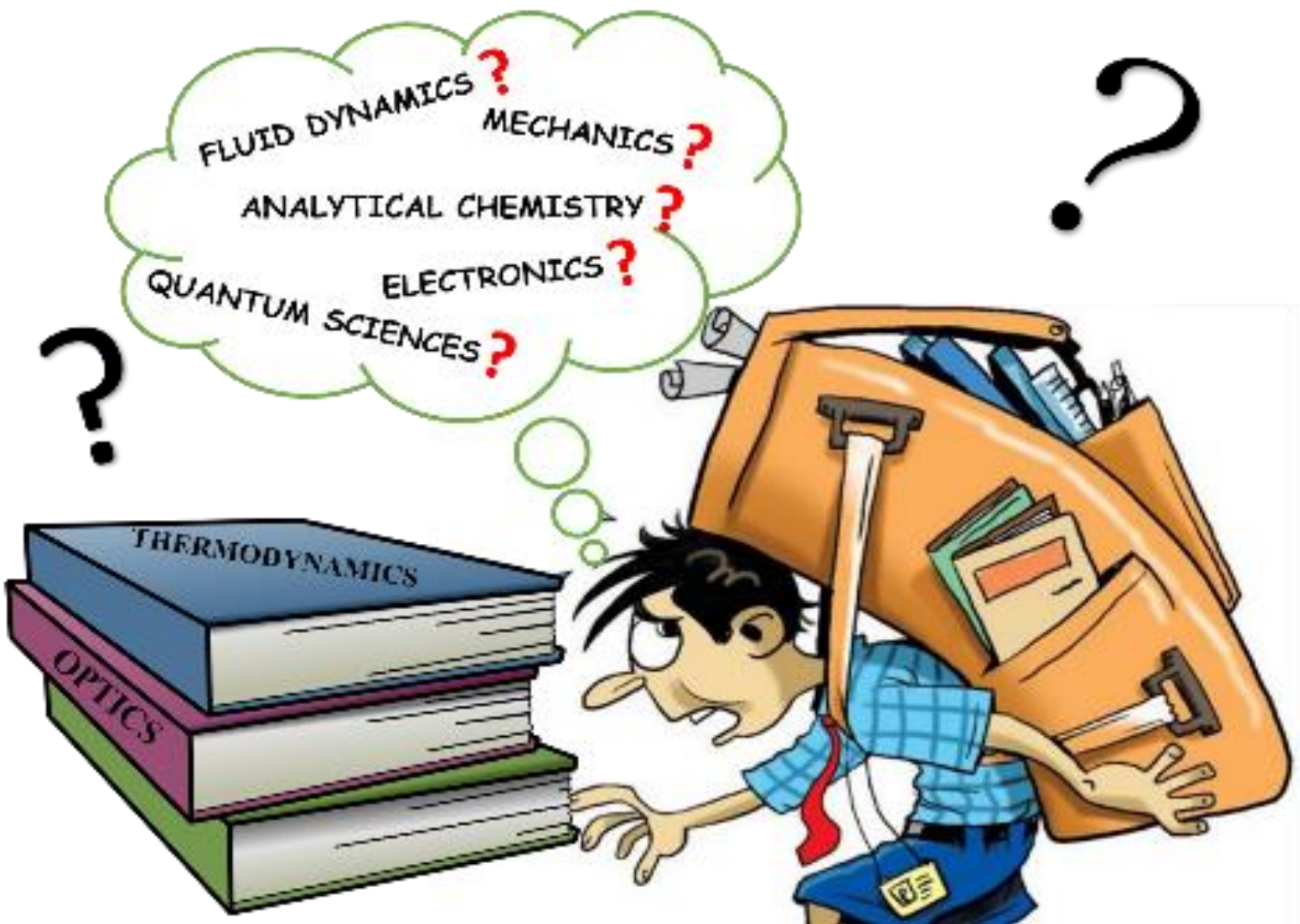



THE SCIENCE LEARNING THROUGH HANDS-ON-ACTIVITIES & TO DESIGN COMPUTER ASSISTED INTERACTIVE MATERIAL

AIM :- To Motivate the students for science learning & to make the learning process joyfull and participatory.



INTRODUCTION

It is well known fact that Science can be learned fruitfully & effectively if theory is coupled with simple & easy Hands-on-Activities (HOA) as well as designed Computer Assisted Interactive Materials (CAIM).



