

Chapter 14: Spaced Practice in Classrooms

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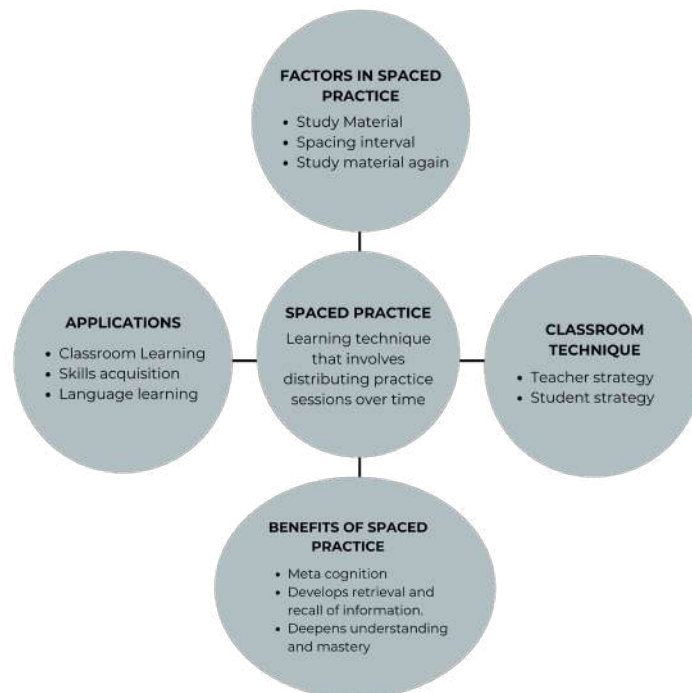
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14.1. Concept Map



14.2 Learning Outcome

After studying this chapter, you should be able to

- Explain the meaning of spaced practice in classroom contexts.
- Distinguish between spaced practice and cramming as learning methods.
- Demonstrate proficiency in using the concepts learned over time with spaced practice.
- Enumerate the advantages and disadvantages of spaced practice in classrooms.
- Discuss the strategies involved in spaced practice in classrooms for effective retention of information learned.

14.3 Clarification of Key concepts

Spaced Practice: Spaced Practice is a learning technique that involves spreading out study or practice sessions over time, rather than cramming all at once. It is a highly effective strategy for improving retention and long-term learning.

Cramming: Cramming is a learning technique where students learn a chunk of information within a short period.

Learning technique: A method or approach used to facilitate the learning process. For example, spaced practice is a learning technique that focuses on distributing study or practice sessions over time.

Retention: The ability to remember and recall information or skills learned over an extended period. Spaced practice enhances retention by reinforcing learning through repeated sessions.

Forgetting curve: A graphical representation that illustrates how memory retention of learned information decreases over time when no practice is undertaken.

14.4 Introduction

Traditional learning methods have gradually fallen out of favour in the present era due to numerous distractions that affect our attention spans, alongside information overload. The key to effective learning and long-term memory retention lies in smoothing out the process with spaced practice. Research has shown that spaced practice is an effective learning strategy (Kahana, 2012). By incorporating spaced practice in the classroom, students can learn more efficiently and acquire more substantial and lasting knowledge and skills (Kornmeier & Sosic-Vasic, 2012).

14.5 What is Spaced Practice?

Spaced practice, also known as spaced repetition or distributed practice, is a cognitive learning strategy that involves spreading out study or practice sessions over time, rather than cramming all learning or practice into one intense session. This approach incorporates attention, perception, and the formation of memories. In this cognitive method, teachers strategically design lessons and assignments that encourage students to revisit previously covered content at spaced intervals. Some scholars suggest that students typically require three to four encounters with new content to process and store it in long-term memory effectively. Each session serves as a rehearsal that scaffolds future learning opportunities (Agarwal et al., 2020).

The concept is based on the idea of the spacing effect, which states that information is better retained and learned when it is presented and reviewed repeatedly over time, with increasing intervals between each session (Kahana, 2012). This indicates that spacing between learning opportunities results in more attentional processing, whereas massed learning leads to less processing (Koval, 2019). This learning technique has proven effective for long-term retention and a deeper understanding of the material.

Instead of studying for several hours in one sitting, spaced practice suggests studying for shorter periods over multiple sessions, with intervals of days or weeks between each session. By reviewing the material repeatedly at spaced intervals, the brain is continually engaged, strengthening memory and reducing the forgetting curve.

A Sample framework of Spaced Practice in the classroom

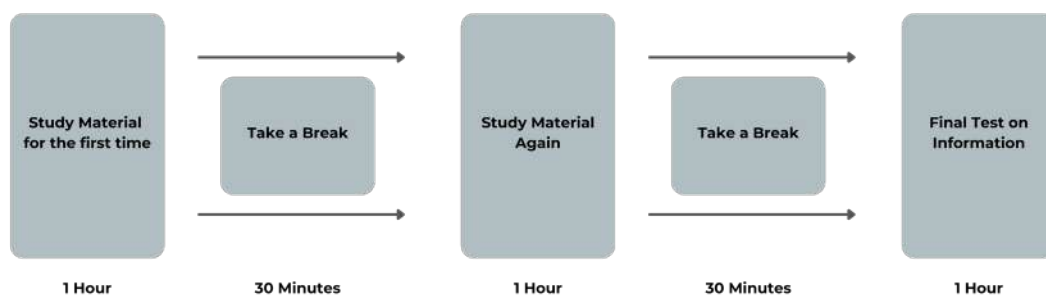


Figure 14.1: A diagrammatic representation of the spaced practice technique, which involves two study periods and two break intervals.

