Training = Simulation + Instructional Design

The simulation of real-world work starts with how things look. That's simulation graphics. For example, the various parts of the simulated lift truck should have the right shapes and sizes, in the right proportions. And when the (simulated) sun shines, it should cast (simulated) shadows that look like real ones.

But especially important is reproducing the behavior of the real heavy equipment, because interactions with the simulated world must be (sufficiently) realistic: how fast things move, how objects collide, etc. That's simulation physics. For example, when a "hard" collision occurs, the load that you are transporting with the simulated lift truck should shift position on the forks and then slide off, to fall to the ground.

With the right simulation graphics and simulation physics, the simulated "look and feel" will properly reproduce the real world "look and feel". In that way, the skills that you'll develop in the simulated world will transfer to the real world.

Well at Simlog, we're in the "helping you learn" business. So, in addition to the right simulation graphics and simulation physics, we've learned how to add "non-real-world" functionality, like making the lift truck's mast "semi-transparent" to help you "see" better e.g. when picking up a load with the forks. (With our simulation software, you'll later disable that semi-transparency, to get ready to "graduate" to the real world.)

More generally, "helping you learn" means giving you something easy to do at the start, to help you learn quickly making the simulated work harder, bit by bit, to help you "ramp up" providing lots of feedback about what you are doing at each step, to make your progress "visible". That's Instructional Design.

Instructional Design

At the heart of Simlog's Instructional Design is the decomposition of real-world work into Simulation Modules which introduce key elements one at a time, starting with Controls Familiarization. Industrial psychologists call this "segmentation", and it is also how coaches help athletes improve motor skills.

Each Simulation Module presents a new goal that is challenging but attainable, thus reducing frustration while maintaining interest. And since each module builds upon what was learned in the previous modules, trainees come up to speed quickly.

Since the work at the start is easy to do, trials are completed quickly, so there is lots of feedback. Later, when the work becomes more difficult, trials take much longer to complete, and the feedback is less "immediate". In this way, Simlog's Instructional Design automatically changes both the duration of the simulation exercises and the frequency of the feedback provided.

Performance Indicators

When each trial (exercise) ends, the values of key Performance Indicators are displayed, providing a comprehensive evaluation of how quickly and how carefully the task was completed.

"Quickly" means timing, and that you can do in the real world with a stopwatch. But "carefully", that's something else, and here are four examples from Simlog's lift truck simulation software: counting all kinds of collisions, but separately:

- counting all kinds of collisions, but separately: forks with the ground, forks with a load, forks with a rack, etc.
- measuring how "skewed" are the forks at pick-up (you want them to be centered and perpendicular, so that the pallet sits "squarely" on the forks)
- keeping track of the mast tilt angle when transporting loads (if there's no mast tilting, then

when the ground is uneven, the lift truck will pitch forwards or roll sideways, and the load will slide off)
- calculating an "impact force" when a collision occurs or when you drop the forks down too quickly and the palletized load "hits" the ground or the shelf "hard".

Of course, everyone learns everything by making mistakes. But with Simlog, making a "small" mistake such as (accidentally) knocking over a slalom barrel as your simulated lift truck navigates an "obstacle course", is just counted.

But making a "big" mistake associated with danger, such as triggering an "overturn" condition (when a tire comes off the ground), will immediately cause the simulation to stop (abort) with a "Fatal Error" message. And the occurrence of that "Fatal Error" becomes part of your simulation results.

About Presenting Simulation Results

There are two ways of distinguishing a beginner from an expert:

- the expert's results are very good (the expert's an expert), but they are also very good all the time
- the beginner's results are poor (the beginner's just a beginner), and there are big differences between the best and worst results

So as the beginner (hopefully) improves, we should expect to see:

- the average result getting better
- that difference between the best and worst results getting smaller

And that's why, at Simlog, we present simulation results as "Average, Minimum, Maximum" numbers, to better "communicate" improvement. Industrial psychologists call this "augmenting" the feedback, and that's key to helping people learn better.

About Defining the Simulated Tasks

So now we have a series of Simulation Modules of increasing difficulty and for each one, we're carefully measuring what's going on, in the form of comprehensive Performance Indicators. The question remains, where do those simulated tasks come from?

To answer it, remember that training simulation is a "means to an end". In other words, what counts is training transfer, i.e. getting ready, at the simulator, for real world work. (And that's why the "realism" of the simulation graphics and simulation physics is so important.)

Well at Simlog, we begin by consulting leading customers to identify their best practices: the tasks you perform in the real world at the controls of their (real) heavy equipment, how they are sequencing those tasks, and how they are measuring/observing the real-world work to monitor improvement.
In this way, we developed the simulated work at the loading docks (six Simulation Modules) with the help of one of the world's leading logistics companies.

After that, we look to standardized demonstration of skills tests ("Practical Exams") developed by key "normative" organizations in many countries including the CSA in Canada; the NCCER, the NCCCO, the NSC, and OSHA in the United States; the CACES in France.

In this way, you can be sure that your training simulation is truly preparing you for real world.

Training = Working Hard

Developing skills to safely and productively operate heavy equipment, including lift trucks, is hard work. Even with the right training "tools", you'll need lots of concentration, self-discipline, and time.

In other words, training simulation is not a video game, despite the "gamification" promoted by some other companies.

The fact is, compared to a video game, training simulation has different motivations, different "work", different simulation graphics and physics, and different feedback.

The bottom line: video games are all about having fun. Training simulation is all about training. But as you continue your simulator-based training, you'll (hopefully) discover that doing better and better (as made evident by improving simulation results) can still mean having fun!

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