

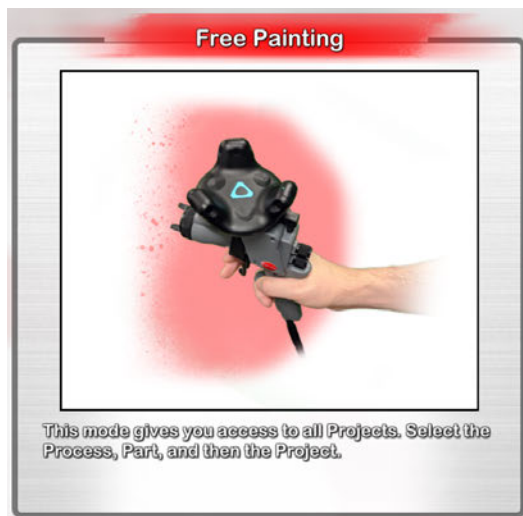
# Training Guide

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## Common Uses

**SimSpray®** and **SimSpray Go™** are designed to support a variety of training models. Create structured learning courses for guided educational experiences or provide a flexible practice space for new and developing trainees. SimSpray's curriculum, customization, and free painting, coating, and blasting modes will provide practical and effective tools to support any training program.

## Free Training Through Free Paint



The **Free Paint** mode provides an unrestricted practice setting for users, which is useful for independent practice. **Free Paint** is also useful for focused training on specific parts, as well as experimenting with new techniques.

There is no login requirement to use **Free Paint** mode, but progress is only recorded while practicing and during review. For powder coating and abrasive blasting, this mode is called **Free Coat** or **Free Blast**.

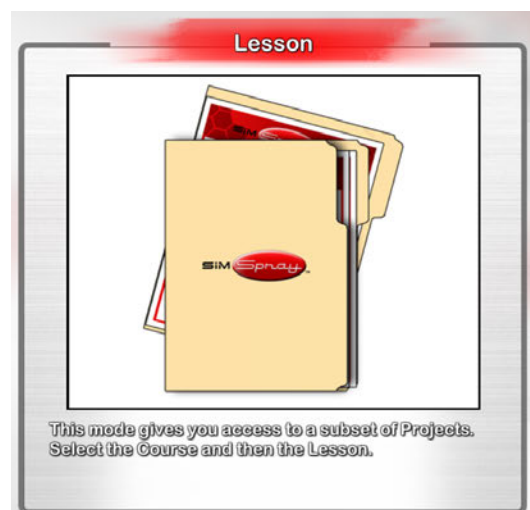
SimSpray will prompt the user to choose any available part, environment, coating process, paints, and difficulty, and then the training space will load.

## Guided Training Through the Curriculum

The guided training model is ideal for structured programs where skills are taught in increments.

Users can follow the existing curriculum for a guided training experience in SimSpray. User accounts are required to access lesson mode. A user account can be created while using SimSpray or on **Performance Portal**. Log in to the SimSpray unit with the appropriate user ID to ensure all progress is recorded and connected to the account.

Select **Lesson** on the modes page, then select the **Proceed** button. **Lesson** mode includes SimSpray's



curriculum, including default lessons and course content. Course content, including parts, processes, and add-ons, varies by model.

Select the relevant curriculum or lesson. Each curriculum consists of courses and lessons, which progress from basic parts with simple shape geometry to more complex parts that require more skill to complete (e.g. painting a flat panel versus painting a table). Each lesson provides a target score and uses preselected parts and coats. Lesson settings enable or disable cues, depending on the skills being practiced and measured.

Progress is not gated, so users can progress as they see fit. However, users will achieve the best results if they start at the beginning of the course and progress to new lessons and courses as passing scores are achieved.

## Curriculum

SimSpray comes pre-installed with a default curriculum of courses and lessons. Each lesson focuses on a specific coating process, paints, and part, and includes a target performance score. To pass a lesson, the user must surpass this score.

Instructors can create custom courses with their own lessons. Courses and lessons are managed in the **Content** section of the **Admin Portal**. Default courses and lessons cannot be changed.

