# Feedback and Cues

This article reviews what feedback is given, what cues mean, and how to use provided feedback and cues. All of the feedback, scoring, and cues are calculated live and will update as trainees work. Visual feedback, including part modes like the coverage map, can be used live just like a training cue for distance, angle, or speed.

## Feedback

**SimSpray®** and **SimSpray Go™** provide live feedback for users in the virtual environment, which encourages additional practice, quick improvements and adaptations to technique, and in-the-moment adjustments. The **Scoreboard** and virtual **Tablet** in the training environment provide active feedback as users practice, focusing on coverage, defects, angle, technique, and speed.

The **Scoreboard** in the training environment provides live updates on the overall score, coverage, and technique as the user works on the part. The overall score includes a weighted average of **Coverage** and **Technique** scores and keeps track of how many coats have been applied. The **Coverage** score also offers live insight into film thickness, defects like drips and sags, dry spray, and orange peel. The **Technique** score offers live insight into angle, distance, and speed.

In the curriculum, target scores are set for each lesson. The curriculum includes several courses, each with their own set of lessons. Lessons are individual tasks with assigned target scores, part, process, and coating material.

Default courses are locked and cannot be changed. The score goal for default courses is 70. Instructors can create custom courses by copying default courses to change lesson content or by creating their own lessons and courses.

## Scoring

Users are scored on skill performance in the virtual environment. The score is shown during the simulation in both the scoreboard in the VR environment and on the monitor. Scores are available for the overall project as well as individual coats, and in individual performance metrics. Scores and the scoring breakdowns are shown upon completion of a project on the **Project Review** page, and can also be accessed in **Performance Portal**.

The maximum score a user can receive is 100. Score breakdowns vary depending on the application type and user settings, and include an overall score, coverage rating, and a technique measurement that includes angle, distance, and speed. The overall score considers all scores and considers any score weight settings that have been adjusted in the **Admin Portal**.

## Coverage

The **Coverage** score is a measure of how much of the coat is within the target film thickness range (mil build) and includes score deductions for any defects visible in the coating.


## Technique

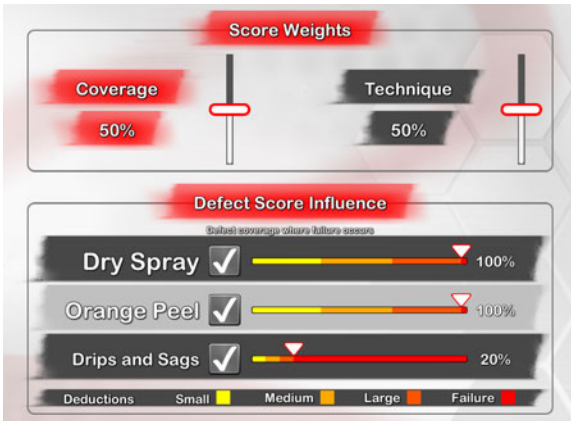
The **Technique** score is an average of angle, speed, and distance scores.

- **Angle** scores measure the horizontal and vertical rotation of the gun in relation to the part.
- **Speed** scores record how fast the gun moves with each pass across the part.
- **Distance** scores are based on how far the gun is from the part.

Angle, speed, and distance are scored based on how closely the user matched target parameters for the angle of the spray gun, application speed, and distance.

## Score Weighting

Scoring can be weighted to prioritize technique, coating, and control how heavily defects impact a user's score. Score weights can be adjusted in the **Admin Portal** and will affect all scored modes (**Lesson Mode** and **Free Paint**, **Free Coat**, and **Free Blast** modes), and all available products (Paint, Powder, and Blast). The default score weighting is set to attributing 50% of the overall score to application technique, and the remaining 50% to coating quality, or coverage.



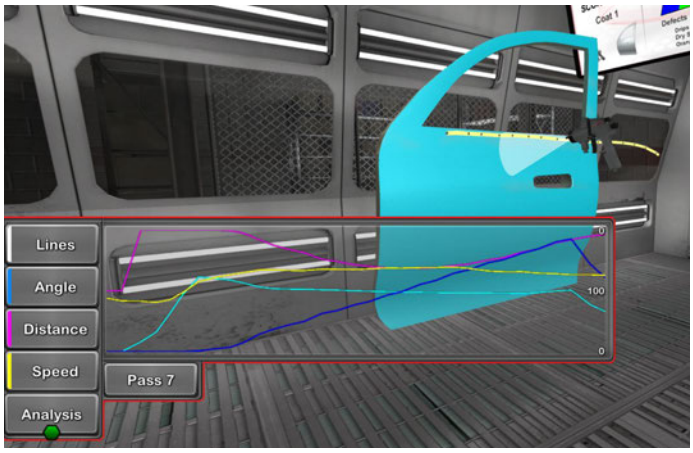

A defects impact on the coating score can also be adjusted here. Enable or disable defect score deductions or adjust sliders to dictate at what point, measured by defect coverage area, a defect will result in a small, medium, large, or failing score penalty on the coverage score.

## Analysis - 3D Lines

**Lines** are a set of 3D lines that provide a real-time playback by creating a 3D overlay on the part that replays the user's movements. The 3D lines follow the path of each pass of the gun, allowing users to see the spray angle, gun distance, and movement speed for each coat. The 3D line analysis can help a user monitor and adjust their technique, focusing on angle, distance, and speed.

