smartCam 4K Reference Guide

futudent
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The smartCam 4K autofocus camera is designed for overhead light use and works best with the following installation and use:

Installation

Place the adhesive slider clip as close to the centre of the overhead light as possible so the light and camera focus on the same treatment location.

Installation Tips:
Do not install on halogen lamps or surfaces that feel hot to the touch. The adhesive may not hold.

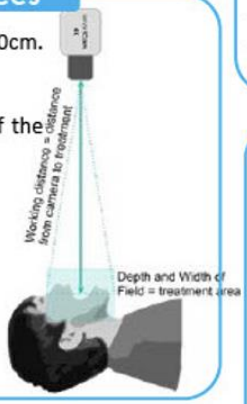
Do not install on loupes, headbands or a shaky surface. Autofocus requires a steady mount.

Important Distances

The working distance is between 50-120cm. The default is 70cm.

The depth of field (DOF) is the height of the treatment area and:

- decreases when the camera is closer to the treatment area.
- increases as the camera is further from the treatment area.
- can be adjusted up or down by 15-20cm at a time by rotating the lens sleeve a 1/4 turn.



Set Working Distance

If your working distance is closer or further than 70cm:

Put the camera in a normal working position. Find the small notch on the front of the lens sleeve.

If your working distance is closer than 70cm, rotate the lens sleeve ¼ turn counter clockwise (left) to bring the focus range closer.

If your working distance is further than 70cm, rotate the lens sleeve ¼ turn clockwise (right) to move the focus range away.

How to Use

Open the recording software and move the camera and light in to working position.

Allow the camera a few seconds to auto focus on the treatment area. The image on the screen will come in to focus.

If the patient or light moves during treatment, the auto lock will take a few seconds to re-focus. The time to re-focus varies with the distance moved:

- Small position changes focus quickly.
- Large position changes focus slower.

The smartCam can be focused manually using the recording software.

Tips for Best Use

The smartCam works differently than your mobile phone camera! Focus-lock at high resolution in a small area takes time.

Light conditions are more important with autofocus cameras. We recommend 50,000lux minimum clinic lighting with good light beam focus.

The light should be low contrast, low shadow and low reflection. Autofocus lock prefers high contrast and may be on those areas rather than on your treatment site:

White balance and colour adjustment in the recording software advanced options can be used to give images a more natural appearance:

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v2022-05-en

Quick guide for installing Futudent

Please note: the information is available with the "Quick guide" inside sales package.

1. Setting up the system

INSTALLING THE RECORDING SOFTWARE

Go www.futudent.com/download, register and download the latest version.

SETTING UP THE CAMERA

a) Attach the camera to your loupes or overhead light.

b) Connect the camera and the pedal to your PC.

c) Open the software.

AIMING AND FOCUSING THE CAMERA

a) Use the focus assistant card to aim the camera and focus it.

b) Make sure you hold the card at your average working distance

Getting started

VIDEO TUTORIAL - www.futudent.com/tutorial See video tutorial for how to setup the system and use the recording software.

USER GUIDE - www.futudent.com/guide See detailed instructions and tips how to use the camera and the cloud services.

CLOUD SERVICE - www.futudent.com Login to the Futudent cloud to download the latest version of the recording software and manage your recordings in your cloud account.

2. Setting up your camera

A standard sale package include:	
Camera Box	**Installation Kit**
• Camera • USB camera cable 1,5 m • Screwdriver • Cloth clip • Universal loupe clip • Spiral Temple Clip • System set-up quick guide • Focus assistant card • A camera case	• 1 PC universal overhead light attachment. • 1pc USB control pedal • 1pc USB 5 m camera cable • 2 PCs 5 m USB extension cables • 40 PCs of cable clip

Step for setting up your camera:

