CAE

CAE LapVR

User's Guide

PN: 165K400100

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System Specifications

Hardware	
Equipment	24” flat LCD monitor Haptic device Two instruments with 6 degrees of freedom Camera with 5 degrees of freedom, changeable virtual lenses and image capture feature Dual foot pedal for electro-surgery and advanced energy devices
Dimensions	18” W x 38” D x 68” H (Adjustable) 46cm W x 96cm D x 173cm H (Adjustable)
Weight	195 lb (90 kg)
Electrical	100-120 V, 50-60 Hz, 10A 200-240 V, 50-60 Hz, 5A
Storage Temperature	-40˚C to +65˚C (-40˚F to +149˚F)
Storage Humidity	20% to 80% without condensation
Operating Temperature	10˚C to 32˚C (50˚F to 90˚F)
Operating Humidity	20% to 80% without condensation

Cautions and Warnings

Please read and understand these cautions and warnings before you begin using the simulator.

Operations

- Do not operate your equipment with any covers removed
- Do not use your equipment in a wet environment. Protect equipment from liquid intrusion.
- Do not put any object on top of the bottom platform. Movement of the lift mechanism can cause crush hazard, resulting in possible bodily injuries and damaged equipment.
- Do not jam the motor lift mechanism onto an object. This is a misuse and subjects the motor to burn out. It can also result in possible bodily injuries and damaged equipment.

Ergonomics

- Tip-over hazard: Do not move your equipment without fully lowering the lift mechanism. Failure to do so can result in possible bodily injury and damaged equipment.
- Improper or prolonged keyboard use may results in injury
- Viewing a monitor screen for extended period of time may result in eye strain

INTRODUCTION

Welcome to the CAE LapVR Simulator user guide. This guide provides instructions on how to use the LapVR simulator.

The LapVR simulator provides a safe, virtual environment for learners to practice laparoscopic techniques and skills. Learners can range from medical students to licensed medical professionals.

The LapVR Simulator

Preprogrammed tasks and courses with didactic content, real-time simulation haptics and post-simulation evaluation metrics help create the comprehensive training experience for learners. Through the combination of these tools, learners are able to recognize the realistic anatomical and spatial limitations of performing laparoscopic surgery on a human patient and master the techniques required for safe, successful surgeries.

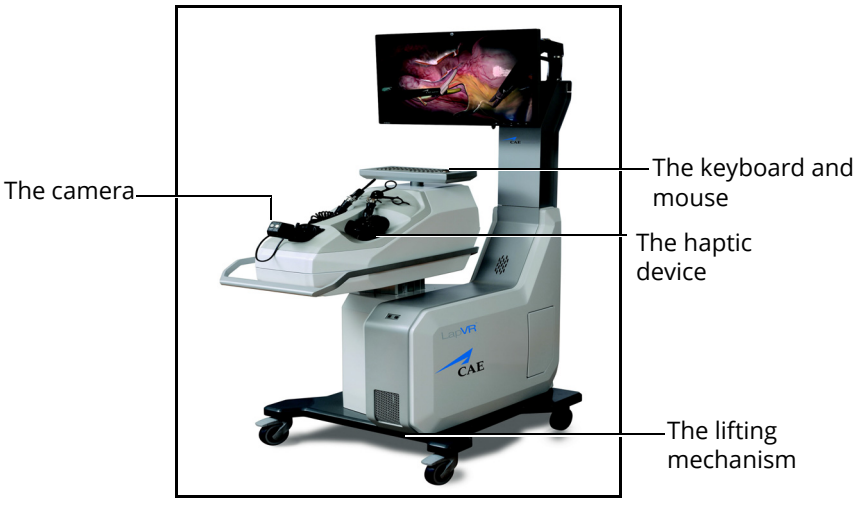
Equipment Overview

The standard equipment for the LapVR simulator includes all the necessary equipment for using the simulator. The items listed in the table below are shipped with the simulator.

Standard Equipment
LapVR Device
LapVR Handle Attachments
LapVR Pedals
Monitor Pole
Monitor
Computer

LapVR Device

The LapVR device comes as a single entity. The haptic device, camera, keyboard, mouse and lifting mechanism are all part of the LapVR device. The device is secured to a four-wheel platform for convenient mobility when storing the simulator. Additional parts, which are packaged and shipped separately, will require minor assembly.

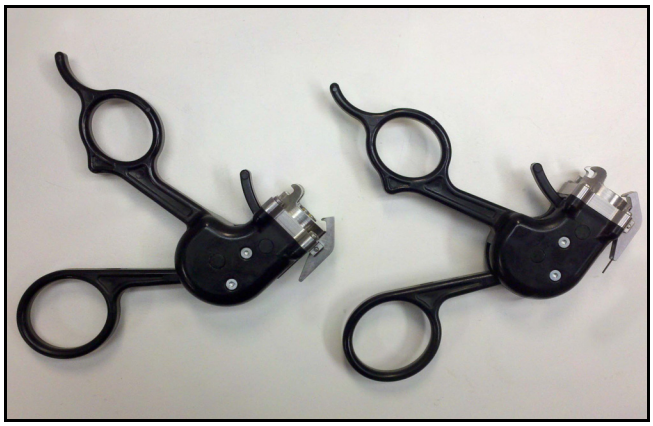


The LapVR Simulator

LapVR Handle Attachments

The LapVR comes with two pairs of quick change handle attachments: the pistol grip attachments and the suturing attachments.

The pistol grip attachments are most commonly used for several instruments throughout the various modules.



The Pistol Grip Attachments

The suturing grip attachments are used for more specific modules that require the use of instruments with a constant grip.

The Suturing Attachments

LapVR Pedals

The LapVR comes with foot pedals to provide power controls for simulations that use electro-surgery and advanced energy devices.

The Foot Pedals

Monitor Pole

The monitor pole is shipped separately from the LapVR device and requires some assembly before the simulator can be used. Two plates (one front and one back) connect to the LapVR device to create the monitor pole. The monitor arm is attached to the monitor pole front plate.

Monitor

One flatscreen monitor is provided with the purchase of a LapVR simulator.

Computer

The computer for the LapVR simulator is shipped inside the LapVR device. To access the computer, press on the access door located on the side of the simulator.

The Computer Access Door

Before Beginning Setup

Proper operation of the LapVR simulation requires correct configuration. Before setting up the system, keep in mind these basic guidelines:

- Read and understand the Cautions and Warnings in the beginning of this User Guide
- Follow and complete the sequence of Setup steps carefully
- Do not power on any components until instructed in the text
- Do not install any Windows updates or anti-virus software when connecting to the network
- When unpacking the simulator for the first time, use box cutters carefully to protect both the packaging and the product

Note: Keep all original shipping materials, including boxes. Warranty and repair items must be returned and shipped in their original packaging.

USING THE SIMULATOR

The LapVR simulator integrates realistic laparoscopic surgical handles and pedals with an interactive software to provide learners with a comprehensive and quantitative training experience. Administrators and trainers are responsible for setting up the user accounts, managing the learners' curriculum and reviewing learners' results to identify areas for improvement.

Note: For optimal use, no other software programs should be open while the simulator software is running.

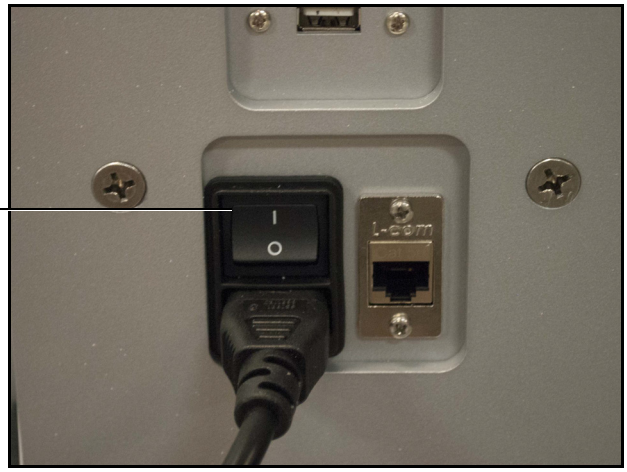
Note: To use the printing functions in the software, a network connection must be established. For further assistance, contact your system administrator.

Powering On the Simulator

Before starting the software, ensure that the simulator is powered on. In the case that the simulator is not powered on, follow the instructions below.

To power on the simulator:

a. Ensure the top of the master power button, located on the back of the simulator, is pressed in



The Master Power Switch

b. Press the top part of the orange power switch located on the back right side of the simulator

The Power Switch Illuminated

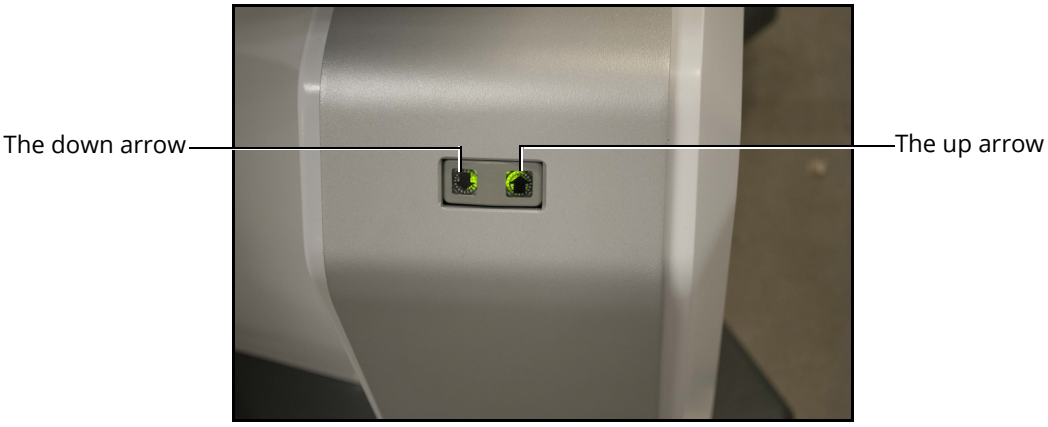
The switch illuminates when the simulator is powered on.

Adjusting the Height

It is important to ensure the simulator is at the appropriate height for the learner to effectively perform the procedures. The LapVR simulator has arrows that allow the learner to adjust the height as needed.

To adjust the height of the simulator:

a. Press the up or down illuminated green arrow buttons located on the front of the lifting mechanism
b. Hold the up or down arrow button for a few seconds to activate the lift mechanism

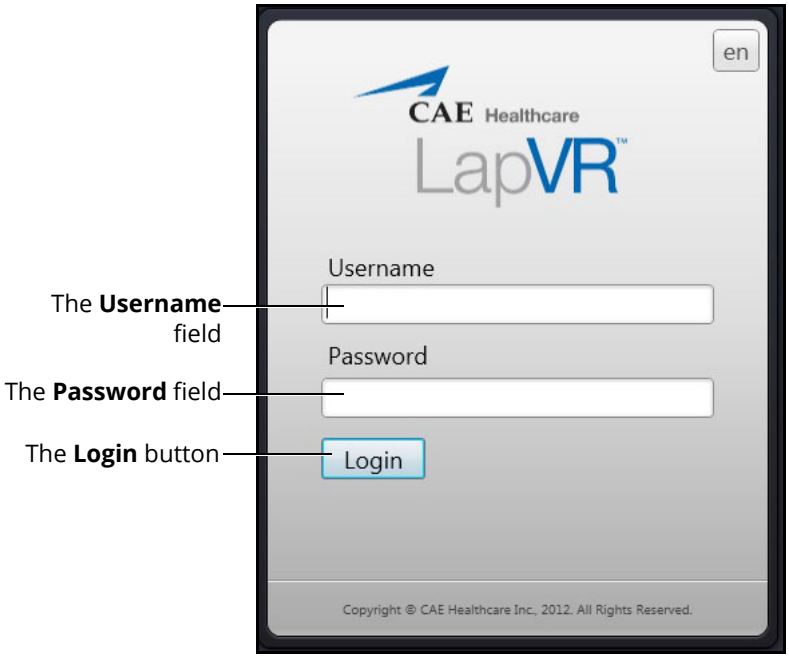


The Lifting Mechanism

c. Once the lift is activated, the device begins moving up or down
d. Release the button when the desired height is achieved

Starting the Software

Once the LapVR simulator is powered on, the software launches automatically and the Login screen appears.



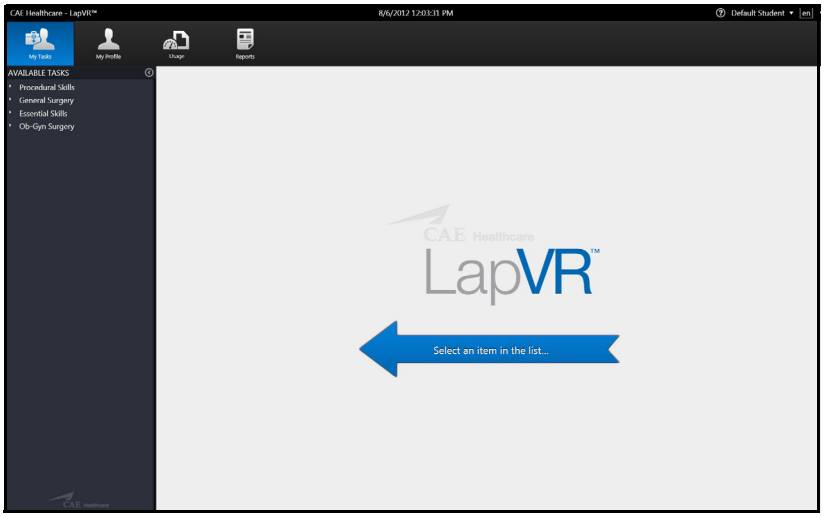
The Login Screen

To log in to the software:

1. Enter the assigned username in the **Username** field. To log in as a guest, enter *guest*

   Note: Any tasks performed while using the guest login will be recorded in the guest account only if the administrator selected Data Recorded in the guest personal data screen.
2. Enter the assigned password in the **Password** field. To log in as a guest, enter *guest*.
3. Click **Login**

The LapVR Home screen appears.

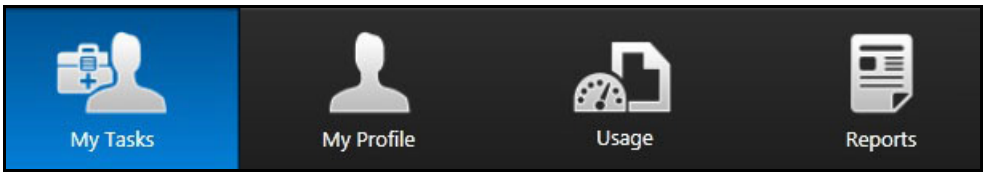


The Home Screen

From the Home screen, users can select and start a simulation exercise, view personal data and print usage summaries and reports. Users are also able to modify language preferences and access the user guide from the Home screen.

Interface Overview

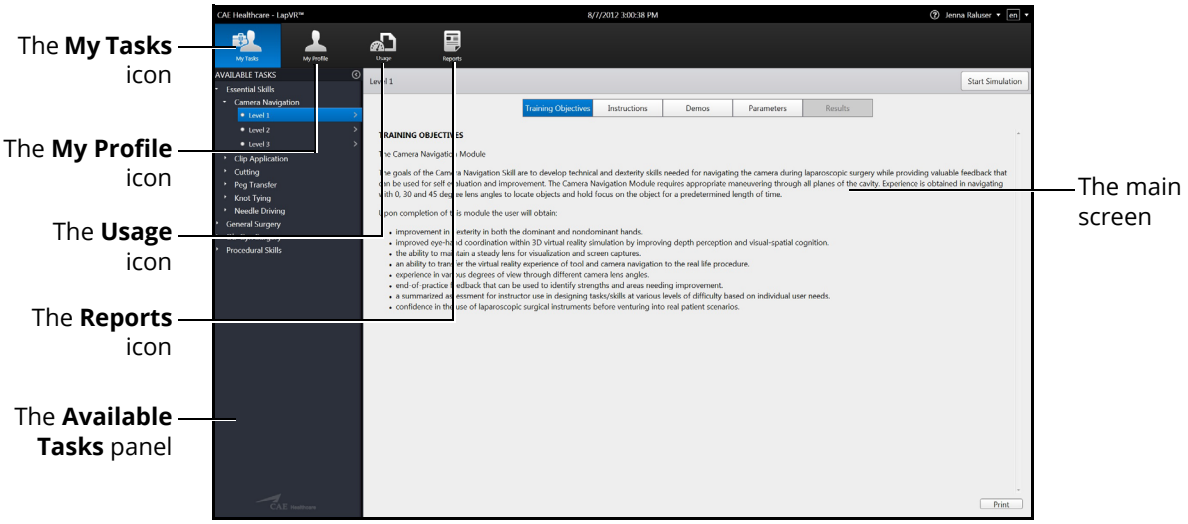
The LapVR user interface contains a dashboard of icons that represent the tools available to users.



