

# How to design a comprehensive lesson plan

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## Abstract

Lesson planning is an indispensable element of constructive teaching-learning process providing the instructor with a coherent framework of teaching and assisting with the smooth flow of the lesson. It is essential for medical educators to be mindful of the characteristics of a sound lesson plan and be well-informed of the pre-requisites of creating a good lesson plan. Robert Gagne a renowned American psychologist has done a remarkable job in the field of instructional designing. He organized the critical steps of lesson planning into nine events which he termed as events of instruction. By adhering to these steps one can achieve the targets set for constructing a sound lesson plan. Gagne in his theory focuses mainly on the outcomes and how following these steps can influence the student learning behaviours. Instructional designing gives structure to the lesson and positively influences the student learning.

## Practice points

1. Why lesson planning is essential? It provides structure and organization to a lesson which positively influences student learning behaviour.
2. What should a teacher know prior to formulating a lesson plan? Components of a lesson plan, capabilities of students and an in-depth knowledge about the subject matter.
3. What is an instructional design? Gagne used this term for a lesson plan. He organized the critical steps of lesson planning into nine events.
4. Why follow the events of instruction? Following these steps lead to a systematic teaching-learning process.

**Keywords:** Curriculum

## Article

### Introduction

A lesson plan is a written guide for trainers in order to achieve the intended learning outcomes. It specifies the learning objectives, equipments, instructional media material, requirements, and conduct of training (educational dictionaries). Lesson planning is essential for directing goal-directed teaching,

providing an outline for a smooth flow of a teaching session, making the teacher more organized, and helping him or her to achieve the set targets within the given frame of time.

### **What is meant by an Instructional design?**

Robert Gagne has used the term **Instructional design** for a lesson plan and described it as a structure which makes the acquisition of knowledge and skills more effective and efficient, is appealing to the learner and is enduring, that is the information is stored in the long term memory and can be recalled when required (Gagne et al. 1992). Another important characteristic of a good lesson plan is that it is mutable; it guides rather than dictating a teacher (Linda Jensen 2001). What should a teacher consider when writing a lesson plan? A teacher should be well informed of the abilities and the learning preferences of students, their cultural backgrounds, the different learning styles, their ability to engage in a discussion and their prior knowledge. He or she should have a grip over the subject matter being discussed and know about the instructional material or equipment that will be needed to make the whole process successful (Teachnology 2010).

### **Components of a lesson plan**

It is important for a teacher to have knowledge about the components of a lesson plan, which is the profile, the objectives, materials/equipment, the procedure and assessment. For example if one is planning a lesson on **anti-diabetic medication**, he/she should be aware of the grade of class and its strength, should specify the objectives first, and make a list of the materials/equipment needed, then work on the activities one intends to include in the lesson, keeping in mind the objectives. In order to evaluate if the objectives are achieved or not, assessment activities, such as quizzes should be included (Table 1).

### **Events of instruction**

Robert. M Gagne, a psychologist well known for his work on instructional design has sequenced the appropriate steps into nine events which he has given the name of “**events of instruction**”. Instructional design theories are greatly influenced by the **theory of behaviourism and cognitivism** (Molenda 2002). Gagne’s events of instruction are also informed by these theories.

#### **1) Gaining Attention**

According to Gagne’s steps of instruction, before starting the lesson, gaining attention of the learners is an important step. In order to capture the attention of the learners, a stimulus should be provided, that arouses interest in them (Khadjooi 2011). This can be done by presenting a real life scenario or a short video of a patient with diabetes.

#### **2) Informing the learner of the objectives**

The objectives are the driving force behind a lesson plan (Gagne et al. 1992). These are the comprehensive set of statement exactly what will a student be able to achieve after a successful study (Adams 2004). Learners will have a clear understanding of their goals and will develop an insight towards the main content. Defining the learning outcome will motivate the learner to complete the lesson (Khadjooi 2011). Every step in the instructional design will be decided by the objectives so it can be considered as a pre-requisite for all the steps.

#### **3) Stimulating recall of prerequisite knowledge**

The **subject matter structure** refers to the various interrelationships among the components of the subject matter. *Learning pre-requisite relations* must be identified before the new information is provided. A *Learning pre-requisite relation* is the obligatory information learner must have, in order to understand the new information that is intended to be provided (Merill et al. 1994). A teacher should be aware of the other information, related to the topic intended to be taught and therefore encourage

the students to review those in order to have a better understanding of the subject. This can be done before starting the discussion of the main topic, stimulating the students by asking some questions that will coerce them to recall their prior knowledge of insulin, its functions and the pathologies involved in type 1 and 2 Diabetes and then allowing a small group discussion in which exchange of ideas take place, helping every participant develop a more extensive and deep knowledge. This action is based on the theory of **social constructivism** (Vygotsky 1978). The recalling of this knowledge will make their mind a fertile ground for the plantation of the new seed (new information).

