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

Through the preceding activities, some questions arose regarding the painting "Those Left Behind"....

1. What were the main components of the materials used in the 1950 painting "Those Left Behind"?

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

*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 Problems and Solutions”* | | *QR audio* |
| --- | --- | --- |
| **Conceptualization Questions outline** | **QR audio** | | |

*Discuss in plenary class.*

**How can we see item details?**

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

| Instruments / Devices | Select |
| --- | --- |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

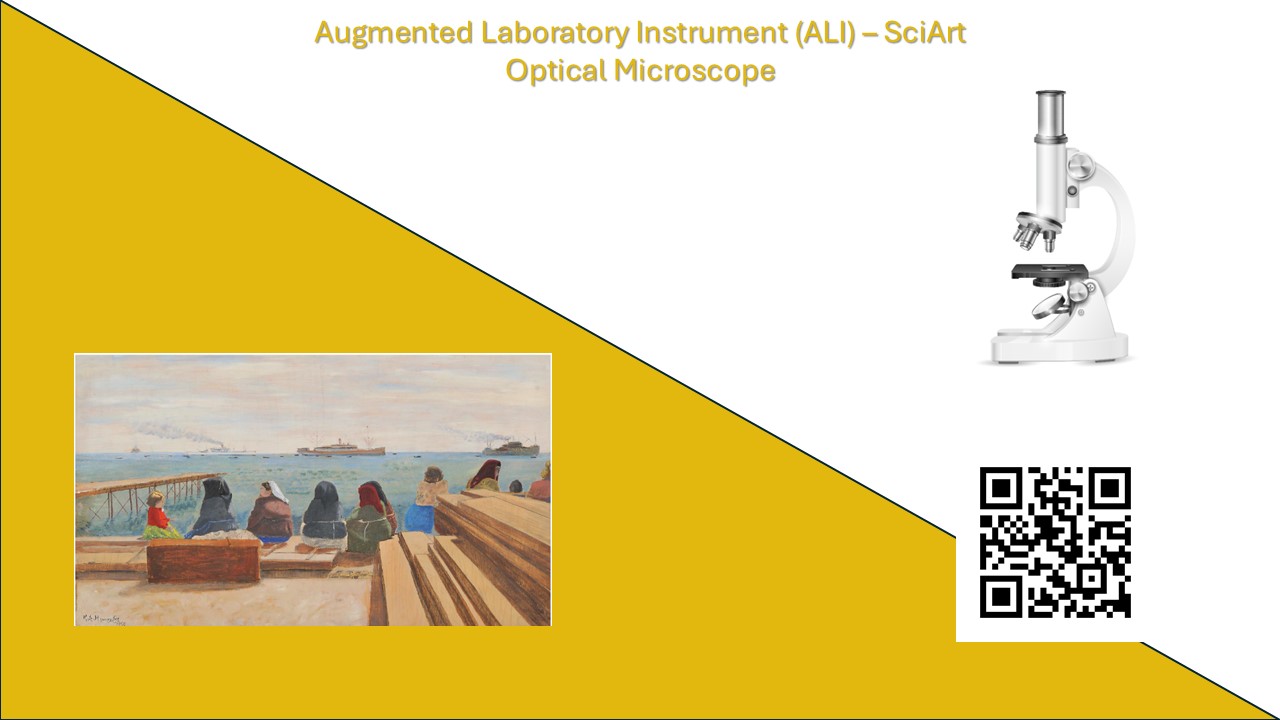
|  |
| --- |

*Discuss in plenary 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* |
| --- | --- | --- |
| **Research Research with solid fill** | **QR audio** | |

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

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

****

***Discuss the results of this device in the classroom***

* In the first point of interest, how does the bright green colour of the dress appear under the optical microscope?

* In the second point of interest, what tree might the plywood wood in the painting come from?

