

# Structured over Chat-Based Feedback: Comparing User Preferences on Different Presentation Feedback Reports

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**Abstract:** Digital presentation training systems provide automated feedback during presentation practice, but less attention has been paid to how feedback should be presented after a training session to support review and reflection. This paper investigates how learners perceive different feedback representations for understanding presentation performance and reflecting on it. A Rehearsal Report was designed for Presentable, a digital presentation training system that provides automated feedback on presentation delivery. Three concepts were developed: a timeline-based design that connects feedback to specific moments in the presentation, a chat-based design that presents feedback conversationally, and a storytelling-based design that organizes feedback into thematic categories. The concepts were evaluated in an online within-subject study with 84 participants. Participants reviewed all three designs and evaluated them regarding clarity, usefulness, reflection support, preference, and perceived support for understanding presentation performance. The results show that the chat-based design received lower ratings than both structured alternatives. Participants preferred designs with clear visual organization and contextual information. The timeline-based design was rated most helpful overall, while the storytelling-based design was rated highest for ease of understanding. These findings suggest that structured visual representations may be perceived as more supportive for post-training reflection than conversational feedback formats.

**Keywords:** Presentation Training, Feedback Visualization, Reflection, Educational Technology, Learning Analytics

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## 1. Introduction

Presentations are an important form of communication in educational and professional contexts. Students present their work in seminars, group projects, or final examinations, while professionals use presentations to communicate ideas, results, or products. Although presentations are common, giving an effective presentation remains challenging for many learners. Successful presenting requires not only knowledge of the topic, but also delivery-related skills such as clear speech, confident posture, appropriate gestures, and audience orientation.

Digital presentation training systems have been developed to support learners in practising these skills. Such systems can provide automated feedback on aspects of presentation delivery, for example speaking pace, posture, gestures, or gaze direction. Previous research shows that automated feedback can increase learners' awareness of their presentation behaviour and support public speaking practice, especially when feedback is provided during training (Chollet, Marsella and Scherer, 2022; Jariyah, Patak and Novia, 2025; Sichterman et al., 2025).

However, immediate feedback alone does not fully support reflection after a presentation has ended. During a presentation, learners must focus on speaking, remembering their content, managing body language, and reacting to the situation. Processing feedback deeply at the same time can therefore be difficult. Post-training feedback offers a different learning opportunity: learners can review their performance as a whole, identify recurring patterns, and reflect on strengths and weaknesses. This relates to self-regulated learning, where feedback supports learners in evaluating their performance and planning future improvements (Nicol and Macfarlane-Dick, 2006; Theobald and Bellhäuser, 2022).

A central challenge is how post-training feedback should be presented. Dashboards, scores, graphs, or isolated feedback messages can provide useful information, but they do not automatically help learners understand what the feedback means for their own behaviour. Research on learning analytics and feedback visualization therefore emphasizes the importance of clear, learner-centred representations that help users interpret performance data (Ahn et al., 2019; McKenna et al., 2019).

This paper investigates how learners perceive different representations of post-training presentation feedback in terms of clarity, usefulness, preference, and perceived support for reflection. For this purpose, three Rehearsal Report designs were developed for Presentable: a timeline-based design, a chat-based design, and a

storytelling-based design. The concepts were evaluated in an online within-subject study with 84 participants. By comparing these approaches, the paper contributes design insights for post-training feedback in digital presentation training systems.

## 2. Related Work

Digital presentation training systems support learners by providing automated feedback on presentation delivery. Such systems can analyse verbal features, such as speaking pace or filler words, and non-verbal features, such as posture, gestures, gaze direction, or body movement. Previous research suggests that automated presentation feedback can increase learners' awareness of their behaviour and support public speaking practice, especially when human feedback is limited (Chollet, Marsella and Scherer, 2022; Jariyah, Patak and Novia, 2025; Sichterman et al., 2025). Existing presentation training systems often provide feedback during or shortly after presentation practice and differ in the technical features they use to capture, analyse, and present feedback (Hummel et al., 2025). However, comparatively less attention has been given to how learners can review and reflect on their performance after the training session has ended.

