



# Embedded Intelligent Software

## KoPa WiFi EDU AO App

### User Manual

Note:

KoPa WiFi EDU AO is exclusively for student end solutions ① and ②, not for student end solution ③.

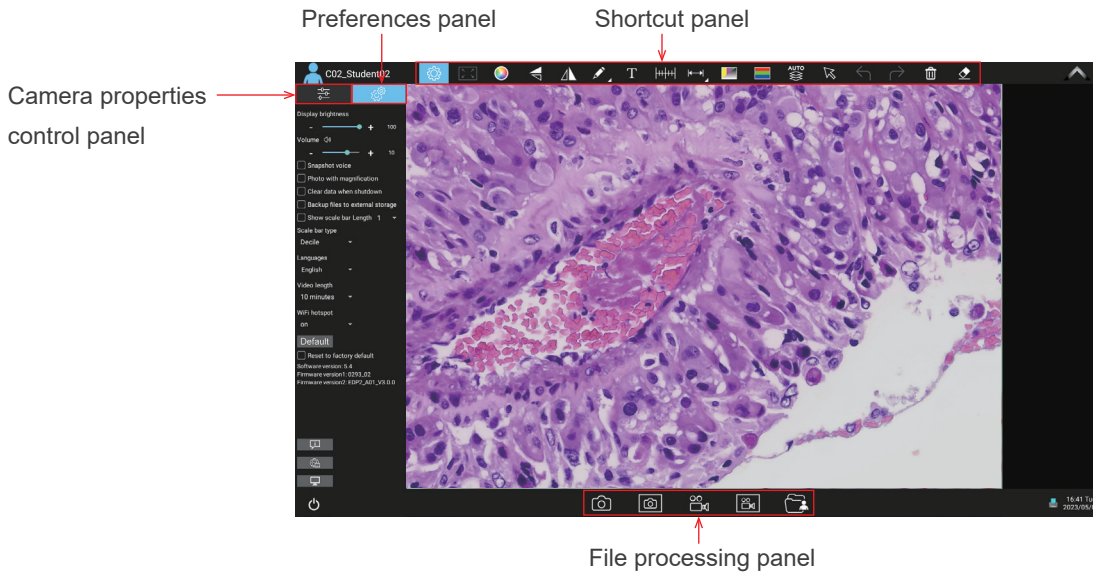
KoPa WiFi EDU AO is pre-installed in the camera before leaving the factory. It does not need to be installed by the user. After starting the hardware, KoPa WiFi AO will automatically enter the main operation interface of APP.

KoPa WiFi EDU AO is a necessary application for teaching. Users cannot uninstall it by themselves. It can be updated and upgraded by tutor' PC software.

# Content

1.1 Operation interface .....	- 1 -
1.2 Shortcut toolar .....	- 1 -
1.2.1 Student user login interface .....	- 1 -
1.2.2 Shortcut tools.....	- 2 -
1.2.3 Methods of calibration and measurement .....	- 3-4 -
1.2.4 Measuring tools .....	- 4 -
1.2.5 Manual calculation function .....	- 4 -
1.2.6 Combined channel .....	- 5 -
1.2.7 Combined color images .....	- 5 -
1.2.8 High content .....	- 6 -
1.3 Setting panel .....	- 6 -
1.3.1 Camera properties control panel .....	- 6-7 -
1.3.2 Preferences panel .....	- 7-8 -
1.4 Folder management .....	- 8 -
1.4.1 Take picture,screenshot,record,screen-record,folder,messenger shortcut panel .....	- 8 -
1.4.2 Folder .....	- 8-9 -
1.4.3 Messenger .....	- 9 -

## 1.1 Operation interface




## 1.2 Shortcut toolar

### 1.2.1 Student user login interface

When the camera is power on, if the tutor software is set to "no need to login" , the student side will log in with the default name.