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

| **Conclusion Thought outline** | **QR audio** |
| --- | --- |

* **Why do we see three different images for the same point of interest? Can you sort them from the smallest to the largest 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 three different short videos or audio recordings*  *Name them "1.d Conclusion A", "1.d Conclusion B"* | | *QR audio* |
| --- | --- | --- |
| **Conceptualization Questions outline** | **QR audio** | | |

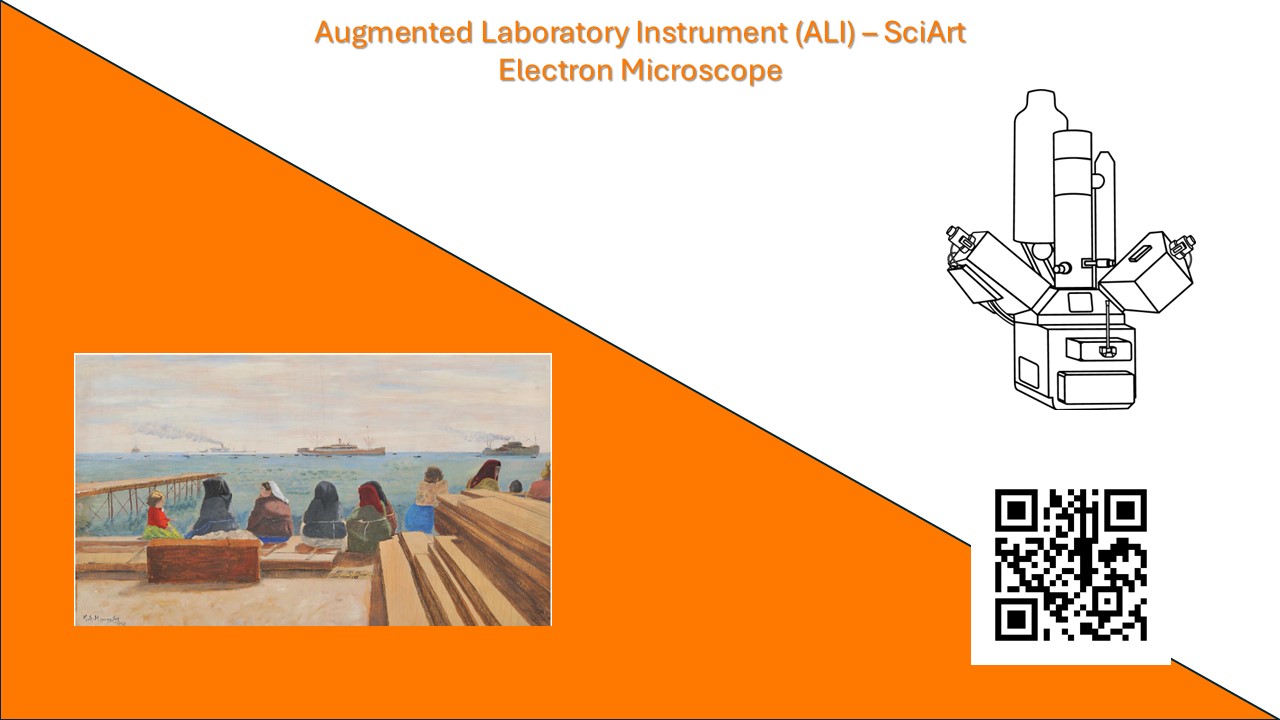
*Discuss as a whole class.*

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

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

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

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

****

***Discuss the results of this device in the classroom***

* In the first point of interest, from the sample taken from the green dress colour, what do you observe in the SEM image? What does the green layer look like? Can you measure its thickness? How are pigment grains visualized?
* In the second area of interest, from the sample taken from the plywood, what do you observe in the SEM image? Are there any morphological features that help us identify the type of wood?

| *Describe how the device works and what purpose we use it for with a short video or audio recording.*  *Name it “1.c Research”* | | *QR audio* |
| --- | --- | --- |
| **Conclusion Thought 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?**
* **Can you search SEM images on the internet for different types of wood (broadleaves and conifers) and compare them?**
* **What do we observe in the images? What might they mean for our subject? Can we conclude the components in the points of interest (green paint and wood)?**

| *Record your answers in three different short videos or audio recordings*  *Name them "2.d Conclusion A", "2.d Conclusion B", "2.d Conclusion C" and "2.d Conclusion D"* | | *QR audio* |
| --- | --- | --- |
| **Conceptualization Questions outline** | **QR audio** | |