Immediate feedback can help presenters notice specific behaviours and adjust them during practice, but processing feedback while presenting may be demanding. Learners must divide their attention between speaking, remembering their content, managing body language, and reacting to the presentation situation. This relates to cognitive load theory, which emphasizes that learning tasks should avoid overloading learners' limited working memory capacity (Sweller, 1988; Sweller, van Merriënboer and Paas, 1998). Post-training feedback addresses a different phase of learning. After the presentation, learners can review their performance more calmly, identify recurring patterns, and plan future improvements. This reflective process is closely related to self-regulated learning, where feedback helps learners evaluate their current performance and close the gap between current and desired outcomes (Nicol and Macfarlane-Dick, 2006; Theobald and Bellhäuser, 2022). Research on formative assessment similarly emphasizes that feedback should not only inform learners about their performance, but also help them interpret the feedback and remain engaged in the learning process (Gikandi, Morrow and Davis, 2011).

However, delayed or post-training feedback also has limitations. Since it is presented after the performance has ended, learners can no longer adjust their behaviour in the moment. Research on feedback timing suggests that immediate and delayed feedback can support learning in different ways, depending on the task, feedback content, and learning goals (Taxipulati et al., 2021). In the context of post-training feedback, the representation therefore needs to support memory, interpretation, and planning rather than immediate correction. If feedback remains too abstract or disconnected from the original presentation situation, learners may struggle to relate it to their own behaviour.

The usefulness of feedback depends not only on its content, but also on how it is presented. Dashboards, charts, scores, or summary views can make performance data accessible, but they do not automatically help learners interpret what the data means for their own behaviour. Learning analytics research therefore emphasizes the need for learner-centred feedback visualizations that support interpretation rather than only displaying data (Ahn et al., 2019; McKenna et al., 2019). Jivet et al. (2017) similarly argue that awareness is not enough: learning analytics dashboards need to support sense-making and meaningful action. Zha and Harrison (2019) also show that feedback visualization design influences how users understand and use visual feedback.

For presentation training, temporal representations are particularly relevant because presentation behaviour unfolds over time. A timeline can help learners reconstruct when specific feedback events occurred and how their behaviour developed during the presentation (Shneiderman, 2003). However, temporal information alone may not be sufficient. Research on informative tutoring feedback suggests that feedback is more useful when it provides explanations and context rather than only indicating that something happened (Narciss and Huth, 2004). Narrative and conversational formats offer alternative ways of presenting feedback. Data storytelling can combine structure, explanation, and visual information to make feedback easier to interpret (Maheshi et al., 2024), while chat-based feedback may feel familiar and supportive because it resembles a conversation with a coach. At the same time, presenting feedback step by step may reduce overview and make it harder to compare feedback points. The present study addresses this design tension by comparing three Rehearsal Report designs: a timeline-based representation, a chat-based representation, and a storytelling-based representation.

### 3. Rehearsal Report Designs

The Rehearsal Report designs were developed as post-training feedback concepts for Presentable, a digital presentation training system that supports learners during presentation rehearsal. The training process can be understood as consisting of three phases. First, learners prepare their presentation through a short planning or message-composition phase. Second, they rehearse their presentation while receiving automated feedback on observable aspects of delivery, such as posture, gestures, body movement, and orientation towards the camera or audience. Third, after the rehearsal has ended, the Rehearsal Report provides a structured reflection phase in which learners can review and interpret the feedback from the session.

For the purpose of this study, three mockups of the rehearsal dashboard were created. All three mockups were based on the same fictional rehearsal scenario and the same underlying feedback content. In this scenario, a learner gives a short practice presentation, initially shows expressive gestures and distracting movements, briefly loses connection with the audience in the middle, and becomes calmer and more controlled towards the end. Using the same scenario ensured that participants evaluated different versions of the rehearsal dashboard rather than different feedback content.

Figures 1a and 1b show excerpts of the three Rehearsal Report designs compared in the study. Figure 1a presents an excerpt of the timeline-based design, while Figure 1b presents excerpts of the storytelling-based and chat-based designs.