BACKGROUND

University of Pune has included 2 Hands-on-Activities equivalent to 4 practicals in the syllabus of B.Sc. Physics as a part of curriculum; students has to complete this task qualtatively to achieve conceptual clarity.

MOTIVATION

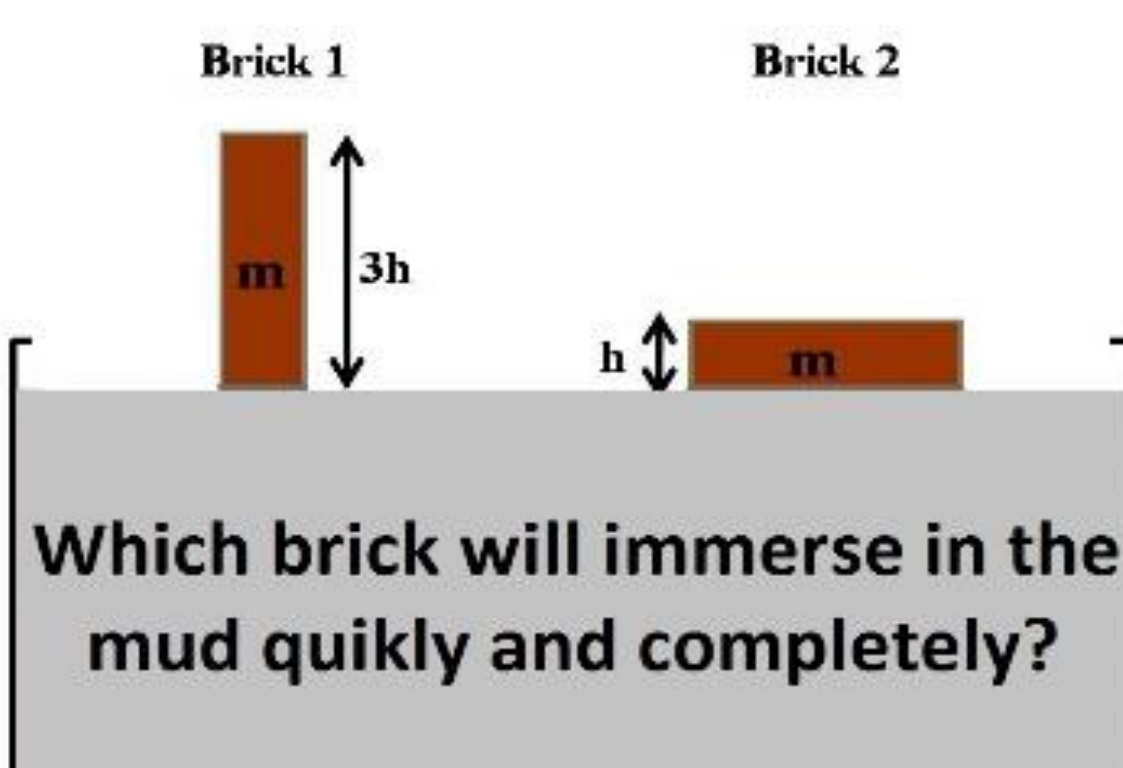
Bharat Ratna Prof. (Dr.) CNR Rao (Head, Scientific Advisory Committee to PM) has already quoted and given a hint.

“Science taught in schools and colleges in India is ‘completely outdated’, ‘most boring’ and is no longer the one practiced in advanced laboratories”.

“Education and science was not given due importance in the country”.

“Science is not about huge laboratories and making nuclear reactors. That was all technology. Science in real sense is in small labs”.