*Discuss as a whole class.*

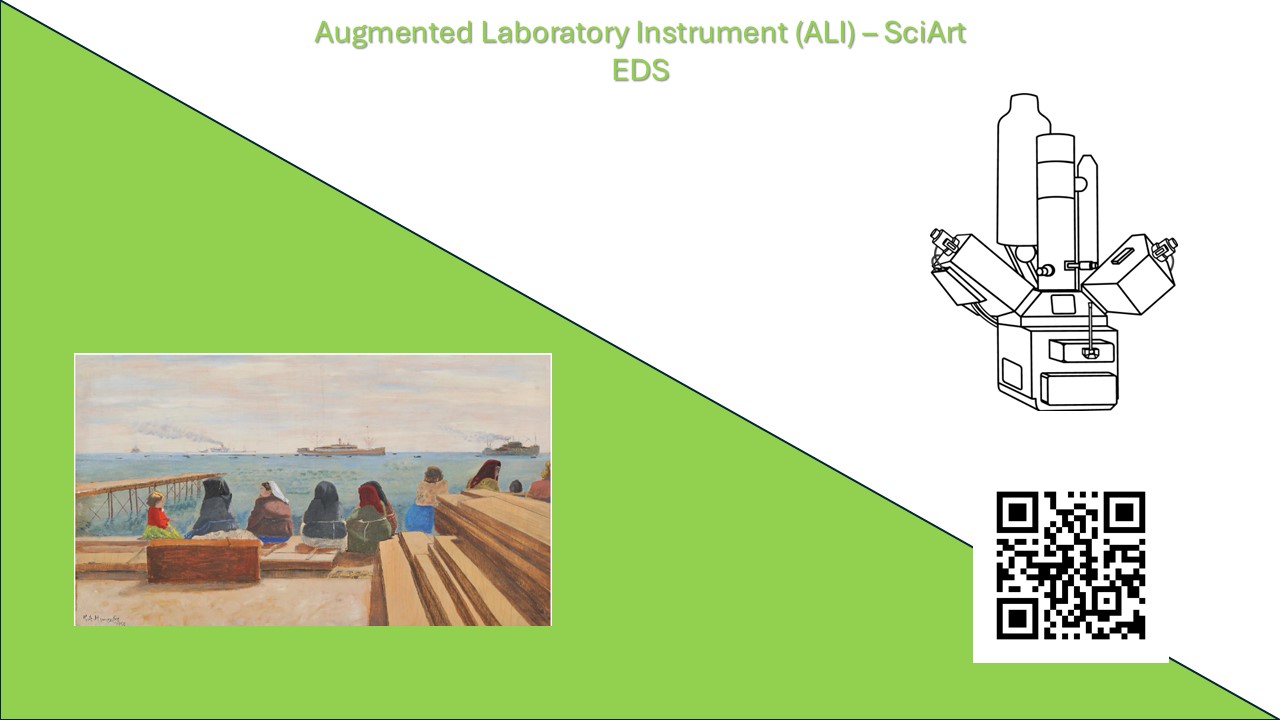
**What do we need to do to find the components   
of the points of interest of the artifact we are studying?**

**What should we recognize?**

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

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

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

****

***Study in your group and then discussthe results of this methodthe classroom***

* In the first point of interest, from the sample taken from the green layer, what do you observe in the EDS spectrum? What elements does it consist of?
* In the second area of interest, from the sample taken of the plywood wood, what do you observe in the EDS spectrum? What elements does the wood, 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.***

| **Name** | **Chemical compound** | **Photo** |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

| *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* |
| --- | --- | --- |
| **Conclusion Thought outline** | **QR audio** | | |

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

| **Points of interest** | **Chemical Compounds** |
| --- | --- |
| Green dress color |  |
| Plywood wood |  |