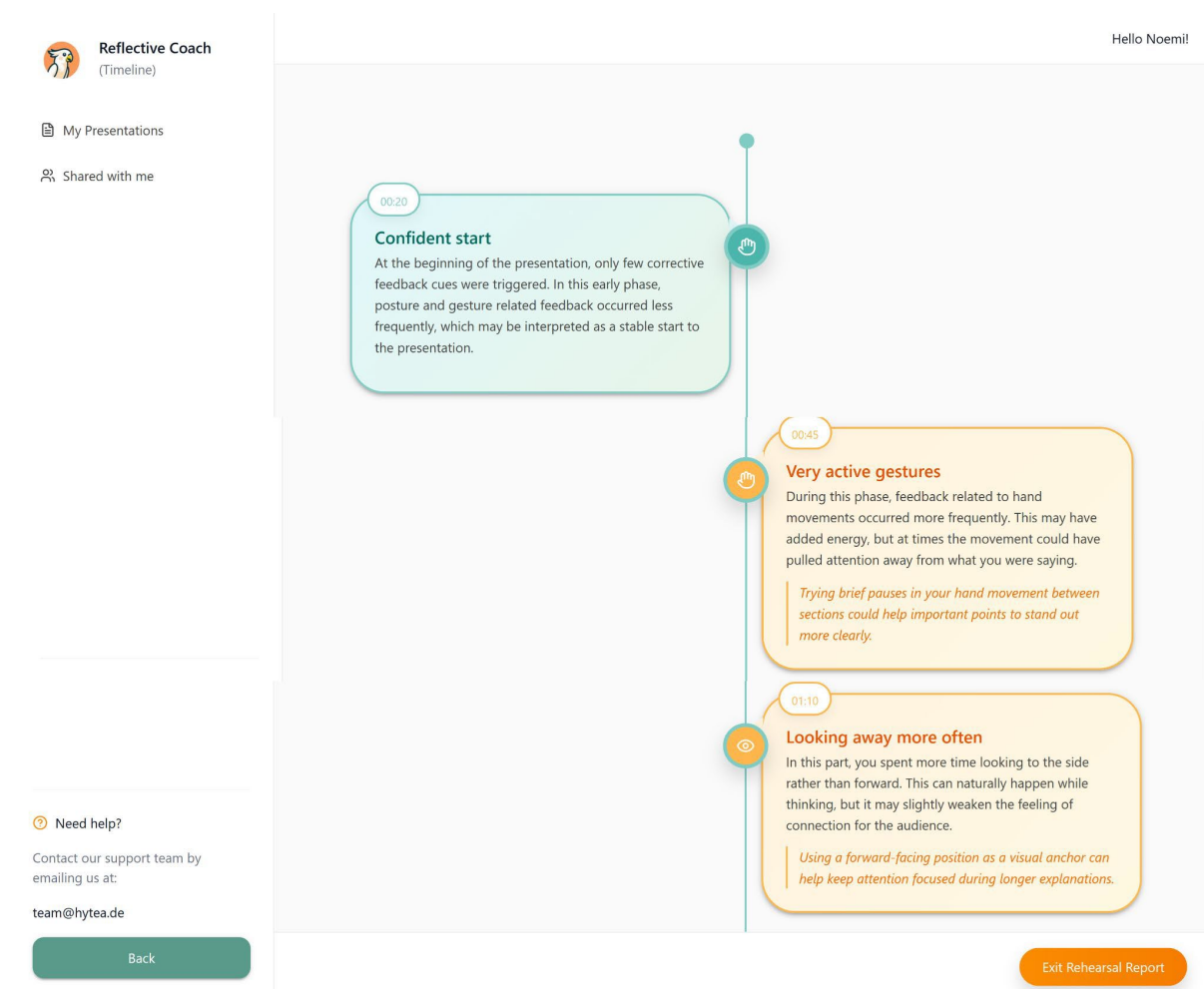


Figure 1a: Excerpt of the timeline-based Rehearsal Report design.

Reflective Coach  
(Data Storytelling)

My Presentations

Shared with me

Need help?  
Contact our support team by emailing us at:  
team@hytea.de

Back

Hello, Noemi

Duration

5:00 min

Target: 4:00 min

Overall

Strong

Improved throughout

Delivery

Engaging

Natural & confident

Camera Connection

In the middle of your talk, you looked away from the camera several times. That's a normal 'search moment' — but it can weaken the feeling of connection.

→ What helps you return to 'face forward' quickly when you lose your thread?

Gestures & Hands

Posture & Movement

Timing

Summary / Next focus

Exit Rehearsal Report

Reflective Coach  
(Chat based)

My Presentations

Shared with me

Need help?  
Contact our support team by emailing us at:  
team@hytea.de

Back

Hello Noemi

Hi Noemi!

Your presentation went well — you spoke confidently for about 5 minutes, a bit longer than your target of 4.

Let's take a moment to reflect together, okay?

During the first half of your presentation, your gestures were very expressive and involved frequent hand movement.

