CLASSROOM MANAGEMENT SYSTEM

NET CONTROL²
CLASSROOM

LANGUAGE LAB
multimedia pack

Based on the version 26.0

Table of Contents

Net Control ² Classroom with the Language Lab multimedia pack is a comprehensive software solution that transforms a standard computer classroom into a fully featured multimedia Language Lab. The software combines more than 150 monitoring, control, and teaching features of our flagship classroom management product, Net Control ² Classroom, with multimedia capabilities specifically designed for use in language labs.

The program provides instructors with a wide range of tools for preparing learning materials, dividing students into groups, organizing audio communication between students, conducting oral assessments, and supporting independent student work.

The software supports modern audio and video formats, making lesson preparation both convenient and efficient.

General Principles of Working with the Module

The instructor works with the module primarily through the **Language Lab** tool in the teacher console. Students interact with the module via a **two-track recorder**, which automatically opens on their computers once a session has been started.

Using the Language Lab Console, the instructor can:

- divide students into groups;
- configure the operating modes of student recorders;
- broadcast multimedia audio and video streams over the network;
- send multimedia materials to students for independent work;
- establish direct voice and camera communication with individual students or with the entire group.

Work with the class always begins by **creating a session**, as described below. The multimedia classroom provides more than **60 tools and features**. A complete list of capabilities is included at the end of this document.

I. Interface of the Language Lab Instructor's console

1. Creating a Session

Work with the Language Lab module is organized within **sessions**. A session serves as a workspace for conducting a single lesson or class. All instructor actions, student recordings created during the lesson, and completed assignments are tied to the current session. This makes it possible to keep materials from different lessons separate, manage session files, and delete unnecessary data once the

lesson is finished.

To create and start a new session, open the **Multimedia** tab on the top toolbar of the teacher console and click the **Language Lab** (*LangLab*) button:
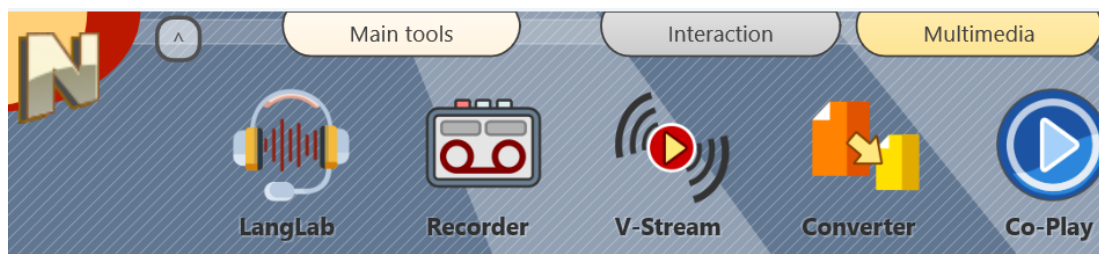
The Language Lab Console will open in a separate tab. This console serves as the main interface for managing the lesson.
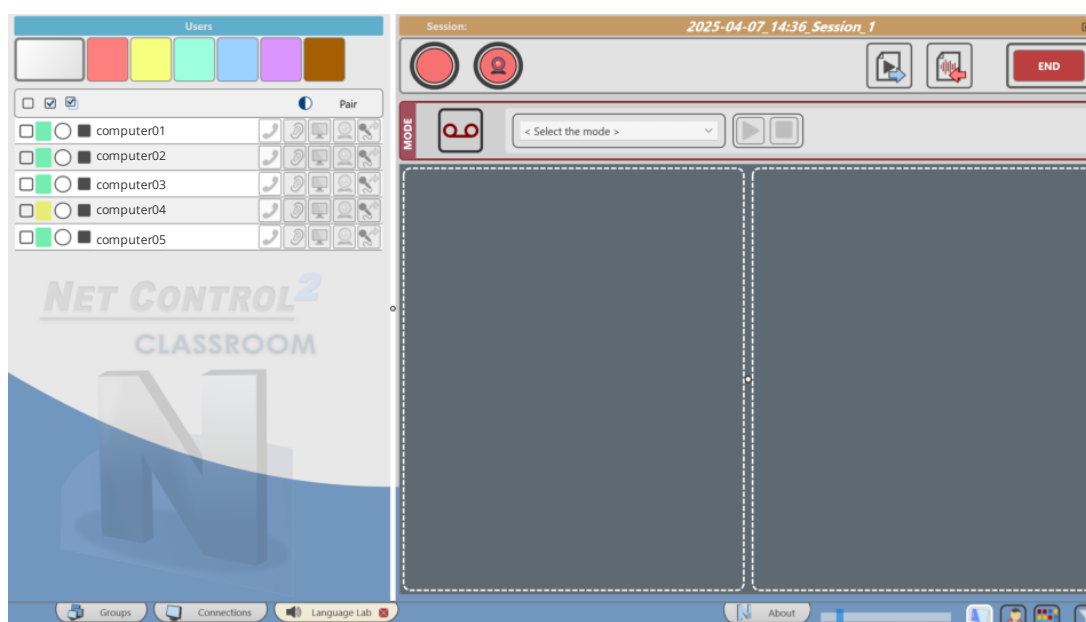
Each session is assigned a default name, which you can change by double-clicking the session title.

We recommend using unique names for sessions.

2. Working with the Student List and Color Groups

The left pane of the Console displays the list of connected students. For organizational purposes, the class can be divided into six color groups:

- red
- yellow

- green
- blue
- purple
- orange

The **white group** includes all students simultaneously.

Assigning a Student to a Group

To assign a student to a color group, use the **group selector button** (a colored rectangle) next to the student's name in the list. Each student may belong to **only one** group.

To assign a group to multiple students at once, select them using the checkboxes on the left, then assign a color group to any of the selected students.

A color group can also be assigned in the main module of the program, on the **Connections** tab, in the connections list.

It is important that each student is assigned to **only one** group.

All actions performed in the right section of the console, i.e. commands, recorder modes, stream broadcasting, playlists, and so on – apply only to the **currently selected color group**.

This allows the instructor to divide the entire class into six independent groups, each of which can receive separate assignments, its own set of files, or dedicated stream broadcasts.

Important

If certain modes are already assigned to individual color groups, and the instructor assigns a mode to the **white group** (which includes all students), then any modes previously assigned to the color groups **will be disabled and replaced with the mode assigned to the white group**. The white group always has the highest priority.

Student List

Student connections are displayed in the list as follows:
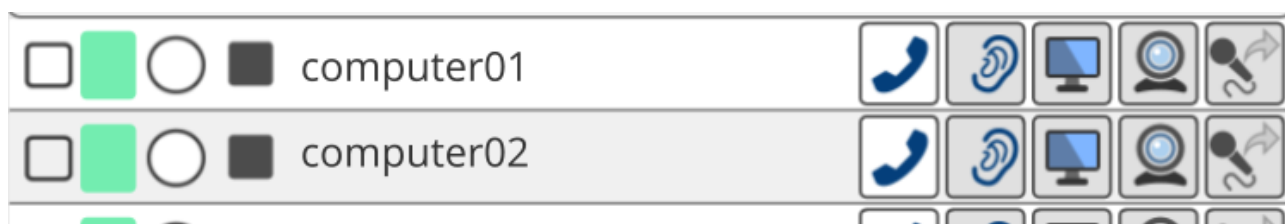
From left to right, the buttons and indicators represent:

- **Selection** checkbox
- **Color group** indicator, with the ability to reassign the student's group
- **Pair Assignment** button for use in *Pair Work* mode (described below)
- **Current Mode** icon
- Connection name, as defined in the *Connections* tab
- **Phone** mode button
- **Listen** mode button
- **System Audio** button
- **Phone and Camera** mode button
- **Student Stream** source selector button

Individual Work with a Student

During a lesson, the instructor can connect to individual students to provide clarification, listen to the student's ongoing voice recording, listen to audio currently being played on the student's computer, or communicate via audio or video.

Only one individual connection may be active at a time. Connecting to a new student automatically disconnects the previous one.

The following individual modes are available:

- **Phone mode** – the instructor can speak with the student and hear the student's voice.
- **Listening mode** – the instructor hears the student's microphone input in real time.
- **System Audio mode** – the instructor hears the system audio output from the student's computer (i.e., whatever is currently being played).
- **Phone and Camera mode** – the instructor can speak with and hear the student; and if a webcam is available on either side, both parties can also see each other.

To activate a mode, click the corresponding mode button to the right of the student's connection name. To disable the mode, click the same button again.

Mode Management

The right section of the console allows the instructor to configure or switch the operating modes of the students' **Recorders**. These **modes determine** *which actions are available to students* at any given time.

Modes are assigned separately for each color group. A mode assigned to the **white group** overrides all modes assigned to individual color groups.

Session Name

A session name is generated automatically when the session starts, based on the current date and time:

Session:	*2025-04-07_14:36_Session_1*	

If necessary, the session name can be changed by double-clicking the name or by using the button to the right of it. Using *non-unique session names* may result in **corruption or loss of data** from previous sessions, or errors during file operations.

The session name is used to form the folder in which all files associated with the session are stored.

Emergency Announcement Buttons
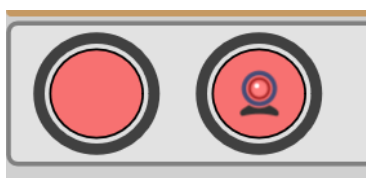
These buttons allow the instructor to **send an urgent announcement** to students within the currently selected color group.