If the tutor software is set to "Manual login", the interface requires a new / logged in user.Click "New", and the following pops up. "Name" is required, while others are optional.The content is automatically filled into the corresponding information in the homework template. In this way, students do not have to fill in the homework template manually.Click "OK" and then click "Login" to enter the main user interface. The "Total number of online microscopes" module on the teacher side will display the corresponding login user's user name.

Name	School	College	Class	Number	Select

Click the "User Login"  button in the upper left corner of the APP to bring up the following user login interface.In the example figure, C34 represents the number of this camera, and Summer is the name of the user using this camera.























Please input your info

Name	_____	Number	_____
Class	_____	College	_____
School	_____	Nation	_____

Students log in the interactive system as users, and can create and edit user information, delete user information, and login with historical user name.Student users can only view the photos taken by the current user and the saved homework in the same camera, and cannot view each other.

## 1.2.2 Shortcut tools

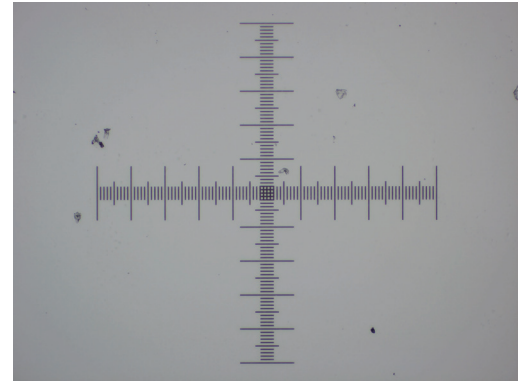



	Settings	Click on Settings to bring up the Camera Properties panel or the Preferences panel
	Adapt screen	Preview screen quickly adapts to the screen
	Color settings	Bring up the palette to set the color of drawing tools and text. Font size, line type and line width can be set.
	Flip	Flip the current screen
	Mirror	Mirror the current screen
	Annotation tools	Annotate the current screen
	Add text	Add text to the current screen
	Calibration	Calibrate the preview window
	Measuring Tools	Measurement of the preview window
	Combine channels	Quickly assign fluorescent channels
	Combine color images	Quickly combine color fluorescent images
	High content	Automatic extraction of the clearest areas of the captured image for fusion, take one picture, two archives.
	Select	Select objects such as annotations, text, measurements, etc., support single selection or box selection.
	Undo	Undo the last operation on "Object".
	Redo	Restore the last operation on "Object".
	Delete	Delete the selected "object".
	Erase	Erase "object".
	Snapshot	Snapshot the image on the currently selected screen.
	Screen capture	Screen capture on the entire computer desktop.
	Record	Record on the currently selected screen.
	Screen record	Screen record on the entire computer desktop.
	File management	File management

### 1.2.3 Methods of calibration and measurement

The calibration of CX23 with 4X, 10X, 40X and 100X have been built-in by default on student solution ① and ② cameras, students do not need to be calibrated separately. If the microscope is other models can be calibrated and measured according to the following steps.

1) Place the calibration scale in the field of view of the microscope.



2) Click  to bring up the calibration table.

Name	Length	Unit	pixels	Select
EL_4X	1000.0	µm	1217.0	<input type="checkbox"/>
EL_10X	1000.0	µm	3970.0	<input type="checkbox"/>
EL_40X	100.0	µm	1226.0	<input type="checkbox"/>
EL_100X	100.0	µm	3987.0	<input type="checkbox"/>
10X	1000.0	µm	3575.0	<input checked="" type="checkbox"/>