The Icon Dashboard

When an icon is selected, the icon will appear blue and the associated content will appear in the main screen on the interface. The left panel contains is a list of options for users.

The **My Tasks** icon is selected by default and referred to as the Home screen when users first login to the software.

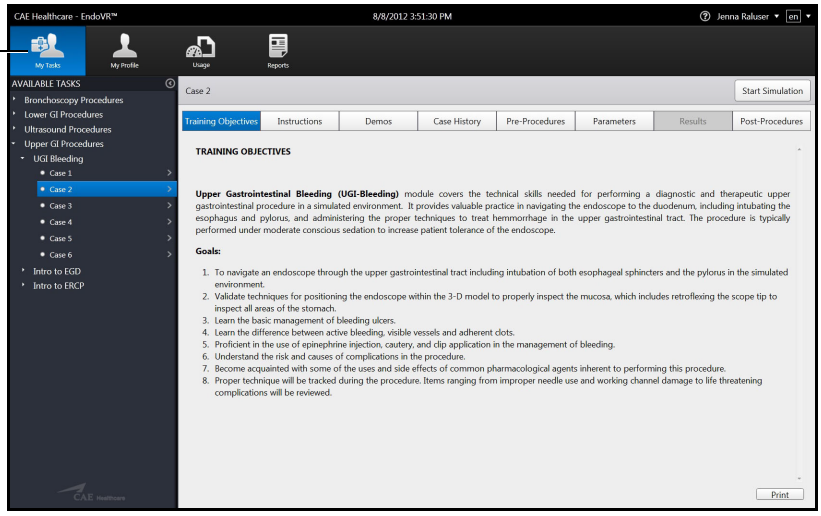


The Home Screen

My Tasks

From the My Tasks screen, users can choose a simulation, review didactic content, run a simulation and review results.

The **My Tasks** icon

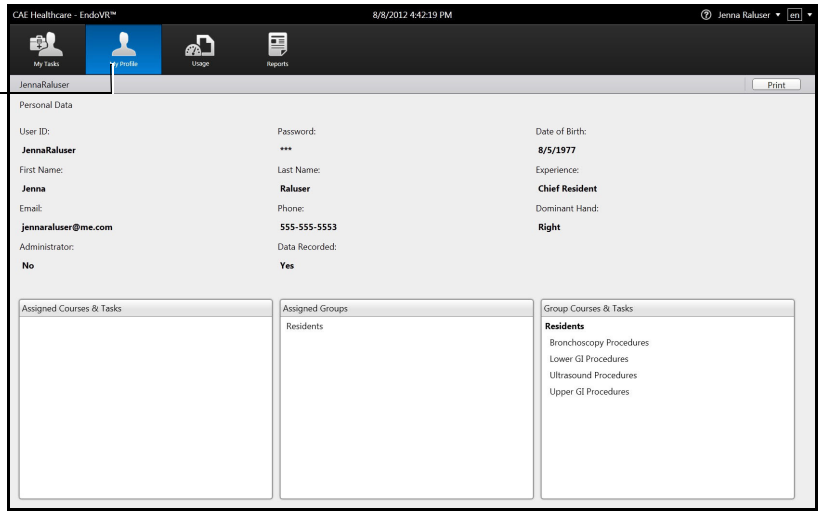


The My Tasks Screen

My Profile

From the My Profile screen, users can review their personal data including username, registration and contact information and privileges.

The **My Profile** icon

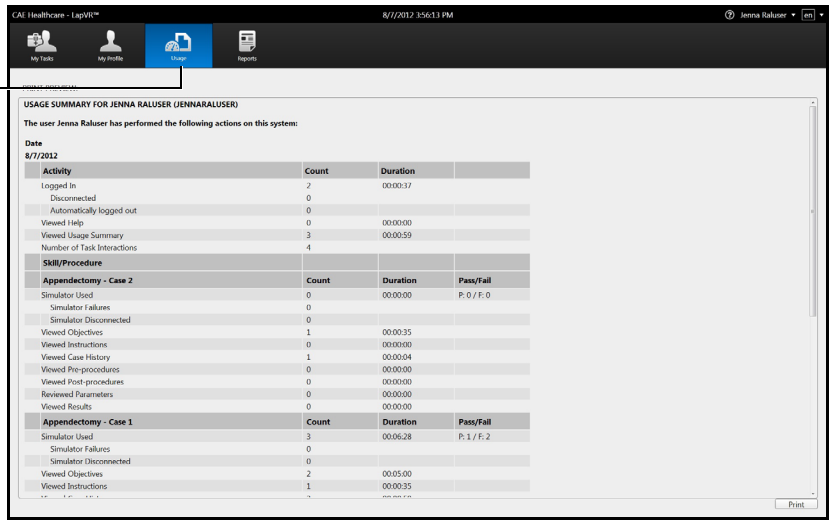


The My Profile Screen

Usage

From the Usage screen, review and print their usage summaries for completed simulations.

The **Usage** icon

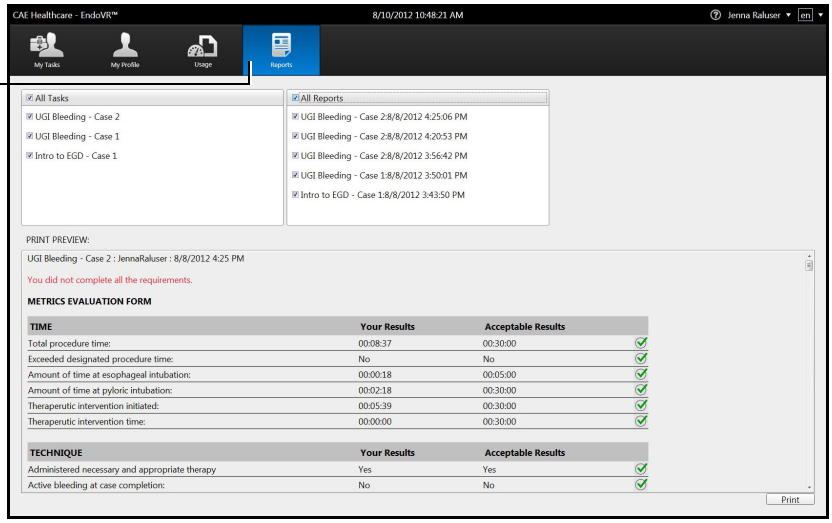


The Usage Screen

Reports

From the Reports screen, users can review and print reports for completed simulations.

The **Reports** icon



The Reports Screen

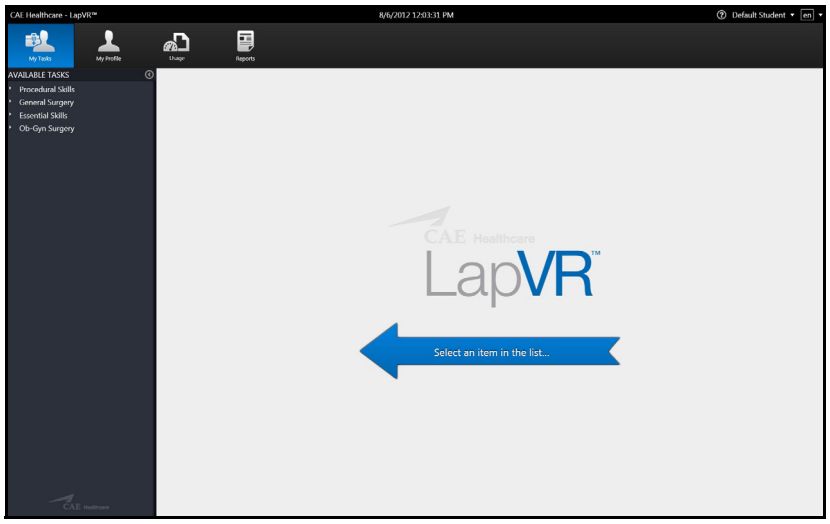
Selecting a Simulation

Each module in the software contains a specially-developed curriculum to test learners on their essential skills or ability to perform acute laparoscopic procedures. Based on the courses and tasks assigned to the learner by the administrator, the training experience is customized to help the learner meet the necessary educational objectives.

Note: Learners only have access to the curriculum assigned to them by the administrator.

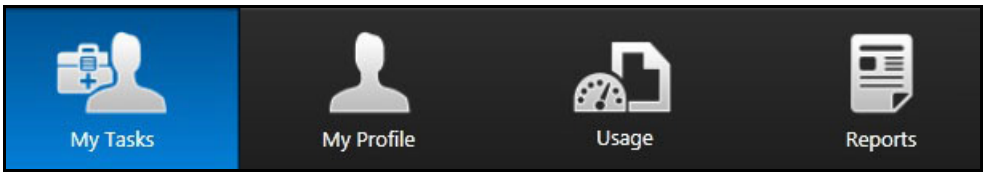
To select a simulation:

1. Ensure the **My Tasks** icon is selected and the Home screen is displayed



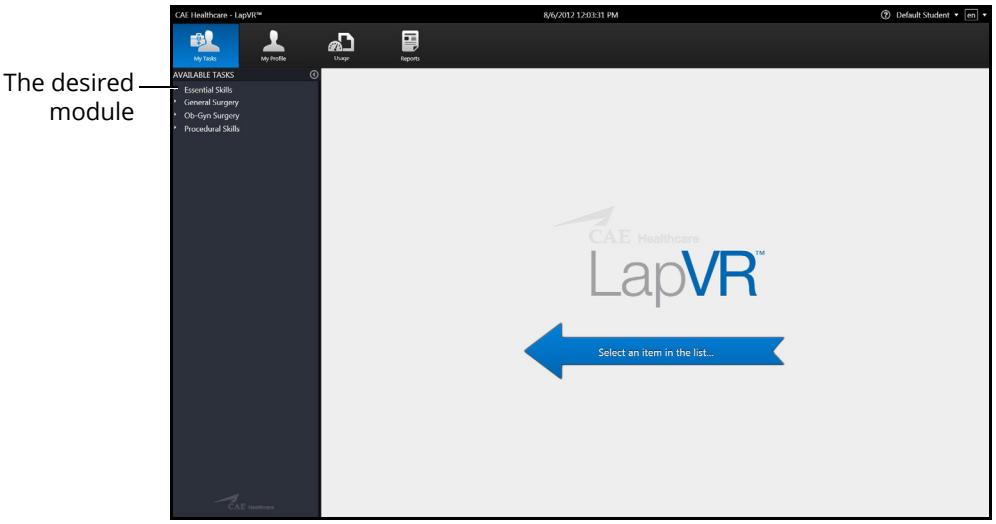
The Home Screen

Note: When selected, the icon on the dashboard is highlighted blue.



The Icon Dashboard

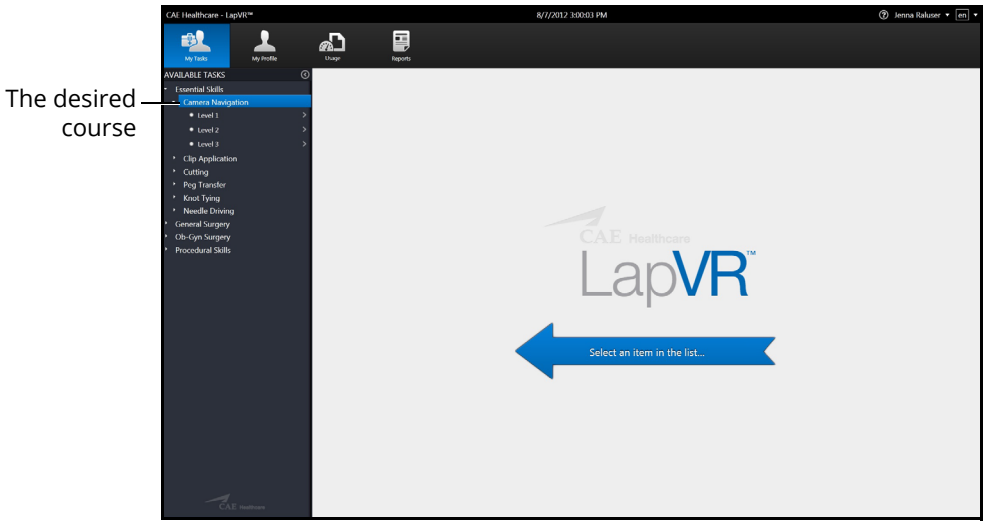
2. From the **Available Tasks** panel on the left side of the screen, click the desired module



The Home Screen

A list of available courses appears.

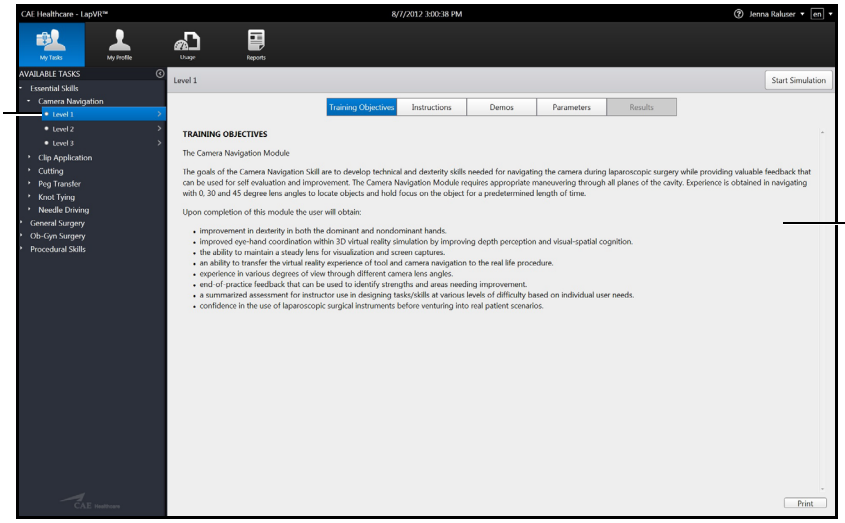
3. Click the desired course



The My Tasks Screen

A list of available tasks appears.

4. Click the desired task



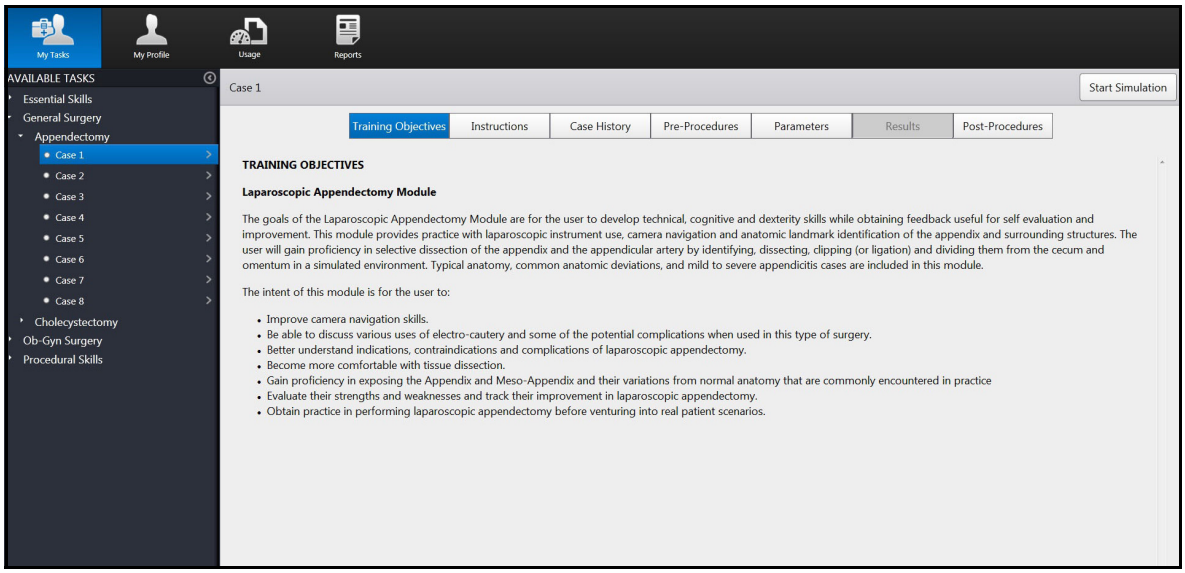
The My Tasks Screen

The didactic content appears in the main screen of the software.