Student progress in the default curriculum will be tracked and shared with **Performance Portal**. Custom curriculum content is tracked within SimSpray, but is not tracked in **Performance Portal**.

## Customization

Instructors can customize the curriculum by creating new courses and lessons. To create a new course, navigate to the Content section of the **Admin Portal**.

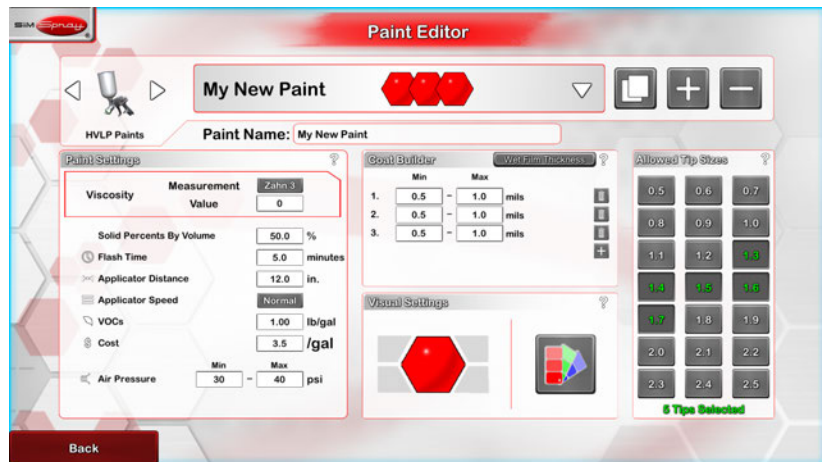
Use the controls to the right side of the **Courses and Lessons** list to create new courses or lessons. Default content cannot be changed, but may be copied. Selected courses will automatically expand to show their lesson content. Selected lessons will show their target score, if cues are allowed, what part, process, and environment are being used, the number and type of paint coats in the project, and if the lesson is easy or hard.



## Paint Types

SimSpray offers paint type customizations that provide additional realism for painting and coating training. Paint type customization supports the key physical traits found on paint material specification sheets and mimic their application visually and physically in the VR simulation environment.

Users can create and save custom paint types for use in Courses and Lessons as well as Free Paint, Coating, or Blasting.



Access the **Admin Portal** and select the **Paint Editor** to edit or create paint types. Choose the process that will use the new paint type, enter its name, and then enter the paint settings. Customization options include viscosity, percent solids by volume, RGB color customization, opacity, gloss, number of coats, coat thickness (wet or dry film thickness), equipment pressure settings, equipment tip size requirements, and application parameters like angle, distance, and speed.

## Integration Examples

SimSpray can be integrated into multiple instructional styles and program formats.

### Free Practice

Free practice allows trainees to use the SimSpray unit as a practice booth. When in a classroom, this allows the teacher and student to freely access all of SimSpray's training content.

Both the **Lesson** and **Free Paint** modes are appropriate for free practice instruction. This model is best for users working independently to practice specific skills or techniques. The user is in control of setting and evaluating their progress. SimSpray provides a performance summary with images and scores after each free practice session.

### Gated Progression

Gated progression allows instructors to assign specific tasks and scores that students must pass before attempting new content.

The gated progression model relies on instructors to set goals and define gates, as SimSpray does not natively support gated progression. Instructors can assign specific tasks and target scores to students, as well as follow-up lessons for student users to pursue upon completion of the tasks and achievement of the assigned score.

Gated progression helps students master concepts, techniques, and parts before progressing to more challenging material while also avoiding overwhelming students with new material.

Gated progression is helpful for preventing the formation of bad habits, as the instructor has more opportunities to catch errors and correct them early on.

## Lead by Example

Leading by example allows instructors to demonstrate techniques and approaches to trainees.

Instructors can use SimSpray to show how students should approach specific parts, environments, and techniques by projecting the VR simulation on a screen. SimSpray supports external displays using HDMI output.

