

PROGRAMMED LEARNING

For paper 6, Group- B, Chapter -03

Programmed learning is an instructional method that presents information logically, broken down into small steps, each appearing on a separate card or frame. Learners work through the program at their own pace, receiving feedback to confirm their understanding of the material. The key elements of programmed learning are self-pacing, immediate feedback and reinforcement to ensure long-term retention of concepts.

History of Programmed Learning

Programmed learning first emerged in the 1950s and was championed by B.F. Skinner. He is an American psychologist who argued that learning could be programmed like a machine by breaking down subject matter into small units. He utilises the principles of operant conditioning. Programs for learning were developed using a "frame" or "card" approach, where each frame presented a step of new information along with a question or exercise for the learner to complete before moving on.

Examples of Programmed Learning

Some examples of programmed learning are flashcards, worksheets with fill-in-the-blanks, crossword puzzles, multiple-choice questions, true/false statements etc. Technology has enabled the creation of interactive computer-based programs that provide instant feedback and guidance to learners.

Principles of Programmed Learning

- Self-pacing - Learners proceed at their speed without pressure.
- Small steps - New information is presented in small incremental steps.
- Narrow branching -Learners choose from 2 or 3 options at each stage.
- Active responding - Learners actively engage with each step via questions or exercises.
- Immediate feedback - Feedback is provided immediately after each response.
- Repetition and rehearsal- Concepts are repeated with each new step for reinforcement.

- Success-oriented - Small successes keep learners motivated to complete the program.
- Student control - Learners control the pace and progression through the program.
- Reliance on intrinsic motivation -Motivation comes from learners' needs and interests.
- Contingency management-Use of rewards and punishments to shape learners' responses.
- Stimulus control and cueing - Provide cues to trigger correct reactions in learners.
- Extinction of incorrect answers -Do not reinforce incorrect responses of learners.

Applications of Programmed Learning

- Learning languages - Vocabulary lists, dialogues, and grammar rules can be taught through programmed learning techniques.
- Science subjects - Fundamental physics, chemistry and biology concepts can be broken down into small progressive steps and taught through programmed learning approaches.
- Mathematics - Basic arithmetic, algebra, geometry, and other mathematics subjects are well suited for programmed learning methods.
- Teaching skills - Practical skills like typing and using software or tools can utilize the learn-by-doing approach of programmed learning.
- Corporate training - Module-based e-learning programs or simulations can be used for structured training of employees.
- Military training - Procedural and operational skills in the military can use programmed learning techniques.
- Music and art - Fundamental techniques and basic skills in music, painting etc., can be taught using programmed learning methods.
- Test preparation - Programmed flashcards, practice questions, and repetition are effective for exam preparation.
- Learning foreign cultures - Aspects of foreign cultures like customs, etiquette, and history can be programmed for effective learning.
- Self-improvement - Programs for improving memory and concentration span utilize principles of programmed learning.

Types of Programmed Learning

There are several types of programmed learning:

- **Linear programming:** Information is presented sequentially, with the learner proceeding linearly through the program.
- **Branching programming:** Learners are given choices and directed down different pathways within the program based on their responses.
- **Intrinsic programming:** Learners proceed through the program based on their intrinsic motivation to learn the material.
- **Extrinsic programming:** Learners are motivated through external rewards and punishments.
- **Continuous reinforcement programming:** Learners receive feedback after every response.
- **Partial reinforcement programming:** Learners receive intermittent feedback, not after every response.
- **Precision teaching:** Specific, measurable behavioural objectives are defined and learners master material one step at a time.
- **Computer-based programming:** Programs are delivered through software on a computer with interactive exercises and instant feedback.
- **Multimedia programming:** Use of a combination of media like text, audio, video and animations within programmed materials.
- **Customized programming:** Programs tailored to individual learners' specific needs, interests and abilities.
- **Mastery learning:** Learners must demonstrate mastery of one unit before proceeding to the next to ensure full understanding.

Advantages of Programmed Learning

- **Self-pacing:** Learners can proceed at their speed without external pressure.
- **Thorough coverage:** The step-by-step framework ensures completeness of learning.
- **Immediate feedback:** Learners know quickly if they have understood the material correctly.
- **Repetition:** Repeating concepts with each new step reinforces learning and retention.
- **Motivation:** Small successes keep learners motivated to complete the entire program.

Disadvantages of Programmed Learning

- Lacks interaction - Programmed learning needs more opportunities for interaction between learners and instructors, which some students need.

- Difficult to develop effective programs - It can be challenging to develop programmed learning materials that are truly effective.
- Ignores individual differences - Programmed learning tends to ignore differences in individual learners' learning styles, interests and abilities.
- Limited development of higher-order skills - Programmed learning mainly focuses on the recall of facts with limited scope for developing analytical, critical thinking and creative skills.
- Can be boring and mechanical - The repetitive and rigid framework of programmed learning can become boring and mechanical for some learners.
- Unsuitable for dynamic subjects - Programmed learning is less effective for subjects with continuously evolving and changing content.
- Rewards guessing -Learners who guess correctly can proceed through programmed material without fully understanding concepts.
- Creates dependence - Learners may become overly dependent on the guidance and feedback provided in programmed learning.
- Impersonal nature - The lack of a human instructor can make programmed learning appear impersonal and machine-like for some learners.
- Ineffective for Motivated learners - Motivated learners may find the rigid structure and pacing of programmed learning restrictive.

Conclusion

Programmed Learning is a highly effective and efficient education and skill development approach. It utilizes carefully designed instructional materials and interactive techniques to promote self-paced learning and mastery of specific concepts or skills. The method's origins can be traced back to the early 1950s when behavioural psychologists and educators recognized the potential of using technology to enhance learning.