Reviewing the Didactic Content

Before beginning a simulation, users should review the didactic content for the selected procedure. The didactic content contains information users need to know before and after performing a specific procedure.

The didactic content for tasks include Training Objectives, Instructions, Demos, Case History, Pre-Procedures, Parameters and Post-Procedures. Essential Skills and Procedural Skills modules include Training Objectives, Instructions, Demos and Parameters only. The Results screen is only accessible after a task is completed.



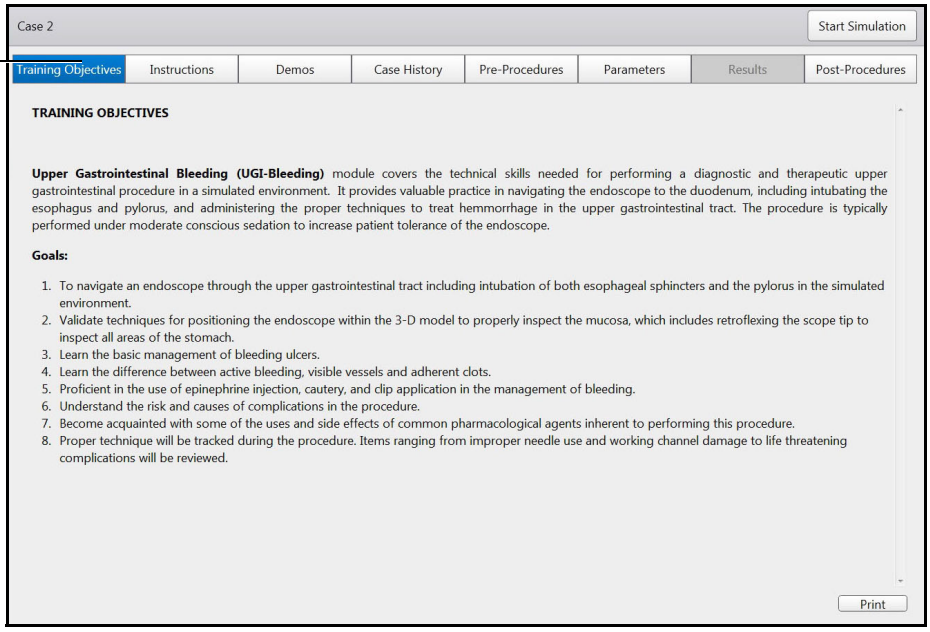
Didactic Content Screen for Procedure Module Task

Note: Parameters can only be changed for specific tasks when the user parameters are unlocked by an administrator.

Training Objectives

To access the Training Objectives screen, click the **Training Objectives** tab. When selected, the tab appears blue and the Training Objectives screen appears.

The **Training Objectives** tab



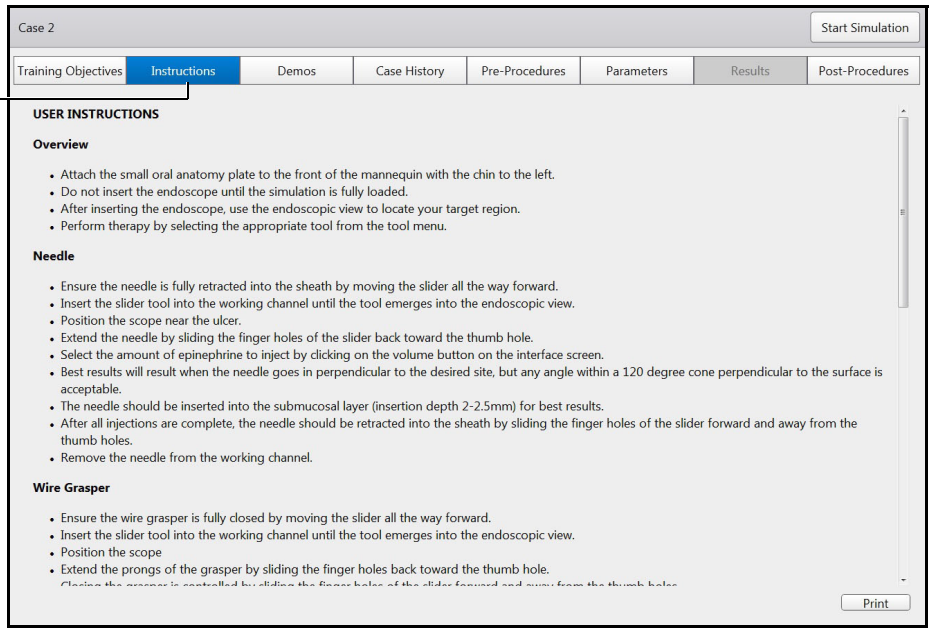
The Training Objectives Screen

The Training Objectives screen outlines the training goals and objectives users meet upon successful completion of the procedure.

Instructions

To access the Instructions screen, click the **Instructions** tab. When selected, the tab appears blue and the Instructions screen appears.

The **Instructions** tab

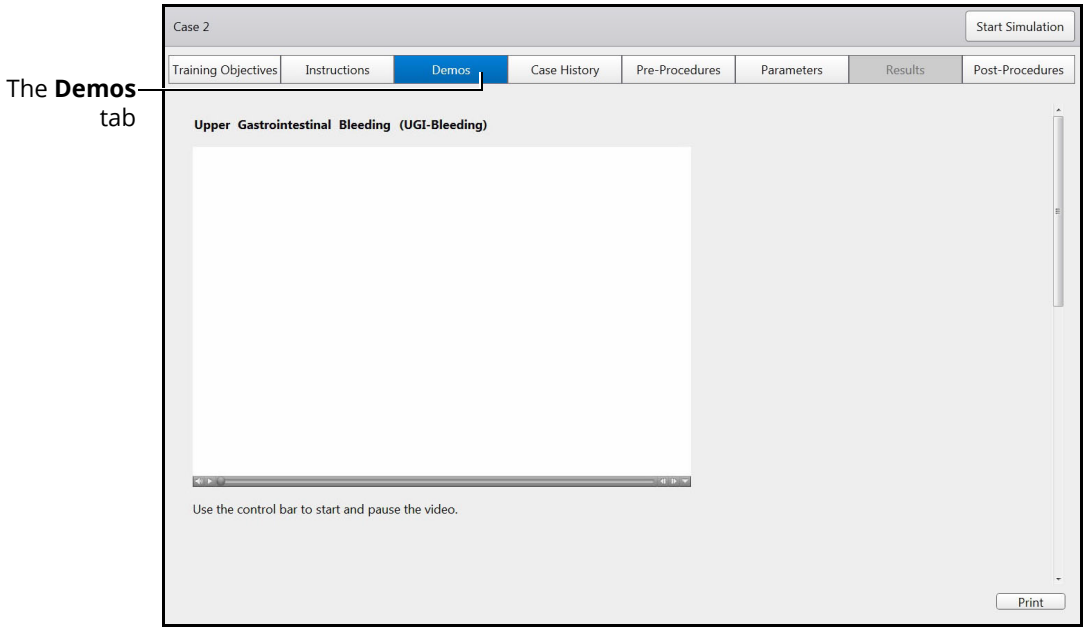


The Instructions Screen

The Instructions screen provides an overview of the procedure and directions for navigating through and performing the procedure.

Demos

To access the Demos screen, click the **Demos** tab. When selected, the tab appears blue and the Demos screen appears.

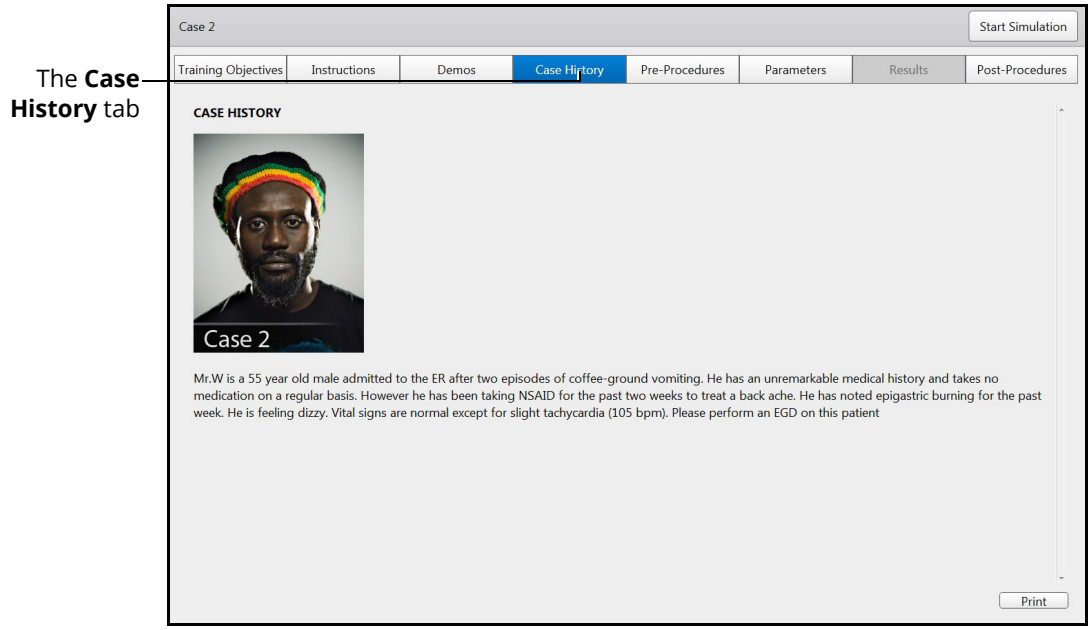


The Demos Screen

The Demos screen provides users with a tutorial on how to perform the selected procedure.

Case History

To access the Case History screen, click the **Case History** tab. When selected, the tab appears blue and the Case History screen appears.



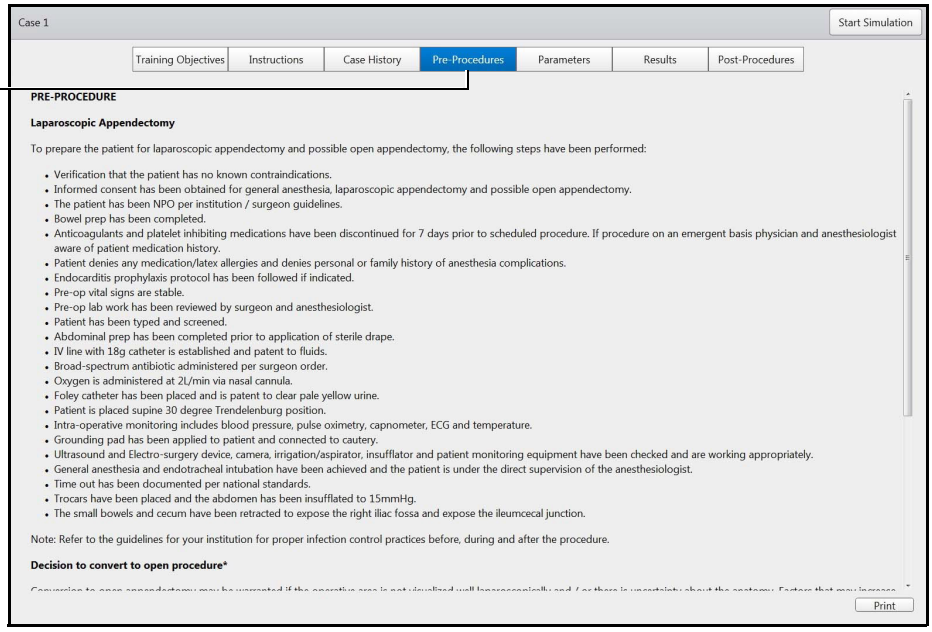
The Case History Screen

The Case History screen provides users with background information about the patient including symptoms, medical history and documentation of previous conditions and procedures.

Pre-Procedures

To access the Pre-Procedures screen, click the **Pre-Procedures** tab. When selected, the tab appears blue and the Pre-Procedures screen appears.

The **Pre-Procedures** tab

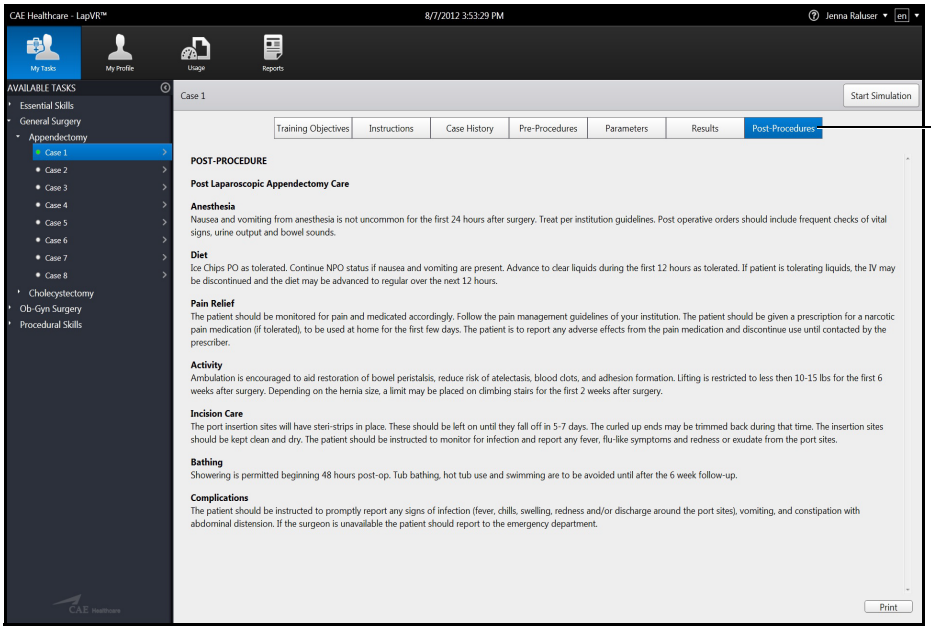


The Pre-Procedures Screen

The Pre-Procedures screen provides steps the user needs to complete prior to beginning the procedure.

Post-Procedures

To access the Post-Procedures screen, click the **Post-Procedures** tab. When selected, the tab appears blue and the Post-Procedures screen appears.



The Post-Procedures Screen

The Post-Procedures screen provides actions users should perform after the procedure is complete.

Changing User Parameters

Every task available on the simulator contains parameters for determining if the learner performed a procedure successfully. For some procedures, the administrator can provide users with the ability to change certain parameters such as timeouts, bleeding, and virtual aids. However, some modules do not contain any adjustable user parameters.

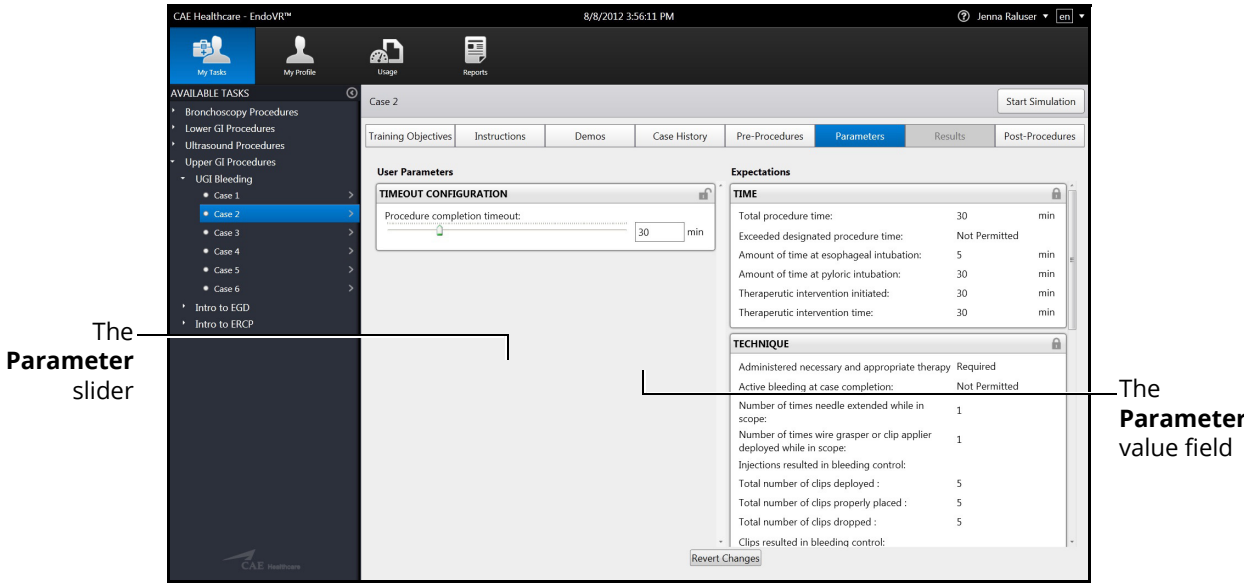
From the Parameters screen, learners can change the parameters prior to beginning a simulation. After the simulation is complete, the parameters return to their default values.