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

*Discuss as a whole class.*

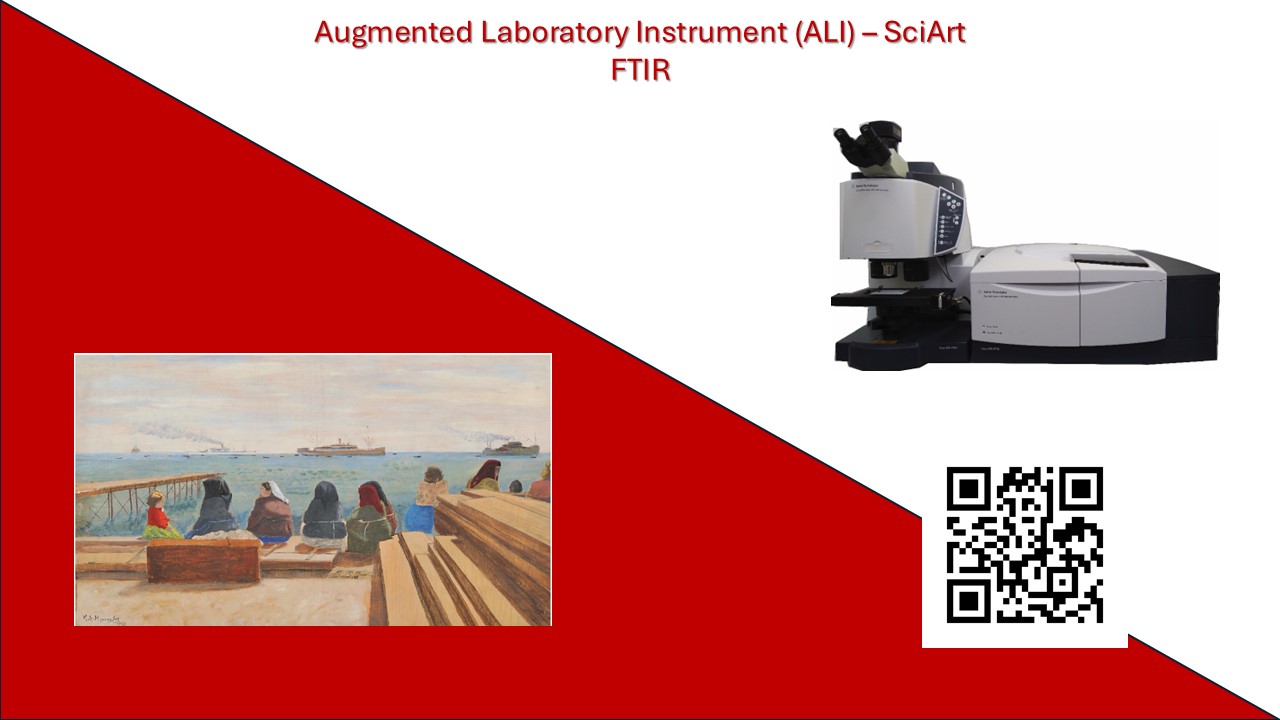
**Is the evidence found in more than one material?   
If so, is there any difference between the materials you can observe in the database?**

**What do you notice that is different and what do we need to identify  
to limit the materials?**

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

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

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

****

***Discuss the results of this method with the whole class***

* In the first point of interest, the sample from the green layer, what do you observe in the FTIR spectrum?
* In the second point of interest, the sample taken from plywood, what do you observe in the FTIR spectrum? What is the wood composed of?

| *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* |
| --- | --- | --- |
| **Conclusion Thought outline** | **QR audio** | | |