Do you feel this level of movement supported your message?

Neutral N

That's a fair perspective.Experiences like this can vary depending on the moment.

Expressive gestures can add energy and emphasis, but they can also become distracting if they draw attention away from the content.

One possible strategy is to experiment with short moments of stillness between sections.

This can help important points stand out and give your audience time to process what you just said.

Exit Rehearsal Report

Figure 1b: Excerpts of the storytelling-based and chat-based Rehearsal Report designs.

### 3.1 Timeline-Based Design

The timeline-based design presents feedback as a sequence of events along the duration of the presentation. Feedback items are connected to timestamps and placed on a vertical timeline, allowing learners to see when specific behaviours occurred and how their presentation developed over time. This design was chosen because the feedback generated during rehearsal is event-based and connected to specific moments. A timeline can therefore preserve this temporal structure and help learners reconstruct the presentation process after the session. This follows visualization principles that emphasize overview, temporal organization, and access to details (Shneiderman, 2003).

Positive feedback and improvement feedback are visually separated, and individual feedback items can be opened to show a short explanation and advice. The design combines an overview of the whole presentation with detailed feedback on specific moments. It aims to help learners identify patterns, such as whether certain behaviours occurred mainly at the beginning, middle, or end of the presentation. This is consistent with feedback visualization research, which highlights the importance of clear representations that help learners interpret performance information rather than only displaying data (Ahn et al., 2019; McKenna et al., 2019).

### 3.2 Chat-Based Design

The chat-based design presents feedback as a conversation with a virtual coach. Instead of showing all feedback at once, the report guides the learner through short messages and reflective prompts. Learners can respond using predefined options, such as agree, neutral, or disagree. This design was included because conversational interfaces are familiar to many users and may make feedback feel more personal, supportive, and less evaluative.

At the same time, the sequential structure provides less immediate overview because feedback points are not visible all at once. The design therefore prioritizes guidance and approachability over detailed comparison and temporal overview. This contrast is relevant because learning analytics dashboards should not only create awareness, but also support sense-making and meaningful action (Jivet et al., 2017).

### 3.3 Storytelling-Based Design

The storytelling-based design organizes feedback into thematic categories, such as gestures, posture, camera connection, timing, and overall summary. Each category contains short explanatory text and a reflective question. Instead of focusing on detailed timestamps, the design presents feedback as a structured and readable overview.

This design was chosen to explore whether feedback becomes easier to understand when it is organized as an explanatory narrative rather than as a temporal sequence or conversation. The aim is to reduce the effort required to interpret the feedback by grouping related observations and explaining them in everyday language. This is in line with research on data storytelling, which suggests that combining structure, explanation, and visual information can make feedback analytics easier to interpret (Maheshi et al., 2024). The storytelling-based design therefore focuses on clarity, categorization, and interpretation, but provides less precise temporal information than the timeline-based design.

## 4. Method

### 4.1 Study Design and Procedure

The three Rehearsal Report designs were evaluated in an online within-subject study. This design was chosen because the aim was to compare how the same participants perceived three different feedback representations. Each participant reviewed all three designs: the timeline-based design, the chat-based design, and the storytelling-based design.

At the beginning of the survey, participants received a short introduction to the study context. They were asked to imagine that they had completed a practice presentation using a digital presentation training tool and were now receiving a feedback report to support reflection and improvement. The three design concepts were then shown in randomized order to reduce order effects. For each design, participants viewed a screenshot and watched a short demonstration video showing how the report could be used, for example by opening feedback sections or navigating through the interface.

After each design presentation, participants answered the same set of evaluation questions, which are described in Section 4.3. After all three designs had been evaluated individually, participants were shown a thumbnail overview of the designs to support recall. The final part of the survey focused on direct comparison, including overall preference, ranking, motivation to improve, and perceived support for understanding presentation performance.

## 4.2 Participants

A total of 84 participants completed the online survey. Participants were recruited mainly through online survey exchange platforms and, to a smaller extent, through personal contacts and university-related channels. The only formal requirement for participation was that participants had to be at least 18 years old.

The sample included participants with different educational and academic backgrounds. Regarding the highest completed level of education, 49% reported a Bachelor's degree, 20% a Master's degree, 23% a high school qualification, 5% vocational training, and 4% a doctoral degree. Academic backgrounds included humanities or social sciences (48%), other STEM fields (14%), computer science (7%), education (4%), and other fields (27%).

