What is an Effective Quizzing Schedule for Middle School Students?

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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

Multiple tests are better than single tests in enhancing learning.1

Feedback provided after testing also enhances learning.2

Prior research supports these principles, yet none have examined a variety of quizzing schedules that promote long-term retention.

METHOD

This research was conducted at a public middle school in Illinois.

Materials

Textbook (genetics) material from 8th grade Science classrooms was used in this study.

Multiple-choice quizzes were followed by immediate feedback.

Within-subjects design: Some of the target facts were tested during lessons, some were not tested, but all items 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)

Students received all eight possible combinations of testing, ranging from zero quizzes to all three quizzes.

Retention was measured at the end of the unit and at the end of the semester with multiple-choice exams comprised of all items (tested and not tested).

UNIT EXAM RESULTS

Students received an exam at the end of the unit (24-hour delay) to measure retention of facts. (N = 91, 7 items/condition)

Testing information led to significant benefits in retention. All conditions, except the pre-test only condition, led to significantly greater retention than the not tested condition (p < .05).

The pre-test + post-test + review test condition led to significantly greater retention than all other conditions, including the review test conditions.

SEMESTER EXAM RESULTS

Students received an exam at the end of the semester (3-month delay) to measure long-term retention of facts. (N = 91, 4 items/condition)

The pre-test + post-test + review test condition was the only condition that resulted in significantly greater retention than the not tested condition (p < .05). All other conditions did not reveal reliable differences.

CONCLUSIONS

A test-enhanced learning program, and a complex experimental design, can be successfully implemented in a classroom setting.

A consistent testing effect was obtained: students better remembered information that was previously tested using classroom quizzes, in comparison to information that was not tested.

On the unit exam, as the number of classroom quizzes increased, students’ retention increased.

However, at the end of the semester, the three-quiz regimen was required to produce significantly greater retention than the not tested condition.

Results are consistent with the notion of desirable difficulty: more effortful learning conditions (e.g., 3 tests) produced larger long-term benefits than less effortful learning conditions (e.g., a pre-test).3

Educational implications: When facilitating long-term learning, educators and students should be encouraged to use multiple quizzes followed by feedback as a method to enhance learning.4

References


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