

Column: Condor Corner
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Introduction

When I first started investigating Condor and its instructional value as a realistic glider flight simulation, I was initially excited to see a main-page function called “*Flight School*”. While I was not particularly impressed with the instructional content, the features and capabilities of *Flight School* held real potential as instructional aids. The “*Custom*” tab on the *Flight School* panel suggested the developers had at least envisioned the possibility of Condor users creating their own lessons, however the Condor manual made no mention of custom lesson development or how it might be done. Inquiries to the Condor Forums about using Condor for instructional purposes were met with disdain.

Not yet dissuaded, I began digging into the implementation structure of the lessons that came with the software and was able to produce my own custom lesson called “Stretching a Glide”. It was a pretty good example of Scenario-based Training (SBT) before the concept became all the rage. The lesson’s introduction started something like:

“If you fly gliders long enough, sooner or later you will find yourself beyond gliding distance of your home airport. Despite the futility of trying, you will attempt to make it back home, because that is what you have always done.”

As the demonstration begins, you find yourself low and well away from your home airport, after drifting downwind while working a weak thermal. Your overpowering urge to get home is obvious as your likely thought process is broadcast as text messages across the top of the screen and you repeatedly pass up opportunities to land safely off the airport. The scenario ends with the glider crashing in trees short of the airport after you try “stretching the glide”. You are then placed back at the start of the scenario and provided the opportunity to fly it for yourself, free to either make all the same mistakes and experience the same inevitable conclusion, or make other decisions that eventually results in a safe landing.

Some of the custom lesson development of “Stretching a Glide” was relatively easy. Some was painstakingly clumsy and time-consuming. It seemed there had to be an easier way to develop these lessons, but without documentation or support, I had done the best I could. While I was trying to decide if the results were worth the effort, the Condor developers came out with a software patch that inadvertently disabled an important custom development tool (the ability to save a *Replay* segment). A later software patch fixed that bug while introducing yet another that corrupted the flight physics model in *Flight School*, rendering even many of the vendor-supplied lessons confusingly unusable. It was at that point I gave up on Condor *Flight School* and focused my instructional development efforts on *Free Flight*, *View Replay*, and *Analyze Flight*.

That said, my current initiative to develop flight training resources for self-directed learners lead me to reinvestigate Condor *Flight School's* capabilities and limitations. The developers seem to have all the bugs fixed, but the jury is still out on whether, and to what extent, *Flight School* will play in the SFTI (Self-directed Flight Training Initiative). Either way, Condor *Flight School* has some interesting and useful applications to simulation-based flight training, and Scenario-based Training, for both students and their instructors.

Condor Flight School

Accessed from Condors main page, *Flight School* is divided into five training levels (Basic, Intermediate, Advanced, Acro, Custom) via corresponding tabs.

Each training level contains one or more lessons listed in the *Lesson Name* section at the left. The first lesson in each level is selected by default and its corresponding *Lesson Description* is displayed on the right side of the panel. Below the *Lesson Description* are three functions:

- | | |
|--------------------|---|
| <i>Cancel</i> | exits <i>Flight School</i> back to the Condor main menu. |
| <i>View Lesson</i> | initiates a <i>Replay</i> -like session (demonstration) containing embedded instructional text messages that appear at the top of the screen. The instructional text stays on the screen for about 5-7 seconds before fading away. When the “ <i>End of Lesson</i> ” message appears, hitting the ESC key, clicking “ <i>Exit Lesson</i> ” and selecting “ <i>OK</i> ” take you back to the <i>Flight School</i> panel at the selected training level (e.g. Basic). |
| <i>Try Lesson</i> | places you at the beginning of the session and provides you the opportunity to emulate (or in the case of “ <i>Stretching a Glide</i> ”, not emulate) the <i>View Lesson</i> demonstration. |



Focused Practice
Condor *Flight School* – *Try Lesson* function
Final Approach & Landing

Flight School Pros:

- 1) From an instructional perspective, a properly designed and executed lesson includes a presentation, demonstration, student performance, and critique (evaluation of student performance). A Condor *Flight School* lesson provides everything, except the critique, in a nice, neat package.
- 2) *Flight School* is implemented and organized in Condor, so you don't need to host your instructional resources in other places or develop them using other media. Your students don't need to purchase or learn to use additional software applications. One stop shopping.
- 3) Unlike Condor's main page *Free Flight* function, where every flight must begin on, or directly above, the approach end of an airport runway, *Flight School* lets you begin the demonstration (*View Lesson*) and student performance (*Try Lesson*) components at any 3-D point (latitude, longitude, altitude) in the *Landscape*. This is an incredibly powerful instructional feature with exciting implications for basic, advanced, and Scenario-based Training.

