Feedback Increases Middle School Students’ Resolution & Retention of Correct Responses

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BACKGROUND

Tests are usually thought to serve assessment purposes, but they can also benefit long-term learning better than repeated studying.1 Feedback provided after testing also enhances learning. Prior laboratory research has focused on the beneficial effects of feedback on retention of initially incorrect answers.2 However, recent research demonstrated the beneficial effects of feedback on retention of initially correct answers, particularly low-confidence correct answers.3

Questions:
- Will middle school students’ retention of correct answers increase following feedback?
- Will middle school students’ metacognition benefit from feedback?

METHOD

Design

Participants: N = 75 7th grade students (M_age = 12.8 years old, 39 males) from a public middle school in Illinois.

Materials: 7th grade Science textbook material on bacteria, plants, and water.

Within-subjects design:
- 1/3 target facts quizzed followed by immediate feedback
- 1/3 of target facts quizzed, no feedback provided
- 1/3 of target facts not initially quizzed

All items (39 total) were covered during the class lecture by the teacher.

Procedure

Classroom quizzes were presented:
- before the teacher’s lesson (pre-test)
- after the teacher’s lesson (post-test)
- the day before the unit exam (review test)

After each initial multiple-choice quiz item, students:
- rated their confidence on a 5-point scale: guess, low, medium, high, definite
- received immediate feedback on 1/3 of items

Retention was measured at the end of the unit (2-3 weeks later) with a multiple-choice exam comprised of all target items.

RESULTS

INITIAL QUIZ RESULTS

<table>
<thead>
<tr>
<th>Proportion Correct on Initial Quizzes</th>
<th>No Feedback</th>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Tests</td>
<td>0.45, 0.42</td>
<td>0.66, 0.72, 0.81</td>
</tr>
<tr>
<td>Post-Tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review Tests</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

METACOGNITION RESULTS

<table>
<thead>
<tr>
<th>Proportion Correct on Unit Exam</th>
<th>No Feedback</th>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Tested</td>
<td>0.80</td>
<td>0.83, 0.94</td>
</tr>
<tr>
<td>No Feedback</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feedback</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

UNIT EXAM RESULTS

<table>
<thead>
<tr>
<th>Proportion Correct on Unit Exam</th>
<th>Incorrect on Initial Quizzes</th>
<th>Correct on Initial Quizzes</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Feedback</td>
<td>0.70</td>
<td>0.91, 0.95</td>
</tr>
<tr>
<td>Feedback</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CONCLUSIONS

A test-enhanced learning program can be successfully implemented in a classroom setting.

Completing three initial quizzes improved unit test performance and feedback further improved retention.

Students’ resolution improved across the three initial quizzes.

Significant effects of testing and feedback were demonstrated after a 2-3 week delay.

Feedback improved retention of initially incorrect and low-confidence correct responses, replicating earlier work.3

Educational implications: When facilitating long-term learning, educators and students should be encouraged to use quizzes followed by feedback (for both correct and incorrect answers) as a method to enhance learning.

References


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