

Federation for Self-financing Tertiary Education (FSTE)

Intensive Teacher Training Programme: Module 3: Understanding student learning and the design of learning activities

Lesson Two: Teaching and Learning Theories

Brief Notes and Suggested Reading

This brief note intends to give participants the blueprints of the contents covered in Lesson Two. Suggested readings are listed to facilitate participants in accessing the sources and to obtain more detail information.

Topics covered in this lesson:

1. Behaviourism
2. Information Processing Theory
3. Cognitive Learning Theory
4. Social Learning Theory

Theories of Teaching and Learning

The purpose of studying educational theory is to provide teachers with a theoretical basis for them to apply appropriately the skills provided by these theories to make their teaching more effectively. The theories of teaching and learning are the conclusions from the researches, so there are many such theories. Due to the limited amount of time, this chapter is confined to those major ones that can be applied in sub-degree programmes, such as behaviourism, information processing theory, cognitive psychology and social learning theory.

1. Behavioural Learning Theory (Behaviourism)

B.F. Skinner became very famous after using the behavioural learning theory to train rats and pigeons to perform specified actions successfully. The theory lays the principles of training animals such as dolphins, sea lions, police dogs etc. It is also widely used in teaching in schools.

(i) Basic Theory:

Behaviourism operates on the principle of “stimulus-response (S-R).” It is believed that all behaviours can be caused by external stimuli (operant conditioning) without the need to consider internal mental states or consciousness. Thus behaviourism assumes that a student is essentially passive, responding to environmental stimuli. Behaviour is shaped through positive or negative reinforcements. Positive

reinforcement increases the probability that an expected behaviour will happen while the negative reinforcement decreases the probability of the appearance of such behaviour.

(ii) Applications of Behavioural Learning Theory in teaching:

The most useful behavioural learning theory in teaching practice is also the simplest one: to strengthen the behaviour you want it to repeat by positive reinforcement. The main criteria in using reinforcement in teaching are as follows:

- (a) Decide what behaviour you want students to perform. When these behaviours emerge, strengthen them. For example, if you want the participants to respond to your teaching, when one of them gives a positive response, you praise him or her immediately.
- (b) Tell your students how you want them to react. When they display these actions you strengthen them by praising these students, and tell them why you do so.
- (c) When an appropriate behaviour appears, reinforce it as soon as possible. Immediate reinforcement is more effective than delayed reinforcement.

(iii) Three Rewards: Three types of rewards are very effective ways of reinforcement:

- (a) Appreciation: When students show a correct behaviour, either a "thumb up" sign, a recognising or an appreciative look, a similar facial expression, a smile or a nod can be a very effective positive reinforcement.
- (b) Praise: Common praises such as "Excellent", "Perfect", "Doing very well" can be used. Students who did not do very well can be praised first before making the correction, such as "doing very well here, but it's a pity that there is still a bit imperfect here. It would be perfect if it was done this way. Do you agree?"
A list of 99 praises is appended for your appreciation and utilisation.
- (c) Reward: Give some interesting gadgets, such as key chains with printed slogan or small toy fire extinguisher, LED lights, food such as candies, fruits, snacks, etc. to students who give correct answers to questions or who did well in exercises a certain number of times. These are positive reinforcements. But be very careful when using physical rewards. Don't let students have the feeling of bribing them.

The most powerful reinforcement in adult education is appreciation, followed by praises. Rewards have to be used with care so as not to make adverse effects.

Teachers should encourage students by means of these "three types of rewards" as far as possible. When a student makes a successful attempt, besides praising him, the teacher should also encourage him to appreciate himself, to enjoy his success, to self-reinforce, and thereby enhances his confidence. When students do not concentrate on school work, a severe gaze can be a negative reinforcement.

2. Information Processing Theory

(i) Basic Theory:

While behaviourism focuses on the external observable learning behaviours, some scholars tried to use the model of computer operation to understand human learning and memory process (Ormrod, 2000). According to their assumptions of

the models, the human brain is similar to the computer, with sensory registers, short-term memory (also known as working memory) and long-term memory. Human sensory organs lead to the sensory registers. Although a lot of information is received by the eyes, ears, mouth, nose, hands and skin, but many are lost. Only the information that attracts attention will be sent to the short-term memory. This information will stay in the short-term memory in 5-20 seconds. If the information is processed with the existing knowledge to form meaningful new knowledge during this time, it will be sent to the long-term memory for storage. Otherwise it will be lost.

(ii) Applications of Information Processing Theory in teaching:

Use as much as possible a variety of learning modes to stimulate students' senses to attract their attention. In addition to seeing with their eyes and hearing with their ears, the best practice is to give students some hands-on experiences. Remind students and gain their attention so that the information can enter into their short-term memory. With the limited short-term memory, do not instil too much to exceed its capacity. Allow more time for students to digest, so that the new knowledge can be integrated with existing knowledge to form their own knowledge, and facilitate the storage to the long-term memory. If time permits, it may be worthwhile to repeat the main points once or twice, so that students can remember them better. Teachers can ask one of the bright students to repeat first, then a mediocre student, and finally a poor student to repeat, with some minor variations, thus the main points are repeated a few times.

