

Summative Evaluation of Hand Hygiene Reusable Learning Object (RLO)

Instructional Designer: Fessehaye Yehdego

Date: April 15, 2026

EDTC 6323

Purpose of the Evaluation

The purpose of this evaluation is to assess the effectiveness of the Hand Hygiene Reusable Learning Object (RLO) in improving healthcare-related hand hygiene protocols. Following the Dick and Carey (2005) model, this summative evaluation was conducted to verify if the instructional materials successfully facilitate the intended learning outcomes for target users. The primary goal is to determine if the RLO provides sufficient instruction for learners to correctly identify when and how to perform hand hygiene and to sequence the necessary steps accurately. This data will inform a "go/no-go" decision regarding the deployment of the module within a clinical or educational setting.

User Profiles

The evaluation involved two representative participants who mirror the target audience of health professionals and new hires (students). Participant 1 is a nurse trainee with a background in healthcare at a post-surgery facility for 7 years. She is expected to know the hand hygiene protocol, but it is a refresher training for her reminding and updating certifications. Participant 2 is also a health professional with experience in clinical environments. Both participants possess basic digital literacy and have previously received standard hand hygiene orientation, making them ideal candidates to test whether this specific RLO improves or reinforces critical safety skills.

Evaluation Location

The evaluation was conducted in a realistic, hybrid setting. The instructional designer visited the post-surgery rehab facility and the health professional college to conduct the evaluation. Participants accessed the RLO online via a learning management link. The instructional designer observed the process and conducted a follow-up discussion to collect qualitative feedback. This environment simulated the self-paced, asynchronous nature of modern professional development while allowing for direct observation of learner engagement and "focus" levels during the quiz component.

Evaluation Methods

Learners were asked to complete the Hand Hygiene RLO module in its entirety, followed by a four-question summative quiz. The data collected included objective performance scores, time-

on-task (duration in minutes), and qualitative observations regarding learner behavior (e.g., focus and speed). The quiz tested four key domains: the timing of hand hygiene, duration of the procedure, essential steps, and the correct sequencing of actions via a drag-and-drop interaction. These metrics were used to determine the success rate per question and overall mastery.

Evaluation Results

The evaluation results indicate a high level of objective achievement, though patterns suggest initial difficulty with complex interactions. The average score across all attempts was 3.67 out of 4 (91.7%). Both participants eventually achieved 100% mastery. However, a specific pattern emerged in the "Drag and Drop" sequencing question (Q4), which had a lower initial success rate of 66.7% compared to the 100% success rate on all other questions. Data showed that Participant 1 initially scored a 75% due to rushing but improved to 100% upon a second attempt with "better focus," while Participant 2 achieved 100% on their first try in 9 minutes.

Healthcare professionals'– Hand Hygiene RLO quiz

Participant	Attempt	Score	Duration	Outcome	comment
Participant 1	1	3/4 (75%)	5 min	Incorrect Sequence (Q4)	Rushing to finish
Participant 1	2	4/4 (100%)	9 min	Corrected Sequence	Stayed focused
Participant 2	1	4/4 (100%)	7 min	All Correct	Stayed focused

Table 1.

*Comments / Engagement Observations: Used this section to record qualitative feedback and patterns observed in learner engagement, including response behavior across attempts from the use tracking spreadsheet attached to keep records of the trainee activities

Charts Summary and analysis of the post training quiz for the Summative evaluation of the RLO