#### 4) Presenting the stimulus material

The new content can be presented by various ways. The choice of the teaching technique can be based upon many factors but anything promoting the process of conceptualization should be preferred. Taking the topic into account, the lesson can be presented as a Power point presentation using the projector, discussing with the students the different treatment regimens available for diabetes, the detailed mechanism of action of drug, the benefits and the various adverse effects. Relevant questions would be appropriate to ask especially at the point where the main topic relates to the reviewed information so that the integration and bridging between information takes place, that helps develop the process of conceptualization and maintaining the link of the new information with the prior knowledge. It will also help the students to actively engage in the discussion, stimulating the thought process in them as evidenced by the **theory of constructivism**. The **Serialist learners** will especially be benefitted by such activities, who learn the content step by step, building a logical and structured framework of knowledge (Pask 1976). **Convergers** will also derive benefit from this, who tend to follow a line of argument, in a stepwise fashion and reaching on the right conclusion (Hudson 1996). This step is allied with the previous step.

#### 5) Providing learning guidance

Presenting the knowledge into real life scenarios is essential to build a clinical approach towards the subject. The information of the main content is a pre-requisite for this area. A real life scenario of a Diabetic patient, with a short question at the end that requires students to do some brainstorming, answering the question keeping in mind the knowledge of the anti-diabetic medication and associating it clinically will result in a better understanding and long term memory of the subject, evidenced by the **theory of cognitivism**. Such activities will help the learners, making the stimulus as meaningful as possible (Khadjooi 2011) and will be favourable for those students with an **activist** learning style who are open minded and tackle problems by brainstorming (Honey and Mumford 1986) or those who are **divergers** producing novel approaches to problems (Hudson 1966).

#### 6&7) Eliciting the performance and providing feedback

Eliciting performance provides an opportunity for learners to confirm their correct understanding (Khadjooi 2011). It is especially important when a skill is being taught. For the above lesson the teacher can prepare some real life scenarios and the students will be encouraged to answer these with the information they have just learned. Based upon the overall performance of the student, feedback will be provided. Appreciating the students for their active participation will help reinforce such behaviour (Positive reinforcement). One can ask the students for their feedback too, which will help the teacher to plan lesson in the future.

#### 8) Accessing the performance

Assessment is done to ensure that the learning outcomes are met. It should preferably be done by the teacher so as to ensure completely that the students know what are taught and to know how far he/she has been successful in attaining his/her targets. It can be done via a handout of mcqs, oral questioning and quizzes. This step will be greatly influenced by the time of the lesson.

## 9) Enhancing retention and transfer

The session can be closed by repeating the keys concepts of the subject, highlighting their importance in practical medicine or asking students to repeat the key points. The repetition of the learned concept is an effective means of enhancing retention (Khadjooi 2011). Gagne has placed such activities under the event of “*enhancing retention and transfer*”.

### Conclusion

Lesson plan is a vital component of systematic teaching-learning process, giving structure to the objectives, resulting in a better understanding of the subject (Khadjooi 2011). As Gagne himself says, “organization is the hallmark of effective instructional materials”. Instructors can follow the above steps to give their lesson a systematic flow within the provided restraints of time. However amendments to these steps can always be done according to the requirements of a particular lesson. The interest of the instructor should lie in promoting student learning and changes to these steps should be made preferably to enhance the process of conceptualization.

### Glossary Items:

**Theory of constructivism:** It is based on constructing a new set of information on prior knowledge and extracting a meaningful idea that demonstrates the ability of structuring and organizing knowledge based on one’s own judgment ( Kaufman 2003 ).

**Theory of social interaction:** Interaction among participants results in the exchange of ideas and experiences, helping in their cognitive development ( Vygotsky, 1978 ). Theory of social constructivism can go hand in hand to the theory of constructivism to provide the best learning outcomes.

**Theory of behaviourism:** It is based on the principle of stimulus-response ( Thorndike 1905). Positive reinforcement (rewarded on a desired behaviour), Negative reinforcement (removal of an unpleasant stimulus, reinforces desired behaviour), Punishment (applying an unpleasant stimulus to undermine an undesired response) can assist in achieving the desired response in the learners ( Skinner 1953 ).

**Theory of cognitivism:** This theory is based on the thought process behind a behaviour. Changes in behaviour are used as indicators, as to what is happening inside a learner’s mind ( Schuman 1996 ).