Voice Announcement – transmits only the instructor's voice

Video and Camera Announcement – transmits both the instructor's voice and the video from the instructor's camera

To make an announcement, click the corresponding button. The button changes color to indicate activation. To *deactivate the announcement* mode, click the same button again.

In most *Recorder modes*, an emergency announcement temporarily pauses playback of the current recording or stream and automatically resumes playback when the announcement ends (with the exception of video-file streaming).

File Management Buttons

These buttons allow the instructor to **send files** (playlists) to students and to **receive recordings** created by them. These functions are described in detail later in this document.

End Button

The **End** button terminates the current session:

3. Modes

Modes

The **Modes** section defines the operating states of the built-in Recorder on the student's computer – specifically, which Recorder features are available to the student at any given moment.
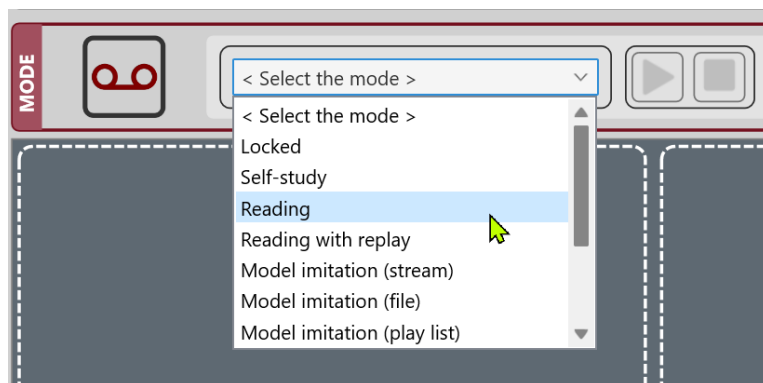
The following modes are available:

Locked

All Recorder functions are blocked, except for:

- listening to the instructor in individual mode,
- listening during an emergency announcement.

Self-Study

The student works with the Recorder independently. In this mode, students can:

- record their voice onto the recording track,
- listen to a stream from the instructor's computer,
- work with audio files on their own,
- save their recordings as files,
- create new files for voice recording.

This mode provides students with **full access** to all Recorder features.

Reading

This mode is intended for recording the student's voice onto the recording track. The student can:

- start and stop recording,
- pause and resume recording.

The student **cannot** play back their recordings.

When the mode ends (for example, when switching to another mode), the recording is automatically saved to disk.

This mode is suitable for pronunciation practice and assessment, fluency training, dictations and self-dictations, reading aloud from a textbook.

Reading with Replay

This mode is similar to **Reading**, but additionally allows the student to:

- listen freely to recorded fragments,
- add bookmarks,
- add subtitle-style comments.

This mode is ideal for practicing and correcting pronunciation, organizing spoken output, and improving the ability to formulate thoughts in a foreign language. By listening to their recordings, students can identify mistakes and correct them in subsequent attempts.

Model Imitation (Stream, File, Playlist)

These three modes allow the student to listen to a reference model (voice or video streamed from the instructor's computer or played from a file) on the **source track** while recording their own voice on the **recording track**.

Model Imitation – Stream

In this mode, the student listens to audio from an incoming stream. They can record their own voice using the **Record button**. They may add bookmarks and freely play back their recordings.

Audio from the stream is **not recorded**. During playback, the student hears **only their own voice**.

Model Imitation – File

Same as stream imitation, but provides additional features:

- **Voice Insert mode** – inserts the student's recorded fragment without overlapping the original audio,
- free navigation within the file (rewind),
- mixed playback (source audio + student recording).

The student works with **one assigned file**.

Model Imitation – Playlist

Same as file imitation, but the student can work with **multiple files** and switch between them. Each student recording is saved **separately per file**.

Listening (Stream, File, Playlist)

These three modes are intended **only for listening** to a model on the source track. Students **cannot** make voice recordings.

As in imitation modes, the source may be:

- a stream,
- a file assigned by the instructor,
- a playlist.

In file mode, the student can navigate within the source file. In playlist mode, they can switch among multiple instructor-selected files.

This mode is used to develop **listening-comprehension skills** (dialogues, podcasts, audio materials). Since recording is disabled, students can fully concentrate on comprehension and objectively assess their abilities under conditions close to real communication.

Pair Work

This mode is used to develop conversational skills in dialogue settings that closely simulate real communication.

Two students selected by the instructor can communicate via voice, practicing tasks such as:

- discussing a topic,
- role-playing (e.g., customer and shop assistant),
- solving a problem,
- completing a collaborative project.

This mode helps students:

- respond quickly to a partner's cues,
- use learned vocabulary and grammar in live communication,
- listen and react effectively.

It significantly reduces the language barrier and improves confidence in speaking.

Listen to Student

In this mode, one of the students in the group becomes the **source**. Other students can hear the source student but cannot speak to each other and cannot hear one another.

To use this mode, the instructor must first select the student whose voice will be broadcast, in the student list, click the **Stream the Student to Others** button:
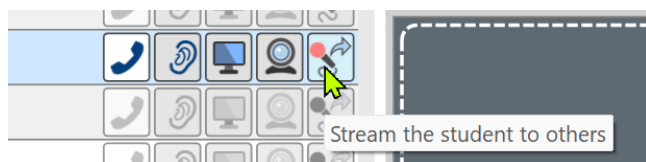
- The selected student is marked with a special icon.

Multiple students may be broadcast **sequentially**. To switch the source, click **Stream the Student to Others** next to a different student.

Selecting a Mode

To activate a mode, select it from the **Mode list**.

Depending on the mode, additional panels become available:

- **Self-Study** enables both the **Stream** and **Playlist** panels.
- Stream-based modes enable only the **Stream panel**.
- File- and playlist-based modes enable only the **Playlist panel**.

Starting and Stopping a Mode

After configuring the mode settings, click the **Start button** next to the Mode list.
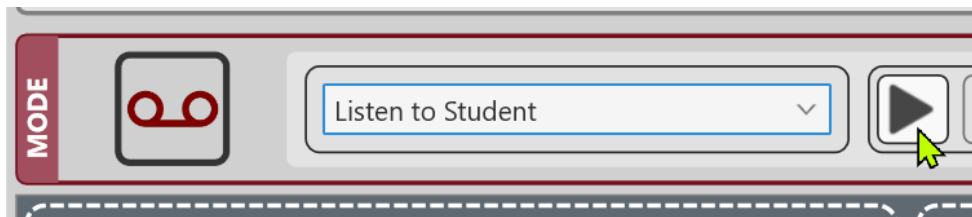
To stop the mode, click the **Stop button**.
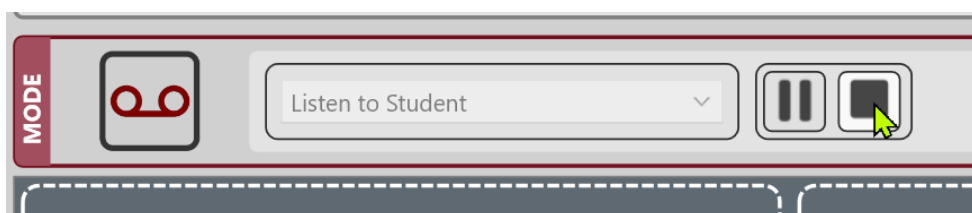
When the mode stops, the current recording-track file is saved to disk, the student's Recorder switches to **Locked mode**.

During the lesson, the instructor can pause the mode – for example, to give explanations – and resume it from the same position using the **Pause button:**
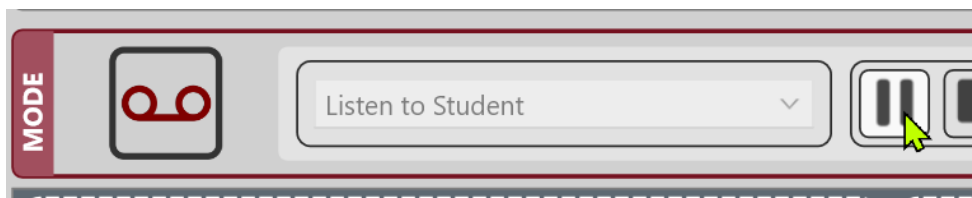
4. Streams

Streams are used to deliver audio and video materials to multiple students simultaneously, *providing equal access to all students within the same color group*.

Unlike working with files, streaming ensures that all students receive the same source material at the same moment in time. A stream cannot be rewound or recorded. However, depending on the *Recorder mode*, the student may still be able to record their own voice.

Streaming ensures consistent learning conditions for all students, saves time on file distribution, and allows broadcasting materials that cannot be transferred as files (for example, media played in third-party applications or in the instructor's web browser).