1. After attaching it to the loupe, it looks like below.

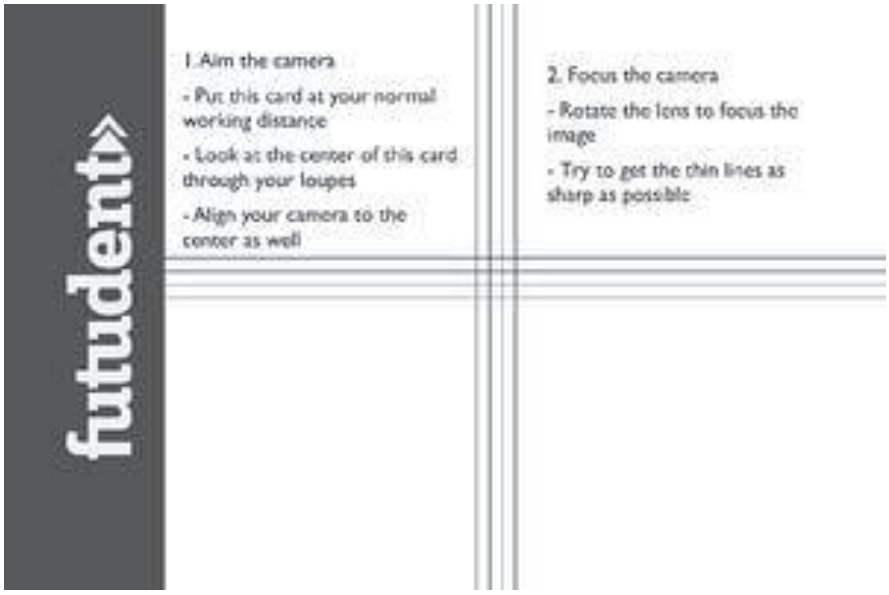
2. Sliding the camera to the clip.

4. Connecting the USB cable to the camera.

3. Focusing your camera

When setting up the camera for use, the Futudent camera has to be focused based on working distance and other recording conditions (loupe, overhead light, gooseneck).

1. Find the Focus Card in the camera case



2. Mount the camera as you intend to use it- on loupe or on overhead-light

3. Put the focus card at your normal working distance

4. Aim the camera

- If using a loupe, look at the center of the focus card through your loupe.
- Align the camera to the center of the focus card.

5. Focus the camera

- Rotate the camera lens to focus the image.
- Try to get the "thin" lines as sharp as possible.

4. Installing the camera to the overhead light

Mounting a camera to the chair-light is an easy and effective way to integrate camera technology into every operatory room. The chair-light is an ideal location for capturing images. Videos and pictures can be taken easily by simply stepping on a pedal. This means no more interruption of the procedure to get high-quality documentation of any procedure the moment it's needed. It is table footage and it is always available to be utilized by everyone in the room

Replace by Ball-mount retrofit

1. Unscrew the two cylindrical screws on each side to dismount the dovetail attachment.	
2. Replace the dovetail mount with the new ball-mount attachment, set and tighten the two screws again. Twist the ball-mount into the similar position than in the photo below.	
3. Slide the ball-mount onto the slider as seen below. Check that the orientation is the same as in the photo.	
Align the slider on your light in a way that allows you to easily attach the cable to the camera. Once you are satisfied with the orientation, remove the protective paper from the bottom of the slider and press it firmly in place.	

4. Twist the camera around a few times to check the tightness of the ball-mount. It should feel easy but firm to turn around. If the joint feels too loose, you can tighten the adjustment screw (see the photo).	
You can now align your camera with your light by simply turning it around and using preview mode in the Futudent software.	

Install to overhead light

1. Find the needed attachment in the installation kits. The cable fixing attachment, camera connecting cable and camera fixing attachment		
2. Put the sticker attachments to a suitable place on the light. *Do not let stickers over 50° C that will*		

not hold the camera		
3. Placed the cable sticker and install the camera connection cable		
4. Change Ball-mount retrofit to the camera as above mentioned.		
5. Sliding the Camera and plug the camera		

5. Installing the camera to Gooseneck

- Gooseneck is an accessory option that purchasable from Futudent.

- There are three optional lengths 50 cm, 60 cm, and 110 cm.

To mount your Futudent camera on the gooseneck:
1. Attach gooseneck to clamp by screwing both pieces together:
2. Mount clamp on desired surface and tighten screw securely
3. Attach the camera to the gooseneck as shown below

6. Installing your Futulight

- Futulight is an accessory option that is purchasable from Futudent

- It is an LED headlight

The package includes the following parts:
1. Case for protection
2. Charger
3. US-plug for the charger
4. Optic filter
5. Battery
6. LED light

<u>Optic filter</u>

When needed, place the optic filter on the LED light.

You can turn the orange shield to cover the light beam.

Attaching the Futulight to your camera:

1. The light is delivered with a connector to fit the counter-piece on top of Futudent camera.
2. Just slide the light on its place, ensure that you push it firmly to the bottom of the slide connector.
3. Remember to align the camera and light.