Most participants had at least some presentation experience. Regarding presentation frequency, 26% reported giving presentations frequently or monthly, 57% occasionally, 8% rarely, and 8% very frequently. Previous use of digital presentation training tools was less common, with 33% reporting previous use and 67% reporting no previous use.

## 4.3 Measures and Analysis

The survey combined quantitative and qualitative measures. For each design, participants answered seven Likert-scale items on a seven-point scale from strongly disagree to strongly agree. The items were developed specifically for this study and were not adopted from a standardized questionnaire. They focused on perceived usefulness for improving presentation skills, ease of understanding, perceived support for reflection, clarity of structure and layout, support for understanding when specific behaviours occurred, intention to use the report after practice, and motivation to improve the next presentation.

In the comparison part of the survey, participants selected which design they found most helpful, which design made it easiest to understand their performance, and which design would most motivate them to improve. They also ranked the three designs from most helpful to least helpful for reflecting on presentation performance and selected which design elements contributed most to their motivation to reflect. Open-ended questions allowed participants to describe what they liked about each design, what they found confusing or less helpful, and why they preferred a particular design.

The quantitative data were analysed descriptively using frequencies, percentages, means, and standard deviations. The open-ended responses were analysed thematically to identify recurring positive and critical comments for each design.

# 5. Results

## 5.1 Individual Design Ratings

As shown in Figure 2, the timeline-based and storytelling-based designs received higher ratings than the chat-based design across the seven evaluation items. The timeline-based design was rated positively, with mean values ranging from 5.20 to 5.86 on the seven-point scale. Its highest rating concerned helping participants understand when specific behaviours occurred during the presentation ( $M = 5.86$ ). The storytelling-based design received similarly positive ratings, with mean values ranging from 5.24 to 5.87, and was rated highest for ease of understanding ( $M = 5.87$ ). In contrast, the chat-based design received lower ratings, with mean values ranging from 3.93 to 4.93. Its lowest rating concerned participants' intention to use this type of report after presentation practice ( $M = 3.93$ ).

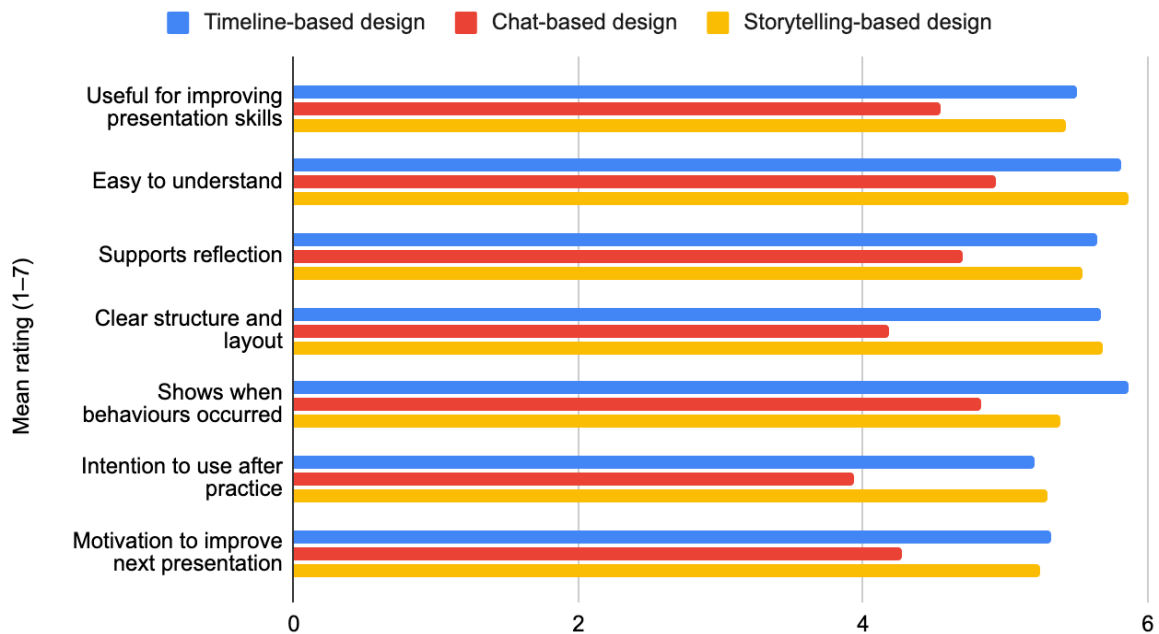


Figure 2: Mean ratings of the three Rehearsal Report designs.