Streaming is available only in the following **Recorder modes**:

- Self-Study
- Model Imitation (Stream)
- Listening (Stream)

After one of these modes is selected, the **Stream** panel appears, allowing the instructor to choose the required stream type:
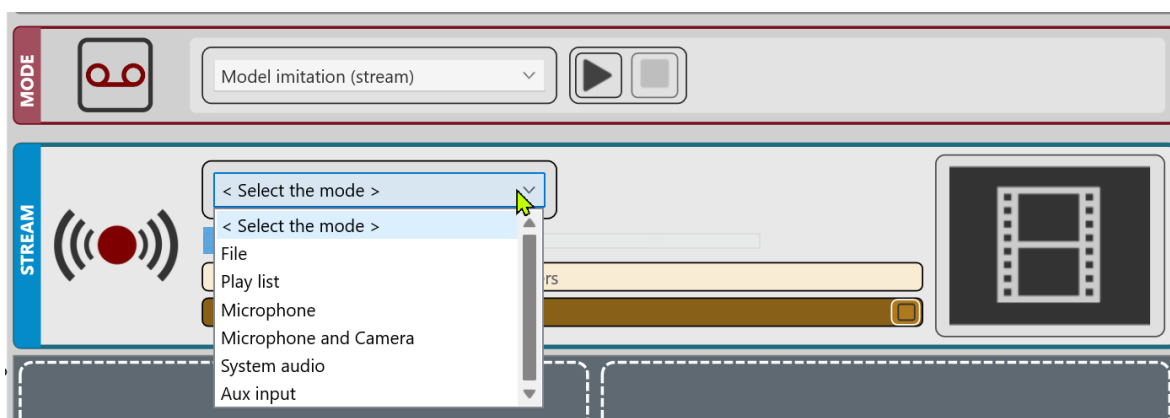
Available Stream Types

4.1. File

Broadcasts an audio or video file to students.

When broadcasting a *video file*, the **preview area** on the right side of the panel displays the currently transmitted frame *(for performance optimization, the refresh rate is reduced to approximately one frame per second)*.

When broadcasting an audio file, the system first converts it into a streaming-optimized format. This may take several seconds. A color indicator below the progress bar shows the conversion progress.

After selecting **File** as the stream type:

- Choose a file using the **Open** button.
- **Start** the **mode**.
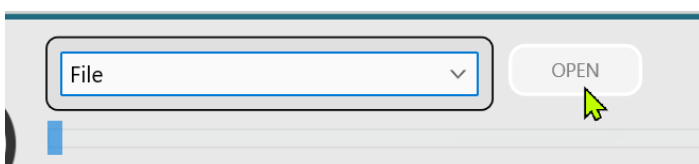
Once started, the file opens and streaming begins.

While broadcasting, the **Stream** panel allows the instructor to:

- open other files via **Open**,
- pause the stream (**Pause**),
- resume playback (**Play**),
- stop the stream (**Stop**),
- navigate within the file using the **progress bar**.
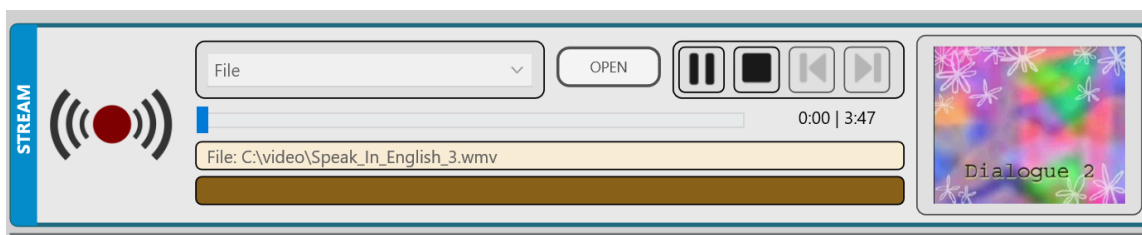
On student computers, the video appears in the **Video** area of the student **Recorder**, the audio is played on the source track.

For true **full-screen video playback** (for video-only lessons), use the **V-Stream** tool described below.

4.2. Playlist Stream

This type works similarly to **File**, but allows sequential streaming of multiple files from a playlist.

A playlist may be created in advance in the **Playlist** panel (see Section 5), saved to a file, and then opened for streaming via **Open**.

To begin playback, the **Mode** must be started:
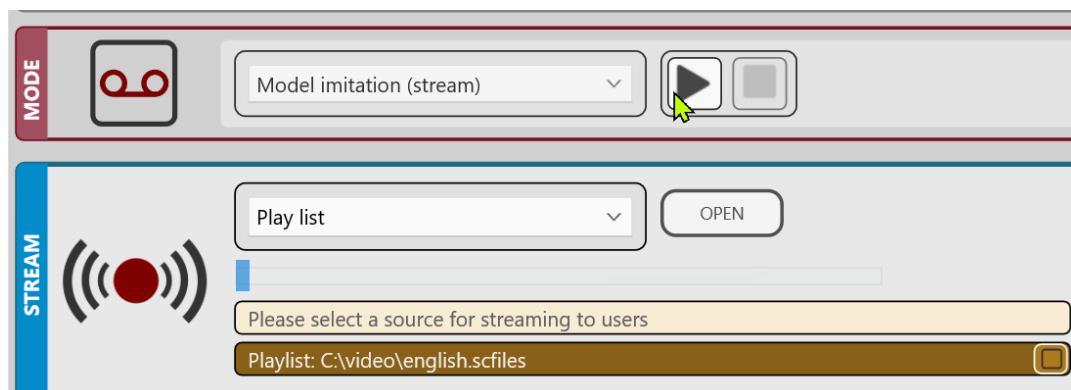
Once the **mode** is *running*, the first file in the playlist begins broadcasting.

The list of playlist files appears beneath the playlist name:
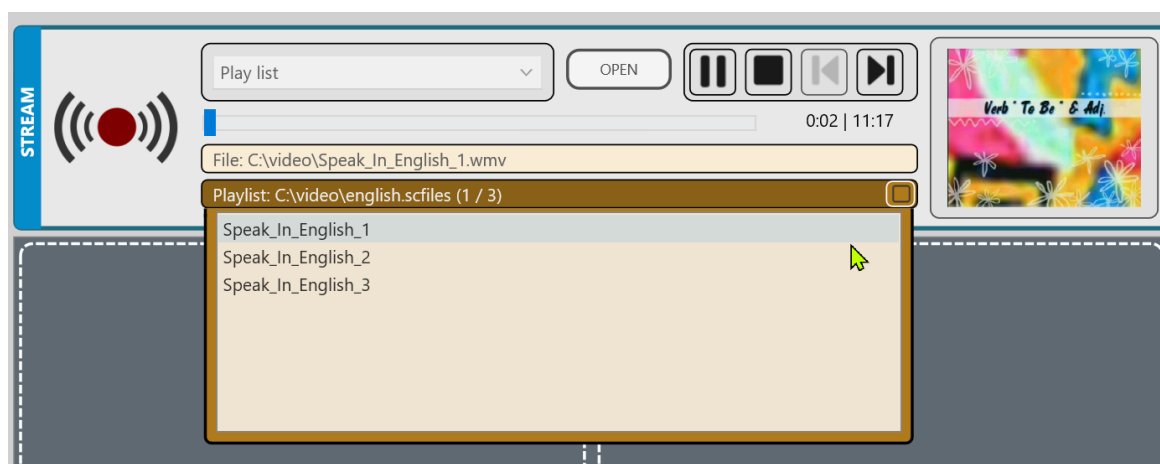
Double-clicking a file name immediately starts its broadcast.

Additional playlists can be loaded with the **Open** button at any time; if the mode is already running, playback will begin automatically.

Navigation between items is available via the **Previous / Next** buttons:

Note: The playlist list becomes available only after the mode is started. Before launching the mode, the list of files cannot be viewed.

4.3. Microphone

Broadcasts audio from the instructor's computer microphone.

4.4. Microphone and Camera

Broadcasts audio from the instructor's microphone together with video from the instructor's camera.

4.5. System Audio

Broadcasts the system audio of the instructor's computer – i.e., any sound currently being played.

This mode is useful for transmitting audio from:

- external applications,

- web browsers,
- media players,
- any other software.

4.6. Auxiliary Input

If the instructor's computer includes additional audio-capture devices recognized by the operating system, audio from these devices can also be streamed.

The device **must be selected in advance**:

N → Options → Options → Multimedia page → **Aux. capture device:**
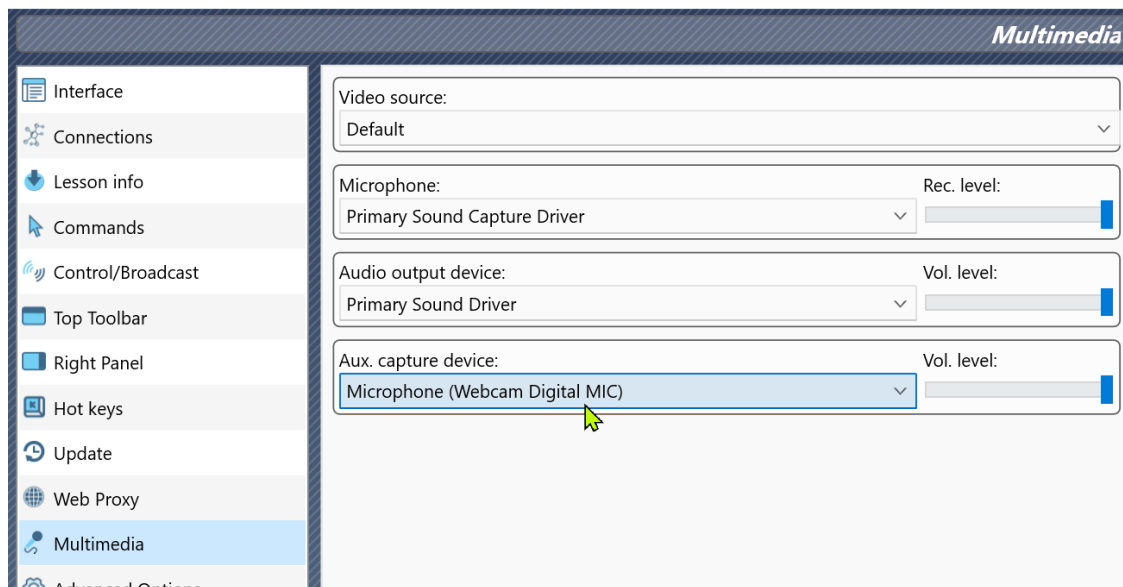
An auxiliary source may include:

- a second microphone,
- a device connected via a secondary sound card,
- a capture card,
- any other device recognized as an audio-capture source.