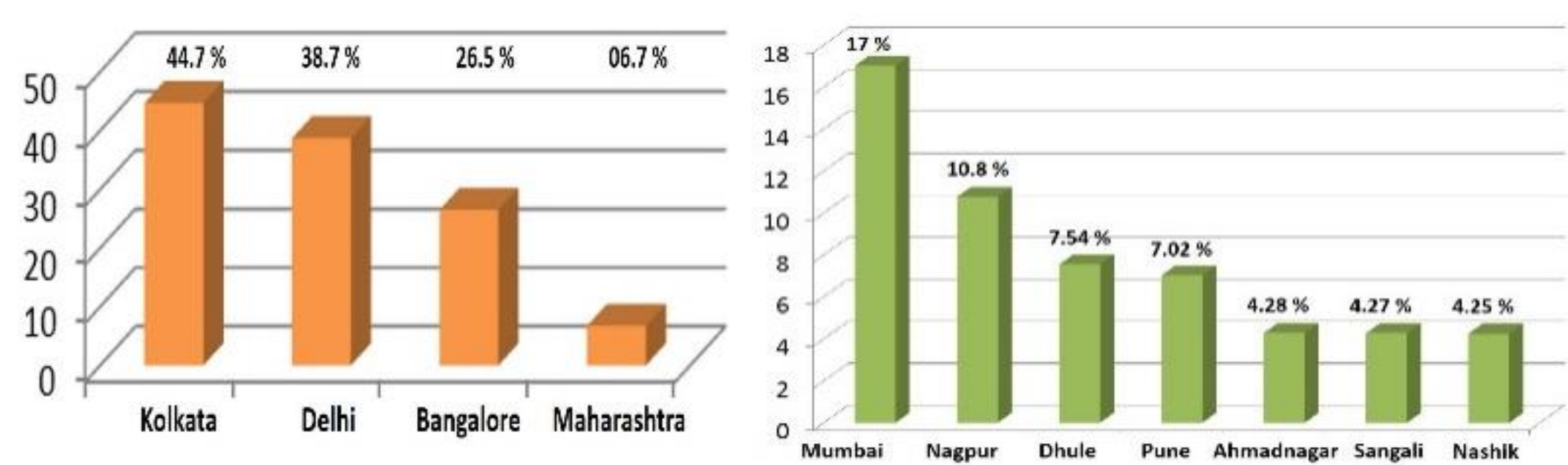
MISCONCEPTION ?



Which brick will immerse in the mud quickly and completely?

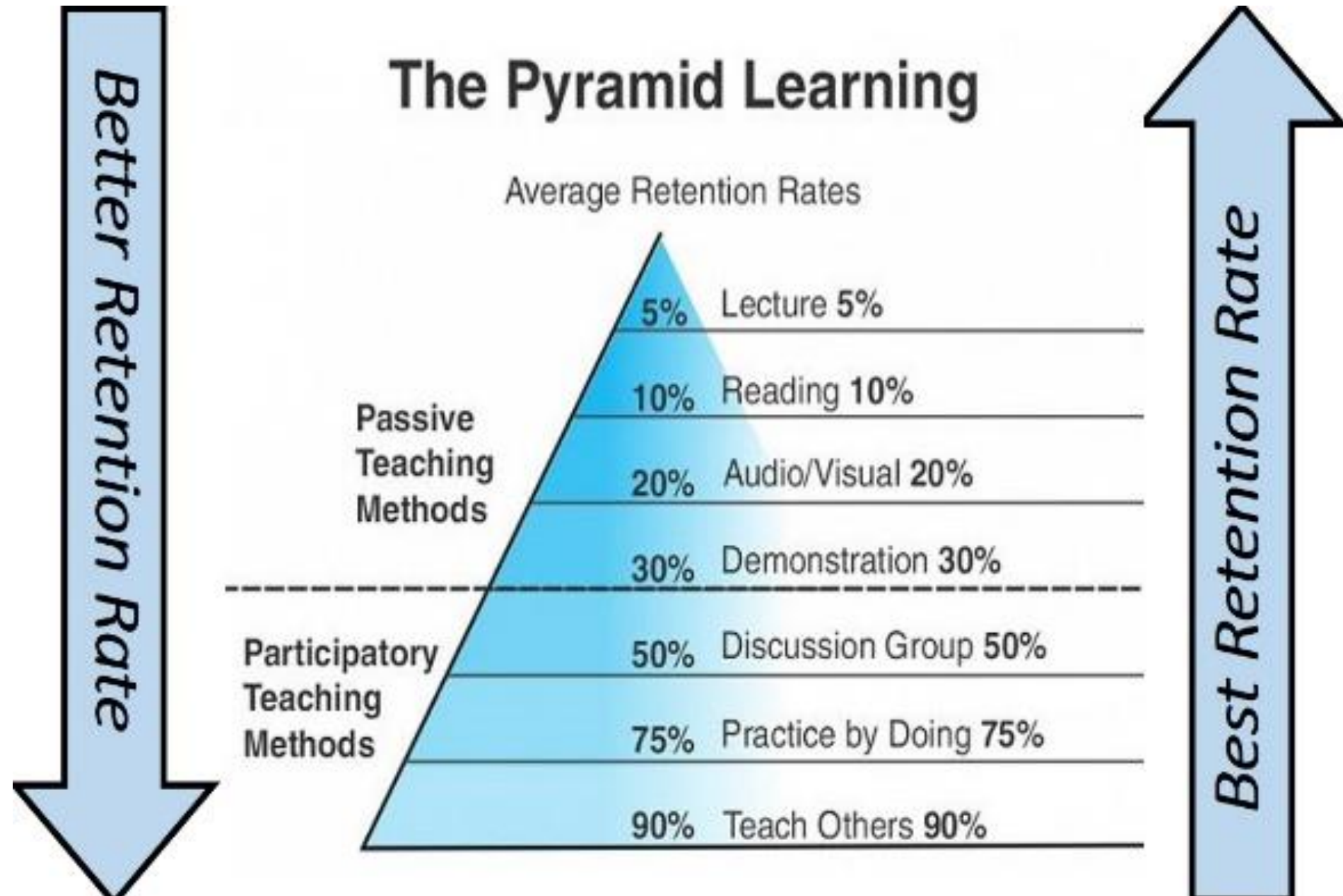
A) Both 1 & 2 : mass is same; so Force will same.
B) Only 2 :- height is less.
C) Only 1 :- area is less, & Pressure is inversely proportional to Area.
D) Only 1 :- due to more height Potential energy of brick will be more.