## 5.2 Design Preference and Comparison

As shown in Figure 3, the timeline-based design was selected as most helpful overall by 48% of participants, followed by the storytelling-based design with 40% and the chat-based design with 12%. For understanding presentation performance, the storytelling-based design was selected most often (49%), followed by the timeline-based design (40%) and the chat-based design (11%). For motivation to improve the next presentation, the timeline-based design was selected by 42% of participants, the storytelling-based design by 40%, and the chat-based design by 18%. The ranking results confirmed this tendency: the timeline-based design was most often ranked first, while the chat-based design was most frequently ranked last.

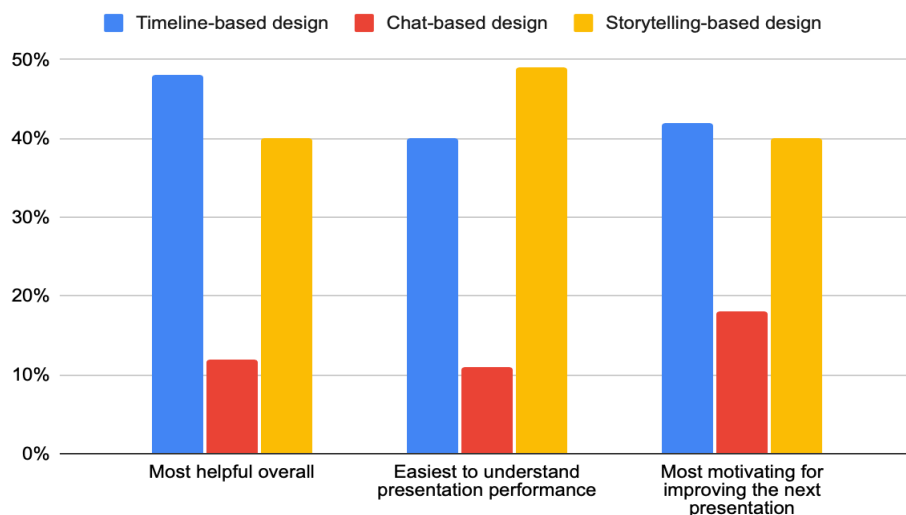
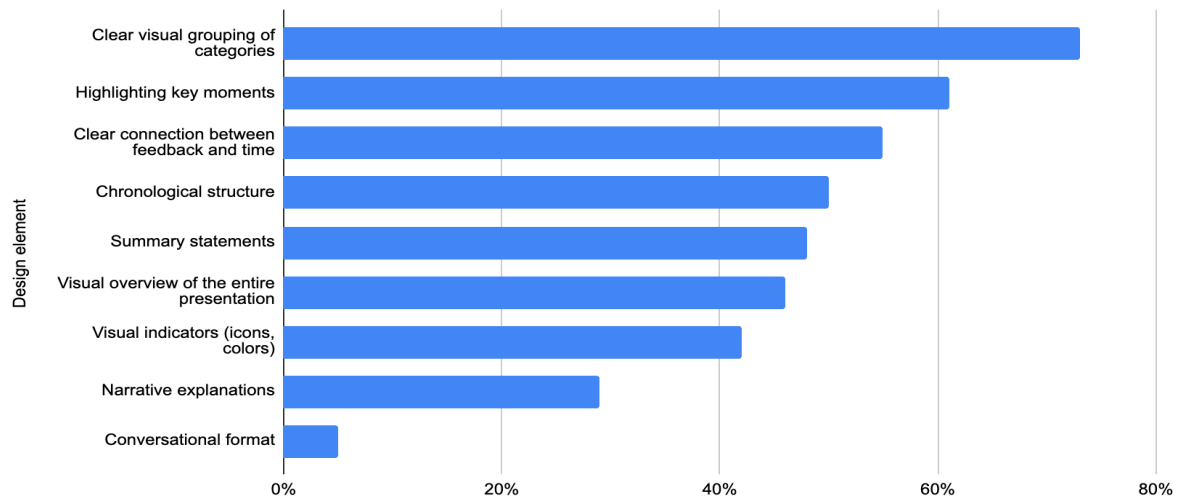


Figure 3: Direct comparison of the three Rehearsal Report designs.