Note: Only unlocked user parameters can be adjusted by the user.

To change user parameters:

1. Select a task and click the **Parameters** tab.

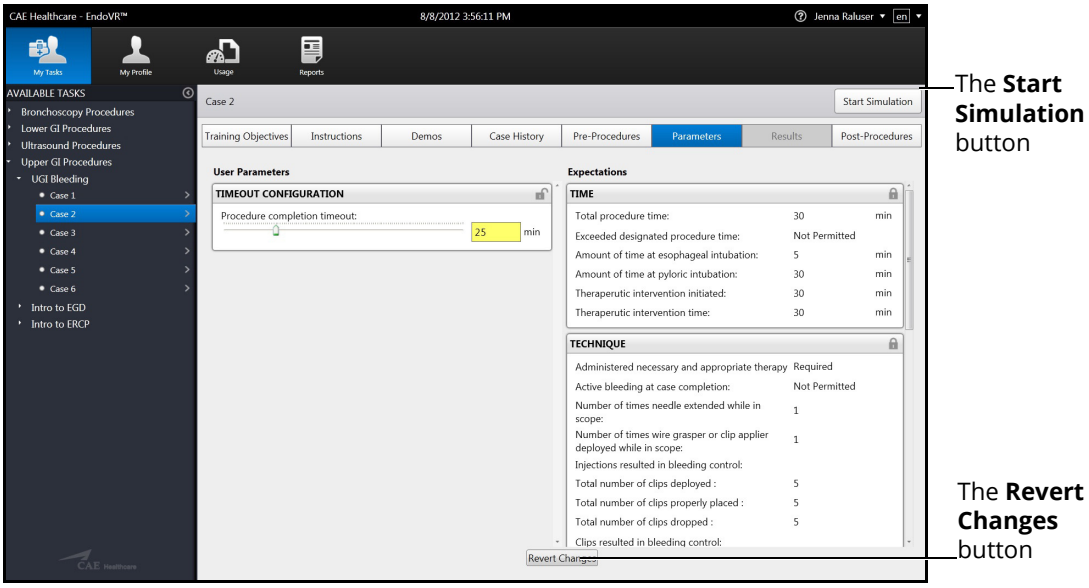
The Parameters screen appears.



The Parameters Screen

2. Use the slider to adjust the parameter to the desired value.

   The adjusted parameter appears yellow and the changes are recognized until the user navigates to a different task or completes the simulation. Users can also cancel the parameter changes by clicking the **Revert Changes** button.



The Parameters Screen with Adjusted Parameter

Note: Parameters with a value field can also be adjusted by replacing the desired value in the value field. The new value must be within the parameters value range.

Running a Simulation

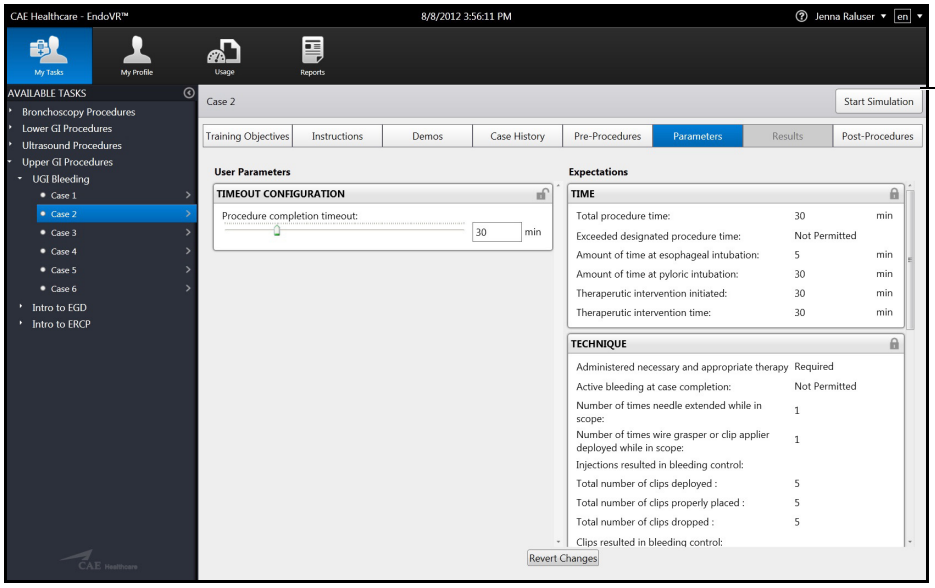
Prior to running a simulation, prepare for the simulation by completing the following steps:

1. Select the desired task
2. Review the associated didactic content
3. Complete any parameter adjustments, if applicable

After the preparation steps are complete, start the simulation.

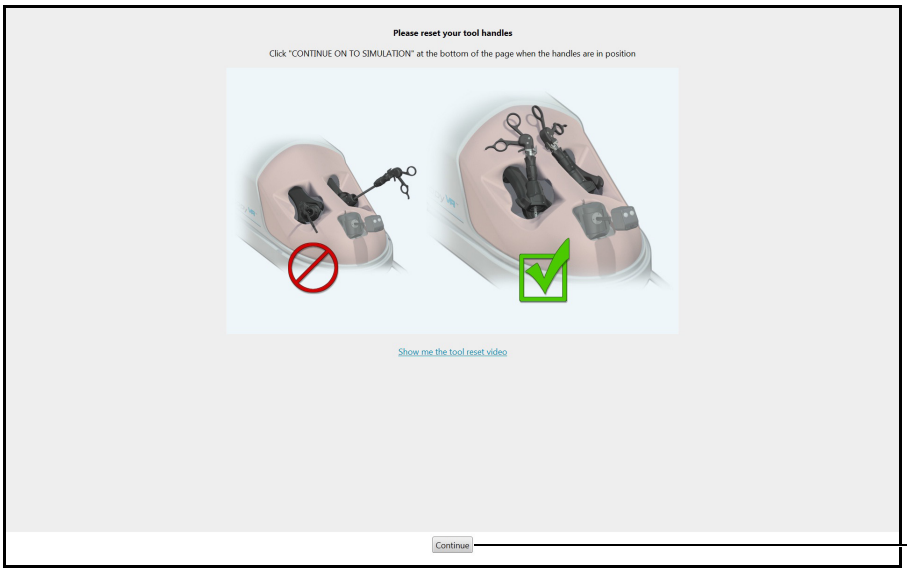
To start a simulation:

1. From any screen within the selected task, click the **Start Simulation** button



The Parameters Screen

The calibration prompt screen appears.

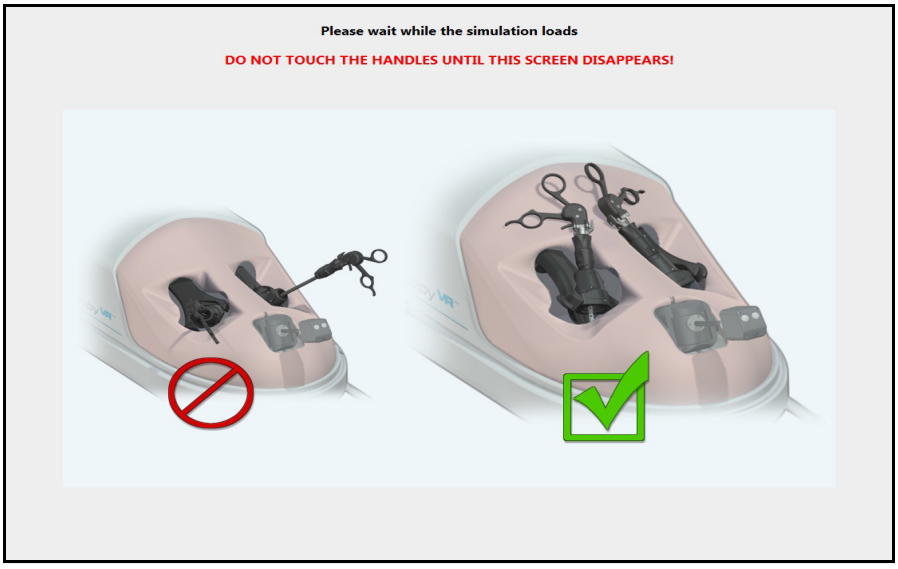


The Calibration Prompt Screen

2. Place the handles in the position displayed on the calibration prompt screen
3. Click **Continue**

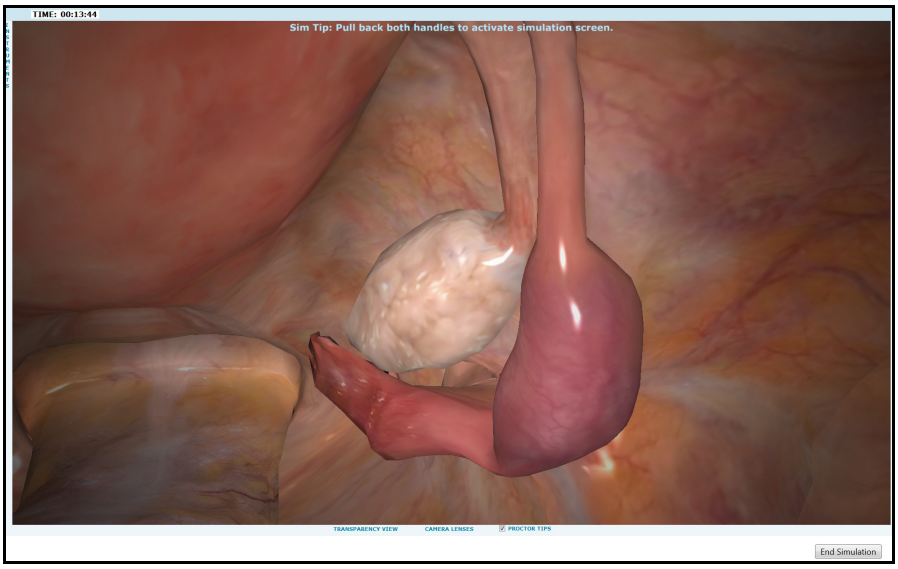
   The calibration screen appears.

WARNING: DO NOT touch or move the handles while the calibration screen is displayed.



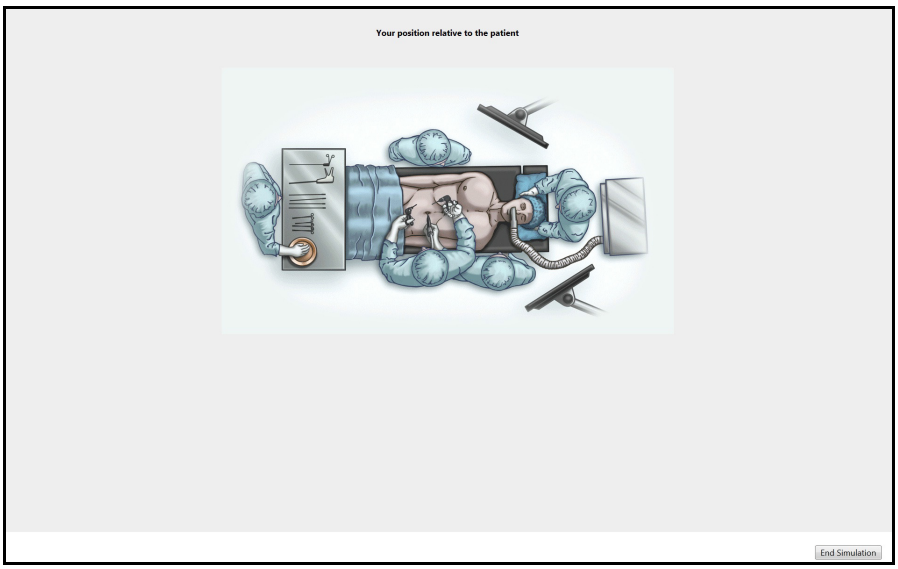
The Calibration Screen

Once the calibration is complete, the simulation start screen appears and the simulation is launched.



The Simulation Start Screen

Note: The Appendectomy module displays an additional screen, the procedure position screen, before the simulation start screen appears.

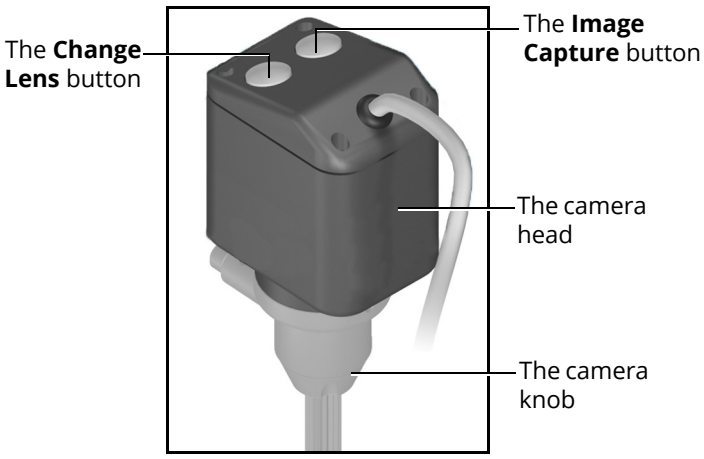


The Procedure Position Screen

The procedure position screen appears briefly and automatically transitions to the simulation start screen.

Using the Camera

During laparoscopic procedures, the camera is used to ensure the procedure is performed correctly and without harm to the patient. The laparoscopy camera requires navigation independent from the other laparoscopic instruments.



The Laparoscopy Camera

Maintaining the camera on a level horizon and effectively adjusting the camera to safely perform the procedures are skills the learner must master to complete the simulations successfully.

IMPORTANT: If a learner does not meet the camera navigation parameters during a simulation, the Results screen displays an unsuccessful completion message, even if the other simulation parameters were successfully completed.

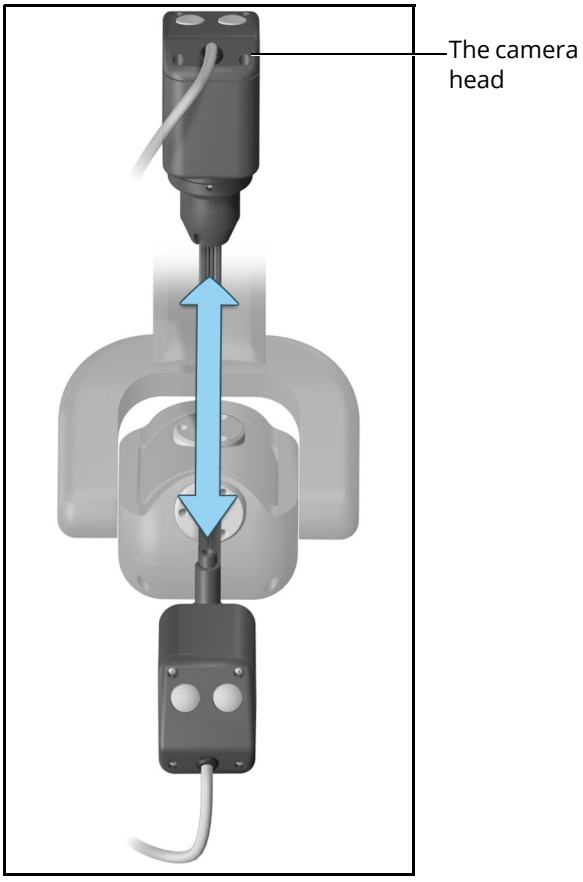
To use the camera:

1. Select a simulation and click the **Start Simulation** button

   After the calibration process is complete, the Simulation Start screen appears
2. Gently push the camera down into the LapVR device to adjust the camera for a closer view
3. Gently pull the camera up from the LapVR device to adjust the camera for a broader view
4. Release the camera when the desired view is reached

Adjusting the Pitch

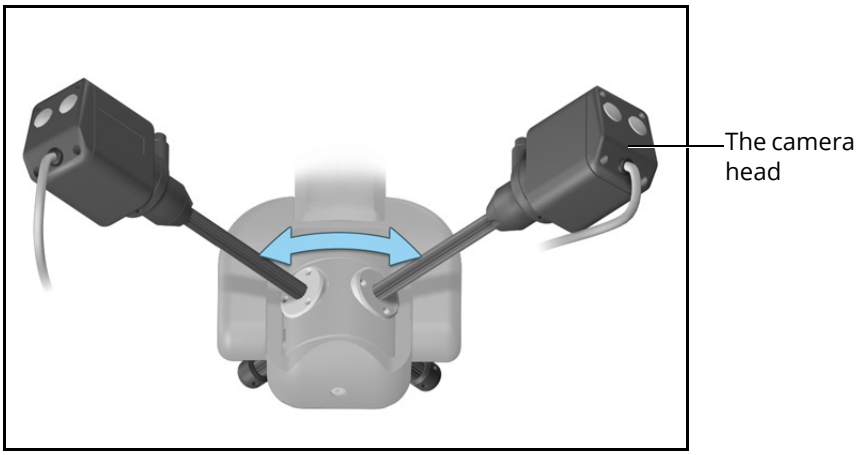
To adjust the pitch of the camera, grasp the camera head and move the camera toward or away from the LapVR device.