**Analysis** also provides color coded graphs to compare gun angles, distance, and speed for each pass against project parameters.

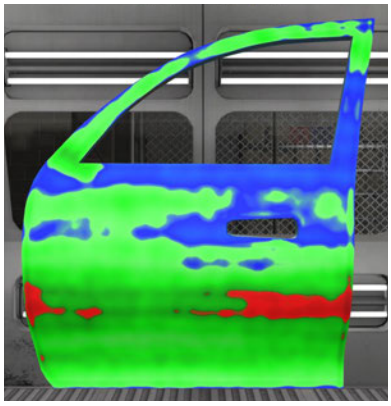
- **Angle** is shown as a light blue line for vertical gun rotation, and a dark blue line for horizontal gun rotation.
- **Distance** is represented with a magenta line.
- **Speed** appears as a yellow line.




## Part Modes

**Part Modes** are a series of visual filters that provide different views of the part. These views include coating, coverage, and defects. Adjust these views on the SimSpray or SimSpray Go monitor, or use the immersive controls tablet found in the environment.

The **Coating** mode shows the selected part with the coating application in the virtual environment, as it would appear to the naked eye. Once coated, the part will appear in the selected coating color. Coating texture and sheen is visible in this mode, but other view modes will better highlight defects and coating quality.



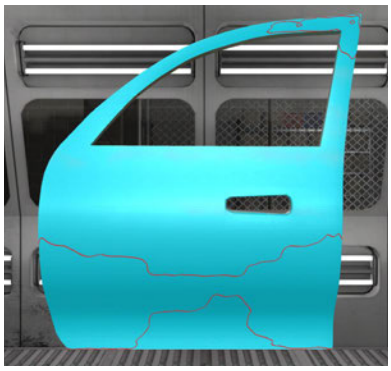
The **Coverage** mode indicates how thickly the coating was applied to any specific part area. Coverage is also referred to as film thickness, and is scored based on the target mil build range. The coverage map displays coating thickness using a color scheme: blue indicates too thin of a coat, red indicates too thick, and green represents an application that is within the target film thickness range.

**Red** indicates where the coating is too thick, or above tolerance, with bright to dark red showing where the coating is thinner and thicker, respectively.

**Green** indicates the coating is within the project's target thickness range, with light green and dark green showing where the coating is thinner or thicker, but still within tolerance.

**Blue** indicates where the coating is too thin, or below tolerance, with light and dark blue showing where the coating is thinner and thicker, respectively.

The **Defect** mode is used to highlight specific defects. The user can toggle through the **Defects** menu on the virtual **Tablet** or monitor to see defects, including dry spray, drips and sags, and orange peel. A defect's surface area is indicated by the bordered and highlighted area(s).



- **Dry spray** occurs when the gun is too far from the part or held at an incorrect angle.
- **Drips and sags** appear when the coating application is too thick; this occurs when the gun is too close to the part, the user moves too slowly, or both.
- **Orange peel** occurs when the gun is too far from the part.

# Cues

SimSpray provides visual cues to users within the virtual environment. Cues help assist users with gun angle, distance, and the speed of their movements.

Cues are represented by visual indicators that appear in the environment once they have been selected on the virtual tablet, or as a preset part of a project or lesson. SimSpray's cues will adjust to reflect any custom settings or paint type for specific tasks, such as custom angle, distance, or speed. Multiple cues can be used at the same time, but it is recommended to focus on one skill at a time.

## Angle

The **Angle Cue** assists users in controlling the angle of the gun as they apply paint, powder, or practice with the abrasive blasting hose. When the user's angle matches the project target value for optimal orientation, only the cue target will be displayed. The cue target and circle turn red when the gun orientation deviates from the project target range.

The abrasive blasting hose angle cue trains users to spray the part at an angle to avoid particulate spray. The abrasive blasting hose angle cue provides a wider range of acceptable angles and the target for the cue is larger than with paint or powder application, simulating actual abrasive blasting activities.

## Distance

The **Distance Cue** assists users in controlling the distance of the gun from the part as the user practices. The distance cue appears as two white lines; a red arrow appears when the user is too far away from or too close to the part.

A white arrow appears when the user is within the target range but not in optimal position. An arrow below the white lines indicates the spray gun is too far away from the part, and an arrow above indicates the gun is too close. When in optimal position, only the cue target bands appear.

## Speed

The **Speed Cue** assists users in developing control of the gun speed as they paint or use the abrasive blasting hose. Speed is not scored for powder coating or abrasive blasting processes.

The speed cue appears as a speedometer; the central horizontal line is the target. When the user's speed matches the project target value for optimal speed, the speedometer needle will be on the central cue target line. The line moves and turns red as the user's speed becomes too fast or too slow and deviates from the project target range.

## Edge-Blending


The **Edge-Blending Cue** assists users in developing the ability to judge the proper distance and angle for spot and panel painting. The cue appears as a transparent ramp that indicates where and how users should adjust their spray distance and angle.

Edge-blending involves fanning off while blending between unpainted and painted part sections, and requires users to keep the tool perpendicular to and the proper distance from the surface.

Edge-blending is available with the HVLP Edge-Blending add-on and is specific to repair projects in that add-on content.