New Edit Delete Confirm

Olympus CX23  Nikon EI/E100  Nikon TS2

Name

Length

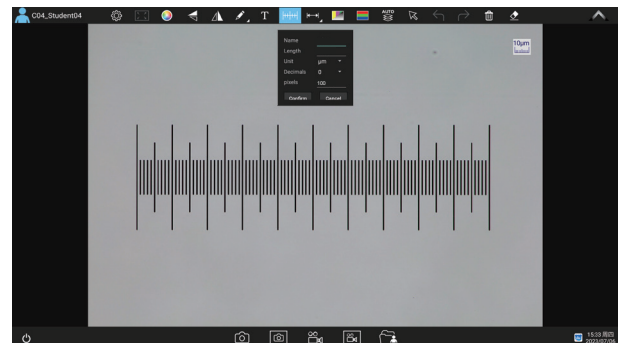
Unit

Decimals

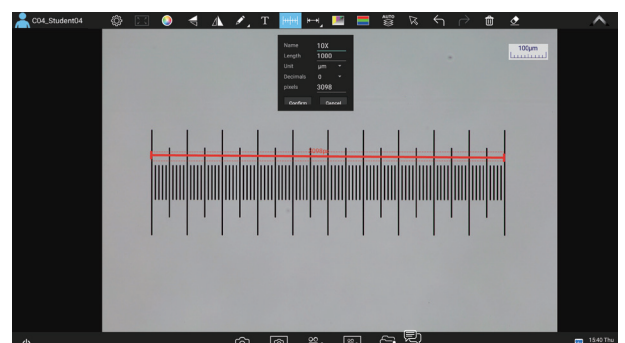
pixels

Confirm Cancel

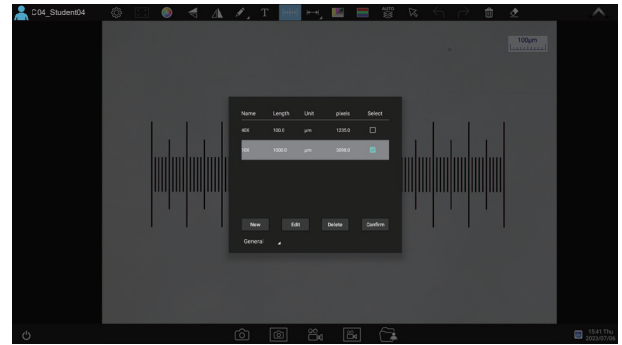
3) Click "New" .



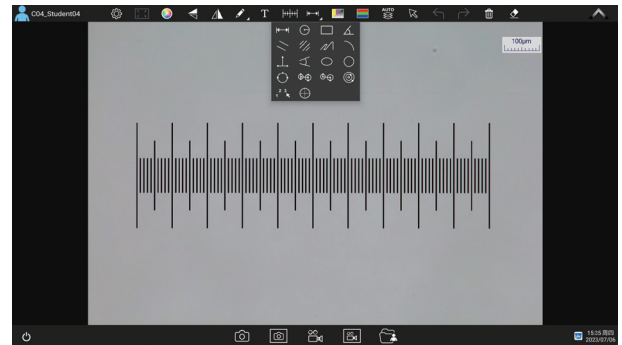
4) Draw on the calibration scale with the mouse, after releasing the mouse, the pixels will be automatically input into the "pixel" box of the newly created calibration table. As shown in the figure below.





















5) Enter the name and actual length, select the unit and decimal point, and click "Confirm" to complete the calibration. The calibration value will be automatically added to the calibration table. Please check the corresponding magnification in the calibration table before measurement.




The lower part of the calibration table supports re-editing and deleting the selected calibration values. After the selection, click "exit", and then use the measurement tool to measure the image.




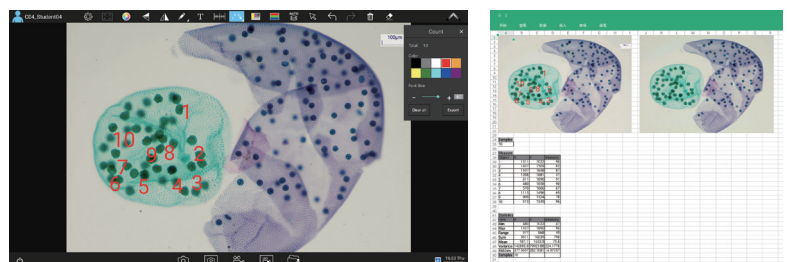
### 1.2.4 Measurement tools

								
Straight line measurement	Circular measurement	Rectangular measurement	Angle measurement	Parallel line distance	Double parallel line center distance	Folding line measurement	Curvature measurement	Three-point vertical line measurement
								
Four-point angle measurement	Ellipse measurement	Drawing a circle with radius	Three-point drawing circle measurement	Concentric circle measurement	Concentric radius circle distance drawing circle measurement	Circle measurement	Manual calculation	Crosses

### 1.2.5 Manual calculation function

Click on "  " to access the table of measuring tools.

