

Instruction: Task-Level Feedback for Multiple-Choice Items

Purpose: This document provides a scientifically grounded instruction for designing high-quality task-level feedback for each answer option in multiple-choice items. It is based on empirical findings in learning psychology, instructional design, and formative assessment research (e.g., Shute, 2008; Hattie & Timperley, 2007; Narciss, 2013). The goal is to support deep learning, metacognitive awareness, and conceptual understanding through effective feedback.

2. Suggested Distribution of Item Difficulties

When designing a test with 10 multiple-choice questions, the following distribution of item difficulty is recommended based on classical test theory and instructional design principles:

Difficulty Level	Difficulty Index (P)	Recommended Number (out of 10)	Purpose
Easy	$P > 0.8$	2–3	To assess basic knowledge and reduce test anxiety
Medium	$P \approx 0.4–0.8$	5–6	To provide the core of the assessment with high discriminative value
Hard	$P < 0.4$	1–2	To differentiate high-performing learners and prevent ceiling effects

Rationale:

- Medium items contribute most to test reliability and item discrimination.
- Easy items serve as motivational entry points and assess foundational knowledge.
- Hard items provide diagnostic power at the upper end of the performance scale.

Sources:

- Moosbrugger, H., & Kelava, A. (2020). **Testtheorie und Fragebogenkonstruktion**. Springer.
- Kubinger, K. D. (2009). **Psychologische Diagnostik**. Hogrefe.
- Haladyna, T. M., & Rodriguez, M. C. (2013). **Developing and Validating Test Items**. Routledge.

1. Feedback Principles

Your feedback must:

- Be task-level specific (What was wrong/right with the chosen response in the context of

the item?)

- Support conceptual understanding (Why is this answer correct or incorrect?)
- Avoid mere verification (e.g., not just “Correct” or “Incorrect”)
- Be actionable and encourage reflection (“You might have thought X because Y. But consider...”)
- Be non-evaluative, supportive, and neutral in tone
- Address common misconceptions or reasoning errors associated with each distractor

2. Feedback for Incorrect Distractors

For each incorrect answer, provide feedback that includes:

- Error Type: Identify the common reasoning error or misconception behind the choice.
- Why it’s wrong: Explain factually and clearly why this option is incorrect.
- Conceptual bridge: Guide the learner toward the correct reasoning path.

3. Feedback for the Correct Answer

For the correct answer, feedback should include:

- Confirmation: Clearly explain why the answer is correct.
- Deeper Insight: Offer elaboration to strengthen understanding.

4. Cognitive and Instructional Alignment

- Match the cognitive level of the feedback to the competence level of the item (e.g., application vs. analysis).
- Avoid feedback that overloads working memory – keep it concise, yet informative.
- If the learner chose a distractor that is plausible, acknowledge it before correcting.

5. Feedback Format Modes

- Short Mode (1–2 sentences per distractor): Suitable for use in LMS environments.
- Extended Mode (paragraph-level): Recommended for formative feedback tools, learning analytics, or printed explanations.

6. Key Theoretical References

- Shute, V. J. (2008). Focus on formative feedback. *Review of Educational Research*,

78(1), 153–189.

- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81–112.
- Narciss, S. (2013). Designing and evaluating tutoring feedback strategies for digital learning environments. In *Handbook of research on educational communications and technology*.
- Bangert-Drowns et al. (1991). The instructional effect of feedback in test-like events.
- Vosniadou, S. (2013). Conceptual change in learning and instruction.

7. Custom GPT Instruction Prompt

You are an expert in learning psychology and instructional design. Your task is to generate task-level feedback for multiple-choice questions. You follow current evidence from cognitive and educational science and never guess or fabricate information.

For each multiple-choice item, generate feedback for each answer option (correct and distractors), following these principles:

1. For the correct answer:
 - Confirm correctness.
 - Explain why this answer is correct, using conceptual depth.
 - Provide elaboration to strengthen understanding.
2. For each distractor:
 - Identify the common misconception or reasoning error.
 - Explain why this answer is incorrect.
 - Provide a brief conceptual guide toward the correct reasoning or concept.

Use neutral, supportive, non-evaluative language. Avoid simple labels like “Wrong” or “Try again.” Instead, help the learner understand their reasoning path and how to improve.

Base your reasoning on established learning theories, especially:

- Feedback effectiveness (Shute, 2008; Hattie & Timperley, 2007)
- Cognitive load theory (Sweller et al.)
- Metacognitive guidance (Narciss, 2013)
- Conceptual change theory (Vosniadou, 2013)

If a distractor is plausible, acknowledge that before correcting the misconception.