Battery information:

1. On/off switch & light intensity adjustment

2. Light on when charging

3. Battery life indicators

Technical specifications:

1. Charger: 110V-220VAC, 50-60Hz
2. Battery capacity: 3,7V 4400mAh
3. Battery life: With full intensity about 9h, with 50% intensity about 13h
4. Charging time to reach full charge: 10h
5. Max output: 32 000LUX, linearly adjustable
6. Color temperature: ~6500K
7. Light spot size: Approximately 7 cm diameter from 25 cm distance

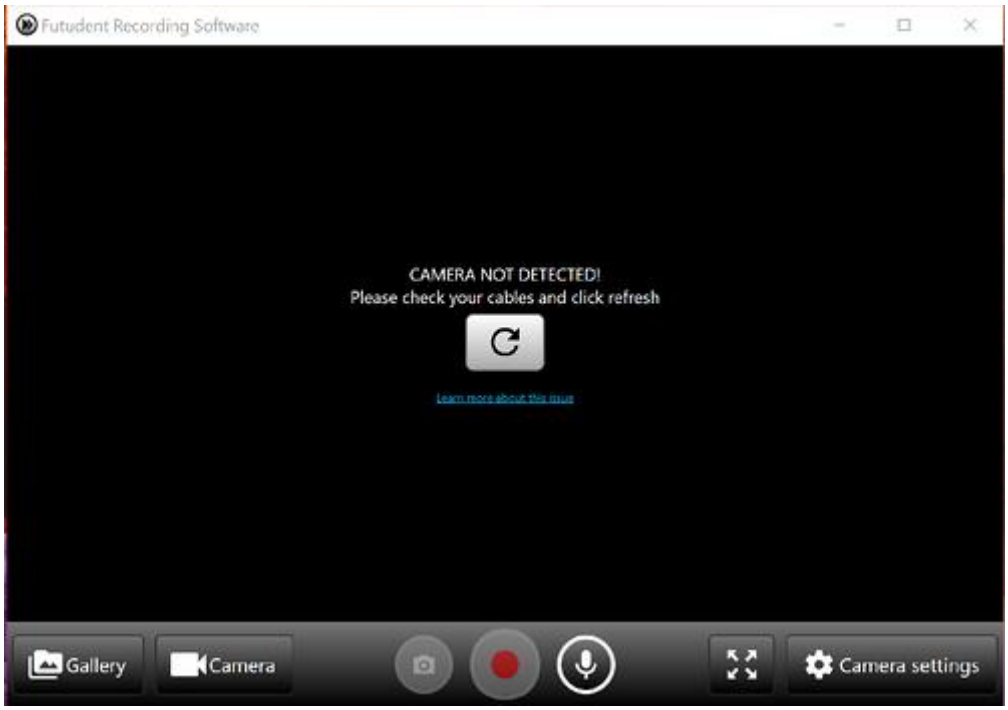
Safety information

1. Use the charger only to power the battery delivered with the package. Do not use any other charger to charge the battery. Misuse may result in the failure of the charger or the battery.
2. The charger and light are designed for indoor use only. Avoid exposure to direct sunlight.
3. Any alteration to the equipment without manufacturers permission may result in a failure.
4. Clean the LED light and/or battery with mild detergent and micro- fibre cloth.
5. When in use place the LED light wire in a way that it's not exposed to any kind of wearing, abrasion or friction.
6. Products may be serviced only by the manufacturer.
7. Dispose of batteries needs to be made at an authorized site.

7. Installing the camera on the loupe

8. Install Futudent Recording Software on Win PC

- Futudent Recording Software 8.0.0 interface
- Function description
- Futudent recording software (8.0) interface

Clicking the "Download for Windows" and run the ".exe" file. The FRS interface appears on your screen.
IMPORTANT: Please accept to install "LAV Filters". It is necessary for proper functioning of the software.

