***

**How can we use the conclusions drawn from archaeometric methods to answer the initial questions?**

*Discuss as a whole class.*

* ***Hypothesis Generation***

*Please provide questions that you can ask an AI machine. The answers it gives you, combined with the results you already have, will help address the initial questions.*

|  |
| --- |

| *Record the questions you will ask on ChatGPT with a short video or audio recording.*  *Name it “6.b Conceptualization”* | *QR audio* |
| --- | --- |
| **Research with solid fill Investigation** | **QR audio** |

* ***Exploration – Experimentation***

Use ChatGPT to get information about the above questions. Write down the information you need to answer the questions.

| **Question** | **Main ChatGPT Answer Points** |
| --- | --- |
| What materials and pigments are used in paintings today? |  |
| In which geographical areas do we find natural ultramarine? |  |
| What is the difference between natural and synthetic ultramarine? |  |
| Is linen used in vegetable sacks? |  |
|  |  |
|  |  |

*Discuss as a whole class the answers   
to the specific questions you asked in ChatGPT.*

* ***Data Interpretation***

| *Note the main points of the answers for each question.  Did it help you find the answer?  How;*  *Name it “4.c Research”* | | *QR audio* |
| --- | --- | --- |
| **ConclusionThought outline** | **QR audio** | | |

*Record the answers to the initial research questions.*

| **1. What were the main components of the materials used in the 1962 painting "The Bird of Mesarka"?** |
| --- |
|  |
| **2. Can these materials give us information about the artist's technique or socio-economic status?** |
|  |
| **3. How can a cheap material be transformed into a work of art with cultural and historical value?** |
|  |

|  | *QR audio* |
| --- | --- |

**Create a video of your answer to each   
interview question.**

**One of you will ask the question**

**and the other person will answer!!!!**

*Name the videos "Final Answer 1", "Final Answer 2", etc.*