14.6 Spaced Practice Classroom Teaching Technique.

There are several teaching techniques and strategies that teachers adopt to explain concepts to students. However, in this chapter, we will discuss the use of spaced practice as a classroom teaching technique and a learning strategy for teachers and students, respectively.

14.6.1 Teachers' implementation of Spaced Practice as a Teaching method in Classrooms.

The following are some techniques that teachers can incorporate into their teaching methods for spaced practice to enhance effective retention of information:

- **Distributed Practice:** This implies that teachers should divide the learning material into more manageable chunks and space practice sessions over time. Instead of covering everything in one study session, teachers should provide students with regular opportunities to review and apply what they have learned. This can be accomplished through in-class exercises, homework tasks, and tests. The act of retrieval facilitates long-term learning and performance (Kim & Webb, 2022).
- **Spaced Review Sessions:** Teachers should arrange frequent review sessions to revisit information that they have already covered. To reinforce important ideas and ensure long-term retention, these sessions could be held at regular intervals throughout the course or unit. Teachers can allocate a specific amount of time during class or assign individual review tasks or practice questions to students.
- **Feedback and Reinforcement:** Teachers should provide students with prompt feedback and support regarding their learning efforts. Feedback should be specific, helpful, and aimed at enhancing comprehension and application. This feedback helps students improve their knowledge and skills. Teachers can offer feedback on tests, assignments, and class discussions. They should highlight areas that need improvement and recommend further practice or resources.
- **Retrieval Practice:** Teachers should assist students in actively recalling knowledge from memory as opposed to merely reviewing it. Teachers should create exercises and tests that call on students to apply what they have learned in earlier lessons. Teachers should organise quizzes, brief answers, and exercises requiring problem-solving for students to practise on a regular basis.
- **Metacognitive Strategies:** Teachers should encourage students to consider their own understanding and reflect on their learning experiences. This process helps students develop their cognitive skills. Teachers should assist students in developing effective study strategies by promoting metacognition. This approach enables students to recognise their strengths and weaknesses. For instance, teachers can guide students to evaluate their understanding following each study session or to actively reflect on how they have learned thus far.
- **Interleaving:** Teachers should adopt a strategy of combining several subjects or ideas in a single study session to make learning more engaging and interesting. They should also intersperse related or unconnected topics rather than concentrating solely on one. By using this method, students can learn to distinguish between various ideas and apply the relevant information in different contexts.
- **Use of Technology:** Teachers ought to leverage technological tools and platforms that incorporate spaced repetition algorithms. Tools and apps such as Anki, Memrise, SuperMemo, Duolingo, Mnemosyne, Rem-Note, and Quizlet can enhance learning by optimising the timing of study or review sessions.

It is imperative that teachers explain the rationale behind spaced practice to students and help them understand its benefits. Teachers must use careful planning to map out regular intervals for study sessions. These short, frequent review sessions provide learners with ample opportunities to revisit and reinforce their understanding of key concepts (Main, 2022). Thus, students feel reinforced and motivated when they make significant or landmark progress. However, motivation can vary among students; therefore, teachers should be flexible and adaptive in their approach, considering individual differences.

14.6.2 Students adoption of Spaced Practice as a learning strategy

In order to maximise the benefits of spaced practice, students can employ a variety of strategies. Here are some effective tips for learning:

- **Retrieval Practice:** A potent learning strategy is actively retrieving facts from memory. Students should be encouraged to recall information actively. Quizzes, practice questions, and attempting to remember essential

topics without consulting notes are effective ways for students to practise information retrieval. This method aids in transferring knowledge into long-term storage while enhancing memory (Kang, Lindsay, & Pashler, 2014).

- **Seeking Feedback:** Learning can be enhanced by actively seeking feedback from classmates or teachers. Critiques from instructors or peers can significantly improve the learning experience. Students should be encouraged to request feedback and share their work or study materials with others. Constructive criticism can help identify areas that require improvement and provide recommendations for further reading and practice.
- **Self-Testing:** Students actively self-testing encourages memory retention and information retrieval. Students need to test their understanding of previously studied information by using flashcards, summarising important ideas, or responding to questions about the subject matter. Self-testing on a regular basis improves memory and encourages long-term retention of information.
- **Spacing out Study Sessions:** Students should schedule multiple study sessions over an extended period rather than cramming all the material into one. By spreading out their study time, they can review and revisit the content at regular intervals, which aids in long-term retention.
- **Reflective Journaling:** Students must strengthen their comprehension skills by reflecting on the educational process and journaling their ideas and insights. They might discuss what they have discovered, what still challenges them, and any connections they draw between various subjects in their writing. Reflective journaling encourages metacognition, helps students track their development, and identifies opportunities for improvement.
- **Interleaved Practice:** Similar to the teacher's technique, students should blend various topics or concepts while studying, much like a teacher might. They can move between numerous topics during study sessions rather than concentrating solely on one. This approach enhances the ability to apply knowledge in different situations and tests the mental capacity to distinguish between various concepts.
- **Elaboration:** This helps students grasp and retain information when you encourage them to elaborate or provide their own explanations. They can attempt to teach the content to someone else or come up with explanations that connect new knowledge to their prior understanding. This method enhances comprehension and facilitates a deeper level of understanding.
- **Use Technology and Spaced Repetition Apps:** Students must utilise the various apps and tools available that employ spaced repetition algorithms to help them review material at optimal intervals. These can be used for vocabulary, facts, or other discrete pieces of information.