The Laparoscopy Camera - Pitch

Adjusting the Yaw

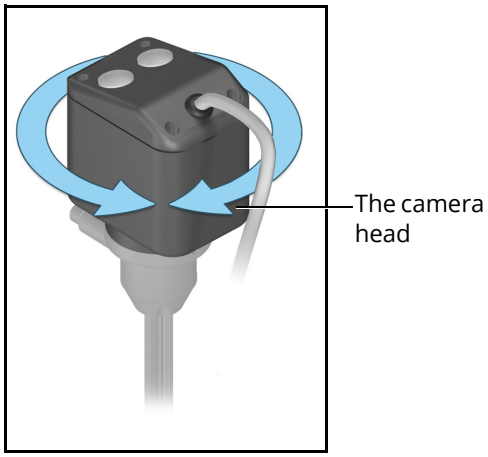
To adjust the yaw of the camera, grasp the camera head and move the camera to the left or right.



The Laparoscopy Camera - Yaw

Adjusting the Angle

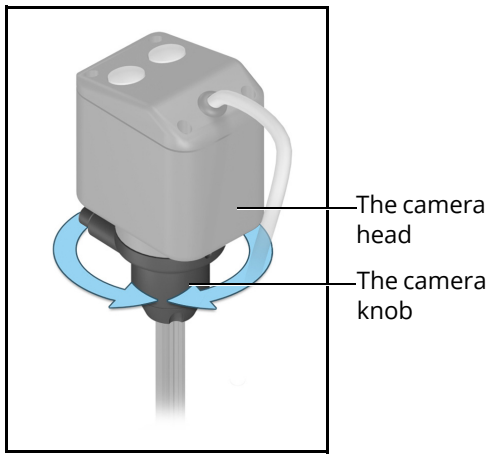
To adjust the angle of the camera, rotate the camera head.



The Laparoscopy Camera - Angle

Adjusting the Plane of View

To adjust the plane of view, rotate the knob under the camera head.



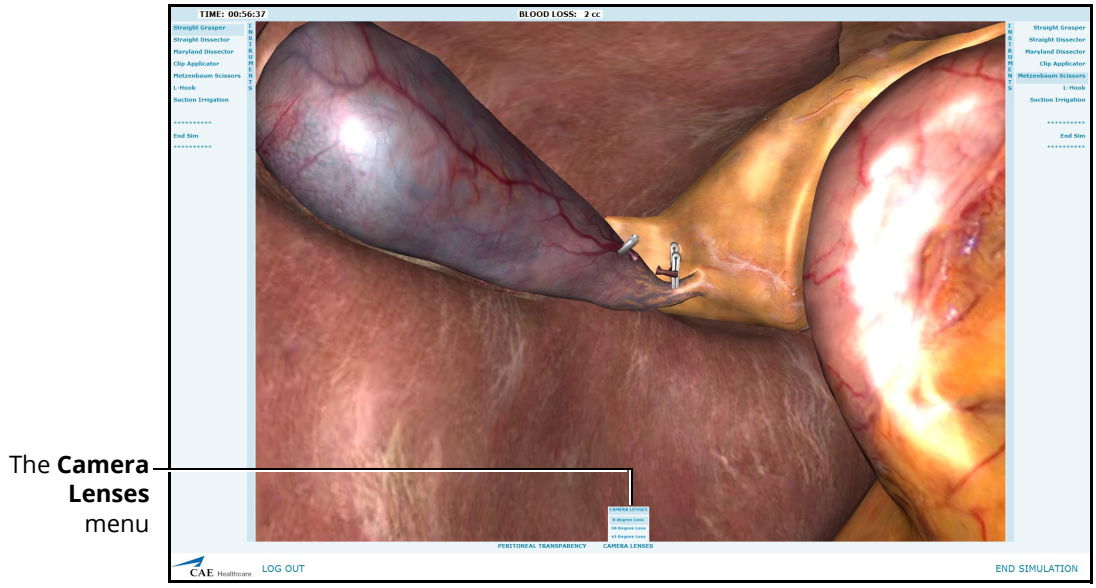
The Laparoscopy Camera - Plane of View

Changing the Camera Lens

To change the camera lens:

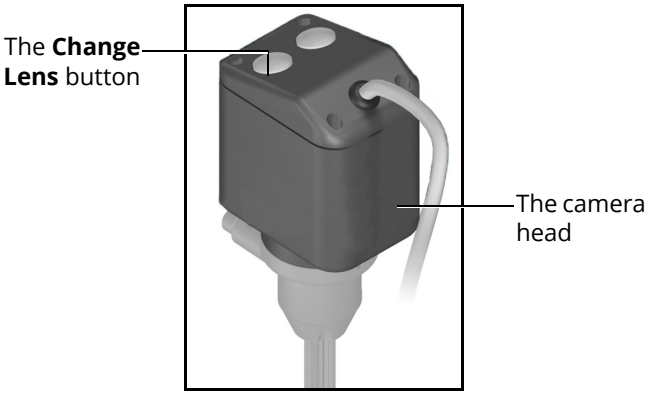
1. Pull the camera up from the LapVR device until the **Camera Lenses** menu appears on the bottom of the screen

   Retracting the camera simulates the removal of the camera through the trochar during a real laparoscopic procedure in order to change the camera or lens.



The Simulation Screen

2. Hold the camera in place to keep the menu accessible
3. Press the **Change Lens** button on the top of the camera head to toggle through the lens options on the **Camera Lenses** menu



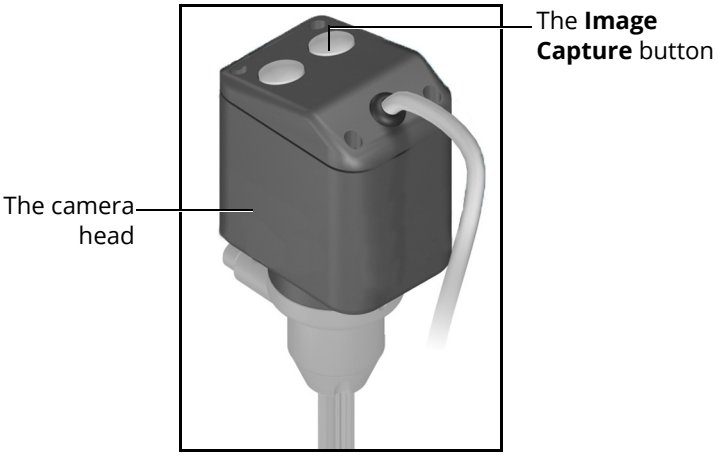
The Laparoscopy Camera

The selected lens options appears blue on the **Camera Lenses** menu.

4. Once the desired option is selected, gently push the camera down into the device to continue the simulation

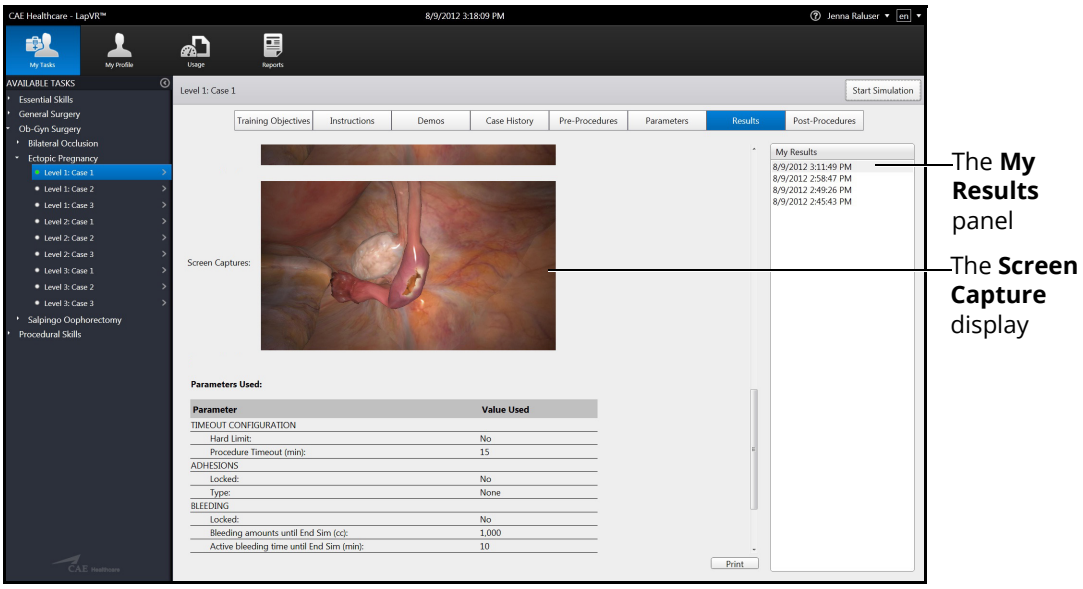
Capturing an Image

To capture an image during the simulation, press the **Image Capture** button located on the top of the camera head.



The Laparoscopy Camera

The images captured during the simulation appear in the **Screen Capture** display on the **Results** screen when the simulation is complete.



The Results Screen with Captured Images

Selecting an Instrument

During each simulation, the learner is evaluated on the proper selection and use of certain procedural instruments. Learners can select the desired instrument from **Instruments** menus located on each side of the simulation screen. The **Instruments** menus are customized for the specific module to narrow down the selection process.

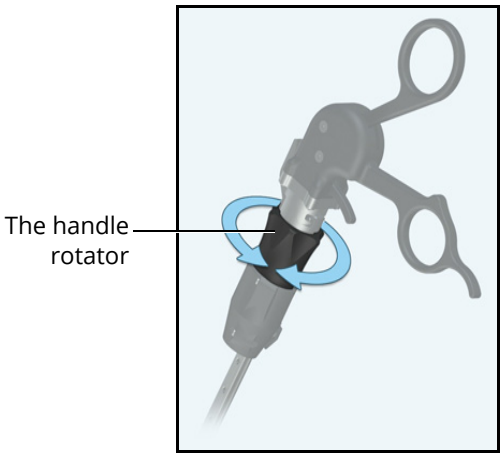
To select an instrument:

1. Ensure the simulation screen is displayed on the monitor
2. Pull back both laparoscopy handles on the LapVR device to activate the simulation screen

   Retracting the handles simulates the removal of the current instruments through the trochar during a real laparoscopic procedure in order to change the instruments.

   The **Instruments** menus appear.

   Note: Learners can also use the computer mouse to click and expand the **Instruments** menus.
3. Turn the rotator located at the base of the left or right laparoscopy handle to select an instrument for the corresponding side



The Laparoscopy Handle

   On the simulation screen, the selected instrument appears blue in the **Instruments** menu.
4. Gently push the handle back into the LapVR device to confirm the selection and begin using the instrument

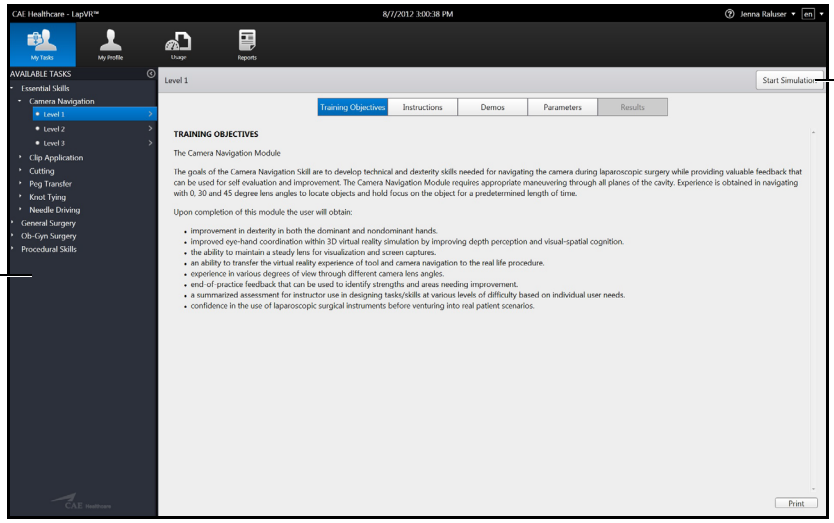
   Note: Certain instruments require a different handle than the standard pistol grip handle.

Using the Handles

Once the learner starts the simulation, the laparoscopy handles become the primary tools for navigating through the procedure and the software.

To use the handles:

1. From the My Tasks screen, select the desired task from the **Available Tasks** panel in the software



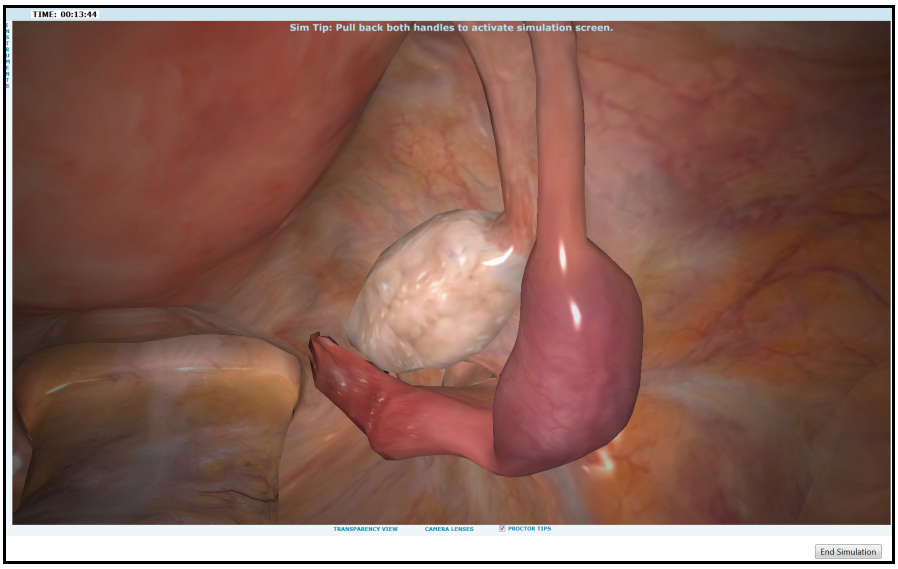
The My Tasks Screen

2. Ensure the appropriate handle attachments are connected to the LapVR handles prior to beginning the simulation

   Note: The handle attachments can be changed during a running a simulation.

3. Review the didactic content and click **Start Simulation** to start the simulation

The Simulation Start screen appears.



The Simulation Start Screen

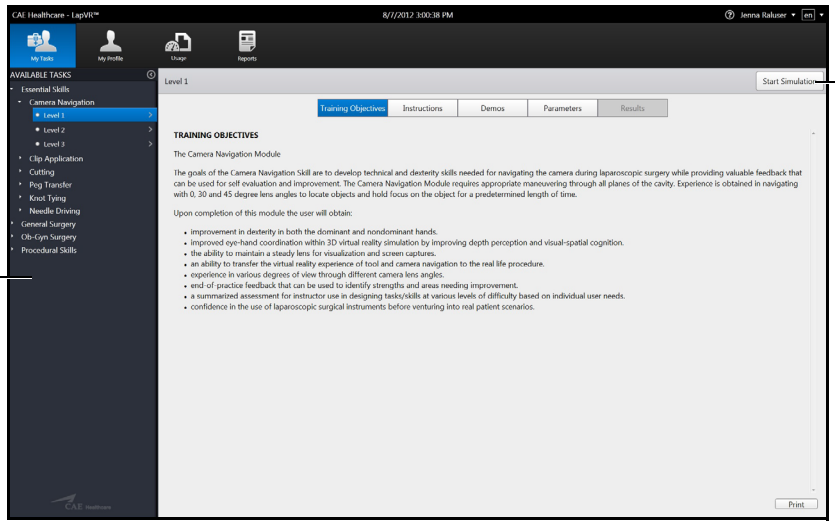
4. Insert thumb and middle finger into the pistol grip handle attachments. For the suturing handle attachments, wrap entire palm around the handle.
5. Retract the handles to activate the **Instruments** panels on each side of the simulation screen
6. Twist the handle rotator below the base of the handle to select the electro-surgery instrument that requires power control from the pedals
7. Reinsert the handles to lock the selected instrument
8. To select the highlighted instrument, gently insert the handles into to the simulator
9. Squeeze the handle to perform an surgical action (i.e. cutting, grasping, clipping, irrigation) and release the handle to discontinue the action

Using the Pedals

The pedals are used for electro-surgery and advanced energy devices and only available for use in certain modules. For example, in the Ob-Gyn Procedures module, the Cutting mode is activated by the left foot pedal and the Coagulation mode is activated by the right foot pedal.