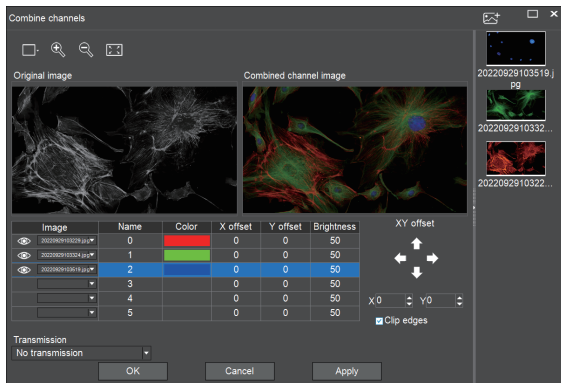
Select the manual calculation tool "  ".



## 1.2.6 Combined channel

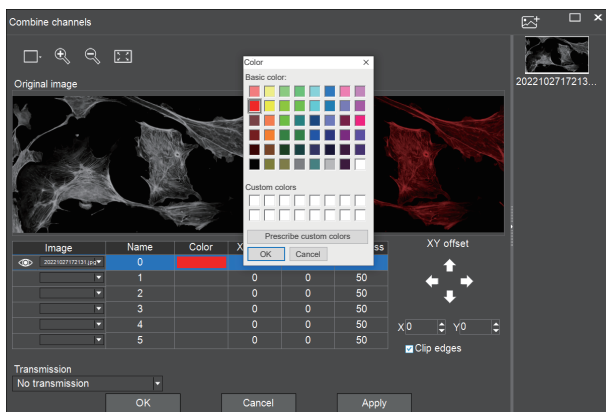


Fluorescent channels can be assigned quickly

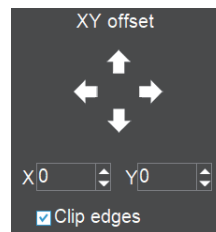


	Live image taking
	Preview window setting: double window to display original image and combined channel image separately, single window to display combined channels image only
	Image Zoom
	Image reduction
	Adapts to screen size
	Import images

Fluorescence channels can be specified for imported images (as shown in the figure below)



Allows direct input of X, Y, and brightness values for fine adjustment.

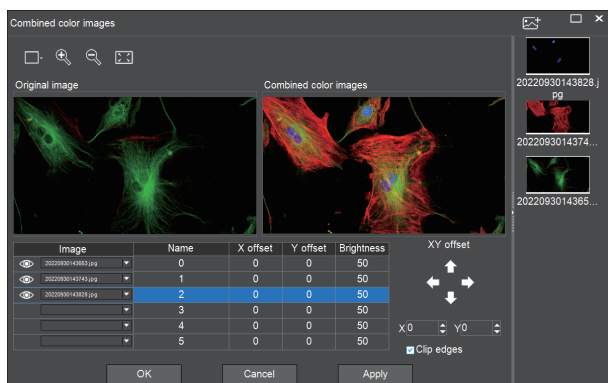


Note: Please import images with the same resolution, otherwise the image import will fail.

## 1.2.7 Combined color images



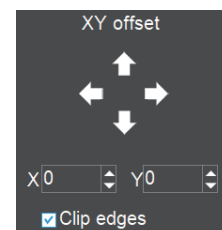
Color fluorescent images can be quickly combined.