SITUATION



M.Sc. Entrance Result (S.P.P.U) (a) India (b) Maharashtra

The Pyramid Learning

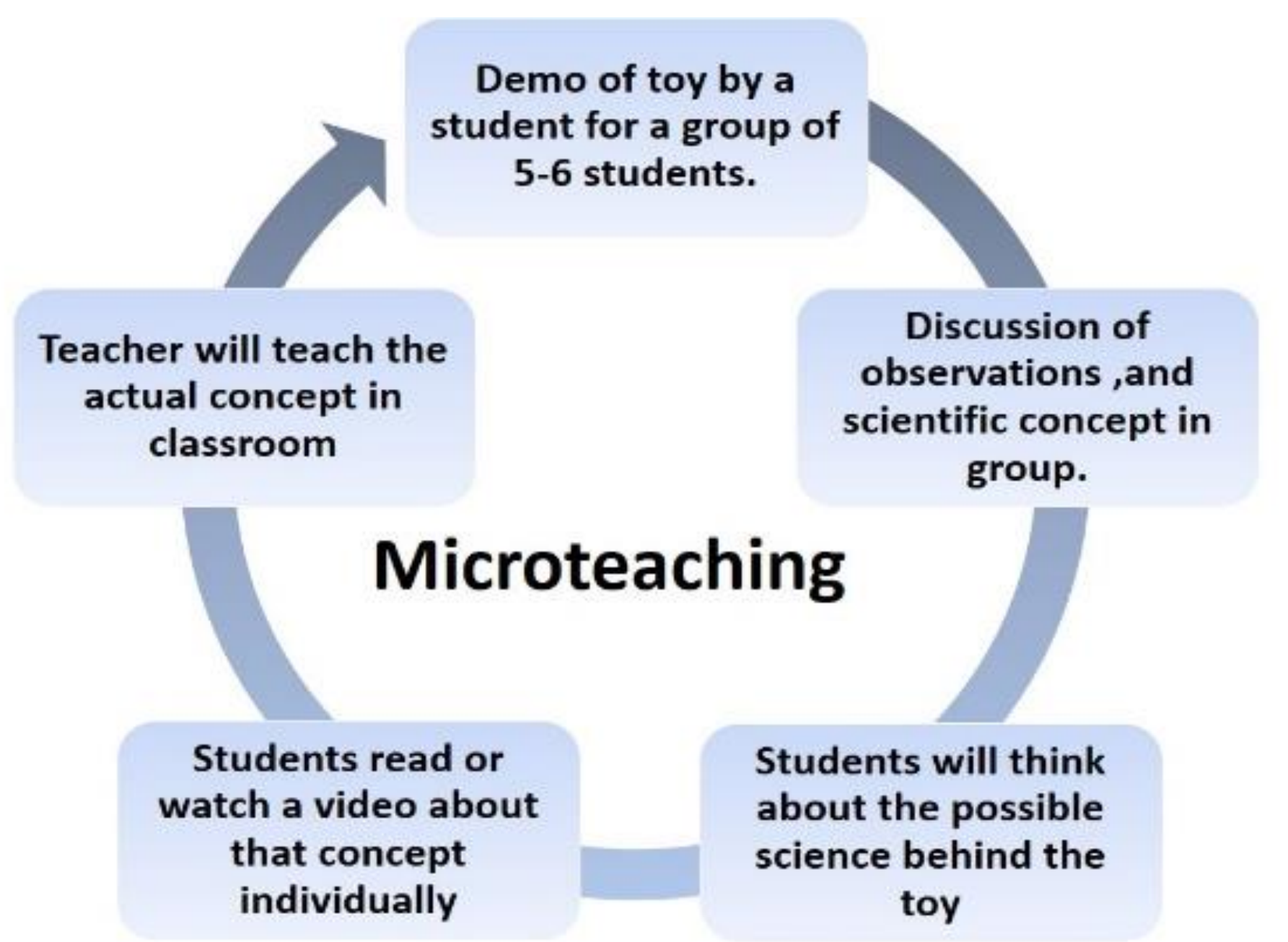


Teaching Methods	Average Retention Rates
Passive Teaching Methods	Lecture 5%, Reading 10%, Audio/Visual 20%, Demonstration 30%
Participatory Teaching Methods	Discussion Group 50%, Practice by Doing 75%, Teach Others 90%

Better Retention Rate (downward arrow)
Best Retention Rate (upward arrow)

College UG students work as demonstrators or facilitators for the school students & demonstrates HOA or CAIM to the school students in repeatative manner and in different batches.