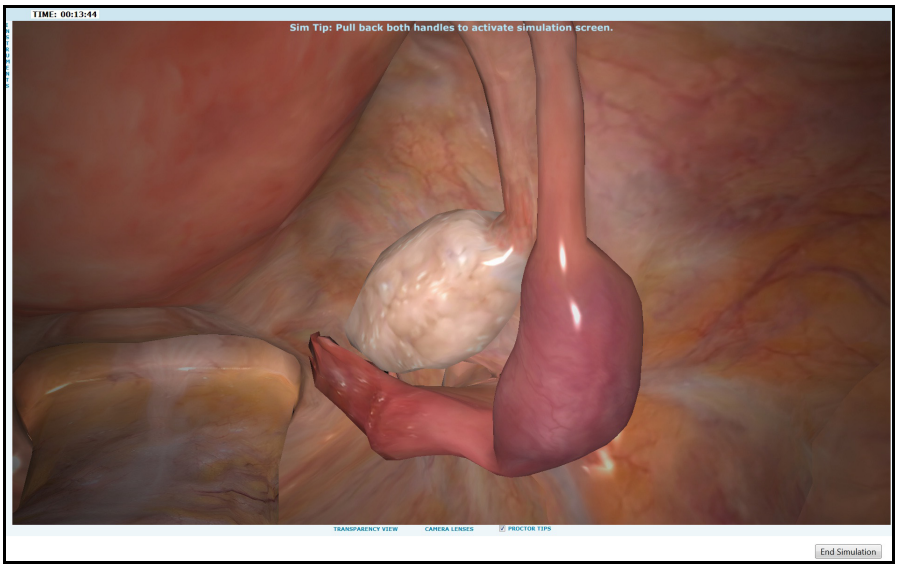
To use the pedals:

1. Remove the pedals from the storage tray located underneath the simulator
2. Place the pedals directly in front of the simulator
3. From the My Tasks screen, select the desired task



The My Tasks Screen

4. Review the didactic content and click **Start Simulation** to start the simulation



The Simulation Start Screen

5. Retract the handles to activate the **Instruments** panels on each side of the simulation screen
6. Twist the handle rotator below the base of the handle to select the electro-surgery instrument in the software that requires power control from the pedals
7. Reinsert the handles to lock the selected instrument
8. Press down gradually on the foot pedal to power the selected instrument during the simulation

Ending a Simulation

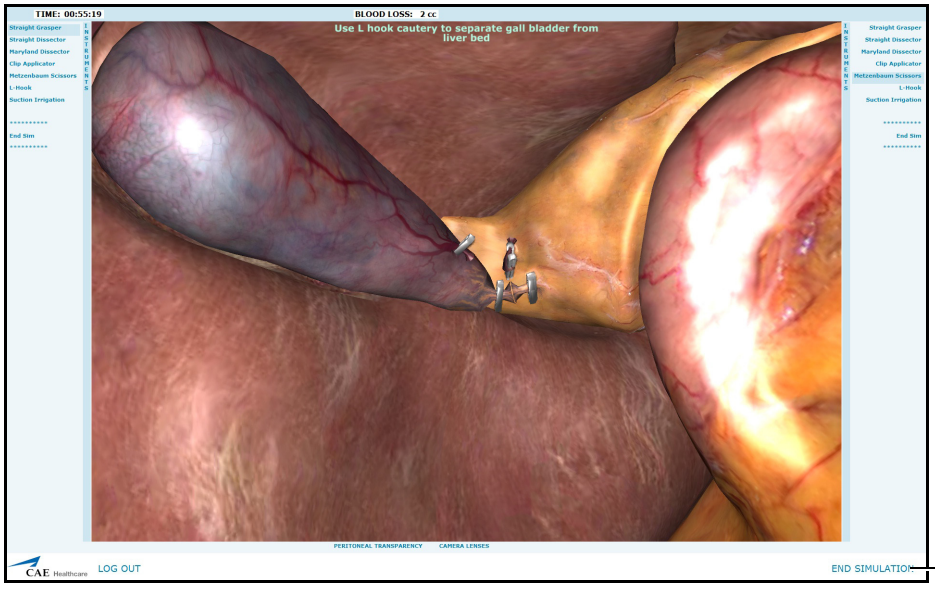
The LapVR simulator has multiple ways in which a simulation can end.

In some cases, the learner makes a procedural error and is unable to correct the error within the allotted time for the simulation. Certain task parameters affect what types of injuries or errors are acceptable and correctable within a simulation. If a learner performs a fatal error, the simulation will end before the time expires.

In other cases, the learner completes the procedure before the allotted time has expired and the simulation ends.

Learners also have the option to stop a simulation at any time during the procedure.

To end a simulation manually, from the simulation screen, click the **End Simulation** button.



The **End Simulation** button

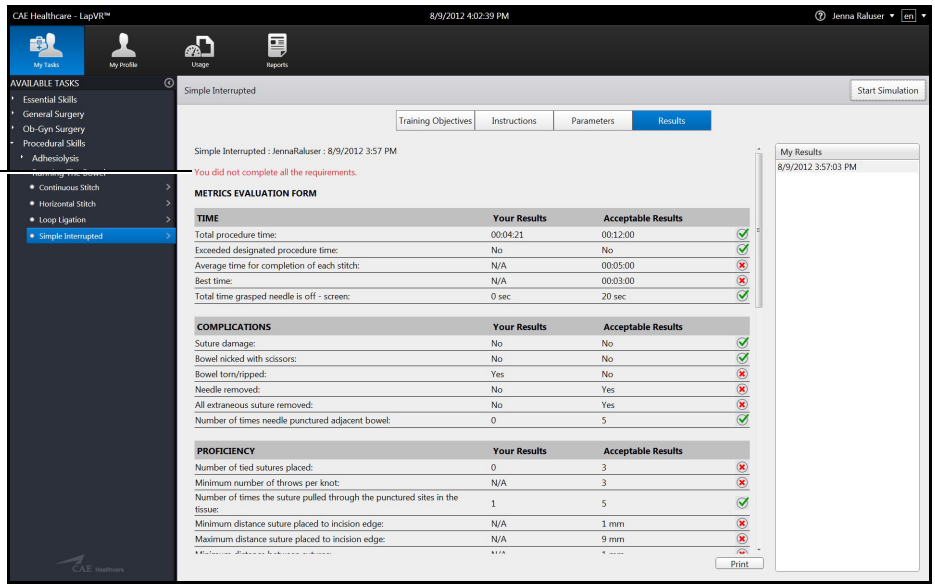
The Simulation Screen

Viewing Results

Once the simulation is complete, the Results screen appears.

If the learner meets all of the parameters for the simulation, the **Successful Completion** message displays.

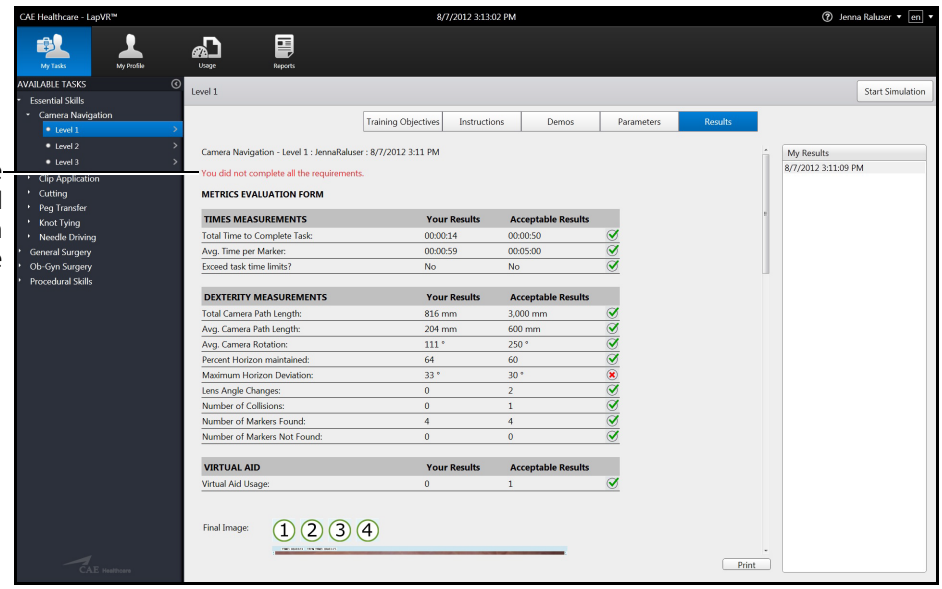
The **Successful Completion** message



The Results Screen

If the learner did not meet all of the parameters for the simulation, the **Unsuccessful Completion** message displays.

The **Unsuccessful Completion** message



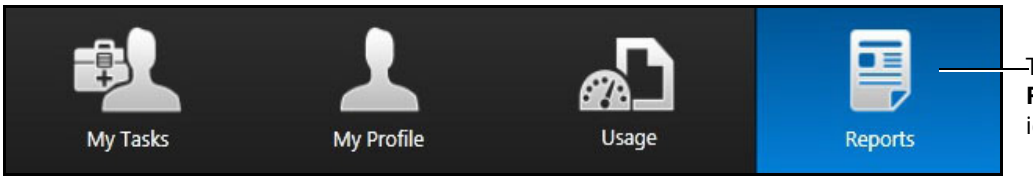
The Results Screen

Viewing Reports

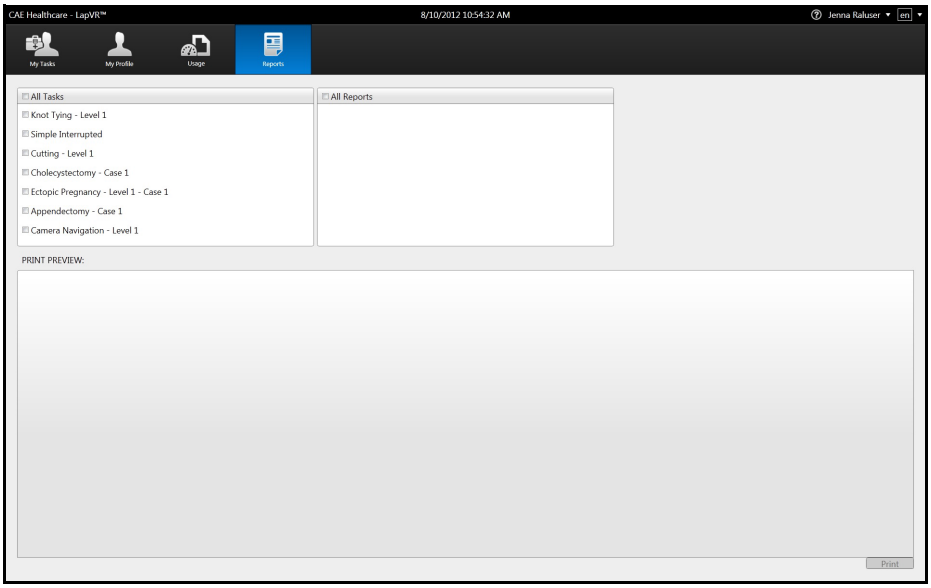
Learners can view customized reports from the Reports screen.

To view reports:

1. Click the **Reports** icon

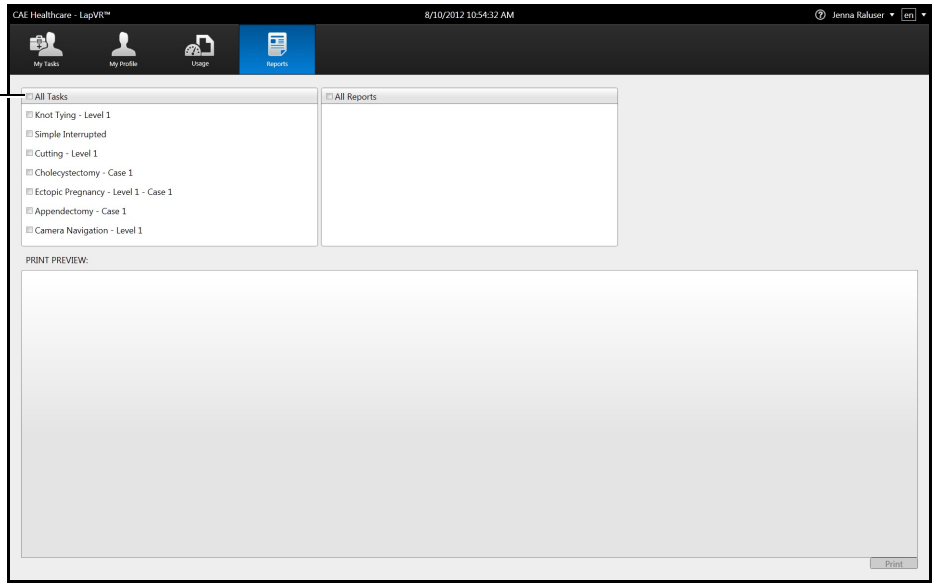


The Icon Dashboard



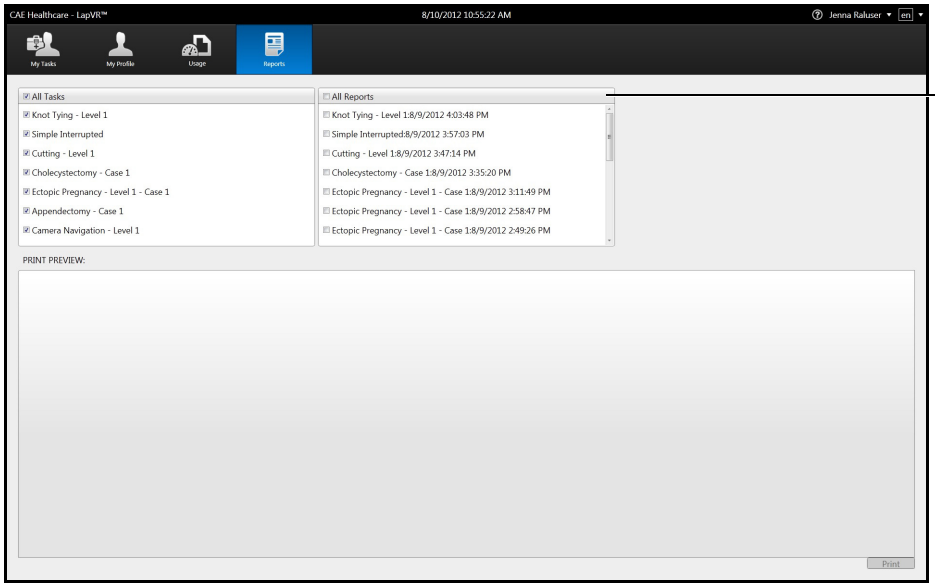
The Reports Screen

2. From the **Tasks** options, select the desired tasks to include in the report or select **All Tasks**



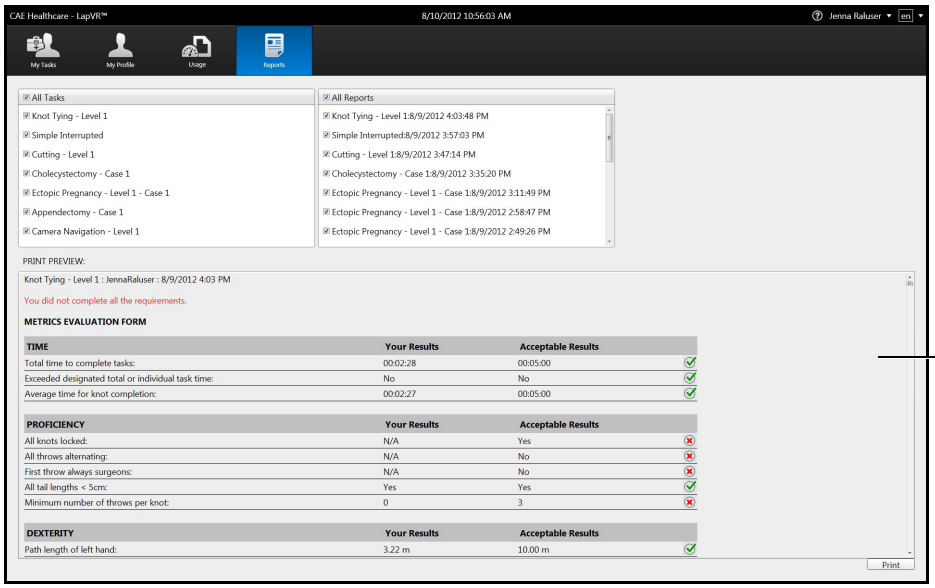
The Reports Screen

3. From the **Reports** options, select the desired reports to include in the report or select **All Reports**



The Reports Screen

The report appears in the **Print Preview** panel.