Starting and Switching Streams

After a stream type is selected, it starts automatically when the selected **Recorder mode** is launched. During operation, the stream source can be changed at any time:

Press **Stop**:
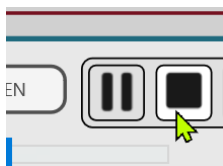
Select a new source,

Press **Start**.

To temporarily pause the broadcast, click **Pause**.

5. Playlists

A playlist is used in certain ***Recorder modes*** as a source of multimedia materials for student work.
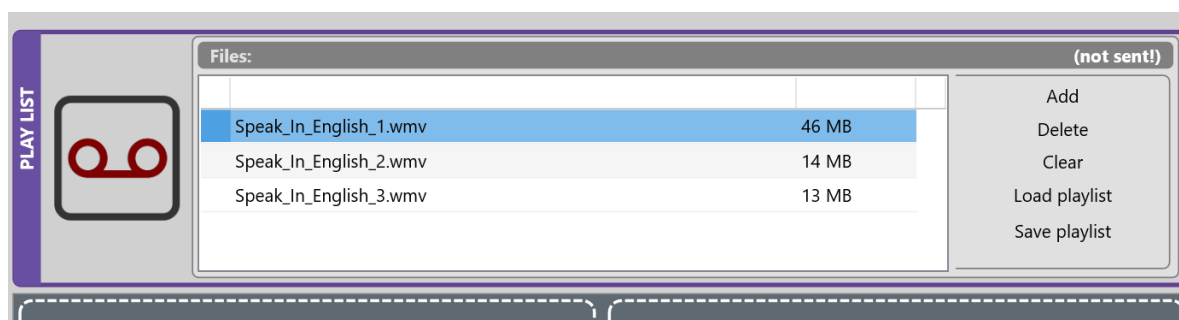
Playlists are linked to both the current ***Recorder mode*** and the selected ***color group***. ***Each color group may have its own playlist.*** If a mode is activated for the white group, the playlist becomes common for all students.

Managing Playlist Contents

Add – add files to the playlist.

Delete – remove selected files from the playlist *(the files themselves are not deleted from disk)*.

Clear – remove all entries from the playlist.

Load / Save – load or save an entire playlist.

Playlists are saved by default in your Documents folder at:

Documents\Net Control 2\Playlists

The play list supports both standard audio and video formats and internal formats: ***.ncrec, .ncrec.mp3***. Playlists themselves are stored in the internal ***.scfiles*** format.

For more information about supported file formats, see ***Section VII***.

Sending Playlists to Students

After new files are added to the playlist, the Send Playlist button changes appearance:

Click this button to begin transferring the files to the students. Since multimedia files may be large, the transfer process may take some time.

When delivery is complete and all student modules confirm receipt, the button turns gray:

If some files cannot be sent (for example, the files are open in another application or unavailable), and the playlist contents do not match between the instructor and students, the icon will not change to the *"delivered"* state.

By default, student computers save received files in the current session folder. If the settings specify automatic cleanup of the session folder at the end of the session, transferred files will also be removed.

6. Receiving Files from Student Computers

During a lesson, students create recordings on the *recording track* of **Recorder**. Recordings are *automatically saved* to the current session folder when the file is closed, or the Recorder mode changes.

The instructor may also force the Recorder to **save the current recording** in order to retrieve the most recent work.

By default, recordings are not automatically transferred to the instructor.

To retrieve files, use the **Receive Records** tool:
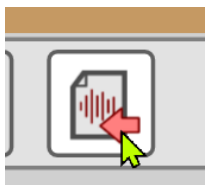
After clicking the button, a *window* opens showing the list of students, and all saved recordings available on their computers:
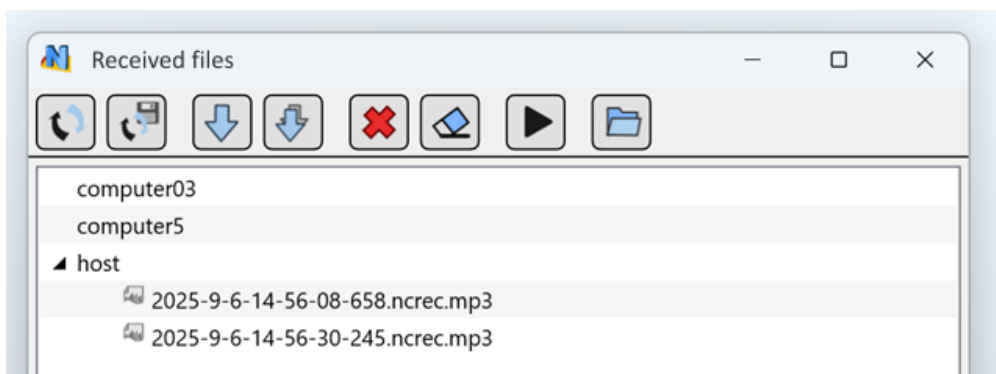
Toolbar Functions:

Refresh – updates the file list.

Save current recordings and refresh – forces saving of each student's active recording (even if work is in progress) and refreshes the list; allows retrieving "work-in-progress" recordings.

Download file – downloads the selected file to the instructor's computer.

Download all files – downloads all files from all students.

Delete file – deletes the selected file from the student's computer.

Delete all files – removes all files in the list.

Play file – plays the selected file in the instructor's built-in Recorder.

Open in folder – opens the folder containing the file in the system file manager.

After a student's file is downloaded, it is marked with a special icon:
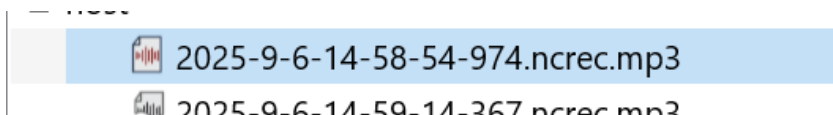
Files are saved into the session folder under:

Documents\Net Control 2\Sessions\SESSION_NAME\Received\Computer_Name

7. Pair Selection

The *Pair Work* recorder mode requires the instructor to form *student pairs* for dialog-based practice. A *pair* consists of two students and is assigned a unique number. Pairs are formed *across the entire class and are not linked to color groups*.

Manual Pair Assignment

To manually assign a pair, click the **Pair Selection** icon for the first student, then click the **Pair Selection** icon for the second student.

A numbered pair will then be created:
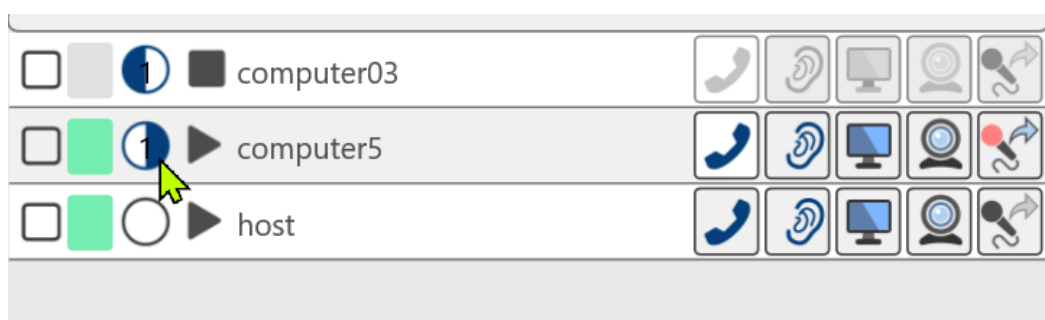
Automatic Pair Assignment

Pairs may also be assigned automatically using the Pairs button located above the student list:
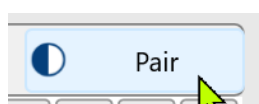
The drop-down menu provides the following options:

Sequentially – pairs are created in order according to the student list

Random – pairs are formed randomly

Reset – dissolves all existing pairs

Dynamic Pair Reassignment

While working in Pair Work mode, the instructor may reassign pairs at any time using any of the methods described above. Pair assignments are updated instantly and do not require restarting the mode.