14.7 The following are some Advantages associated with spaced practice technique:

- **Stronger Retrieval Strength:** Studies show that when knowledge is actively retrieved from memory during spaced practice, the brain connections and pathways associated with that knowledge are strengthened. As a result, recalling the information when necessary becomes simpler and quicker.
- **Reduced Forgetting:** The forgetting curve can be slowed down by frequently reviewing previously learned content. Learners can strengthen their memory and prevent material from fading by spreading out practice sessions, ensuring that it remains accessible in the future (Van & Sweller, 2015).
- **Enhanced Learning Efficiency:** The use of study time is optimised through spaced practice. By breaking up learning sessions, students can concentrate on one idea or topic at a time without feeling overwhelmed, maximising their capacity to absorb and process knowledge.
- **Improved Long-Term Retention:** Studies show that the best way to improve long-term retention of information is by encoding and consolidating knowledge into long-term memory through spaced study sessions. This approach can enhance the retention and retrieval of information over an extended period.

14.8 The following are some disadvantages associated with the spaced practice technique:

- **Potential for Procrastination:** Experience shows that, when using a spaced practice strategy, there may be a tendency to postpone studying because you believe you'll have plenty of time to review later. This can result in inefficient time management, adding unnecessary stress and reducing the technique's effectiveness.
- **Requires Time Management:** Effective implementation of spaced practice necessitates long-term planning and scheduling of study sessions. It can be challenging for individuals with hectic or erratic schedules to set aside time and establish a routine that allows for regular reviews. If care is not taken, the likelihood of individuals giving up on the technique is high.

- **Lack of Immediate Gratification:** Spaced practice emphasises long-term learning rather than cramming, which creates an illusion of short-term proficiency. Success and happiness for learners may not be immediate, as the benefits of spaced practice become evident only over time.
- **Increased Perceived Difficulty:** Due to the constant effort and repetition required for spaced practice, it may initially seem more challenging than cramming. Occasionally, particularly during review sessions when learners believe they should have mastered the material, they may feel dissatisfied or discouraged.

14.9 Application of Spaced Practice

Spaced practice is a valuable teaching technique that can be applied across various fields of study and at different grade levels. Below are some ways in which spaced practice can be utilised as an instructional method:

- **Language acquisition:** By spacing out practice sessions for vocabulary, grammar, or speaking skills, spaced practice can be utilised for language acquisition. For reinforcement and to avoid forgetting, learners should practice and review language topics regularly. This can involve routinely engaging in conversations, listening to podcasts, or reviewing flashcards.
- **Education:** Students can use spaced practice to improve their knowledge acquisition and memory. Students can routinely review their content over an extended period rather than studying for significant periods right before an exam. They can strengthen their understanding and enhance long-term retention by spreading out their study periods and going over the content occasionally.
- **Test Preparation:** Strategies for exam preparation can incorporate spaced practice. Students can spread out their study sessions over time, revising the content at regular intervals rather than cramming just before the deadline. This approach reduces forgetfulness and enhances exam performance.
- **Employee Training:** To improve learning and knowledge retention, employee training programmes might utilise spaced practice. Organisations can create training plans with separated practice intervals rather than conducting a single intensive training session. Employees are more likely to remember the material, apply it on the job, and avoid the “forgetting curve” if learning sessions are spaced out and regular review activities are included.
- **Skills Acquisition:** For the acquisition of skills and the enhancement of performance, spaced practice is very helpful. Spacing out practice sessions enables better learning consolidation, whether studying a sport, rehearsing dance moves, or playing an instrument. Students can practice particular abilities or techniques over time, progressively increasing their expertise.

14.10 Conclusion

This chapter has shown that spaced practice, often referred to as distributed practice or spaced repetition, involves spacing out the exercise or review of material over time, rather than cramming it all in at once. Long-term learning and retention are greatly facilitated by this strategy. By employing this approach, students can improve their study habits, deepen their comprehension of the subject matter, and enhance their overall academic performance. Spaced learning tools are increasingly accessible to learners worldwide, offering multilingual support and culturally relevant content.

14.11 Reflective Questions

1. What is spaced practice?
2. How does spaced practice improve learning?
3. State and explain four (4) advantages of spaced practice.
4. Distinguish between spaced practice and cramming methods of studying.
5. What are some strategies for implementing spaced practice in your study routine?

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