



EVIDENCE BASED INTERVENTION NETWORK EBI BRIEF

Interspersing Easier Problems in Drill Practices¹

Interspersing easier problems is a way for teachers to slowly introduce a new, targeted item that gets interspersed within mastered items. Instead of constructing assignments with just current problem tasks, assignments have problems that include mastered tasks, along with current skill tasks. As students make progress, mastered items are slowly removed. This intervention allows students to become engaged in tasks, because the assignment fits the students' level, while maintaining the simplicity of the curriculum (Cates & Erkritz, 2007).

Theoretical Support

Students often choose behaviors that require less effort (Logan & Skinner, 1998). In other words, when students select an assignment or choose to behave a certain way, their decision is frequently based on the action that requires the least amount of effort. A student is more likely to engage in the assignment if it does not require significant effort. By re-introducing mastered tasks within current unmastered skills, a student might believe that an assignment involves less effort; in turn they might prefer the assignment. According to Dunlap & Kern (1996), if students are given assignments they prefer, they are more likely to engage in the assignments or tasks. In addition, if students are engaged, then they are more likely to complete an assignment, which may be a strong positive or negative reinforcer in the classroom (Martin, Skinner, & Neddenriep, 2001).

Logan & Skinner (1998) summarized earlier studies (e.g., Cook, Guzaukas, Pressley, & Kerr, 1993), and noted that, students preferred academic assignments when up to 30 % of the items were new items, (versus 100% of the items being new). Essentially, students are partial towards assignments with a mix of mastered and current skill tasks. With interspersing easier problems in drill tasks, the ratio of mastered to targeted skills may decrease as the student becomes more efficient. For example, assignments may start off with a 1:3 ratio, where one mastered skill problem is interspersed after three targeted skill problems, then decrease to a 1:8 ratio, where there are fewer mastered skill problems.

Empirical Support

Logan & Skinner (1998). Logan & Skinner's (1998) study focused on problem completion and students' perceptions of the assignment. The control condition included giving 25 current skill multiplication problems, and the experimental condition included giving those 25 problems, plus 9 mastered skill multiplication problems. The 30 6th grade students were given instructions, 8 minutes to finish each assignment, and a questionnaire, asking which assignment required the most time, most effort, and which assignment they would prefer. The authors found that students preferred the experimental assignment and thought the control assignment took more effort. In addition, the experimental assignment had a higher percentage of problems correct and total number of problems

¹ Written by Ashley Visner, Indiana University Ed.S. student, fall 2010



EVIDENCE BASED INTERVENTION NETWORK EBI BRIEF

completed than the control assignment. This study is a good example of how problems completed may increase a student's perception to prefer a certain assignment.

Billington & Skinner (2002). According to the authors, the purpose of their study was to attempt to “influence students to choose assignments having more target problems, after having completed an assignment with greater target problems” (Billington & Skinner, 2002, p.108). Thirty-five undergraduate students in a psychology course completed two sets of math assignments. Each set included a control assignment, which had 15 multiplication problems, and an experimental assignment, which had 18 current skill multiplication problems and 6 mastered skill multiplication problems. During Assignment Set 1, students were given directions and the first assignment. After 5 minutes, the same directions were given, as was the second assignment. After completing these two assignments, students filled out a questionnaire regarding which assignment was more preferred, more effortful, and more difficult. During Assignment Set 2, students were given the same directions, but instead of waiting 5 minutes to start the second assignment, they were to do both assignments, fill out the questionnaire, and leave the room. Results from the Set 1 questionnaire indicated that the experimental assignment took less effort, was less difficult, and was preferred over the control assignment. Results from the Set 2 questionnaire indicated that, although students had to complete more problems, they still preferred the experimental assignment, thought it was easier, and thought it took less effort. The authors concluded that the students preferred assignments with interspersed mastered skill problems within current skill problems.

Martin, Skinner, & Neddenriep (2001). Unlike current previous research that focuses on math assignments, this study targeted reading. Forty eight 7th graders were given instructions, two grade-level passages, and a questionnaire. To the experimental passage were added two, first-grade level paragraphs. Once the students finished reading the passages, they were asked which one took less time to read, took less effort to read, and which one they preferred. Contrary to the results for math assignment studies, reading results were a little different. Students thought the experimental passage took more time to read and more effort, even though it contained a below grade-level paragraph. Therefore, interspersing easier reading passages are not as significant as interspersing easier math problems.

Summary

Interspersing easier problems in drill practices can be very beneficial, especially when easier math problems get interspersed. Not only is this intervention valuable for students, but also for teachers.



EVIDENCE BASED INTERVENTION NETWORK EBI BRIEF

References

- Logan, P. & Skinner, C.H. (1998). Improving Students` Perceptions of a Mathematics Assignment by Increasing Problem Completion Rates: Is Problem Completion a Reinforcing Event, *School Psychology Quarterly*, 13, 322-331.
- Cates, G. L. & Erkfritz, K. N. (2007). Effects of Interspersing Rates on Students Performance on and Preferences For Mathematics Assignments: Testing the Discrete Task Completion Hypothesis. *Psychology in the Schools*, 44, 615-625.
- Billington, E.J. & Skinner, C.H. (2002). Getting Students to Choose to Do More Work: Evidence of the Effectiveness of the Interspersal Procedure, *Journal of Behavioral Education*, 11, 105-116.
- Martin, J.J., Skinner, C.H., & Neddenriep, C.E. (2001). Extending Research on the Interspersal Procedure to Perceptions of Continuous Reading Assignments: Applied and Theoretical Implications of a Failure to Replicate, *Psychology in the Schools*, 38, 391-400.