8. Ending a Session

To end the current session, click the End button at the top of the module:

A Session Completion window will appear:
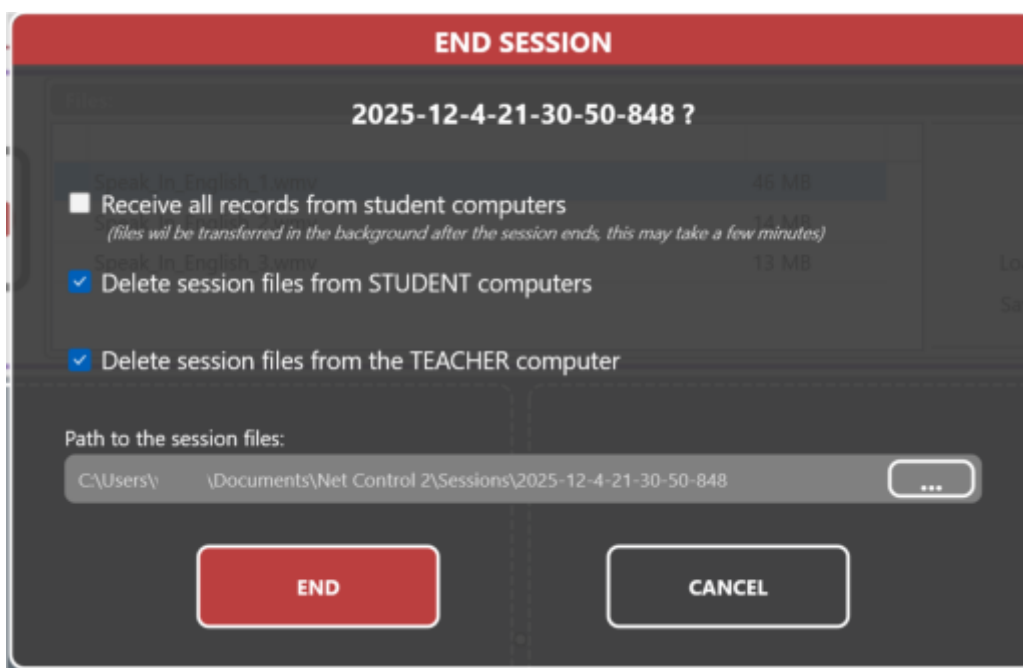
Additional Options

Receive all records from student computers - before ending the session, all recordings created by students are downloaded to the instructor's computer.

Delete session files from student computers - after the session ends, all session-related files (recordings, work files, playlists) are deleted from student computers.

Delete session files from teacher computer - removes all session-related files from the instructor's computer (received recordings, created files, etc.). This option cannot be used together with **Retrieve all recordings from student computers**.

After selecting the desired options, click **END** to complete the session.

III. Student Interface

1. Student Recorder

The two-track **student recorder** is the primary interface used by students when working with the *Net Control 2* Language Lab module.

With the recorder, students can:

- listen to audio and video files,
- listen to streams initiated by the instructor,
- record their voice onto the recording track,
- place bookmarks,
- edit subtitles when necessary.

The features available to the student depend on the current recorder mode (as described in the previous section).

Recorder Interface Elements

Below is a description of the controls and interface areas of the student recorder:
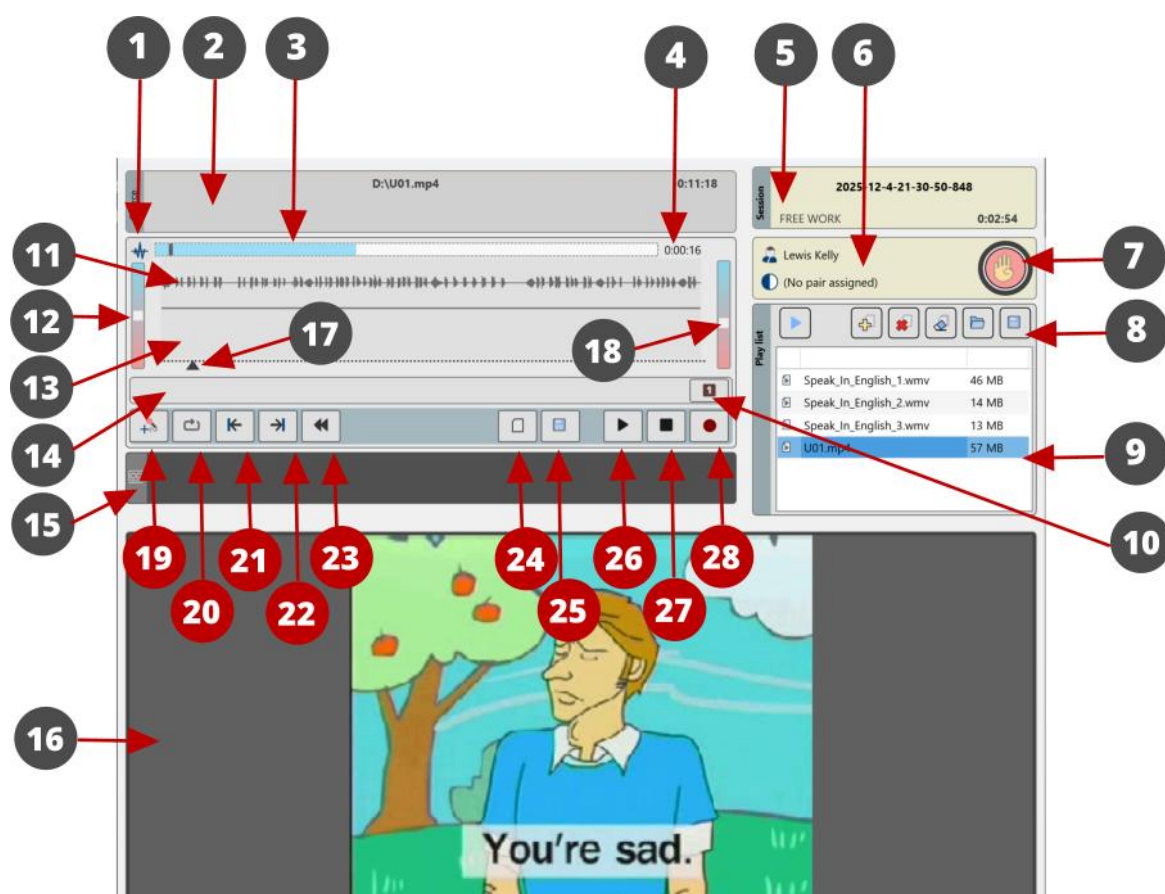
(1) Histogram Generation Button

A ***histogram*** is a visual waveform representation of the audio signal. By default, when opening a recording in a non-native format, the recorder displays a simplified waveform on the source track **(11)**. This improves performance and speeds up loading but does not reflect the actual amplitude of the sound.

To generate a precise waveform histogram, click the **Histogram** button **(1)**. This starts a decoding process that typically takes only a few seconds, but may require more time for long recordings or on less powerful computers. Once decoding is complete, the detailed histogram appears on the source track.

Notes:

Histograms can be generated only for files; histograms for streams are generated automatically.

If you save the file in .ncrec format after generating a histogram (using button **(25)**), the detailed histogram will load automatically next time.

Generating a histogram also enables navigation between fragments using buttons

Previous Fragment (21) and **Next Fragment (22)**. If these buttons are pressed when no histogram exists, histogram generation will start automatically.

(2) File or Stream Information Area - the area displays the file name, file description (if supported), recording duration.

(3) Long Time Slider - a full-length timeline used to navigate to any point in the opened file. Available only for file-based playback.

(4) Playback Position - shows the elapsed time from the beginning of the file.

(5) Session Information – displays the session name, the current recorder mode, elapsed session time. The background color indicates the student's assigned color group.

(6) Instructor and Pair Information – displays information about the connected instructor, the assigned pair (in Pair Work mode).

The displayed naming format depends on the instructor module settings (student name, computer name, both, or connection name). The instructor name matches the name configured in the instructor module (***N → Options → Options; Lesson Info*** page or in the ***Start Lesson*** dialog).

(7) "Raise Hand" Button - allows the student to alert the instructor. When pressed, an icon appears in the instructor's student list:

The raised-hand state clears when the instructor clicks the icon, or the student presses the button again.

This tool serves purely as a notification and has no additional functional effects.

(8) Playlist Control Buttons - controls for managing the playlist:

- **play selected file,**
- **add file,**
- **remove file,**
- **clear playlist,**
- **open playlist,**
- **save playlist.**

(9) Playlist - displays the list of files in the student's playlist. Typically, playlists are prepared and delivered by the instructor, but depending on the mode, the student may also

manage local playlists.

Playlists are available only in the following Recorder modes:

- Self-Study
- Listening (Playlist)
- Model Imitation (Playlist)

(10) Bookmark Button - creates a bookmark at the current playback position. Bookmarks on the source track are saved when the file is saved to *.ncrec*. Bookmarks on the recording track are saved inside *.ncrec.mp3* files.

To remove a bookmark, right-click it and choose **Delete**:

Bookmarking the source track is available only when working with *files*. Bookmarking the recording track is available only in modes that permit simultaneous playback and recording.

(11) Source Track - displays the waveform of the file or stream currently being played.

- Files may be shown using simplified or precise histograms (see (1)).
- Streams always display as histograms.
- Zooming is available when working with files, see (18).

(12) Source/Recording Volume Balance - adjusts the relative loudness of the two tracks:

- moving the slider up amplifies the source track,
- moving it down amplifies the recording track.

(13) Recording Track - displays the student's own recorded audio. Zooming is available, using (18).

(14) Bookmark Panel – please see (10).

(15) Subtitles Panel - if a file with the same name and the extension .srt is located in the same folder as the *active audio/video file*, subtitles load automatically and appear during playback.

Subtitles may be:

- prepared by the instructor and saved in an .ncrec file,
- created or edited by the student in Self-Study mode.

See **Subtitle Editor** for details.

(16) Video Panel - displays:

- video when playing video files,
- the partner's webcam in video/phone modes,
- the student's own webcam preview when streaming or during video calls.

(17) Short Time Slider - a zoomable timeline showing a smaller portion of the audio/video material than the long slider **(3)**, which always displays the full file length. Useful for precise navigation, detailed analysis, and fragment selection.

(18) Short Scale Zoom - adjusts the zoom level of the short timeline. Available only when working with files.