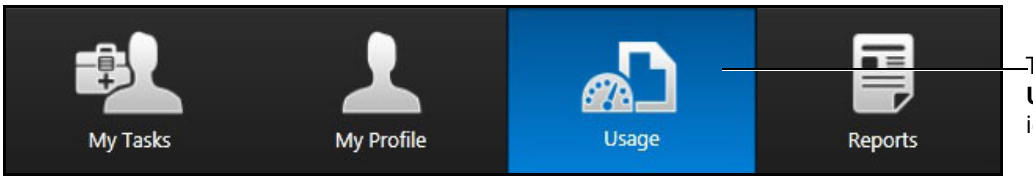


The **Print Preview** panel

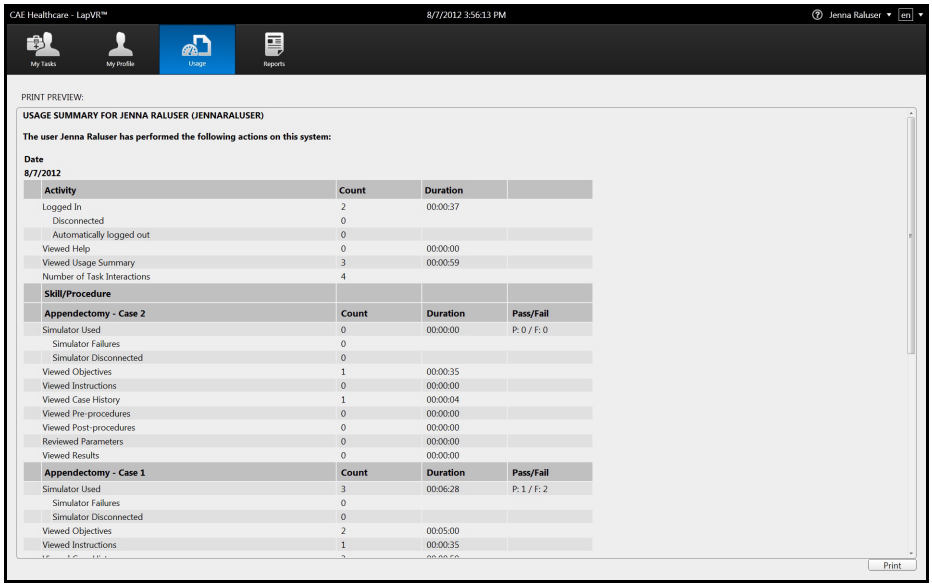
The Reports Screen

Viewing Usage Summaries

To view usage summaries, click the **Usage** icon.



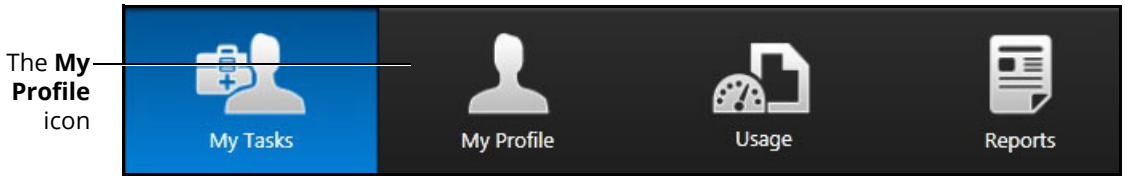
The Icon Dashboard



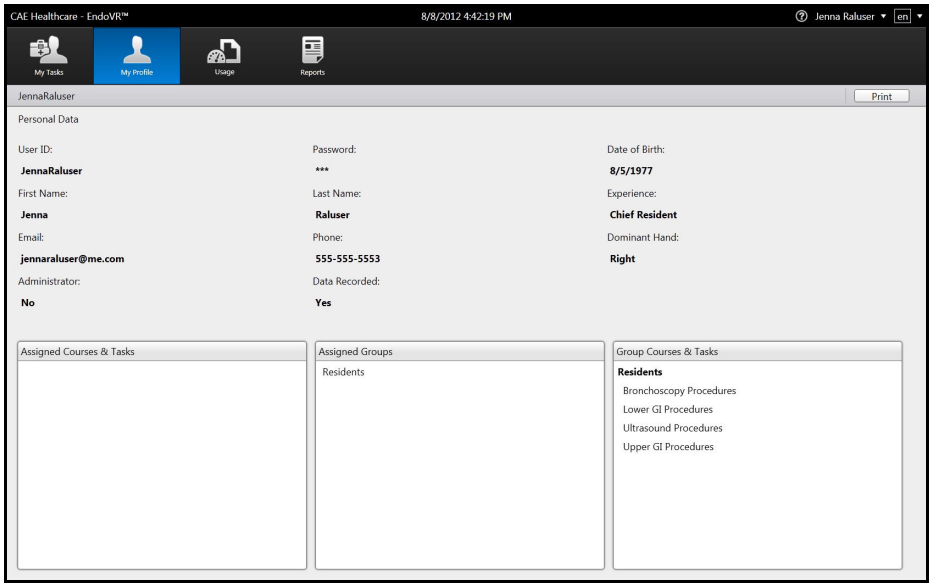
The Usage Summary Screen

Viewing Personal Data

To view personal data, click the **My Profile** icon.



The Icon Dashboard



The Personal Data Screen

Printing Data from the Simulator

Learners can print the data from the Results screen after completing a task. The print feature is also available on the Personal Data, Usage Summaries and Reports screens.

The Reports screen is the only screen that requires the learner to select the data to include in the report and generate a print preview prior to printing.

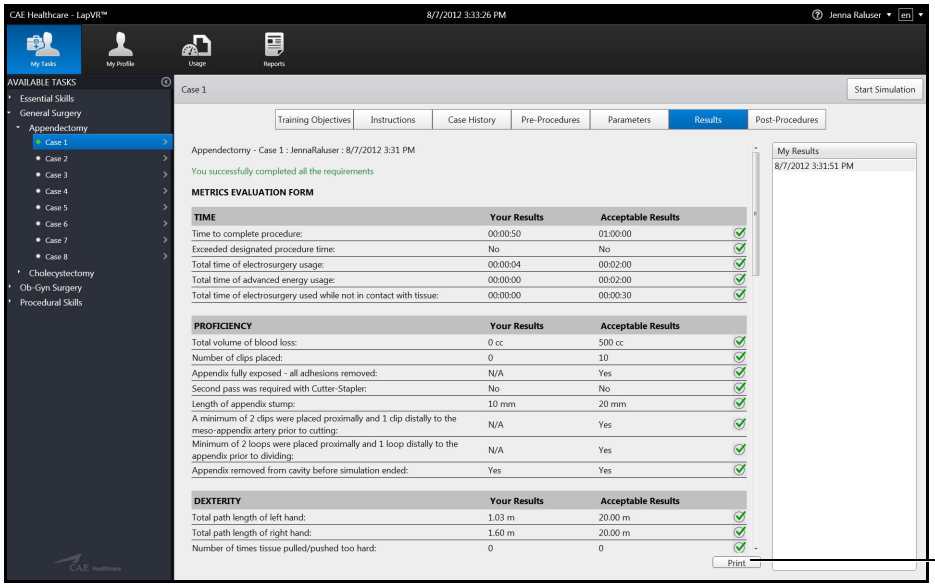
For more information on generating a print preview for Reports, see *Viewing Reports*.

Printing Data to a Network Printer

A network connection is required for printing to a network printer. Contact your administrator for further assistance.

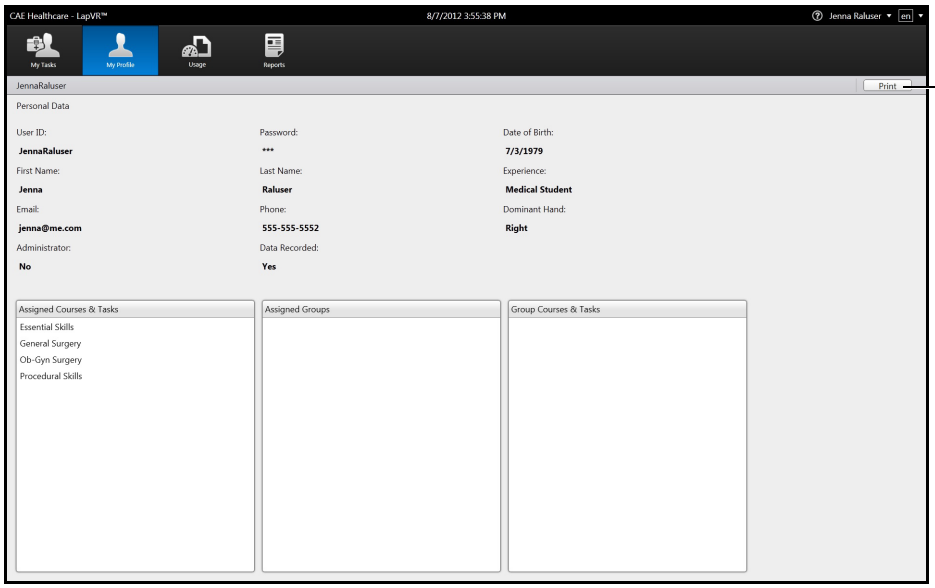
To print data to a network printer:

1. From the selected screen, click the **Print** button located near the bottom right corner of the screen

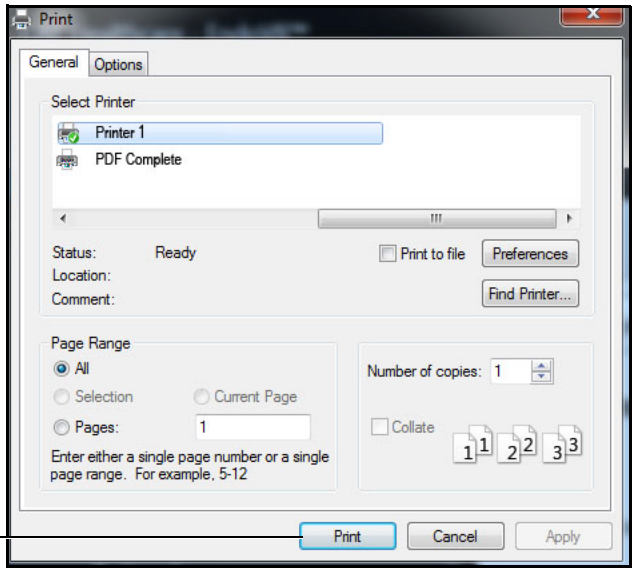


The Results Screen

Note: The **Print** button on the Personal Data screen is located near the top right corner of the screen.



The Personal Data Screen



The Print Window

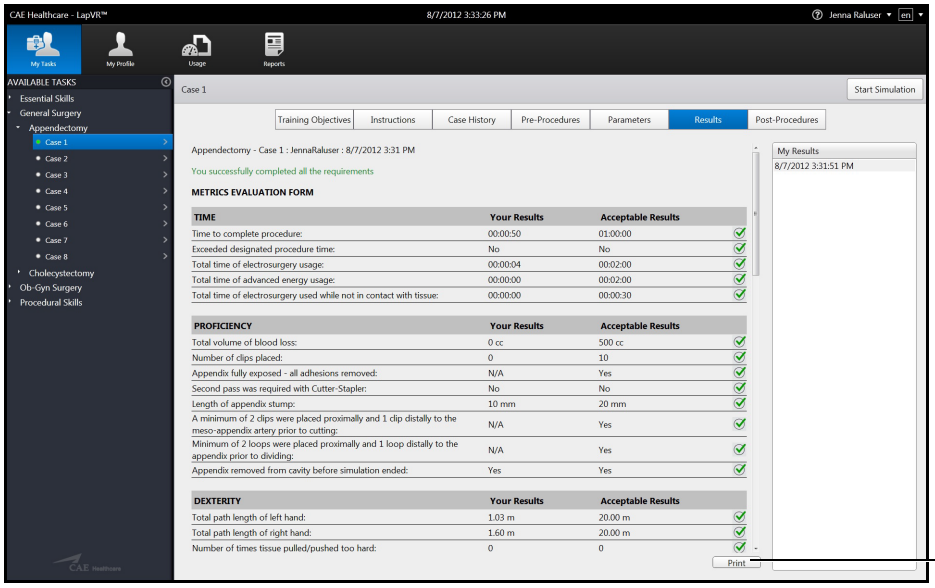
2. Select the desired network printer
3. Click **Print**

Printing Data to a PDF File

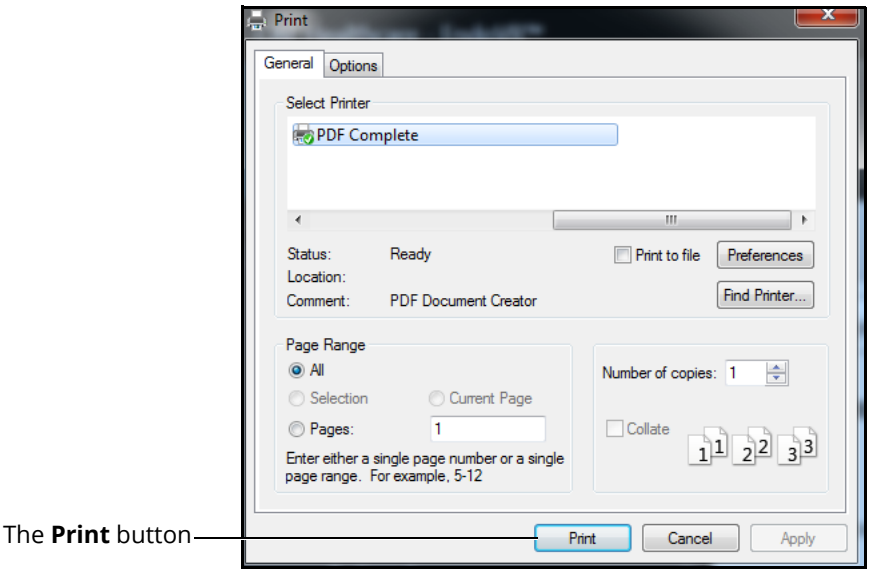
If network connection is not available or no network printers are available, users can print data to a PDF file and save the file to an external device to print on a computer with a network printer connection.

To print the data to a PDF file:

1. From the selected screen, click the **Print** button located near the bottom right corner of the screen



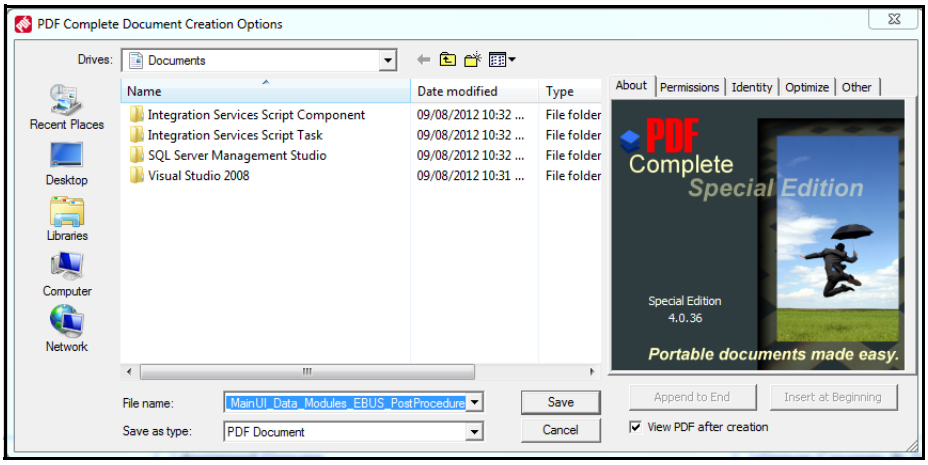
The Results Screen



The Print Window

2. Select the **PDF Complete** program

3. Click **Print**



The PDF Complete Document Creation Options Window

4. Select the desired folder where the file will be saved

   Note: If the location is on an external device, use the USB port located on the back of the simulator to connect the external device to the simulator.