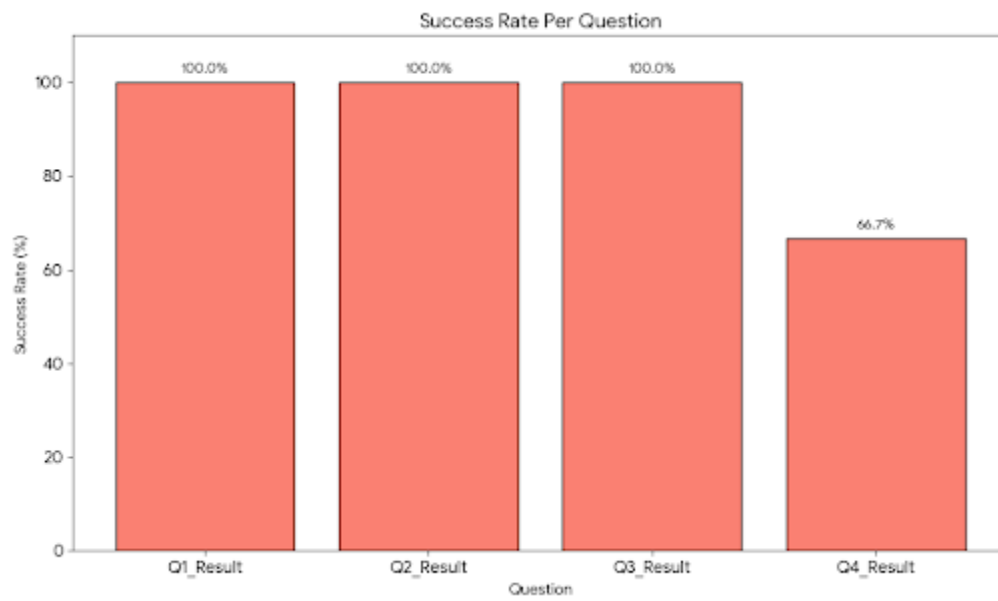


Chart 1.

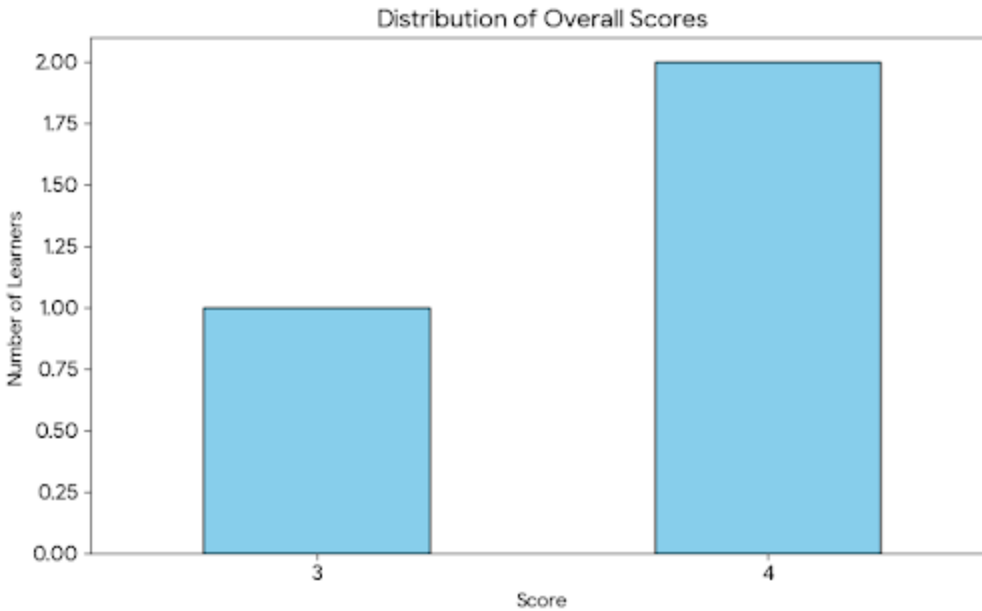


Chart 2.

This summative evaluation report is based on the data provided in **the Hand hygiene RLO**, which tracks hand hygiene quiz performance across three recorded attempts, using Ai model, Which I confirm and acknowledge its accuracy.

1. Executive Summary

The overall performance on the Hand Hygiene RLO Quiz was high, with an average score of **3.67 out of 4** (91.7 %). While initial attempts showed some room for improvement (particularly in sequence-based questions), subsequent performance indicated effective learning and 100% proficiency in core conceptual areas.

- **Total Attempts:** 3
- **Total Unique Learners:** 2
- **Average Score:** 3.67 / 4
- **Success Rate (Perfect Scores):** 2 out of 3 attempts (66.7 %) achieved a 100% score.

2. Performance Metrics & Data Analysis

Scores Over Time

The chronological tracking shows a clear upward trend. One participant initially scored a 3/4 and improved to a 4/4 in their second attempt, suggesting that the training intervention or feedback was effective in closing knowledge gaps.

Distribution of Overall Scores

The majority of learners achieved the maximum score.

- **Score of 4:** 2 attempts
- **Score of 3:** 1 attempt

Success Rate per Question

The breakdown by question identifies specific areas of strength and one area for potential review:

- **Q1 (When to perform):** \$100 % Success
- **Q2 (Effective duration):** \$100 % Success
- **Q3 (Essential steps):** \$100 % Success
- **Q4 (Sequence of steps):** \$66.7%Success

Questions Answered Correctly 100% of the Time:

Learners achieved a perfect 100 % success rate across all attempts for **3 out of 4 questions** (Q1, Q2, and Q3). Q4 (the drag-and-drop sequence) was the only question where an incorrect response was recorded.