For example, using this “start anywhere” feature of *Flight School*, the student can be placed

- on final approach so she can repeatedly practice, in isolation, her final descent and landing
- at the IP primed to practice entering and flying the traffic pattern

- out in the middle of nowhere where he must select a suitable landing area and execute a safe landing in unfamiliar terrain
- at an unfamiliar airport where she must enter and fly the traffic pattern using angular references rather than any familiar land marks or known altitudes
- on base leg too low and too slow to safely make the turn to final
- within sight of the airport, but too low to get back
- at various positions and altitudes around the airport requiring selection and execution of a non-standard landing pattern
- approaching a well developed cumulus cloud anxious to practice entering and centering a thermal
- on the lee side of a ridge
- low over terrain unsuitable for landing
- etc.

The possibilities are almost endless.



Scenario-based Training
Dealing with a Tow Plane Power Failure at Low Altitude

Flight School Cons:

- 1) The *View Lesson* function in *Flight School* does not have all the features of the *View Replay* function on Condor's main page.

Like *View Replay*, *View Lesson* lets you can *PAUSE* and toggle (*F9*) the *replay camera* on/off for full view control.

Unlike *View Replay*, however, *View Lesson* provides no control over your position within the demonstration, other than to restart at the beginning. You can't back up and repeat a sequence or move ahead to a specific point.

2) *Ghosts* appear in *View Lesson* but not in *Try Lesson*.

Condor *Ghosts* are *Flight Track* files (.ftr). When incorporated into a *Replay* or *Free Flight* session, *Ghosts* simulate the presence of other gliders in your airspace, making possible some very meaningful and important SBT experiences. For example:

- Joining, sharing, exiting a thermal with other gliders
- Learning to see and avoid other aircraft
- Learning to negotiate the traffic pattern and available runway real estate with other landing gliders
- Practicing ridge flying etiquette

While working to create a *Flight School* lesson on thermal sharing, I was delighted to discover that *Ghosts* did in fact appear in the *View Lesson* demonstration. My spirits were then crushed when *Try Lesson* (my chance to fly the scenario) left me completely alone in the thermal.

3) Tow Plane Anomalies

In developing a lesson on low altitude rope breaks, *View Lesson* showed the tow plane flying happily away after the rope break. When I tried flying the scenario in *Try Lesson*, the tow plane was nowhere to be seen.

4) No Critique Option for Distance Learning

To critique the performance of a distance student (across the street or across the country), I have the student save her *Free Flight* session as a *Replay* and email it to me. I load the *Replay* file into my Condor installation, watch it using *View Replay*, and add my comments using the radio communication simulation (Return key), which stores my comments as text messages that appear during subsequent playbacks. Finally, I send the annotated *Replay* back to the student for her review, or set up a Skype session in which we watch and discuss the *Replay* together.

The *Try Lesson* function (the *Flight School* equivalent of *Free Flight*) does not allow the student to save her performance session as a *Replay* file.

5) Development is Clunky

Replay Segment Files

It is reasonably easy to create the *Replay* files that drive the *View Lesson* (demonstration) and *Try Lesson* (student performance) functions in *Flight School*.

These *Replay Segments* (as I call them) are at the heart of *Flight School's* most powerful feature, the ability to start the session at any 3-D point in the *Landscape*. If you don't use *Flight School* for any other purpose, this one feature is worth its instructional weight in gold.

At the end of this article is a description of how to create a *Replay Segment* and place it in *Flight School* so you can do all the cool stuff listed above in *Flight School Pros (3)*, and more.

Lesson Description files

The *Flight School Lesson Description* is implemented as an HTML document. I don't know HTML very well, but have enough experience with it to know it is a lot of very detailed work. I managed to create a few *Lesson Description* files by copying one that came with *Condor*, changing only the instructional text, swapping in a different graphic (jpeg) file reference, and saving the document by a new name. I also tried creating a *Lesson Description* file using Microsoft Word and saving it as HTML, but *Condor* would not display it. I haven't figure out why yet. I need to consult an expert on HTML.

Lesson Description Graphic

The little picture in the upper right corner of each *Flight School Lesson Description* is simply a *Condor Screenshot* in JPEG format. While adding a bit of visual interest, as implemented, these pictures are too small to visually convey any meaningful information. I'm guessing there is a way to make the images larger, but again, I'll need some HTML consulting. For instructional purposes, one should either make them larger or not use them.

Instructional Message files.

