Introduction
Learning is the process of growth and development whereby the learner acquires a body of knowledge, develops ideas which one makes a part of oneself and develops the ability to use such knowledge in the pursuit of chosen ideals. Learning is a part of education, which brings modification of behaviour. Teaching is a process which facilitates learning by encouraging learners to think, feel and do. Teaching is a system of directed and deliberate actions that are intended to induce learning through a series of activities designed to induce learning (Heidgerken, 1953). Both teaching and learning involve series of actions and activities. A model tries to explain the concepts involved and its interrelationship. It is a visual aid or a picture which highlights the main ideas and variables in a process or a system. Many researchers have tried to put together classroom or school-based models that describe the teaching-learning process. The main models discussed and compared are by Carroll (1963), Proctor (1984), Cruickshank (1985), Gage and Berliner (1992) and Huitt (1995). This article aims at explaining the various models of teaching-learning process and their application in nursing.

1. John Carroll’s Model
It is basically related to school learning. However, it can be applicable to nursing. Carroll states that time is the most important variable in school learning. A simple equation for Carroll’s model is:

\[ \text{School Learning} = f(\text{Time spent} / \text{Time needed}) \]

Time spent is the function of opportunity and perseverance. Opportunity is determined by the class room teacher; the specific measure is called allotted or allocated time (that is allocated for learning by class room teacher). Perseverance is the students’ involvement with academic content during that allocated time. Carroll proposed that perseverance be measured as the percentage of the allocated time during which students are actually involved in the learning process, and was labelled engagement rate. Allocated time multiplied by engagement rate produced the variable which Carroll proposed as a measure of time spent, which came to be called engaged time or time on task

\[ \text{Time on Task} = \text{Engagement Rate} \times \text{Time allocated for teaching and learning} \]

Students can learn if:
They are given enough time to learn the concept and information taught in school and are provided quality instruction. By quality instruction it is meant that the teacher should:

1. Organise subject matter into manageable learning units
2. Develop specific learning objectives for each unit
3. Develop appropriate formative and summative evaluation measures with

Opportunity: It depends upon the allocated time for theory and practical for each subject by the Indian Nursing Council, the university, the institution, faculty planning, faculty commitment and the ability to provide comprehensive teaching-learning experience.
sufficient time allocations
(4) Plan and implement
group teaching strategies
with sufficient time allo-
cations, practice opportu-
nities and corrective in-
structions for all students
to reach the desired level
of mastery.

2. Proctors’ Model
This model emphasises the
importance of schools’ social
climate in the teaching-learn-
ing process. The school cli-
mate is influenced by a num-
ber of factors. The two impor-
tant factors are student char-
acteristics and the interac-
tion among the individuals
involved in the schooling pro-
cess.

Application in Nursing
Student learning = School
climate.
Student characteristics + In-
teraction among the individu-
als
Student learning or achieve-
ment is directly proportional
to school climate.
School climate = Student
characteristics + interaction
among the individuals

Student characteristics in-
clude race, gender, eco-
nomic level and past aca-
demic performance, attitudes,
 norms, beliefs and prejudices.
 Interaction includes the
input of administrators, teach-
ers and students.

The outcome of learning
and student’s achievement
will go up when the institution
has good qualified faculty
members, adequate infra-
structural facilities, commit-
ted students, quality instruc-
tions, corrective feedback, and
good communication among
students, parents and edu-
cators. On the other hand,
adverse or negative attitudes
on the part of the instructors
and administrators will erode
student’s self esteem and con-
sequently lower the achieve-
ment level.

It is hypothesised that
there is a cyclical relationship
among the variables and
changes can be made at any
point along the way. These
changes will affect the insti-
tutional achievement, which
will continue to affect the so-
cial climate of the school.

3. Cruickshank’s Model
It is based on the classroom
and teacher. He has taken the
concept of Mitzel & Biddle and
incorporated it in his model.
Mitzel classified variables as
Product, Process and
Presage.

Biddle classified variables
such as school and commu-
nity contents, formative expe-
riences, class room situa-
tions, teacher properties,
teacher behaviours - interme-
diate and long-term conse-
quences.

Applications in Nursing
Product ↔ Process ↔ Presage
Product is the outcome of
learning on the part of the
students. It is the gain in
knowledge, changes in atti-
dute and skill attainment in
nursing students. Process in-
volves interaction between
student and teacher in vari-
ous contexts such as class
room, hospital, community
set up. Presage is the
teacher’s intelligence, expe-
rience and success and other
teacher characteristics such
as personality, attitude, apti-
tude, experience, motivation,
commitment and sincerity
etc. Presage is supposed to af-
flect the process and then, of
course, process will affect the
product.