Now plugging the camera USB and clicking the "refresh" button. The camera should start working

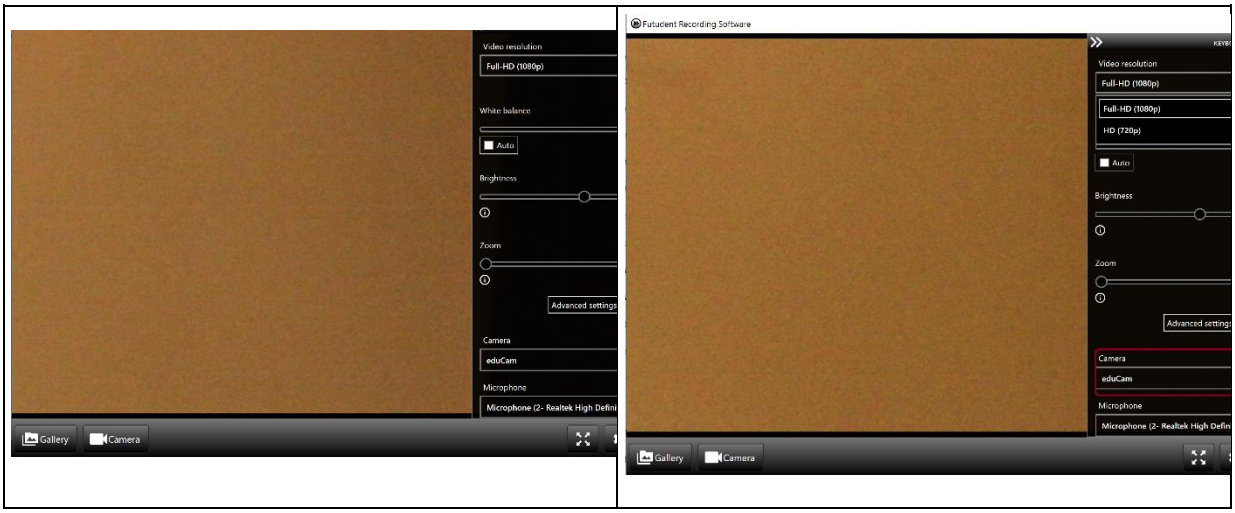
Futudent recording software (8.0) function

Access camera settings

The Futudent EduCam has built-in white balance automation, which handles most lighting conditions in your practice. The following instructions are for when the white balance automation doesn't provide

your required color, you want to change the resolution or if you want to utilize the built-in digital zoom. You can also access the advanced camera settings through the camera settings.

Click the "**Camera Settings**" button at the bottom right corner of the main screen.



- **Select video resolution**The Futudent EduCam supports two resolutions: Full-HD (1080P) and HD (720P). The Full-HD resolution gives the best image quality for videos and photos. It consumes roughly 3 GB per hour to record a Full-HD video. The HD resolution is designed for older computers and for more compact file sizes. The HD setting consumes roughly 1.5 GB/h to record an HD quality video.
- **White balance & Brightness**
  If automatic white balance & brightness do not fit in your operatory room, you can manually adjust it to meet your requirements. To do this, you need to turn the Auto mode off after which you can use the slider to adjust the white balance & brightness.
- **Zoom** You can use the digital zoom with the eduCam through the camera settings. Zoom is at level 100 it means no digital zoom is used. It's not recommended from an image quality perspective to use a higher zoom factor than 300, which equals to 3X digital zooming.
- **Select camera**
  If the live view from the camera is not immediately seen, please select "eduCam" in the Select camera drop-down menu. You might need to click the Refresh button after selecting the camera model.
- **Select microphone**
  You can select the microphone if you want to use it for recording sound. You can also conveniently mute the microphone if you don't want to record sound

Control the Futudent camera

Click on "Camera", to start taking the pictures/videos

- **Start / Stop Recording**
  Keyboard - click the camera icon to take a still photo
  Foot pedal - press the down for 3 (three) seconds to start or stop recording. To have a bookmark during recording press shortly for 1 (one) second.
- **Taking Photo** Keyboard - click the camera icon to take a still photo
  Foot pedal - press the shortly 1 (one) second to take a still photo
- **Microphone** The microphone is not part of the camera, the software chooses the default microphone into use, that system finds.
  The microphone is on by default. The microphone can be mute/unmute by clicking the microphone icon.