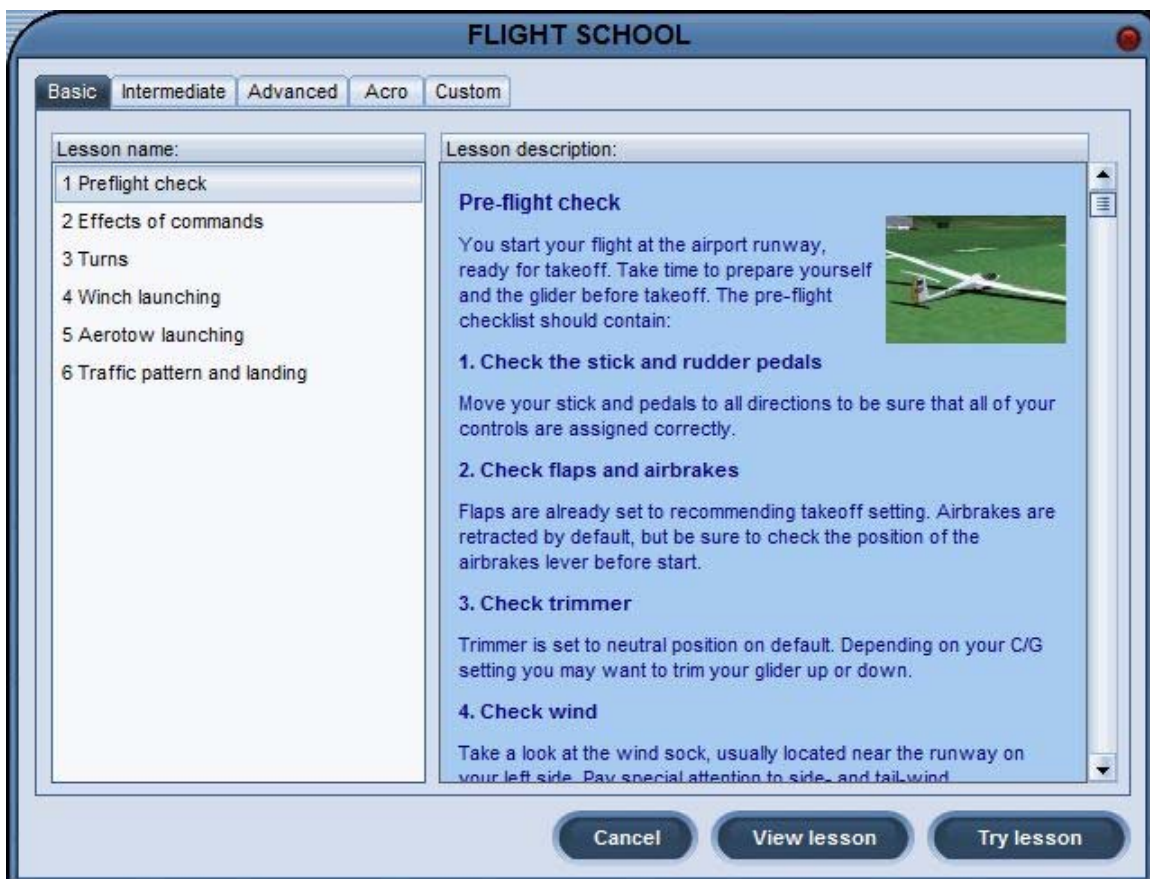
Creating and editing the text files that generate the on-screen instructional messages turned out to be pretty easy (compared to my first solution) after one of my cyber students accidentally discovered how to create/embed comments in a *Replay* file. Easy that is, except for decoding the numeric parameter in each message record that controls the time at which the message appears on the screen. Getting the messages to show up at exactly the right time in the demonstration can be a real challenge. And, there seems to be no control over how long the instructional message stays on the screen (approx. 5-7 seconds), so the messages need to be short enough to be read in the available time.

In one way, I like being able to embed instructional text into a *Replay* file. The problem is that it is difficult, if not impossible, for the viewer to simultaneously read the instructional text and watch the demonstration. If you have ever watched an action film with subtitles, you know what I mean. One way to deal with the issue is to instruct the viewer to hit the *PAUSE* key when a message appears. This freezes the action, enabling the viewer to read and comprehend the instructional text before it fades out. Then hit *PAUSE* again to resume the action.

A better solution would be to deliver the verbal content as an audio track coordinated with the *Replay*, a feature not available in Condor.

Distribution/Installation Complexity

A complete *Flight School* lesson file suite comprises as few as one and as many as four files: a *Replay* file, an instructional message text file, a *Lesson Description* HTML (text) file, and a *Lesson Description* graphic (.jpg). Each of these files needs to be placed in an exact location within *Flight School* and all except the graphic file need to have identical names preceding the file type extension. 'Not the end of the world, but not as nice as being able to provide the student with a simple package (folder) easily placed in the appropriate level-of-training folder in *Flight School*.