3. Detailed Summary Table

Metric	Value
Total Learners	2
Average Duration	7.0 minutes
Highest Score	4
Lowest Score	3
Questions with 100% Mastery	Q1, Q2, Q3

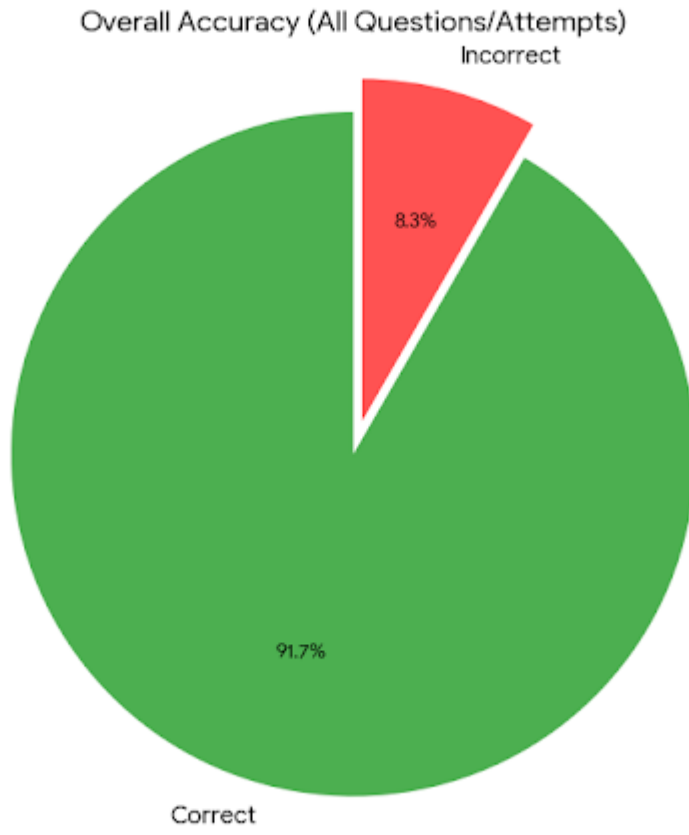
Table 2.

4. Qualitative Feedback (Comments)

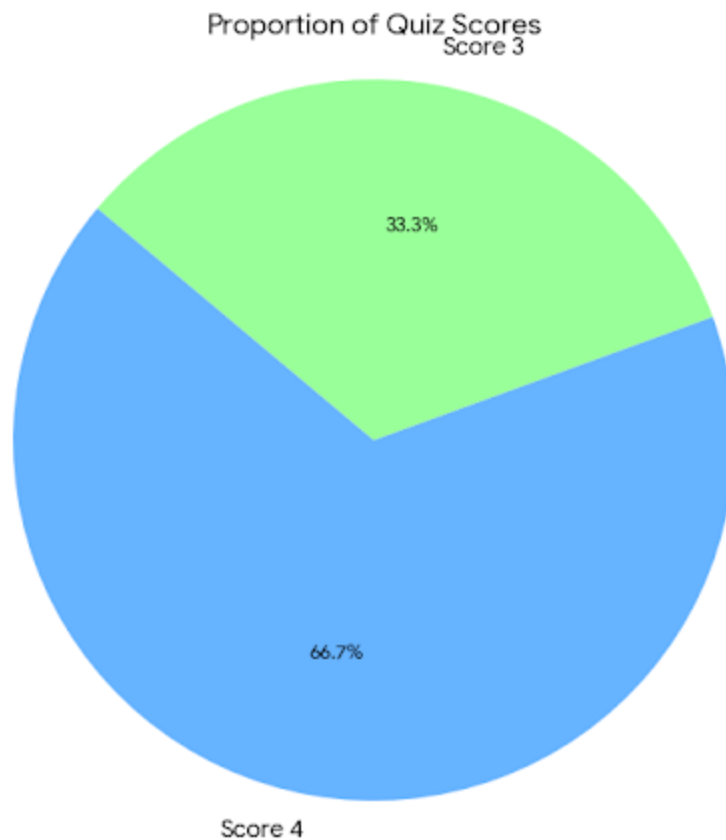
- **Participant 1 (Attempt 1):** Noted as having "no focus," which likely contributed to the incorrect sequence in Q4.
- **Participant 1 (Attempt 2):** Showed "great focus" and achieved a perfect score.
- **Participant 2:** Demonstrated "better focus" and achieved a perfect score on their first recorded attempt.