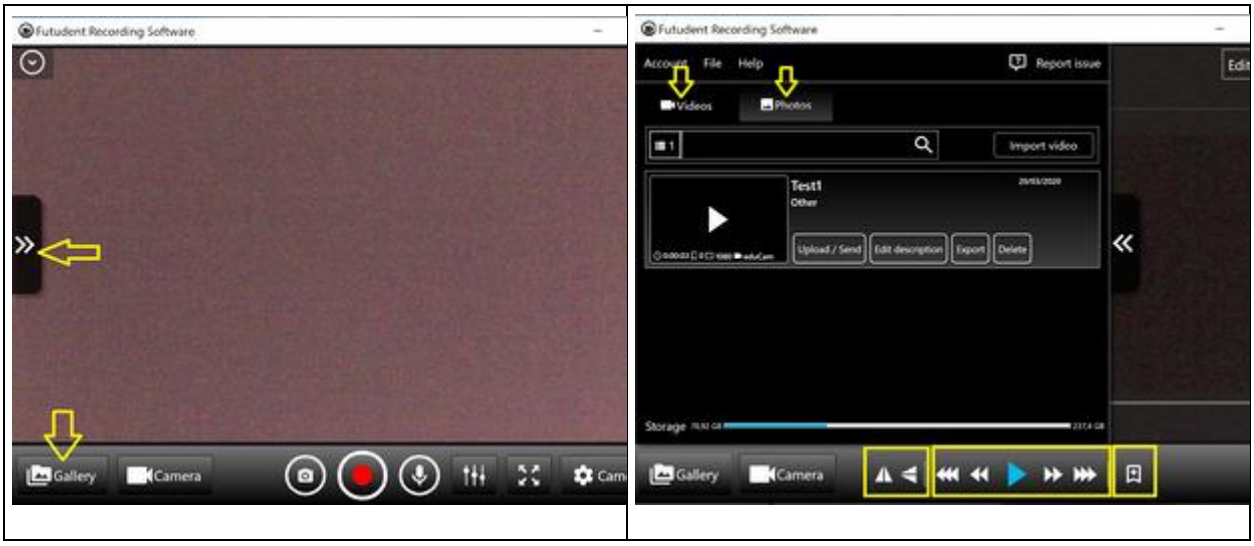
Tips during recording:

- You can adjust zoom during a live view and recording with your keyboard by using the up and down arrow keys.

- You can adjust white balance with your keyboard if you first turn the auto mode off and click the slider bar. Then you can use left and right arrows on the keyboard to adjust white balance.

Access Gallery setting

There are 2 ways to access the Gallery.



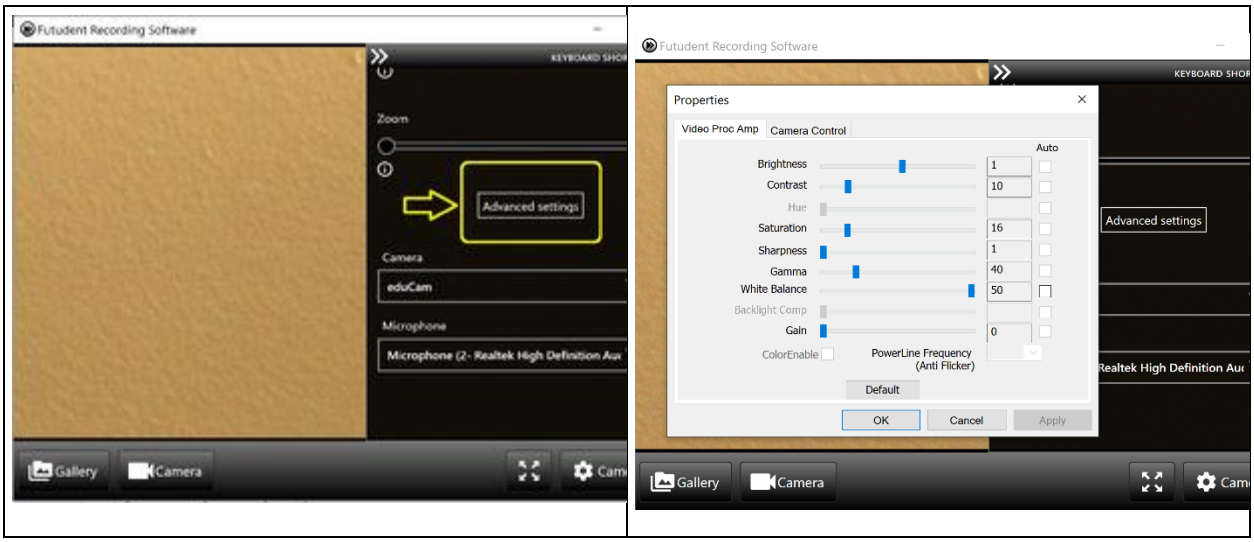
- Saved photos/recordings can be viewed, deleted, upload to cloud or shared with patients/colleagues
- Photos can be found in JPG format in the **Futudent Photos** folder on the desktop
- Videos can be found at local user/documents/futudent/data, Videos are mp4 format and editing videos can be done with third-party software.
- Bookmarks are created by tapping the foot pedal or clicking the camera icon, allow you to jump to that point of the video. Further instructions or notes can be added to the bookmarks during replay or add or remove additional bookmarks by clicking the camera icon.
- There are three group of control buttons can be applied in playback, they are "flip controls", "play controls" and "add bookmark".