Conclusion

After a second, more serious, and complete analysis of *Flight School*, it is clear it can't do everything needed to support my SBT and SFTI development. It simply lacks too many important features, almost all of which can be done other ways inside and outside of Condor.

It really is too bad. With a few simple enhancements, *Flight School* could be an instructional juggernaut.

Its ability to support a large number of SBT and basic/advanced training lessons, however, is worth understanding. So, here is how you do it.

SBT with a Start Point other than a Condor Airport

- 1) From Condor's main menu, select *Free Flight*.
- 2) Use the *Flight Planner* to create the environment for the SBT (*Task, Weather, Plane, NOTAM*). The takeoff airport should be the one closest to your intended SBT start point.
- 3) Select *Start Flight* and fly the glider out to the start point of your SBT, placing it on the desired heading, altitude, and attitude, and at the best glide speed of the selected glider.

Note: Condor begins all flights with the glider trimmed to its best glide speed. If your SBT begins at any other speed, the glider will initially pitch up/down as it attempts to return to the default trimmed speed.

Once at your intended start point, PAUSE and note the time on the instrument panel chronometer. You will need this in Step 11 below.

- 4) If your SBT is to include a demonstration beyond the start point, hit PAUSE again to continue flying your *Free Flight* to its conclusion. Otherwise, simply continue the *Free Flight* for another 10-15 seconds.
- 5) Press ESC to end *Free Flight* and click on *Exit Flight* and *OK*.
- 6) From the *Debriefing* window, select *Save Replay*.
- 7) On the *Save Replay* window, give your SBT *Replay* file a meaningful name and click *OK*. An *Information* panel appears telling you where Condor intends to store your *Replay* file.

Note: Your Windows operating system may have other plans. See "Warning" in Step 18 below.

Click *OK* to complete the save operation.

- 8) From the *Debriefing* window, select *Done*.
- 9) From Condor's main menu, select *View Replay*.
- 10) From the *View Replay* panel, select your SBT *Replay* (it will highlight in red) and click the *View* button at the lower right of the panel. The *Replay* file will load and begin playing automatically.

- 11) Place your cursor on the salmon-colored progress bar on the *Replay Control* panel displayed at the bottom of the screen. Clicking on the progress bar positions the *Replay* at a given point in the flight. Use this feature and the *PAUSE* key to position the *Replay* at the desired start point of your SBT (the chronometer time noted in Step 3).
- 12) Click on the *Ball-over-Scissor* icon to snip off the front end of the *Replay*. The progress bar to the left of your current position will turn white.
- 13) Use the cursor position and *PAUSE* functions to specify the ending position of your SBT. This is optional if the end of the original *Replay* is where you want to end the SBT.
- 14) Click on the *Square-over-Scissors* icon to snip off the back end of the original *Replay* and establish a new end point. This will turn the right side of the progress bar white.
- 15) Click on the *Disk* icon in the lower right of the *Replay Control* panel.
- 16) The *Save Replay* window displays the name of the original *Replay* file. If you want to over-write the original *Replay*, simply click *OK* and Condor will replace the original file with your SBT *Replay* segment. To retain the original *Replay*, give the SBT segment a different name before clicking *OK*. As the new *Replay* segment is saved, the original *Replay* will resume and run to its conclusion. Hit ESC at any point and click on "*Exit Replay*".
- 17) From the *View Replay* window, select *Cancel* to return to Condor's main page.
- 18) Using Windows operating system file handling capabilities (find, search, copy/paste, move, etc.), navigate to your installation's "Condor/Replays" folder. Copy or move your SBT *Replay* segment to the "Condor/Flight School/Custom" folder. (You may have to first create a folder called "Custom" and place it the Flight School folder along with Basic, Intermediate, Advanced, and Acro).

Warning: Windows operating systems, starting with Vista, store files created by Condor (e.g. *Replays*) in a special directory created for this purpose. These application-created files are called "Compatibility" files. Depending on your operating system, installation, and permissions, it may be a real challenge to find this special directory and thus your *Replay* files, and get them moved to *Flight School*.

A description of how to deal with this issue would take most of another Condor Corner article, so contact me if you have trouble. More often than not, I can talk you through a solution.

- 19) From Condor's main page, select *Flight School*.
- 20) From the *Flight School* page, select the *Custom* tab. Your SBT lesson should appear in the *Lesson Name* section. The *Lesson Description* section will be blank. Click the SBT file name to select it. Select *View Lesson* to watch the flight segment as you recorded it. Select *Try Lesson* to begin a *Free Flight* session at your SBT start point.

Piece of Cake.

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