Biddle variables include
the following:
School and community con-
ents: It includes the philoso-
phy, aims and objectives, cli-
mate of the school and envi-
ronment, facilities available
in the institution and in the
environment.

Formative experiences: It
is the experience gained from
the past events by the teach-
ers, administrators, students
eetc.

Classroom situations: The
climate, physical facili-
ties, furniture, control of ex-
ternal noise, adequate light-
ing, ventilation, seating faci-
lities etc.

Teacher properties: Teacher’s
personality, attitude, knowl-
edge, experience, communi-
cation and assertive

Teacher’s behaviour and
intermediate and long-term
effects: Ability to handle the
students of various personali-
ties, problematic students,
way of disciplining the stu-
dents, techniques used to cor-
rect the wrong behaviours of
the students. Being impartial
to all students, maintaining
good interpersonal relation-
ship with the students etc.

4. Gage & Berliner’s Model
This model is classroom- and
teacher-based and centres on
the question, “What does a
teacher do?” A teacher begins
with an objective and ends
with an evaluation. Instruc-
tion connects objectives and
evaluations and is based on the teacher’s knowledge of the student’s characteristics and how best to motivate them. If the evaluations do not demonstrate that the desired results have been achieved, the teacher re-teaches the material and starts the process all over again. Classroom management is subsumed under the rubric of motivating students. Gage & Berliner suggest that the teacher should use research and principles from educational psychology to develop proper teaching procedures to obtain optimal results.

Application in Nursing

The teacher starts teaching with the formation of specific learning objectives and based on this, she instructs the students. After the instruction, she evaluates the student. So instruction connects the objectives to evaluation. Evaluation in turn helps them to revise or modify the specific learning objectives and prepare for further instruction or remedial instruction.

5. Huitt’s Model

This model is not only classroom-, teacher- and student-based, but includes additional contextual influences as well. This adds variables related to context, and student and teacher characteristics. Huitt advocates that the important context variables must be considered because our society is changing rapidly. From this perspective, children are members of a multifaceted society, which influences and modifies the way they process learning as well as defines the knowledge and skills that must be acquired to succeed in society.

His model shows a relationship among the categories of context (family, school, home and community environment), input (what students and teachers bring to the class room process), class room processes (what is going on in the class room) and output (measures of learning done outside the class room).

Application in Nursing

Input : It is the beginning of teaching-learning process. Input variables include (1) Teacher characteristics such as values, beliefs, knowledge of student, teaching-learning process, communication skills, personality etc. (2) Student characteristics such as study habits, learning style, age, sex, gender, race, ethnicity, motivation, moral, socio-emotional, cognitive, character development and aptitude etc.

Output : It is the end of the teaching learning process. Educators must identify or propose an end result or outcome of teaching and learning. Until the outcome objectives are known, nothing else can be considered. Output measures are gain in knowledge, learning new concepts, reading, language, mathematics etc.

Classroom processes include teacher’s behaviour, student’s behaviour and other variables such as classroom climate, student leadership roles etc.

1. Teacher’s behaviour includes planning (getting ready for classroom interaction), management (getting the class under control) and instruction (guiding the learning process). Planning activities have a little predictable relationship with student achievement. The other two are moderately related to student achievement. Lack of a strong relationship may be due to teacher inconsistency, which depends on change of the time of day or the characteristics of a particular group of students. The 3 variables such as correct feedback by the teacher, reinforcement and level of student teacher interaction are the class room predictors of student’s success.

2. Student’s behaviour includes planning, preparation for the class, learning readiness, need, preference for learning and learning styles, study habits, age, sex, gender, race, ethnicity, motivation, moral, socio-emotional, cognitive, character development and aptitude etc.

Context variables include mother’s education, family expectation, technology at home, facilities in the institution, institutional climate, specific needs of the community, prevailing health problems, demand etc.

Intermediate outcome: Academic learning timer (ALT) is the best class room process predictor of student achievement. ALT is defined as “the amount of time students are successfully involved during the learning of content that will be tested.
Huitt proposes that ALT should be considered as the “vital signs” of a class room. It is influenced by (i) School year - the number of days available for going to school; (ii) Attendance year - the number of days the student actually attends school; (iii) School days - the number of hours the student attends school each day can influence ALT.

**Conclusion**

Teaching and learning is the fundamental concept of nursing education. The aim of nursing education is to prepare the nurses with head, heart and hand. The knowledge of nursing is enhanced by teaching and learning. The above mentioned models and concepts can be understood and applied in nursing education to facilitate teaching and learning.

**References**


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