Tips:

1. *You can adjust zoom during a live view and recording with your keyboard by using the up and down arrow keys. This way you can for example take close up pictures and pinpoint a crack in a tooth.*
2. *You can adjust white balance with your keyboard if you first turn the auto mode off and click the slider bar. Then you can use left and right arrows on the keyboard to adjust white balance.*

Access camera Advance setting

You can access advanced settings either through the camera settings window by clicking the Advanced settings button, or by right-clicking on the screen and selecting **Camera properties.**

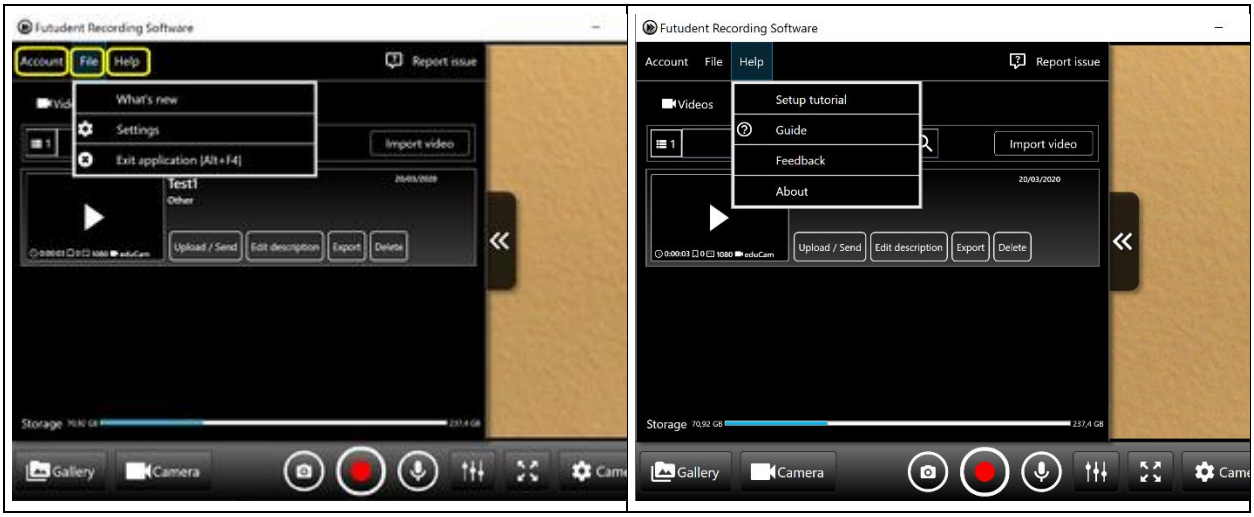


When you have opened the Camera properties, you will see all available settings. With these settings, you can control the camera and see changes reflected in the image in real-time.

Please note: there is "white balance" lock function that is ONLY available for mciroCam.

Access other features of software

Once clicking on "Gallery", there are three major features can be found at right top corner. They are "Account" "File" and "Help".



Account: users are able to login and create a new account at Futudent cloud

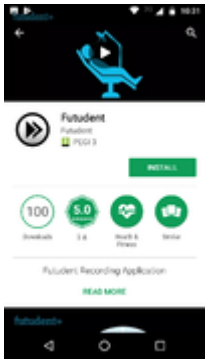
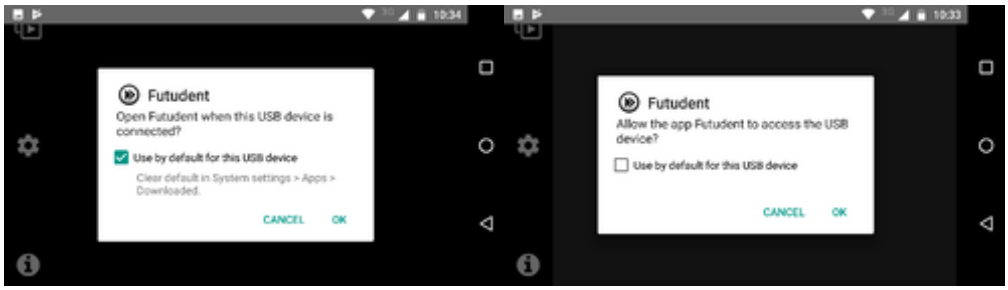
File: "what's new" include new release note information. "Settings" allows user to change the software languages and to update the default location for the photos and videos.