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

|  |
| --- |

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

|  |
| --- |

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

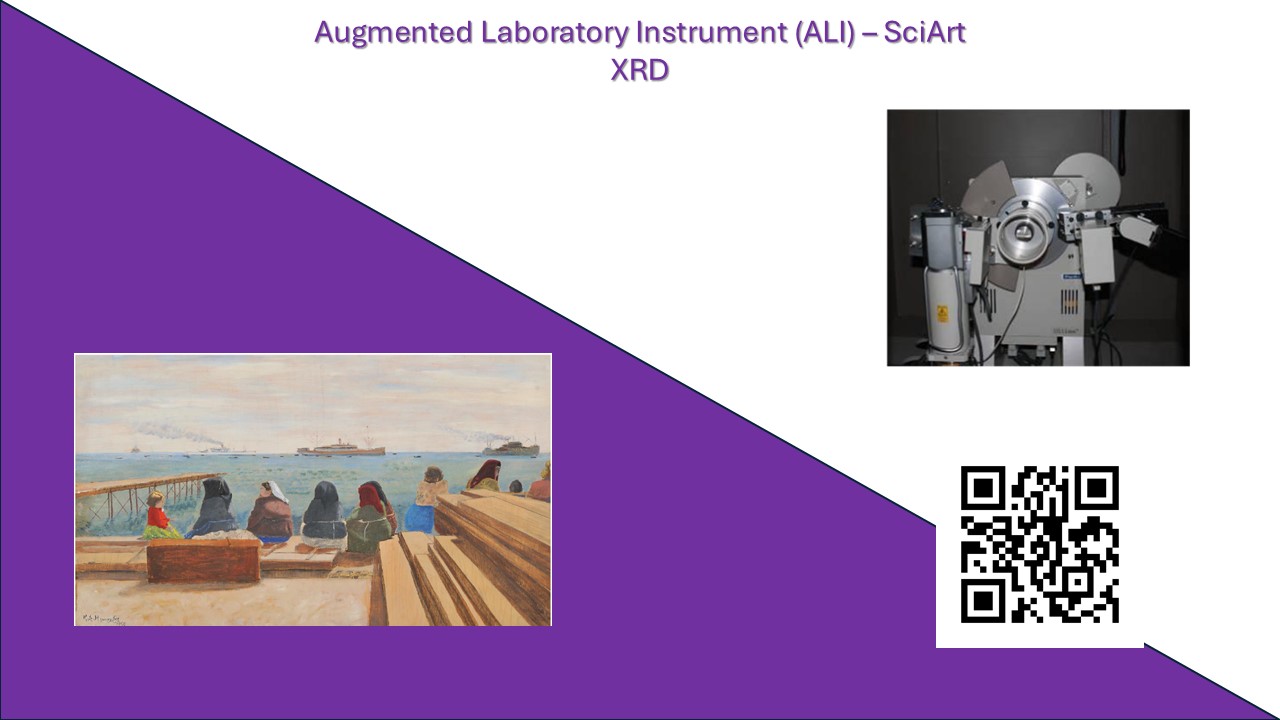
*Discuss as a whole class.*

**What difference does the XRD method give for the points of interest?**

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

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

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

****

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

* In the first point of interest, the sample taken for the green colour, based on the XRD graph (diffraction pattern), which compound is confirmed?
* In the second point of interest, the sample taken from the wood, based on the XRD graph (diffraction pattern), which compound is confirmed?

| *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* |
| --- | --- | --- |
| **Conclusion Thought outline** | **QR audio** | | |

* **Summarise, in the table below, the information you have obtained about the chemical compound of the colour green and the basic material of which all woods are made.**

| **Points of interest** | **Chemical Compounds** |
| --- | --- |
| Green colour |  |
| Plywood wood |  |

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

**Back to the initial questions...**

1. What were the main components of the materials used in the 1950 painting "Those Left Behind"?

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

| **Conceptualization Questions outline** | **QR audio** |
| --- | --- |

*Discuss as a whole class.*

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

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

Use ChatGPT or another source of information from the internet to get information on the above questions. Write down the information you need to answer the questions.

| **Question** | **ChatGPT main answer points** |
| --- | --- |
| What is the value of these materials and how rare were they? |  |
| Can you get information on the internet about verdigris and its possible uses? |  |
| Can you get information about plywood and its possible uses from the internet? |  |
| The material in which the board was made (plywood) when was it first manufactured? Would this information help in dating the painting if we did not know its age? |  |
|  |  |

*Discuss in class the answers  
to the specific questions you posed on ChatGPT or any other internet search engine*

| *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* |
| --- | --- | --- |
| **Conclusion Thought outline** | **QR audio** | | |

*Record the answers to the initial questions of the investigation.*

| **1. What were the main components of the materials used in the 1950 painting "Those Left Behind"?** |
| --- |
|  |
| **2. Can these materials give us information about the artist's technique or socio-economic status?** |
|  |
| **3. How can plywood 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.*