(19) Voice Insert Mode - available only when working with files. When **enabled**, the recorded microphone fragment is **inserted** into the file without overlapping the original audio; the insertion creates a gap in the source track. When **disabled**, the recorded audio is **mixed** with the source and plays simultaneously.

This mode allows preparing source files without manually adding pauses for student responses.

(20) Auto-Repeat Mode - when enabled, the student can highlight a fragment of the source or recording track (by dragging with the left mouse button). During playback, the selected fragment loops continuously.

Note: compressed formats may not support exact byte-level positioning, so actual loop boundaries may differ slightly from the selected region, especially for video recordings.

(21), (22) Previous / Next Fragment - moves to the previous or next fragment.

Fragment boundaries:

- Source track: pauses longer than 3 seconds
- Recording track: pauses + start of each new recorded segment

For the source track, a *histogram is required*. If none exists, histogram generation begins automatically (see **(1)**).

(23) Rewind to Beginning - returns playback to the start of the file.

(24) Create New Recording File - available only in ***Self-Study*** mode. Creates a new file for recording voice.

(25) Save Button - saves one of the following:

- metadata and bookmarks of the source file into .ncrec, or
- microphone recordings into .ncrec.mp3.

If both options apply, the user is prompted to choose the save type.

(26) Play / Pause - starts or pauses playback.

(27) Stop and Rewind - stops playback and rewinds to the beginning. The current file remains open.

(28) Start Recording - begins recording from the microphone.

- When working with files, the fragment is recorded first and added to the timeline afterward.

- When working with streams or in Reading mode, the recording appears on the timeline immediately.

For short recordings, the student may *hold down* the record button, recording starts after 2 seconds, releasing the button stops the recording.

2. Internal File Formats

Internal file formats are used to store extended information about a media file – including a custom title, description, bookmarks, waveform histogram, subtitles, and fragment start positions – which cannot be stored in standard audio or video formats.

The **.ncrec** format is used to store additional metadata for an audio or video *source* file. The path to the original source file is stored inside the .ncrec file, so opening the .ncrec file in the Recorder automatically loads the associated media file. The source file is loaded from the full path recorded in the .ncrec file; if the file is not found at that path, the program attempts to locate it in the current folder.

Recordings created by a student on the recording track are saved in the **.ncrec.mp3** format. This file contains the recorded voice in standard MP3 format, with extended metadata encapsulated inside the MP3 file itself. The Recorder recognizes this metadata automatically.

Despite the embedded metadata, the file retains a valid MP3 structure and can be opened or played in any third-party application that supports MP3 playback.

3. Subtitle Editor

The subtitle editor is available to

- **students** in **Self-Study** mode
- **instructors** when working with the **Instructor's Recorder**

Subtitles created in the editor may be saved inside **.ncrec** files or exported to a standard **.srt** file.

To open the subtitle editor, click the **Subtitle Editor** button on the recorder's subtitle panel:
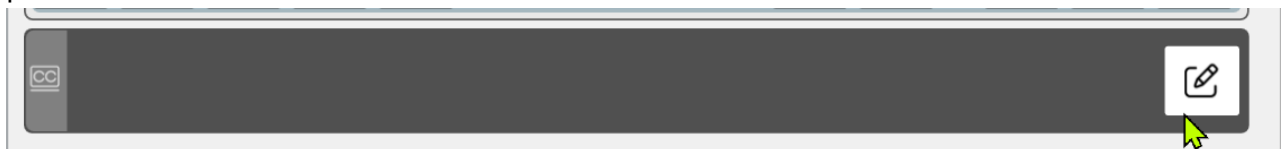
In the editor window, the toolbar provides the following actions:
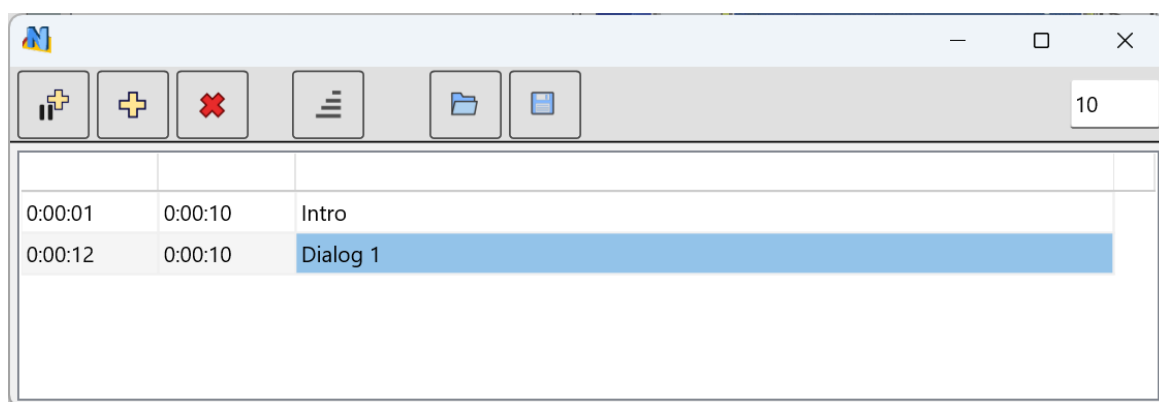
Add subtitle at current playback position - when the file is playing, clicking this button pauses playback and creates a subtitle entry at the current time position. Clicking the button again resumes playback.

Add subtitle - creates a new subtitle immediately after the previous one (i.e., after the most recent subtitle by timestamp). The default subtitle duration is **10 seconds**, and can be adjusted in the field in the upper-right corner of the window.

Delete subtitle - removes the selected subtitle from the list.

Sort list - sorts all subtitles chronologically by start time.

Open subtitles - imports subtitles from a standard **.srt** file, an internal **.ncrec** file, or

an internal **.ncrec.mp3** file.

Save subtitles - exports subtitles to a standard **.srt** file or saves them inside an **.ncrec** file.

Using External Subtitles

To enable subtitle playback together with a source media file, you may place an external **.srt** subtitle file in the *same folder* as the source file. The subtitle file must have the **same base name** as the media file (without extension), and use the **.srt** extension.

Standard *.srt* files can be created using third-party subtitle editors or downloaded from the Internet.

IV. Instructor Recorder

The **Instructor's Recorder** is designed for creating recordings and preparing learning materials for students. It can also be used to play and review **.ncrec** and **.ncrec.mp3** files, including recordings created by students and transferred to the instructor's computer.

To open the recorder, click the **Recorder** button on the top toolbar (on the **Multimedia** tab):
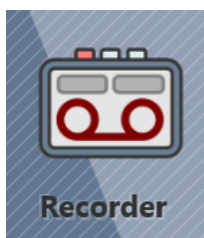
The interface of the Instructor's Recorder is identical to the student recorder described in **Section III**, with the following differences:

- all recorder functionality is available without restrictions;

- information about the current session and student connections is not displayed.

V. Video Streamer

The **Video Streamer** allows the instructor to demonstrate videos stored on the local computer directly on student devices. This tool saves lesson time, as files no longer need to be pre-distributed over the network.

During streaming, the instructor can:

- pause playback,
- rewind to any point in the video,
- switch student displays between windowed and fullscreen modes.

Important limitation: the streamer works **only with video files**. It supports video files with audio tracks, but it **cannot** broadcast audio-only files or video files without an audio track. To launch the streamer, click **V-Stream** on the top toolbar (on the **Multimedia** tab).

Interface Elements of the Video Streamer
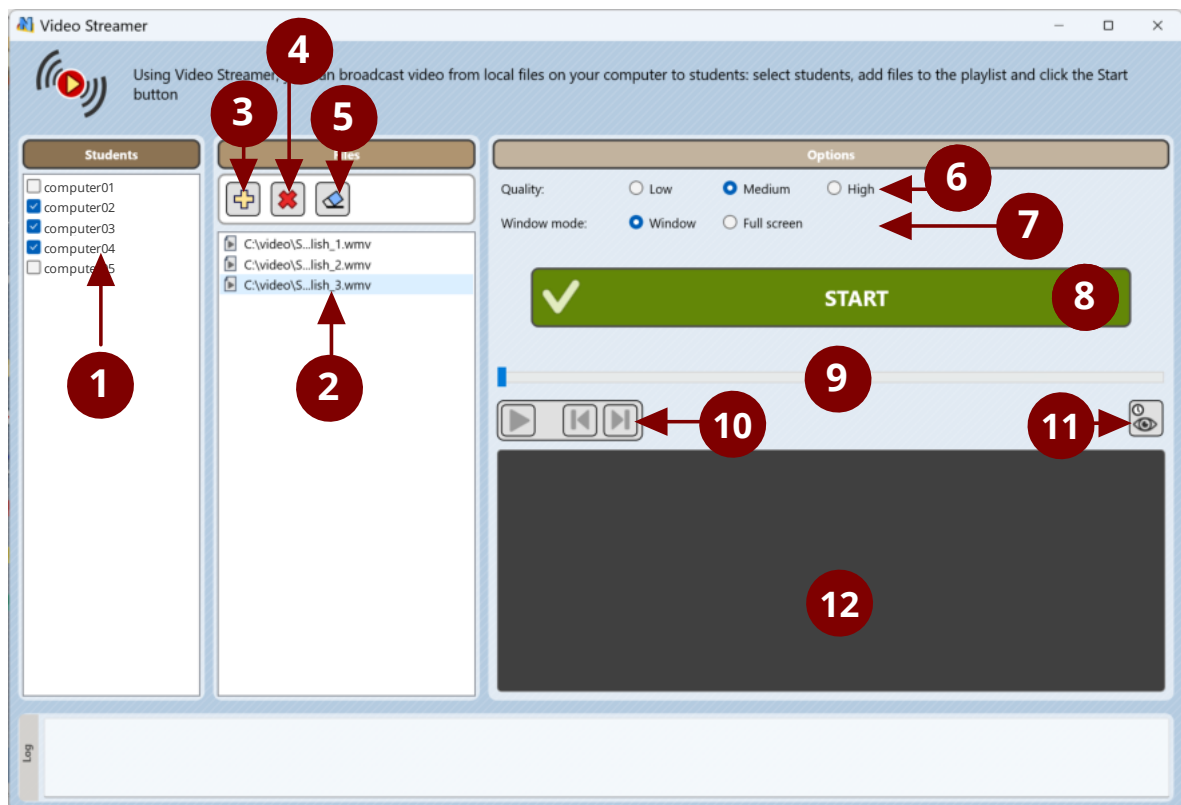
(1) Student List - streaming is performed only for students whose checkboxes are selected. The instructor may connect or disconnect students at any time.