Help: "Setup tutorial", "Guide" and "Feedback" provide quick links to assist users. "About" provides the software information.

9. Install Futudent App to Android OS mobile devices

- Download, install, and use the Futudent Android application
- To ensure the best in practices, it is good practice to regularly check for updates to your phones operating system and apps

Installation

1. Download & install Futudent app from Google Play Store. 
2. Connect the camera to your mobile Android device with an *active* USB cable and OTG (on-the-go) adapter
3. Start the Futudent app and grant all required permissions (only required first time app is run) 
4. Live feed from camera should now be visible - if not visible, disconnect camera and reconnect after a few seconds
5. Right-side button functions (top to bottom)

- Resolution: tap to choose between 1080p (full-HD) and 720p resolutions
- Record: tap to start a recording
- Photo: tap to take a picture which can be immediately viewed in phone's photo gallery
- Microphone: tap to mute/unmute microphone

6. Left-side button functions (top to bottom)

- Gallery: recordings can be viewed here
- Settings: change photo and video storage locations or disable preview in recording mode
- Support: tap to access Futudent Guide and Futudent Support contact information

Changing storage location

To change the location where videos and/or photos from the Futudent app are stored:

- Open the app
- Tap the "settings" icon (left-side)
- Tap the edit icon next to the location path - video storage or photo storage
- Select Internal storage to choose a location on the phone's memory or External storage to choose a location on an external SD card

Please ensure there is sufficient space in chosen storage location

Wireless streaming to a TV/Monitor

Casting lets you mirror your mobile device's screen to a larger screen and is possible with a casting device such as MiraCast or Chromecast:

- Connect the casting device to a monitor or TV
- Connect your Android device to the *same Wi-Fi network* as you cast device or TV with Chromecast built-in
- Select Cast from the device settings to see available cast devices
- Select your Chromecast/Miracast or TV with Chromecast built-in that is currently casting content
- To stop casting, pull down the notification drop-down on your device, tap the casting device and select disconnect

Please note: Not all phones support casting and certain phone have been optimized for casting so experiences may vary, please check your phone specifications! Android 4.4.2 or higher is required.

Transferring files to your local computer

1. SD Card A quick way to transfer recordings to your PC is with an SD card - simply remove the card from your mobile device and plug into a computer. An external SD/memory card reader is required if the computer does not have an in-built SD card slot.
2. USB Cable To transfer photos and recordings from your mobile device to a computer with a USB cable connection • Connect mobile device to computer • Select 'File Transfer' from USB options • Browse phone content with File Explorer/Finder • Copy and paste or drag and drop to any location on the computer
3. Cloud Recordings may be uploaded directly to a cloud application such as Dropbox or iCloud

10. Know software keyboard shortcuts

List of Futudent Recording Software keyboard commands.

Window OS computer			**macOS computer**	
Command description	**EduCam/ ProCam/ MicroCam**		**Command description**	**EduCam/ ProCam/ MicroCam**
Zoom [Camera mode]	↑Up-key Down-key↓		Zoom [Camera mode]	↑Up-key Down-key↓

Start/Stop recording	F6[Long press]		Start/Stop recording	F6[Long press]
Pause/Play(Playback mode)	Space key		Pause/Play(Playback mode)	Space key
Open/Exit Gallery	F5		Open/Exit Gallery	F5
Open/Exit Full-Screen	F11		Open/Exit Full-Screen	F11
Forward/Backward Play (Playback mode)	←Left-key Right-key →		Forward/Backward Play (Playback mode)	←Left-key Right-key →
Bookmark when recording	F6		Bookmark when recording	F6
Bookmark movement (Playback mode)	↑Up-key Down-key↓		Bookmark movement (Playback mode)	↑Up-key Down-key↓
Activate camera	F6		Activate camera	F6