3. Cognitive Learning Theory

(i) Basic Theory:

Cognition refers to the act of knowing. Thus cognitive skills refer to concentration, perception, memory and logical thinking. The following are some of the main points in cognitive learning theory.

- (a) Cognitive skills are underlying mental abilities and are not the same as the academic knowledge acquired in the classroom.
- (b) Cognitive skills can change and improve.
- (c) Malfunctioning cognitive skills make learning difficult and frustrating.
- (d) Specific cognitive skills testing is the best way to identify which cognitive skills are the cause of a learning problem and need strengthening.
- (e) With the right information and training, every child can experience learning that is easy, fast, and fun.

(ii) Applications of cognitive Learning Theory in teaching:

Students' experiences should be fully utilised so that they new learning can be integrated with the existing experiences to facilitate understanding and retention. This is consistent with the Information Processing Theory mentioned above. If the teacher can put the contents into jingles, songs, verses or lists, students would feel easier to write them down, and they can be retained in memory for much longer time.

4. Gagné's 9 General Steps of Instruction

(i) Basic Theory:

The principles of Behaviourism, Information Processing Theory and Cognitive Learning Theory can be integrated into a practical teaching strategy. R.M. Gagne formulated an effective teaching strategy in nine steps. They are as follows:

(a) **Gain attention:**

Present an interesting video clip, a multimedia advertisement, a challenging question, a new situation, or asking question to help motivating students to learn and grounding the lesson.

(b) **Inform learner of objectives:**

Let students foresee what they will be able to accomplish and how they will be able to use the knowledge. Give a demonstration if appropriate.

(c) **Stimulate recall of prior knowledge:**

Remind the student of prior knowledge relevant to the current lesson (facts, rules, procedures or skills). Show how knowledge is connected, provide the student with a framework that helps learning and remembering. Tests can be included.

(d) **Present the material to be learned:**

Present the learning materials in various formats, such as text, pictures, figures, graphics, simulations, sound, etc. so as to stimulate students' senses. Present information in small pieces to avoid memory overload and to facilitate recall of information.

(e) **Provide guidance for learning:**

Use different strategies and media to help students to learn.

(f) **Elicit performance:**

Let the student do something with the newly acquired behaviour, practice skills or apply knowledge.

(g) **Provide informative feedback:**

Praise the students for their correct responses. Analyze student's behaviours and give them instant feedback.

(h) **Assess performance:**

Give students a test, after the lesson has been learned.

(i) **Enhance retention and transfer:**

Ask students to make summary of the lesson. Use jingles, mnemonics, rhymes, songs or other memory tools to help students to memorise the main points. Inform students about similar problem situations. Provide students with additional practice. Help students to transfer their knowledge to other situations.

(ii) Applications of Gagne's 9 General Steps in Instruction:

Teachers in the planning and conducting lessons should make full use of Gagne's nine steps of instruction.

Firstly, in the preparation of the lesson, the teacher should identify the main points, the difficult, confusing, and interesting or arousing areas in the lesson. Secondly, set the learning objectives according to the learning ability and age differences to give maximum coverage of students. When come to the classroom, the teacher uses the

most motivating way to arouse students' interest, and inform them of the usefulness they can expect. The teacher can also challenge the use with their prior knowledge and let them compare it with the new knowledge. The teacher can provide demonstrations and let students to simulate. Positive feedback such as praises and admiration should be used frequently to enhance learners' confidence. Design interesting jingles or mnemonics to help students to memorise important points. At the end of the lesson, ask students to make verbal summaries of what they have learnt.

5. Social Learning Theory

(i) Basic Theory:

Bandura opined that people's beliefs about their efficacy can be developed by four main sources of influence

1. The most effective way to gain a strong sense of efficacy is through successful experiences. Successes in doing something strengthen one's personal efficacy. Failures weaken it. Frequent successes overcome occasional failures and build resilient sense of efficacy.
2. The second effective way to strengthen self-efficacy is through vicarious experiences. By observing peers successfully doing similar tasks, people will believe that they too possess the capabilities to succeed in doing the tasks. Similarly, seeing peers fail in performing a task successfully will lower their self-efficacy.
3. Social persuasion can also strengthen people's self-efficacy. People persuaded verbally by credible teachers or models are more inclined to believe that they have the capabilities to master the given activities and will mobilise greater effort to learn successfully. However, it is easy to undermine people's self-efficacy by persuasion. People who have been persuaded that they lack capabilities to do something tend to avoid these activities which may cultivate their potentials and give up quickly when facing difficulties.
4. Self-efficacy can be enhanced by reducing students' stress reactions and altering their negative emotions and misinterpretations of their physical states. Mood also affects students' judgment of their self-efficacy. Positive mood enhances self-efficacy while despondent mood diminishes it.