(2) Playlist - displays the list of videos to be streamed. Files are played sequentially; when one finishes, playback automatically advances to the next file.

(3) Add File - adds a file to the playlist.

(4) Delete File - removes the selected file from the playlist.

(5) Clear Playlist - removes all files from the playlist.

(6) Quality Settings - defines the bitrate (bandwidth) of the video stream, which affects both network load and image quality:

- **Low** – recommended for low-resolution videos
- **High** – recommended for high-resolution videos

(7) Display Mode Switching - switches student displays between windowed and fullscreen modes. The display mode can be changed at any time during streaming.

(8) Start / Stop - starts or stops streaming for the selected students.

(9) Playback Slider - allows rewinding the current video file to any position.

(10) Playback Controls – provides access to **Pause / Resume, Previous / Next File** player actions.

(11) Monitoring Mode - controls the refresh rate of the instructor's preview window (12):

- **Default** – reduced frame rate (~1 fps)
- **Real-Time Mode** – displays video at full frame rate (e.g., 30 fps);
- **Off** – disables the preview entirely;

  The mode button presses cycle through the three modes.

(12) Preview Window - displays the current frame being streamed to students.

Important notes

Video Optimization. For best performance, convert video files to **MP4** before streaming. This can be done using the **Converter** described in the next section. Optimized files reduce network bandwidth usage and lower system load.

Network Stability. For smooth and synchronized playback, all students' network connections should remain stable. Temporary connection drops or degraded connectivity for even a single student may impact playback performance for the entire group.

VI. File Converter

The File Converter is a dedicated tool for converting audio and video files into more efficient (compressed) formats. Converting files helps to:

- accelerate file transfers to students,
- improve the quality and stability of streaming (fewer transmission errors),

- reduce network load and save valuable lesson time.

A more compressed format does not necessarily result in lower quality. For example, converting DVD video (MPEG2) to MP4 may reduce file size by a factor of 10 while maintaining comparable visual quality; converting WAV audio to MP3 also provides roughly a tenfold reduction in bandwidth and storage requirements.

Converter Capabilities

With the converter, the instructor can:

- Convert supported video formats to H.264 (MP4) with an adjustable bitrate (which determines final file size and quality).
- Change the output video resolution (image size).
- Convert supported audio formats to MP3: 64 kbps for mono audio, 128 kbps for stereo audio, multi-channel audio is automatically converted to stereo.
- When converting audio files, a histogram block is added to match the ncrec.mp3 format, ensuring correct waveform display in the student recorder.

Opening the Converter

To launch the converter, click **Converter** on the top toolbar (**Multimedia** tab).

Interface Overview
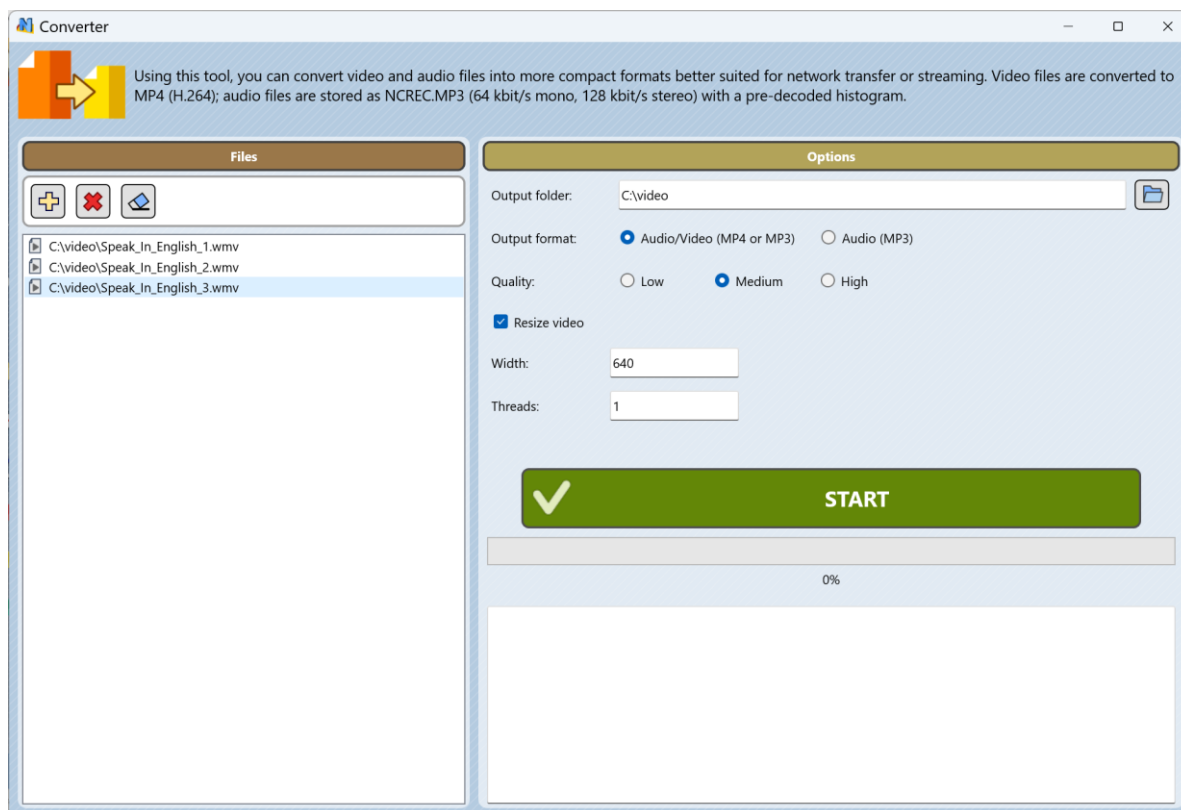
Files block - displays the list of files selected for conversion. The toolbar provides the following commands:

- Add File
- Delete Selected File
- Clear List

Options block - defines the primary conversion settings:

Output format:

Audio / Video – converts files to their corresponding output formats (audio → MP3, video → MP4)

Audio (MP3) – converts any input file, including video, to MP3 (extracting the audio track)

Quality (Video Only) - sets the output MP4 bitrate:

- Low – 250 kbps
- Medium – 500 kbps
- High – 1 Mbps

Resize – when enabled, activates the Width field for specifying the target video width; the height is calculated automatically to preserve aspect ratio.

Threads – sets the number of files to convert in parallel. This affects overall conversion speed and CPU load.

Conversion Control:

Start – begins the conversion process

Stop – interrupts conversion

A detailed conversion log is displayed at the bottom of the window, showing operation progress, conversion status for each file, any errors encountered.

VII. Technical Information

Supported Source File Types

Video Formats:

3GP, ASF, AVI, AVM, AVS, DAT, FLV, MKV, MOV, MP4, MPEG, MPG, NSV, OGM, RM, RMVB, TP, TS, VOB, WMV

Audio Formats:

AAC, AC3, APE, DTS, FLAC, M4A, MKA, MP2, MP3, MPA, MPC, OFR, OGG, RA, TTA, WAV, WMA

Webcam Support

Windows-compatible webcams that support video capture at 640 × 480 resolution are supported. Support for higher resolutions is not required. If the system contains multiple webcams, sound cards, or microphones, device selection is performed in the Instructor Module: **N** → **Options** → **Options** → **Multimedia,** in the Student Module: **Options** → **Multimedia** tab. Changing the selected device requires restarting the Language Lab session.

Audio Input / Output Levels

Recording and playback volume levels must be adjusted through the operating system's audio settings. These levels cannot be modified within the module itself.

Network Requirements

The system operates over both wired and wireless networks; however, wired connections are strongly recommended.

For wireless networks, it is advised to disable all power-saving features related to data transmission in the network adapter settings, use high-performance, enterprise-grade routers or access points.

Recommended average network latency (ping): *no more than 1 ms.*

VIII. Feature List

Teacher Console:

Student Management

- Display the list of students in a structured list view.

- Assign each student to one of six color groups (**red, yellow, green, blue, purple, orange**), allowing the instructor to divide the class into six independent working groups.

- Use the **white group**, which applies actions to *all* students simultaneously.

- Organize work in the form of **sessions**: at the end of a session (e.g., a lesson), student recordings are either transferred to the instructor or deleted, according to session settings.