**Table 1**

Components	Inclusions of the components
Profile (basic information about lesson and class)	Title of lesson: <b>Anti-diabetic medications.</b> Subject: <b>Pharmacology.</b> Level of class: <b>Third year medical students</b> Strength of class: <b>100 students (Approx)</b>
Objectives (What you the students should know or be able to do at the end of lesson)	Students should know about <ul style="list-style-type: none"> <li>• The different treatment regimens available for diabetes.</li> <li>• Mechanism of action of drugs.</li> <li>• Effects and side effects on body.</li> <li>• Contra-indications and interactions with other drugs.</li> <li>• Apply this knowledge in practice of medicine.</li> </ul>
Materials/Equipment needed to conduct the lesson.	<ul style="list-style-type: none"> <li>• Multi-media</li> <li>• Mike</li> <li>• Pointer</li> <li>• Checklist</li> <li>• Hand-outs</li> </ul>
Procedure (What method you follow to organise your lesson)	Follow the Gagne’s nine events of instruction.  (Other methods that can be used are Peyton’s steps, Hunter’s steps and 5E’s model)
Assessment (Activities included to ensure that learning outcomes are achieved)	<ul style="list-style-type: none"> <li>• Oral questioning and answering</li> <li>• Hand-outs with multiple choice questions.</li> </ul>

**Table 2**

**Gagne’s Events of Instruction**

Session title: Anti-diabetic medications

Student / trainee level: Third year medical students

Level	Activity
1	Gaining attention  Presenting the students with a real life scenario. A middle aged, obese man comes to you, who recently was diagnosed with Diabetes Mellitus. He tells you that since when he was informed about diabetes, he is exercising regularly and taking a diabetic friendly diet but none of these has worked and his blood glucose levels are still poorly controlled. He asks you about the various treatment regimens available for Diabetes. He seems a bit concerned about the side effects of the various drugs. What information would you provide him?  In addition to the scenario a picture of a middle aged obese man would add to the effectiveness of the scenario.
2	Informing learner of  A slide shown to the learners informing them about the objectives. <b>AT THE END OF THE SESSION YOU WILL KNOW ABOUT</b>

	objectives	<ul style="list-style-type: none"> <li>• Various treatment regimens available for different forms of diabetes.</li> <li>• Mechanism of action of the anti-diabetic medication.</li> <li>• Effects of the drugs on the body and the various side effects involved with the use of these drugs.</li> <li>• Contra-indications and interactions with other drugs.</li> <li>• How to apply the knowledge of anti-diabetic drugs in real life medicine.</li> </ul>
3	Stimulate recall of prior learning	A short question answer session and discussion about the prior knowledge of normal release of insulin in the body, factors responsible for insulin release, functions of Insulin in the body, effects of insulin deficiency on the body and the various pathologies involved in type 1 and type 2 Diabetes Mellitus.
4	Presenting stimulus	Presenting the new material using a power point presentation. Detailed explanation about the various regimens, their mechanism of action, their benefits and the various side effects involved. Relating the new content with the prior knowledge. For example when discussing the mechanism of action of the drugs of group Sulfonylureas, relating it to the process of normal release of insulin. Emphasizing on the keys points and giving time to the learners and yourself to do reflective thinking.
5	Providing learning guidance	Presenting real life scenarios and discussing it with learners. A 75 year old diabetic male, who come to you with complaints of renal dysfunction. Prior to giving any treatment to this patient, you ask about the medications which he is currently taking and he tells you that he is taking Metformin for his diabetes. What appropriate action would you take? ( More real life scenarios can be added in this event depending upon the limitation of time, needs of the subject, level of understanding and preferences of students)
6	Eliciting performance	Giving students the opportunity to formulate their action plan concerning the scenario and discussing it with the fellow students. For the above scenario, the student using the knowledge of the adverse effects of diabetes will indicate that Metformin should be immediately withdrawn as it increases the risk of lactic acidosis in patients with renal dysfunction.
7	Providing feedback	Giving students feedback about their participation during the session. Appreciating them if they have done well and encouraging them if they are too relaxed to learn and actively participate. Feedback from the learners about how this session has informed them of the various treatment regimens of diabetes and their practical application in medicine. What are the deficiencies they find in this interactive session and how these can be improved?
8	Assessing performance	A handout can be given to all students that consist of a small number of multiple choice questions that will inform them about the core knowledge of the anti-diabetic drugs.
9	Enhancing retention and transfer	Repeating the keys points or asking students to repeat the key points of the session.

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## **Declaration of interest**

The author reports no declaration of interest.