## 5.3 Motivating Design Elements and Qualitative Feedback

Figure 4 shows which design elements participants selected as contributing most to their motivation to reflect on their presentation performance. Participants most frequently selected clear visual grouping of categories (73%), followed by highlighting key moments (61%), a clear connection between feedback and time (55%), chronological structure (50%), summary statements (48%), a visual overview of the entire presentation (46%),

and visual indicators such as icons and colours (42%). In contrast, narrative explanations were selected by 29%, and the conversational format by only 5%.



**Figure 4: Design elements contributing to motivation for reflection.**

The qualitative responses supported these findings. For the timeline-based design, participants often mentioned the clear structure, timestamps, chronological organization, and separation of positive feedback and improvement feedback. For the storytelling-based design, participants highlighted the clear grouping into categories, the overview, and the understandable language, but some missed precise time information. For the chat-based design, participants appreciated the personal and interactive character, but criticized the limited response options, lack of overview, and difficulty of revisiting specific feedback points.

## 6. Discussion

The results show that participants evaluated the three representations of post-training feedback differently, although all designs were based on the same feedback scenario. The timeline-based and storytelling-based designs were evaluated more positively than the chat-based design. This suggests that structured representations may be particularly important for how learners perceive post-training feedback after presentation practice.

The timeline-based design was especially strong in helping participants connect feedback to specific moments in the presentation. Since the feedback used in the scenario was event-based and linked to specific moments, participants may have benefited from seeing these events arranged in temporal order. This aligns with visualization principles that emphasize the value of providing both an overview and access to details (Shneiderman, 2003).

The storytelling-based design was selected most often as the design that made it easiest to understand presentation performance. This indicates that temporal detail is most likely not the only factor shaping participants' preferences. Participants also valued clear categories, structured summaries, and explanations in everyday language, which is consistent with feedback visualization research emphasizing interpretation rather than only data display (Ahn et al., 2019; McKenna et al., 2019).

The chat-based design received more mixed reactions. Some participants appreciated its personal and interactive character, but the design was rated lower overall and was most frequently ranked as the least helpful format. A central issue was the lack of overview: because information was presented sequentially, participants found it harder to review feedback quickly or compare feedback points. In addition, the predefined answer options did not match participants' expectations of a chat interface.

Across the three designs, participants consistently valued clear visual grouping, highlighting key moments, connection between feedback and time, and chronological structure. These findings suggest that participants preferred feedback formats that helped them organize and interpret performance data. For post-training feedback, clarity and contextualization appeared to be more important than conversational interaction alone. Future designs could therefore combine the structured overview of the storytelling design with the temporal detail of the timeline design.

## 7. Limitations and Future Work

This study has several limitations. First, the evaluation was conducted as an online survey in which participants reviewed screenshots and demonstration videos. They did not use the reports after giving their own presentation. Therefore, the results reflect perceived usefulness, clarity, motivation, and preference rather than actual use in a real training situation. Second, the feedback was based on a fictional rehearsal scenario and mock data rather than participants' own presentation recordings. Learners may respond differently when feedback is personally relevant and connected to their own performance.

The study focused on comparing different representations of the same feedback content and did not investigate how automated feedback messages themselves should be generated or formulated. The participant sample was also limited, as many participants were recruited through online survey platforms and university-related contexts. Other user groups, such as school students, professional presenters, or learners with little presentation experience, may have different expectations regarding post-training feedback. In addition, the study focused on perceived reflection support and motivation, but did not measure whether the designs improve presentation skills over time.

Future work should integrate the Rehearsal Report into Presentable and connect report items to the recorded presentation video. This would allow learners to click on feedback points, review the corresponding moment, and relate the feedback more directly to their own behaviour. Such an implementation would make it possible to evaluate the reports in real presentation training sessions rather than through screenshots and demonstration videos. Future studies should also investigate the effect of Rehearsal Reports across repeated practice and explore hybrid designs that combine the structured overview of the storytelling design with the temporal detail of the timeline design.

## 8. Conclusion

This paper investigated how learners perceive different representations of post-training feedback for presentation practice. Three Rehearsal Report designs were developed and compared: a timeline-based design, a chat-based design, and a storytelling-based design. The results of the online study show that participants preferred structured feedback formats over the conversational chat-based approach.