	Live image taking
	Preview window setting: double window to display original image and combined channel image separately, single window to display combined channels image only
	Image Zoom
	Image reduction
	Adapts to screen size
	Import images

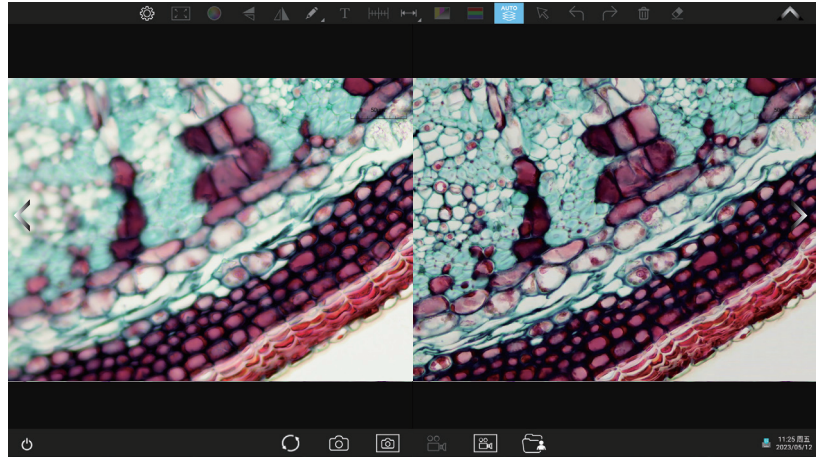
Note: Please import images with the same resolution, otherwise the image import will fail.

Allows direct input of X, Y, and brightness values for fine adjustment.





## 1.2.8 High content



Automatic depth-of-field fusion function for high content images works with USB or WiFi connection. Break through the limitation of insufficient depth-of-field in high magnification objective lenses, and to adjust the focal length can obtain a greater depth of field, thus obtaining a sharper image than a real-time single-frame image, support taking one picture, two archives.



Operation steps:

Step 1. Click "  " button, a dual screen appears, the left screen is in line with the focal plane under the eyepiece, and the right screen is the result of high content fusion.

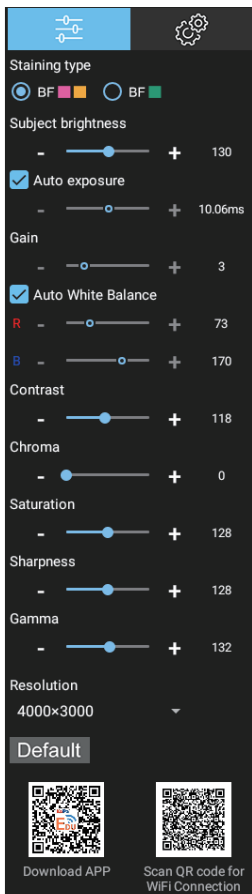
Step 2. Adjust the microscope coarse/fine focus knob, the depth-of-field fusion in real time on the right screen. If you switch the field of view midway, you can click "  " button to refresh.

Step 3. Click "  " button to automatically save two pictures on the left and right screen, close the current window to exit, click "  " button to enter the file manager and export pictures.

## 1.3 Setting panel

### 1.3.1 Camera properties control panel

Clicking the Settings button in the upper left corner of the main operation interface will bring up the Image properties adjustment panel.