Multimedia Streaming

Broadcast a multimedia **stream** to the selected group. Available stream types include:

- audio from the instructor's microphone;

- audio + video from the instructor's microphone and webcam;

- **system audio** from the instructor's computer (i.e., sound from external applications, media players, or browsers);

- audio from any system-recognized capture device (external player, capture card, etc.);

- audio or video files;

- playlist files;

- audio and video from a **selected student's** webcam and microphone, transmitted to all students in the group.

Additional stream features:

- Support for **up to six independent streams**, one per color group. Starting a stream in the **white group** overrides all streams in color groups.

- Pause or resume any active stream.

Individual Student Interaction

- Establish **Phone mode** (two-way voice communication) with any student.

- Listen to any selected student.

- Monitor a student's **system audio** – any audio currently played on the student's computer, including audio from external applications.

- View a student's webcam feed and listen to their microphone audio.

Emergency Announcements

- Send **emergency audio announcements** to:

  o all students (white group), or

  o the currently selected color group. During the announcement, all playback on the students' computers is paused and the instructor's microphone is broadcast.

- Send **emergency audio + video announcements** using the instructor's webcam.

File and Playlist Management

- Create playlists and transfer playlist files to the current group. Depending on configuration, files are saved:

  o in the **shared media folder** (available for independent study), or

  o in the **session folder** (automatically deleted after the session ends).

- Save and load playlists from disk.

- Receive recordings created by students during the current session. Recordings are displayed in a hierarchical tree with selective file retrieval.

Recorder Mode Management

Switch the student recorder to one of the following modes, depending on the activity:

- **Independent Work** – the student works freely with the recorder: opens files, listens

to streams, records voice, sets bookmarks, saves recordings.

- **Pair Work** – two students communicate by voice and can also see each other's webcam video.

- **Reading Aloud (Dictation)** – the student records speech onto their track; the instructor may later retrieve the recordings for review and assessment.

- **Reading Aloud with Playback** – similar to Reading Aloud, but also allows the student to listen to their own recordings for self-assessment.

- **Model Imitation (Stream / File / Playlist)** – the student listens to a model (live stream, instructor's file, or playlist) and records their own voice for comparison. Recordings may be retrieved by the instructor during or after the session.

- **Listening (Stream / File / Playlist)** – three listening-only modes without voice recording, intended for developing listening comprehension skills.

Pair Management

- Create student pairs for **Pair Work**:

    o   randomly,

    o   sequentially,

    o   manually.

- Dynamically reassign pairs during the lesson without switching modes.

Mode Control

- Pause any recorder mode and resume it.

- Switch freely between modes within the same session.

- display the list of students in a structured list view;

- assign each student to one of six groups *(red, yellow, green, blue, purple, orange)*, allowing the teacher to divide the class into six independent groups;

- use a separate **white group**, which applies actions to **all** students simultaneously;

- organize work in the form of **sessions**: at the end of a session (e.g., a lesson), student recordings are either transferred to the instructor or deleted, depending on session settings;

- broadcast a multimedia **stream** to a selected group.Available stream types include:

    o   the instructor's microphone audio;

- the instructor's microphone + webcam video;

- system audio from the instructor's computer (i.e., any sound from external players, browsers, or applications);

- audio from any system-recognized capture device (external player, capture card, etc.);

- audio or video files;

- files from a playlist;

- audio and video from a selected student's webcam and microphone, transmitted to all members of the group;

- support up to **six independent streams**, one per group; starting a stream in the **white group** overrides streams in colored groups;

- pause or resume any active stream;

- establish a **telephone mode** connection with any student, allowing two-way voice communication;

- listen to any selected student;

- monitor any student's **system audio** – i.e., audio currently being played on the student's computer, including audio from external applications;

- enable viewing of a student's webcam feed and microphone audio;

- send **emergency audio announcements** to:
  - the entire white group, or
  - the currently selected color group; during the announcement, all audio playback on student computers is paused and the instructor's microphone is broadcast;

- similarly, send **emergency audio + video** announcements using the instructor's webcam;

- create playlists and transfer playlist files to the current group. Depending on configuration, files are saved either:
  - in the shared media folder (available for independent study), or
  - in the session folder (automatically deleted after the session ends);

- save and load playlists from disk;

- receive student-created tracks (recordings) created during the current session; the list of student tracks is displayed as a tree structure with selective file retrieval;

- switch the student recorder into one of the following modes depending on the task:

  o **Independent Work** – the student can freely work with the recorder, open files, listen to streams, record voice, add bookmarks, and save recordings;

  o **Pair Work** – two students communicate with each other by voice and can also view each other's webcam video;

  o **Reading Aloud (Dictation)** – the student records speech onto their track; the instructor may later retrieve the recordings for review and assessment;

  o **Reading Aloud with Playback** – similar to the previous mode but allows the student to listen back to their own recordings for self-analysis;

  o **Model Imitation (stream, file, playlist)** – the student listens to a model (live stream, a file from the instructor, or multiple files in a playlist) and records their own voice for comparison. Recordings may be retrieved by the instructor during or after the session;

  o **Listening (stream, file, playlist)** – three sample-listening modes without voice recording, designed for developing listening comprehension skills;

- create student pairs for Pair Work:

  o randomly;

  o sequentially;

  o manually;

- dynamically change pair assignments during the lesson without switching modes;

- pause any recorder mode and resume it; freely switch between modes within a single session.

2. Student Console (Recorder)

- The student console is implemented as a two-track recorder that plays the source audio or video on the first track and records the student's microphone on the second track.

- The source may be:

  o a network stream from the instructor's computer,

  o a local file,

  o a file from the playlist,

  o another student's voice in Pair Work mode,

- o   or the voice of a selected student during group broadcast. (The available source depends on the recorder mode and the type of network stream.)

- In file-based modes, the student can work with bookmarks:

  - o   create bookmarks for quick navigation between file segments,

  - o   or use bookmarks prepared by the instructor. *

- Ability to select and loop (auto-repeat) a fragment of the file. *

- Automatic detection of pauses in the source file with quick navigation between them.*

- Standard playback and recording controls are available: **Play**, **Pause**, **Stop**, **Rewind to Start**, **Record***

- Ability to create a new blank file for voice recording.

- Ability to record short fragments by pressing and holding the **Record** button (recording starts after 2 seconds and ends when the button is released).

- **Voice Insert Mode** for file-based work: When enabled, recorded fragments are inserted without overlapping the original audio. The source file is automatically "split," and the student's recording is inserted into the gap. This allows instructors to prepare source material without manually inserting pauses.

- Display of waveform histograms for recorded fragments or incoming streams.

- Ability to generate precise histograms for any file using a dedicated button (by default histograms for arbitrary files are not generated for performance reasons). Once a histogram is created, pause-to-pause navigation becomes available.

- Scalable time ruler (timeline) for precise fragment selection and navigation (in file modes).*

- Additional full-length time scale for quick navigation across the entire file.

- Display of subtitles or timed text.

- Automatic detection of **.srt** subtitle files: If a subtitle file with the same base name as the played file is present, it is loaded automatically.

- Ability to play video files.

- Display of file information:

  - o   file name,

  - o   description (if available),

  - o   duration of the source and the combined file (with voice inserts).

- Display of:
    - session name and elapsed session time,
    - current recorder mode,
    - instructor's name,
    - paired student's name (in Pair Work mode).
- The student can send a notification to the instructor ("raise hand").
- Ability to work with playlists transferred by the instructor or added locally in Independent Work mode.
- Full playlist management: add, delete, clear, load, and save playlists.

*Availability of some features depends on the recorder mode currently assigned by the instructor.

3. Instructor Recorder

The instructor's two-track recorder is functionally similar to the student recorder in **Independent Work** mode (file playback, playlist support, bookmark creation, etc.), and additionally provides:

- the ability to create subtitle markers (text annotations);
- during subtitle creation, the ability to pause video precisely at the desired timestamp and insert subtitled segments with exact timing;
- the ability to save modified files–bookmarks, subtitles, waveform histograms, and other metadata–into a dedicated **index (.ncrec) file** associated with the original media; when both files are distributed to students, all markup information is preserved;
- when working with audio files, the ability to encapsulate markup data directly inside the **.mp3** file, eliminating the need for separate index files.

4. Video Streamer

The Video Streamer is designed for centralized broadcasting of video materials from the instructor's computer (local files) to one, several, or all students without needing to pre-distribute the files.

The streamer provides:

- playback of video files from a teacher-created playlist, with the ability to pause, seek

with a slider, and adjust volume;

- playlist management, allowing the instructor to queue multiple video files that will play automatically in sequence;

- ability to switch student displays between windowed and fullscreen modes during playback;

- adjustable video bitrate (low/high) to optimize network bandwidth and video quality;

- a monitoring window showing the exact frame currently being sent to students.

5. File Converter

The built-in Converter enables:

- conversion of video and audio files into more compressed formats (MP4 and MP3) to reduce disk usage and network load;

- video conversion to **H.264/MP4** with selectable bitrate to control both quality and file size;

- adjusting output video resolution (width), with automatic height calculation to preserve aspect ratio;

- converting audio to **MP3** with adjustable bitrate (64 kbps mono, 128 kbps stereo) and automatic stereo mixing for multichannel audio;

- adding a special waveform histogram block to audio files (ncrec.mp3 format) for correct display in the student recorder;

- converting video files to audio-only MP3 files by extracting the audio track;

- selecting bitrate presets for video output: Low (250 kbps), Medium (500 kbps), High (1 Mbps);

- parallel conversion of multiple files by adjusting the number of processing threads;

- complete process control via Start and Stop buttons, with a detailed log showing progress, status, and errors.