The timeline-based design was especially valued for connecting feedback to specific moments in the presentation, while the storytelling-based design was perceived as particularly easy to understand. In contrast, the chat-based design was appreciated by some participants for its personal and interactive character, but was also criticized for its limited overview and restrictive interaction options.

Overall, the findings suggest that post-training feedback should combine clear structure, visual grouping, and contextual information. For presentation training systems, Rehearsal Reports may therefore complement immediate feedback by providing a structured basis for reviewing performance after the session.

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## Ethics Declaration

The study was conducted as an anonymous online survey with adult participants who voluntarily agreed to participate. No personally identifying data was collected.

## AI Declaration

AI-based writing support was used for language refinement, restructuring, and condensation of existing thesis material. The conceptual content, study design, results, and interpretation are based on the first author's bachelor thesis and were reviewed and edited by the authors.

## References

- Ahn, J., Campos, F., Hays, M., & DiGiacomo, D. (2019). Designing in Context: Reaching beyond Usability in Learning Analytics Dashboard Design. *Journal of Learning Analytics*, 6(2), 70-85.
- Chollet, M., Marsella, S., & Scherer, S. (2022). Training public speaking with virtual social interactions: Effectiveness of real-time feedback and delayed feedback. *Journal on Multimodal User Interfaces*, 16(1), 17-29.
- Gikandi, J. W., Morrow, D., & Davis, N. E. (2011). Online formative assessment in higher education: A review of the literature. *Computers & education*, 57(4), 2333-2351.
- Hummel, S., Schneider, J., Mouhammad, N., Klemke, R. and Di Mitri, D. (2025) "Enhancing presentation skills: key technical features of automated feedback systems – a systematic feature analysis", *International Journal of Technology Enhanced Learning*, Vol. 17, No. 6, pp. 1–25.
- Jariyah A, A., Patak, A. A., & Novia, L. (2025). The Impact of Microsoft PowerPoint Online 'Rehearse with Coach' Feature in Improving BEC Students' Presentation Skills. *JoELEE: Journal of Excellence in English Language Education*, 4(2), 288-296.
- Jivet, I., Scheffel, M., Drachsler, H., & Specht, M. (2017). Awareness is not enough: Pitfalls of learning analytics dashboards in the educational practice. In *European conference on technology enhanced learning* (pp. 82-96). Springer, Cham.
- Maheshi, B., Milesi, M. E., Paliheena, H., Zheng, A., Martinez-Maldonado, R., & Tsai, Y. S. (2024). Data Storytelling for Feedback Analytics. In *Data Storytelling and Learning Analytics Workshop 2024* (pp. 118-123). CEUR-WS.
- McKenna, K., Pouska, B., Moraes, M. C., & Folkestad, J. E. (2019). Visual-form learning analytics: a tool for critical reflection and feedback. *Contemporary educational technology*, 10(3), 214-228.
- Narciss, S., & Huth, K. (2004). How to design informative tutoring feedback for multimedia learning. *Instructional design for multimedia learning*, 181-195(3).
- Nicol, D. J., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in higher education*, 31(2), 199-218.
- Shneiderman, B. (2003). The eyes have it: A task by data type taxonomy for information visualizations. In *The craft of information visualization* (pp. 364-371). Morgan Kaufmann.
- Sichterman, B., Banihashem, S. K., Verstappen, M., Schipper, M., Waisvisz, P., Noroozi, O., & van Ginkel, S. (2025). Can AI feedback stand alone for fostering students' presentation performance? A comparison of AI-only versus teacher-supported AI feedback. *Interactive Learning Environments*, 34(3), 1280-1297.
- Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive science*, 12(2), 257-285.
- Sweller, J., Van Merriënboer, J. J., & Paas, F. G. (1998). Cognitive architecture and instructional design. *Educational psychology review*, 10(3), 251-296.
- Taxipulati, S., Li, Y., Chen, Y., Tian, A. and Huang, Q. (2021) "The Influence of Feedback Content and Feedback Time on Multimedia Learning Achievement of College Students and Its Mechanism", *Frontiers in Psychology*, Vol. 12, 706821.
- Theobald, M., & Bellhäuser, H. (2022). How am I going and where to next? Elaborated online feedback improves university students' self-regulated learning and performance. *The Internet and Higher Education*, 55, 100872.
- Zha, M., & Harrison, L. T. (2019). Designing and Evaluating Feedback Schemes for Improving Data Visualization Performance. *Worcester Polytechnic Institute, Tech. Rep.*