(ii) Application of Social Learning Theory in teaching:

In the teaching process, give students chances to practice or demonstrate, or even show off. Ask other students to observe the demonstrator carefully and to find out the good points and areas for improvement. Arrange the learning tasks from easy to difficult so that students have higher possibility of success in each task. Try to find out the good points and praise the students for the good work when they do the tasks. Encourage students to admire their own success and appreciate the effort they contributed. When a student performs a good job, encourage the whole class to clap hands for him or her.

Conclusion:

Teaching is an art. It needs a mixture of skills and knowledge of various teaching and learning theories underpinning these skills. But most of all, it is the devotion, care and concern for the students that is important. If a teacher is devoted to help his/her students, he/she will try all the methods and will eventually become an excellent teacher. We are looking forward that you will become one of the best teachers in sub-degree level in the tertiary institutions. Cheers!

Reference:

Skinner, B. F. (1948). 'Superstition' in the pigeon. *Journal of Experimental Psychology*, 38, 168-172.

[http://en.wikipedia.org/wiki/B. F. Skinner # Theory](http://en.wikipedia.org/wiki/B._F._Skinner_#_Theory)

<http://www.learningrx.com/cognitive-learning-theory-faq.htm>

[http://edutechwiki.unige.ch/en/Nine events of instruction](http://edutechwiki.unige.ch/en/Nine_events_of_instruction)

[http://de.rverson.ca/portals/de/assets/resources/Gagne%27s Nine Events.pdf](http://de.rverson.ca/portals/de/assets/resources/Gagne%27s_Nine_Events.pdf)

<http://www.smart-goal-setting-tips.com/self-efficacy-i.html>

99 WAYS TO SAY* VERY GOOD!

1. SUPER GOOD!
 2. You've got it made.
 3. SUPER!
 4. That's RIGHT!
 5. That's good.
 6. You're really working hard today.
 7. You are very good at that.
 8. That's coming along nicely.
 9. GOOD WORK!
 10. That's very much better!
 11. I'm happy to see you working like that.
 12. Exactly right.
 13. I'm proud of the way you've worked today.
 14. You are doing much better today.
 15. You've just about got it.
 16. That's the best you have ever done.
 17. You're doing a good job!
 18. THAT'S IT!
 19. Now you've figured it out.
 20. That's quite an improvement.
 21. GREAT!
 22. I knew you could do it.
 23. Congratulations!
 24. Not bad.
 25. Keep working on it, you're improving.
 26. Now you have it!
 27. You are learning fast.
 28. Good for you!
 29. Couldn't have done it better myself.
 30. You are a joy.
 31. One more time and you'll have it.
 32. You really make my job fun.
 33. That's the right way to do it.
 34. You're getting better every day.
 35. You did it that time!
 36. You're on the right track now!
 37. Nice going.
 38. You haven't missed a thing.
 39. WOW!
 40. That's the way!
 41. Keep up the good work.
 42. TERRIFIC!
 43. Nothing can stop you now.
 44. That's the way to do it!
 45. SENSATIONAL!
 46. You've got your brain in gear today.
 47. That's better.
 48. That was first-class work.
 49. EXCELLENT!
 50. That's the best ever!
 51. You've just about mastered that.
 52. PERFECT!
 53. That's better than ever.
 54. Much better!
 55. WONDERFUL!
 56. You must have been practicing.
 57. You did that very well.
 58. PINE!
 59. Nice going.
 60. You're really going to town.
 61. OUTSTANDING!
 62. FANTASTIC!
 63. TREMENDOUS!
 64. That's how to handle that!
 65. Now that's what I call a fine job.
 66. That's great.
 67. Right On!
 68. You're really improving.
 69. You're doing beautifully.
 70. Superb!
 71. Good remembering!
 72. You've got that down pat!
 73. You certainly did well today.
 74. Keep it up!
 75. Congratulations. You got it right.
 76. You did a lot of work today!
 77. Well, look at you go!
 78. That's It!
 79. I'm very proud of you.
 80. MARVELOUS!
 81. Hike that.
 82. Way to go!
 83. Now you have the hang of it.
 84. You're doing fine.
 85. Good thinking!
 86. You are really learning a lot.
 87. Good going.
 88. I've never seen anyone do it better.
 89. Keep on trying!
 90. You outdid yourself today.
 91. Good for you!
 92. I think you've got it now.
 93. That's a good (boy/girl).
 94. Good job, (student's name).
 95. You figured that out fast.
 96. You remembered!
 97. That's really nice.
 98. That kind of work makes me happy.
 99. It's such a pleasure to teach when you work like that!
- When asked, "How are you"?* Reply: SUPER GOOD.
BUT I'LL GET BETTER!

*From County of Strathcona's Teaching Today Magazine From
Mulcahy, Marfo, Peat. and Andrews. 1986, p. 220