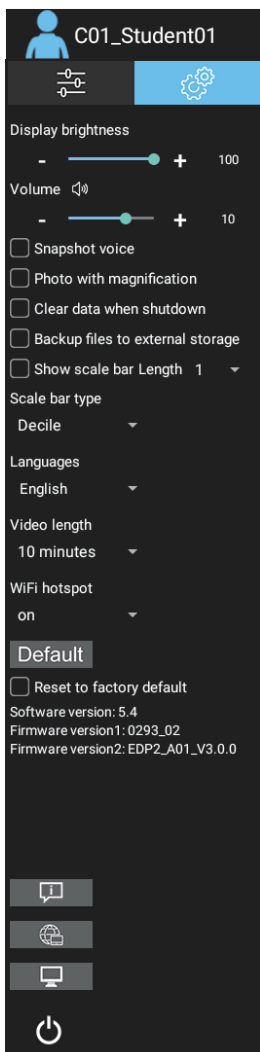


Staining type	Users can select different exclusive types of stained pathology sections to obtain matching image effects and more accurate color reproduction. BF type 1: for bright-field, red or gold-based sections; BF type 2: for bright-field, cyan-dominated sections; FL type: for fluorescence observation.
Brightness	Manually drag the adjustment bar to adjust the image brightness.
Exposure	When checked, the camera will automatically expose according to the environment used. When unchecked, manual exposure can be performed through the adjustment bar, supporting direct input of values in the box.
Gain	Manually drag the adjustment bar to adjust the image gain. Support for entering values directly in the box. Click on "Gain" will restore the default value of gain alone.
White Balance	Manual white balance adjustment can be made through the adjustment bar, supporting direct input of values in the box. Click on "R" will restore the default value of the R channel alone. Click on "B" will restore the default value of the B channel alone.
Contrast	Manually drag the adjustment bar to adjust the image contrast. Support for entering values directly in the box. Click on "Contrast" will restore the default value of contrast alone.
Chroma	Manually drag the adjustment bar to adjust the image hue. Support for entering values directly in the box. Click on "Hue" will restore the default value of hue alone.



Hue	Manually drag the adjustment bar to adjust the image saturation. Support for entering values directly in the box. Click on "Saturation" will restore the default value of saturation alone.
Saturation	Manually drag the adjustment bar to adjust the image sharpness. Support for entering values directly in the box. Click on "Sharpness" will restore the default value of sharpness alone.
Sharpness	Manually drag the adjustment bar to adjust the image gamma. Support for entering values directly in the box.
Gamma	Click on "Gamma" will restore the default value of gamma alone.
Resolution Setting	The preview resolution can be switched. Note: After the resolution is successfully switched, the camera needs to restart and resume capturing images for about 35 seconds.
Restore Default values	Restore all image property values to default at once.
Download smart terminal APP and realize the same screen view	Once "WiFi hotspot" is activated in the "Preferences" panel, a dual QR code will be displayed, allowing smart terminal (cell phones or tablets) to share the same screen. Scan the QR code on the left with your smart terminal's browser and follow the instructions to download and install the APP: KoPa WiFi Lab. After installation, scan the QR code on the right with the scanner in KoPa WiFi Lab to start automatic connection to the microscopic image.

### 1.3.2 Preferences settings panel









Brightness	Manually drag the adjustment bar to adjust the overall brightness of the screen. (this function is only available for the smart display camera)
Voice	Adjust the volume of audio playback on the display (this function is only available for the smart display camera)
Snapshot voice	When checked, click to take a photo, there will be a prompt sound; When unchecked, clicking to take a photo will not prompt the sound (this function is only available for the smart display camera)
Clear data when shutdown	When checked, it will clear the images, videos and other data from the application after shutdown. When unchecked, the data such as images and videos will be saved locally after shutdown.
Backup files to external storage	When checked, images and videos taken will be saved synchronously to the external USB flash drive inserted. When unchecked, the images and videos taken will not be saved synchronously to the external USB flash drive inserted and need to be copied manually. Note: If there is no access to the external USB flash drive, this function is not valid until the external USB flash drive is accessed.
Show scale bar	When checked, the scale bar of the currently selected length is displayed in the upper right corner of the preview window. The scale will be hidden when unchecked.
Length	Three fixed scale lengths are available.
Languages	APP interface language switch.
Video length	There are three options for setting a time limit :10 minutes, 30 minutes, and 60 minutes. Note: avoid excessive memory capacity due to too long recording time. Default is 10 minutes.

WiFi hotspot	WiFi hotspot on and off settings. It is turned off by default. After turning off the "WiFi hotspot", users cannot scan the code to preview the image.
Default	When checked, the system will restore the factory settings. Note: it takes about 4 minutes to restore the factory settings. Do not power off during the recovery process, otherwise the system will fail to start due to abnormal conditions.
Surf the internet	Connect to the wireless Internet (only 5G wireless Internet signal is supported), enter the current connected 5G network password, and click "browser" to directly open the browser to surf the Internet.
System desktop	Access to the operating system desktop.