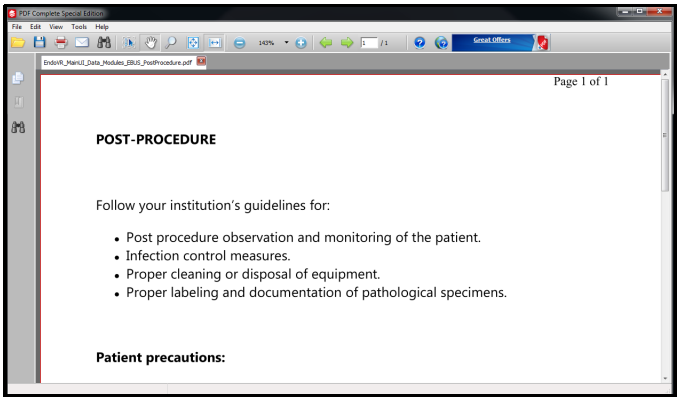
5. Enter the desired file name in the **File name** field
6. Click **Save**

   The PDF Complete window appears.

The PDF Complete Window

7. Click **Done**

The PDF Complete Special Edition window appears with the completed PDF.



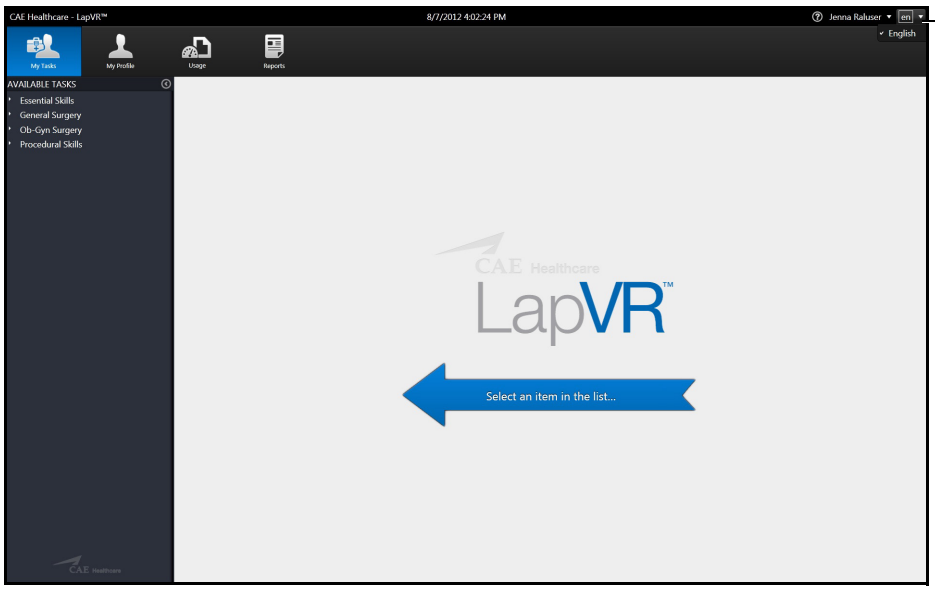
The PDF Complete Window

Modifying Language Preferences

Learners can change the language settings for their personal account using the language preferences menu in the top right corner of the screen.

To modify the language preferences:

1. Click the **Language Preferences** menu



The **Language Preferences** menu

The Home Screen

2. Select the preferred language from the drop-down menu

   A checkmark appears next to the selected language and the language is applied to the software.

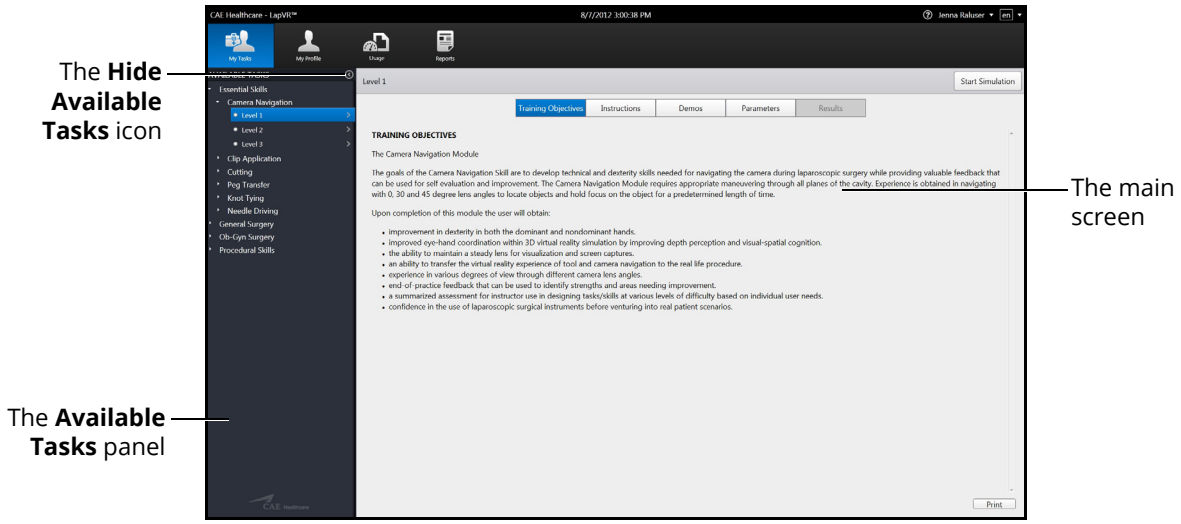
Note: Since the LapVR software is currently only available in English, no other options are available to set as the default language.

Hiding the Available Tasks Panel

Learners can hide the Available Tasks panel to view the didactic content in full screen mode.

To hide the Available Tasks panel:

1. From the icon dashboard, click the **My Tasks** icon
2. From the **Available Tasks** panel, select the desired task



The Home Screen

3. Click the **Hide Available Tasks** arrow

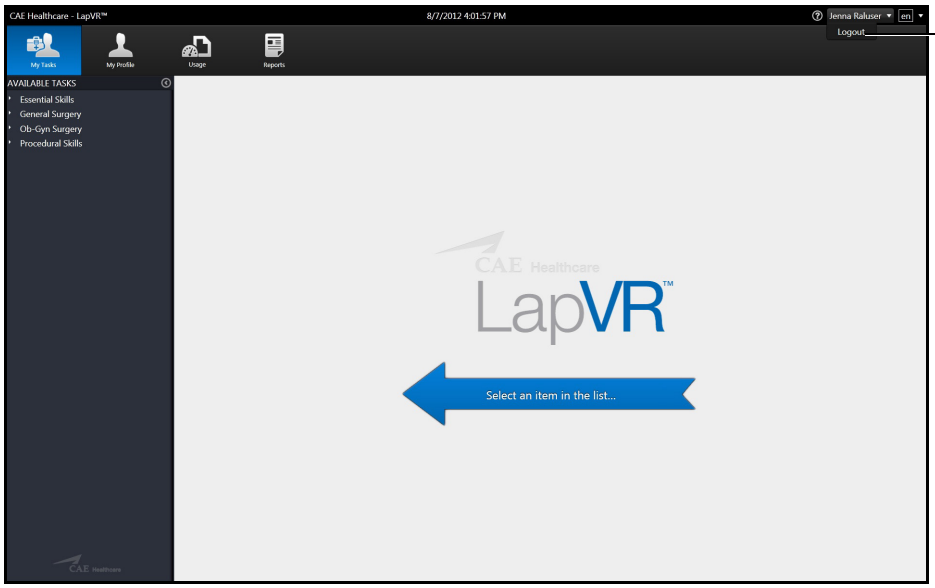
   The didactic content expands to the width of the full main screen.

Exiting the Software

Learners should log out of the software once they are completed with their training session.

To exit the software:

1. Click on the username in the top right corner of the screen



The Home Screen with Logout Drop-Down Menu

2. Select **Logout** from the drop-down menu

The Login Screen

APPENDIX A - MODULE DESCRIPTIONS

The LapVR simulator contains several modules for learners to practice performing laparoscopic procedures using different techniques and tools. Modules are bundled in four separate categories: Essential Skills, Procedural Skills, General Surgery and Ob-Gyn Surgery.

The following table outlines the categories and modules offered for the LapVR simulator.

Category	Module	Description
Essential Skills	Camera Navigation	Use the camera to adjust the plane of view, yaw, pitch and angle and align the red guide circle with the target yellow circle.
	Clip Application	Use the instruments to clip a blood vessel in a timely and effective manner.
	Cutting	Use the instruments to grasp and cut a circle on a piece of simulated cloth.
	Peg Transfer	Use the instruments to grasp and place the pegs in the holes.
	Knot Tying	Use the instruments to grasp a thread and tie multiple knots in a timely and effective manner.
	Needle Driving	Use the instruments to drive the needle through the targets located on flexible tissue.
Procedural Skills	Adhesiolysis	Use the instruments to complete a successful lysis of an adhesion in the bowel.
	Running the Bowel	Use the instruments to gently manipulate, measure and inspect the small intestine without causing damage.
	Suturing and Knot Tying	Select one of the tasks to to close an enterotomy on as section of the bowel: Continuous Stitch, Horizontal Stitch, Loop Litigation and Simple Interrupted.

Category	Module	Description
Genral Surgery	Appendectomy	Apply the skills practiced in the essential skills and procedural skills modules to perform a successful laparoscopic appendectomy. These skills include navigating the camera, grasping, clipping, cutting, lysing adhesions and electro-surgery.
	Cholecystectomy	Apply the skills practiced in the essential skills and procedural skills modules to perform a successful cholecystectomy. These skills include navigating the camera, grasping, clipping, cutting, lysing adhesions and electro-surgery. Additional specific objectives include: • Dissect the peritoneal sheath and fatty tissue of Calot's Triangle. • Complete proximal and distal clipping of the cystic duct and artery. • Cut the cystic duct and artery. • Separate and remove the gallbladder from the liver bed.

Category	Module	Description
Ob-Gyn Surgery	**Bilateral Occlusion**	**Apply the skills practiced in the essential skills and procedural skills modules to perform a successful bilateral occlusion on the fallopian tubes. These skills include navigating the camera, grasping, clipping and electro-surgery. Additional specific objectives include:** • Isolate the tubes. • Complete occlusion of the tubes using Filshie clips or eletcro-surgery.
	Tubal Ectopic Pregnancy	**Apply the skills practiced in the essential skills and procedural skills modules to perform a successful removal of ectopic tissue from the fallopian tube. These skills include navigating the camera, grasping, clipping and electro-surgery. Additional specific objectives include:** • Isolate the tubes. • Remove the ectopic tissue from fallopian tube. • Use retrieval bag to capture ectopic tissue from the tube via Salpingostomy or to capture both ectopic and fallopian tissue via Salpingectomy.
	Salpingo Oophorectomy	**Apply the skills practiced in the essential skills and procedural skills modules to perform a successful removal of ectopic tissue from the fallopian tube. These skills include navigating the camera, grasping, clipping and electro-surgery. Additional specific objectives include:** • Isolate the tube. • Remove the fallopian tube and ovary. • Use retrieval bag to capture the fallopian tube and ovary.

Module Instruments and Required Equipment

In each of the modules, different instruments are available to the user for completing a task. Users should also note the limitations that an administrator can place on their usage of the instruments and the equipment required to complete a selected task.

Essential Skills

The Essential Skills modules give learners an opportunity to practice and master essential techniques before attempting a procedural task.

Module	Available Instruments	Instrument Restrictions	Required Equipment
Camera Navigation	• Camera	**None**	• Camera
Peg Transfer	• Straight Grasper • Probe	**The administrator has the ability to restrict the use of the grasper for either hand.**	• Pistol grip handles • Camera
Cutting Skill	• Straight Grasper • Metzenbaum	**The administrator has the ability to restrict the use of the metzenbaum for either hand.**	• Pistol grip handles • Camera
Clipping Skill	• Straight Grasper • Metzenbaum • Clip Applicator • Suction	**The administrator has the ability to restrict the use of the clip applicator for either hand.**	• Pistol grip handles • Camera
Needle Driving Skill	**Needle Drivers:** • Straight • Curved Left • Curved Right	**None**	• Pistol grip handles • Suturing handles • Camera
Knot Tying Skill	**Needle Drivers:** • Straight • Curved Left • Curved Right	**None**	• Pistol grip handles • Suturing handles • Camera

Procedural Skills

The Procedural Skills modules give learners an opportunity to practice and master procedural techniques before attempting a procedural task.

Module	Available Instruments	Instrument Restrictions	Required Equipment
Adhesiolysis Procedural Skill	**Graspers:** • Straight • Babcock • Fenestrated **Scissors:** • Metzenbaum **Other:** • Suction	**The administrator has the ability to restrict the use of multiple instruments on either hand.**	• Pistol grip handles • Camera
	Electrosurgery: • Spatula • L-Hook • Bipolar Grasper		• Pistol grip handles • Camera • Foot pedals
Running the Bowel Proceural Skill	**Graspers:** • Straight • Babcock • Fenestrated • Atraumatic Single **Scissors:** • Metzenbaum **Stapler**	**The administrator has the ability to restrict the use of multiple instruments on either hand.**	• Pistol grip handles • Camera
	Electrosurgery: • L-Hook	**The administrator has the ability to restrict the use of the clip applicator for either hand.**	• Pistol grip handles • Camera • Foot pedals

Module	Available Instruments	Instrument Restrictions	Required Equipment
Suturing and Knot Tying	**Needle Drivers:** • Straight • Curved Left • Curved Right **Drivers with Neele:** • Straight **Scissors:** • Suture Scissors	**None**	• Pistol grip handles • Suturing handles • Camera
Loop Litigation	**Graspers:** • Straight **Scissors:** • Suture Scissors **Loop Tool**	**None**	• Pistol grip handles • Suturing handles • Camera

General Surgery

The General Surgery modules allow learners to use the practiced skills from the Essential Skills and Procedural Skills modules to perform multi-step laparoscopic procedures from start to finish.

Module	Available Instruments	Instrument Restrictions	Required Equipment
Appendectomy	**Graspers:** • Straight • Maryland **Scissors:** • Straight **Cutter Stapler:** • 45mm vascular load • 45mm bowel load **Other:** • Loop tool • Clip applicator • Suction/irrigation	**None**	• Pistol grip handles • Camera
	Electrosurgery: • L-Hook • Advanced device		• Pistol grip handles • Camera • Foot pedals

Module	Available Instruments	Instrument Restrictions	Required Equipment
Cholecystectomy	**Graspers:** • Straight **Dissectors:** • Straight • Maryland dissector **Scissors:** • Metzenbaum **Other:** • Clip applicator • Suction/irrigation	**None**	• Pistol grip handles • Suturing handles • Camera
	Electrosurgery: • L-Hook		• Pistol grip handles • Camera • Foot pedals

Ob-Gyn Procedures

The Ob-Gyn Surgery modules allow learners to use the practiced skills from the Essential Skills and Procedural Skills modules to perform acute laparoscopic procedures on simulated female reproductive organs.

Module	Available Instruments	Instrument Restrictions	Required Equipment
Bilateral Tubal Occlusion	**Graspers:** • Straight • Allis • Babcock • Atraumatic **Dissectors:** • Maryland dissector **Scissors:** • Metzenbaum **Other:** • Probe • Filshie clip • Suction/irrigation **Uterine Manipulator**	**None**	• Pistol grip handles • Suturing handles • Camera
	Electrosurgery: • Biopolar grasper • Kleppinger		• Pistol grip handles • Suturing handles • Camera • Foot pedals

Module	Available Instruments	Instrument Restrictions	Required Equipment
Tubal Ectopic Pregnancy	**Graspers:** • Straight • Allis • Babcock • Atraumatic **Dissectors:** • Maryland dissector **Scissors:** • Metzenbaum **Other:** • Probe • Filshie clip • Suction/irrigation • Retrieval bag **Uterine Manipulator**	**None**	• Pistol grip handles • Suturing handles • Camera
	Electrosurgery: • Monopolar needle • Biopolar grasper • Kleppinger		• Pistol grip handles • Suturing handles • Camera • Foot pedals

Module	Available Instruments	Instrument Restrictions	Required Equipment
Salpingo-Oophorectomy	**Graspers:** • Straight • Allis • Babcock • Atraumatic **Dissectors:** • Maryland dissector **Scissors:** • Metzenbaum **Other:** • Probe • Filshie clip • Suction/irrigation • Retrieval bag **Uterine Manipulator**	**None**	• Pistol grip handles • Suturing handles • Camera
	Electrosurgery: • Monopolar needle • Biopolar grasper • Kleppinger		• Pistol grip handles • Suturing handles • Camera • Foot pedals

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