5. Recommendations

- **Maintain Focus on Sequencing:** Since Q4 was the only question missed, future training should continue to emphasize the "Drag and Drop" sequence of steps, as this requires higher cognitive load than simple recall.
- **Duration:** The average time spent (7 minutes) appears sufficient for learners to digest the content, but the "no focus" comment suggests that learner engagement is a key factor in achieving perfect accuracy.



Pie chart 1



Pie chart2.

1. Proportion of Quiz Scores

This chart shows the breakdown of achievement levels across all attempts.

- **66.7 %** of attempts reached the maximum score of 4/4.
- **33.3 %** of attempts resulted in a score of 3/4.
- This visualizes the "Pass Rate" vs. "Near-Pass Rate" effectively for a quick glance.

2. Overall Accuracy (All Questions)

Instead of looking at learners, this chart looks at the **total volume of answers** provided.

- Across all 3 attempts and 4 questions (12 total answers), **91.7 %** were correct.
- Only **8.3 %** (representing the single error in the sequence question) were incorrect.
- This is a powerful metric to show the overall effectiveness of the Hand Hygiene training content in ensuring correct knowledge retention.

Metric	Breakdown
Score Mastery	2/3 Attempts at 100%
Total Response Accuracy	11 Correct / 1 Incorrect
Common Error Source	Sequencing (Q4)

Table 3.

Reaction to Results

The RLO worked exceptionally well for delivering factual knowledge and immediate conceptual recall. The 100% success rate on Questions 1, 2, and 3 suggests that the instructional content regarding "when" and "how long" to wash hands is clear and effectively supported. However, the initial failure of Participant 1 on the sequencing question was unexpected. It suggests that while the knowledge was present, the digital interaction or the complexity of the sequence required a higher level of cognitive focus than the other questions. This indicates the module is effective but sensitive to learner "rushing."

Action Response and Revisions

To improve the RLO, I would implement two primary changes. First, I would add a "Review" screen immediately preceding the sequencing quiz to reinforce the step-by-step order, as this was the only area where errors occurred. Second, I would modify the number of attempting the quiz to prevent "rushing" by requiring a maximum number of attempts to retake it. These revisions would ensure that learners are not just clicking through but are processing the quiz deeply enough to replicate it correctly on the first attempt.

More importantly, I would integrate the RLO as a prerequisite to an in-person hand hygiene demonstration. I will indicate this need by editing the completion certificate to include in red as "In person Hand washing demonstration under supervision of Training officer is required", indicating the trainee has to contact the facility's Training Department to maintaining an action-oriented and result-oriented procedure on the top of the online RLO. This ensures that the high scores achieved in the RLO are directly translated into proper clinical technique performed accordingly in a real-world environment.

Overall, the evaluation approach aligns with e-learning evaluation stages including pre, during, and post training analysis (Papas, 2011). The RLO is effective and should be kept, provided those minor instructional scaffolds and suggestions are added.

Learner feedback

Trainees said that the online RLO is simple and clear, every slide has few information with picture and audio. The sequencing and hand-washing video description allowed them to be engaged and to retain the concept while training and while taking the quiz. The transcription of the audio also allowed them to reread themselves to enforce long term memory. On the other hand, they shared their concern about the opportunity to do the learning and quiz unlimited times may sometimes make them unfocused and simply retry and guess for answers, which may affect practicing hand hygiene real time.

Appendices

Tracking learners' activities on the RLO:

<https://docs.google.com/spreadsheets/d/1ASR5PoA2SdgUAtx61BfKeYmzlwqjRqrv/edit?usp=sharing&ouid=102764784941728623287&rtpof=true&sd=true>

charts Links:

<https://drive.google.com/file/d/1DKTd2vfAln5NgScFzZOmssMLtLpfNcDw/view?usp=sharing>

[Links Participant performance picture](#)

Participant performance picture:

https://drive.google.com/drive/folders/1-YMDCr3_zLhVFP7CJYPidiXMFSc3BqR1?usp=sharing

References

Dick, W., Carey, L., & Carey, J. O. (2005). *The systematic design of instruction* (6th ed.). Pearson.

Papas, C. (2011). Introduction to evaluation in eLearning. eFront Learning.

<https://www.efrontlearning.com/blog/2011/01/introduction-to-evaluation-in-elearning.html>

Declaration of AI Use

This paper was developed with support from AI tools. An AI language model was used to analyze raw CSV data from the "Hand Hygiene Response Tracking Form," generate statistical summaries, and assist in formatting the report according to APA standards. As an instructional designer, I reviewed all AI-generated analysis to ensure accuracy and alignment with the observed learner behaviors and drafted the final qualitative reactions and action responses based on personal professional judgment.