## 1.4 Folder management

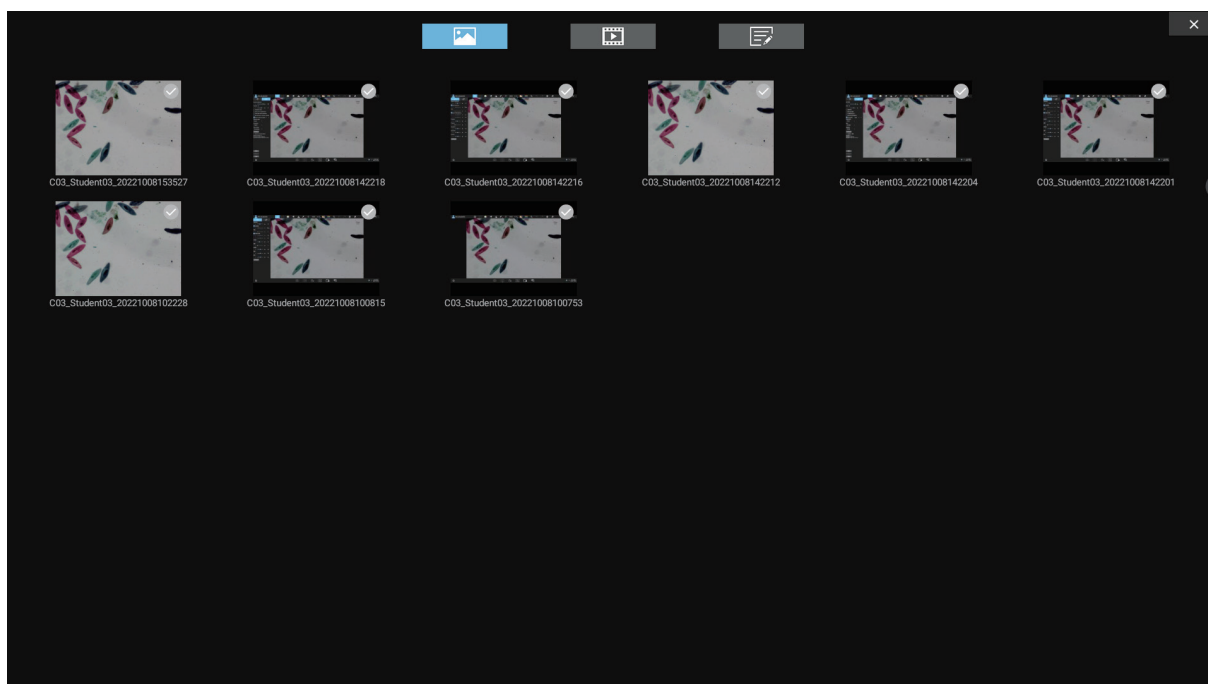
### 1.4.1 Take picture,screenshot,record,screen-record,folder,messenger shortcut panel

	Take a picture	Click to take a photo of the current live image.
	screenshot	Click to capture the entire screen. Under the lecturing mode of tutor end software, students are supported to take screenshot of the teaching process and save them locally.
	Record	Click to record the current live image.
	Screen record	Click to record the entire screen. Under the lecturing mode of tutor end software, students are supported to record the teaching process and save them locally.
	Folder management	Click to enter image and video Management.
	Messenger	It can send files (experimental report, electronic homework), text, pictures (local stored static pictures, real-time captured under the microscope) and emojis to the tutor, so as to realize one-to-one communication with tutor. Support for retracting the last messenger chat;Support voice communication with tutor through headphones.