Student users can then approach SimSpray as a practice area that provides clear target goals in the form of scores. The coat coverage map, 3D lines, defect filters, and angle, distance, and speed cues all assist the instructor in demonstrating appropriate technique and providing benchmarks for students.

## Skill Evaluation and Qualification

Skill evaluation and qualification allows instructors and organizations to objectively assess trainee performance. This model is best used in conjunction with other learning models, but is also a useful tool for recruiting new or experienced workers.

SimSpray's performance analysis toolset enables performance review in detail, at the level of individual coats and passes, where a "pass" is one stroke across the selected part, from trigger pull to trigger release.

The recommended skill evaluation standards are as follows:

- Select a part in **Free Paint**, **Free Coat**, or **Free Blast** mode
- OR -
- Create a custom lesson in **Lesson** mode
- Optional: Create a paint type with the technique and material parameters that best match the job scenario (applicator distance, coat thickness, and number and types of coats)
- Select a paint type, number of coats, and suitable coating technique that is similar to the ideal work the candidate is expected to perform
- Allow the candidate to complete the project and use SimSpray's feedback and performance reporting to provide objective feedback on their performance

Performing skill evaluation and qualification using these metrics gives organizations and instructors an objective, clear, and fast way of evaluating a candidate's capabilities.

## Immersive Learning Values

SimSpray products provide multiple benefits for instructors and students. The immersive learning environment created by SimSpray's virtual reality training:

- Provides students with transferable skills
- Generates savings and cost reductions for programs
- Increases efficiency
- Creates opportunities for better engagement

## Transferable Skills

Virtual reality training is effective at teaching students practical skills that transfer to real-world applications. One study<sup>1</sup> found that virtual reality training students achieved 40% higher certification rates than traditionally trained counterparts, and that trainees who used VR tools demonstrated a stronger mastery of more difficult techniques.

SimSpray training programs also encourage the development of transferable soft skills like collaboration, communication, and teamwork.

Trainee users can see each other's performance and engage in friendly competition, compare scores, and help each other improve, providing them with both the hard and soft skills that contribute to ongoing career development and employability.

## Cost Savings

Programs that employ SimSpray products enjoy real savings and cost reductions, as virtual projects do not require the use of paint, PPE, spray equipment, paint booths, or other consumable materials. SimSpray can reduce operating costs significantly, depending on usage. SimSpray also increases the speed of skill acquisition and reduces clean up and prep time.

SimSpray enables instructors and students to complete more than 80 projects in the time it would take to finish 12 traditional projects, and programs realize \$1,000 in cost savings after just 5 students.

SimSpray also provides training opportunities that don't require the use of production line facilities or equipment, leading to fewer production interruptions.

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<sup>1</sup> Stone, Richard T.; Watts, Kristopher Patrick; and Zhong, Peihan, "Virtual Reality Integrated Welder Training" (2011). *Industrial and Manufacturing Systems Engineering Publications*. 42. [https://lib.dr.iastate.edu/imse\\_pubs/42](https://lib.dr.iastate.edu/imse_pubs/42)

## Efficiency

SimSpray products offer a more efficient way to train for paint, blasting, and powder coating programs. SimSpray units are convenient and portable, and require significantly less technical maintenance than conventional training methods.

The virtual environment provides more training opportunities without additional expense, and reduces clean up and prep time.

The objective feedback tools measure, review, and assess skills and performance, allowing instructors to focus their attention on trainee development. The lower costs and virtual training environments allow students to practice as much as they need without wasting materials.

## Engagement

SimSpray also provides numerous opportunities for greater engagement between trainees and instructors. Training in SimSpray improves employee safety by eliminating exposure to chemical hazards and equipment risks while still providing strong results.

The cues, scores, and analysis in SimSpray offer clear and objective skill assessment and guidance that help trainees take ownership of their skill progression.

Rather than limiting instruction to one student at a time, instructors can display SimSpray environments on an external screen, demonstrating proper technique and allowing trainees to offer suggestions to one another as they learn.

Game-based features in SimSpray can motivate improvement and engagement for trainees as well. The practical, immersive tool also supports recruitment efforts by providing an engaging experience for potential trainees.