

# Impact of COVID-19 on achievement of Bloom's Taxonomy levels : New ways to do Teaching, integrate Learning activities and conduct Assessment

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## ABSTRACT

*Bloom's Taxonomy is used to establish objectives for educators and students to achieve learning goals. Bloom's taxonomy is also used to establish the organizing objectives for students and educators. Educators get help from Bloom's taxonomy by delivery of lessons and lectures with appropriate and strategic instructions, learning activities and assessments improves student, course and student learning outcome. I worked as an Assistant Professor at Manav Rachna University teaching undergraduates zoology courses and applied differential teaching, learning and assessment practices which enabled student to achieve Bloom taxonomy level.*

## INTRODUCTION

Benjamin Bloom along with other educators Max Englehart, Edward Furst, Walter Hill and David Krathwohl in 1956 published a framework- Blooms Taxonomy for characterization of educational goals to achieve levels of knowledge and skills to be attained by students during teaching, learning and assessments. The framework Blooms Taxonomy categorized into Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation is always designed and integrated by K-12 teachers, college instructors and university professors in their lessons and lectures respectively to enhance knowledge (Knowledge) and skills ( Comprehension, Application, Analysis, Synthesis, and Evaluation). Knowledge is very important to attain ability so knowledge to attain first I.e. is a precondition whenever a lesson, lecture, course and program planning is designed. Then to prepare skills and abilities are put into practice. The main categories of Blooms Taxonomy is

1. **Knowledge** - to increase knowledge about concepts, context and facts.
2. **Comprehension** - ability to compare and contrast biological processes.
3. **Application** - Apply the knowledge and skills to explore biological phenomenon.
4. **Analysis** - Critical analysis to understand biological outcomes.
5. **Synthesis- Design and create a product / project by application of biology knowledge and skills.**
6. **Evaluation** - Evaluate the outcomes of biological events.

**The Revised Taxonomy in 2001** - A Taxonomy for Teaching, Learning, and Assessment - developed by groups of cognitive psychologists, curriculum theorists and instructional researchers, and testing and assessment specialists resulted in formation of categories and sub-categories based on words and facts -

1. Remember - Increasing ability to remember by Recognizing and Recalling.
2. Understand- Increase ability to understand a biological phenomenon by Interpreting, Exemplifying, Classifying, Summarizing, Inferring, Comparing and Explaining.
3. Apply - Increase ability by applying knowledge to by executing and implementing a specific biological concept and context.

4. Analyze - Increase ability to analyse a biological process or outcome by differentiating , organizing and attributing.
5. Evaluate - Increase ability to evaluate a biological event by checking and critiquing.
6. Create - Increase ability to create a biological product or project by generating ideas, planning the methods and producing a project and product.

The knowledge in the above taxonomy was divided into - factual knowledge, conceptual knowledge, procedural knowledge and meta-cognitive knowledge. The bloom taxonomy might change again as we move into the world of remote education and research.

## **OBSERVATIONS**

### **Teaching**

I taught the following courses at Manav Rachna University

- EDH 114 - Animal Diversity - I ( 3 Credits Theory + 1 Credit Laboratory Practicals)
- EDH 205 - Animal Diversity - III and Comparative Anatomy of Vertebrates ( 3 Credits Theory + 1 Credit Laboratory Practicals)
- EDH 302 - Ecology and Animal Behaviour ( 3 Credits Theory + 1 Credit Laboratory Practicals)
- EDH 402 - Molecular Biology and Immunology ( 3 Credits Theory + 1 Credit Laboratory Practicals)

I integrated the following teaching practices such use of White board - Marker, Power Point Slides-Projector. In the laboratory students were initially exposed to virtual labs to gain understanding of techniques and then hands-on learning activities so that they can re-gain the skills and knowledge.

### **Learning**

I integrated the following learning activities such as Think-Pair Share, Write-Pair Share, Stump your Partner, One Sentence Summary, Fish Bowl Debate, Minute Paper, Catch Up, Discussions, Aesthetic Presentations, Team Based Learning and Jig Saw. The laboratory learning included virtual labs and hands-on labs by doing them individually and in group.

### **Assessment**

Further the student assessment was conducted for both formative and summative assessment by challenging students with questions of all blooms taxonomy level.

## **RESULTS**

Students studying previously online and returning to in-person classes which I taught in-person showed varied level of learning due to COVID-19. So variety of teaching practices were employed in classroom to develop students ability to grasp content knowledge and develop concepts - students involved high level of blooms taxonomy achievement. Students were also engaged in classroom for learning by participating in varieties of activities which further advanced the achievement of blooms taxonomy level and further the assessment in which questions were designed and included questions of all blooms levels to challenge students - students showed high level of achievements.

## **CONCLUSIONS**

The above teaching, learning and assessment practices showed differential response of students who were previously studying online and then moved to in-person mode. The above strategies will certainly help professors to achieve the blooms level.

## **REFERENCE**

Mehrotra, P. (2021). Impact of COVID-19 on transformation of Teaching, Learning and Assessment. International Journal of Advance Research and Innovative Ideas in Education.