### 1.4.2 Folder



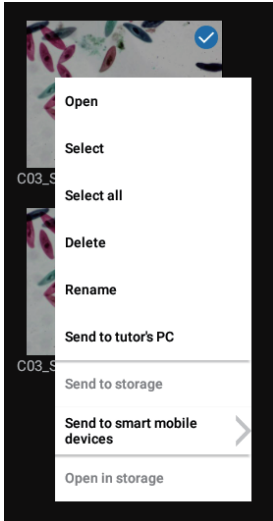
(1) After entering folder management, the top of the interface can switch to browse the three modules of images, videos and assignments.



(2) Image and video modules




Right-clicking on a single image or single video will display the following menu:



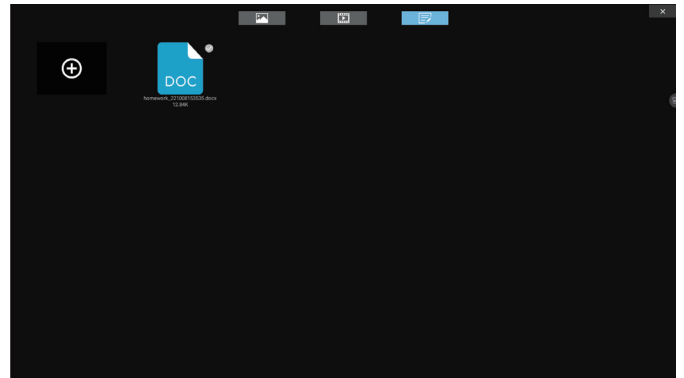
- Open: Enlarge the currently selected image / play the current video.
  - Select: Select the current image / video.
  - Select all: Select all images / videos in the folder.
  - Delete: Delete the current image / video.
  - Rename : Rename the current image / video.
  - Send to the tutor's PC: Send the currently selected image / assignment to the tutor end.
  - Send to storage: Copies the currently selected image / video to a mobile storage device. After successful copying, A small icon of USB flash drive will appear in the upper right corner of the image / video thumbnail.
  - Send to smart mobile device: Open the currently selected image / video in the location of the storage USB flash drive.
- Note: This menu will only take effect if the "Backup file to Storage Device" has been checked in the Settings panel of the student solution ① and ② camera that connected with a USB flash disk.

(3) Homework modules

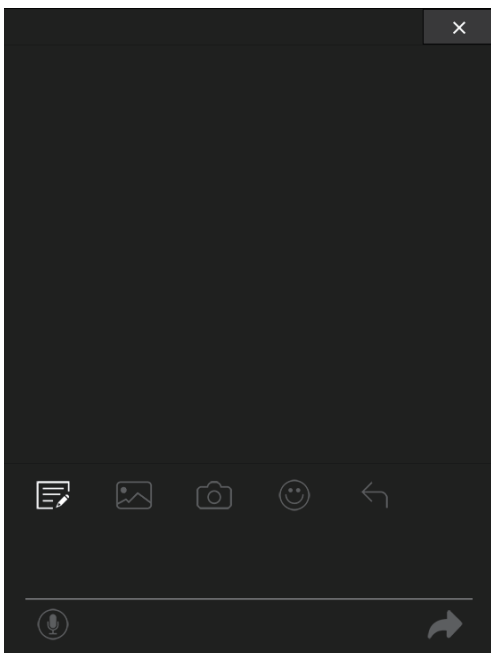









Click the button  to create a file according to assignment template, open the new assignment template for editing and submit.

The default assignment template format is as follows:  
 The user information corresponds to the logged in user information, which can be modified and edited here;  
 Images taken locally can be inserted in the "Image" area;  
 Text can be entered in the "What I see" and "What I learn" area;  
 Save the current edit after editing the assignment, close the document, select the current assignment and send to the tutor end.



1.4.3 Messenger



	Send the local document to the file manager on the tutor's PC
	Send the local document to the tutor's messenger dialog window
	Capture the dynamic screen of the current preview and send it directly to the tutor's messenger dialog window
	Send the emoji to the tutor's messenger dialog window
	Retract the latest missive
	Initiate voice conversations with Messenger on the teacher's side (requires access to headphones)
	After entering the text in the text box, click this button to send