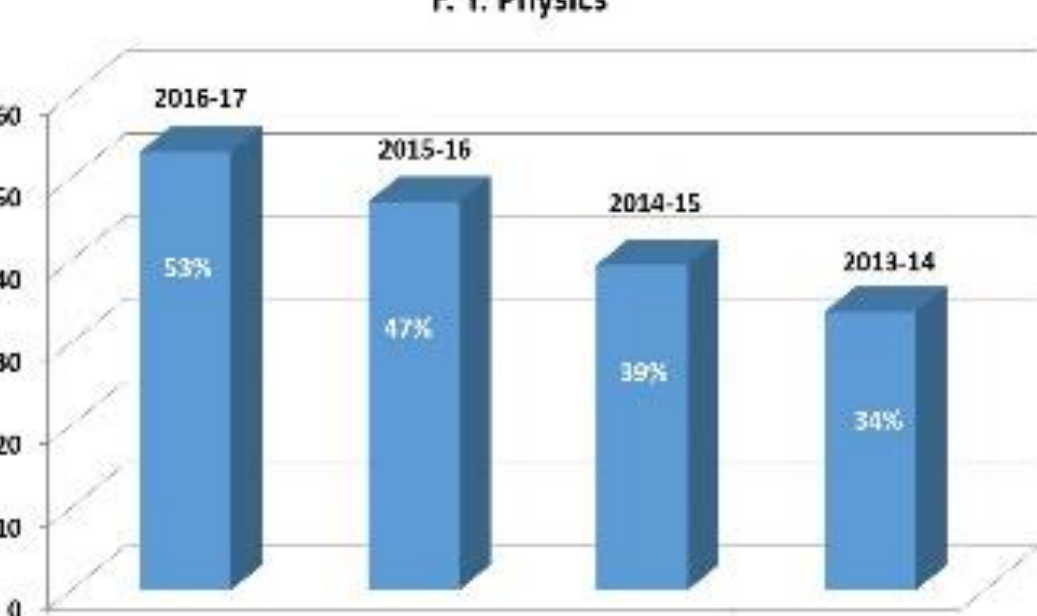
Microteaching



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graph TD; A[Teacher will teach the actual concept in classroom] --> B[Demo of toy by a student for a group of 5-6 students.]; B --> C[Discussion of observations ,and scientific concept in group.]; C --> D[Students will think about the possible science behind the toy]; D --> E[Students read or watch a video about that concept individually]; E --> A;
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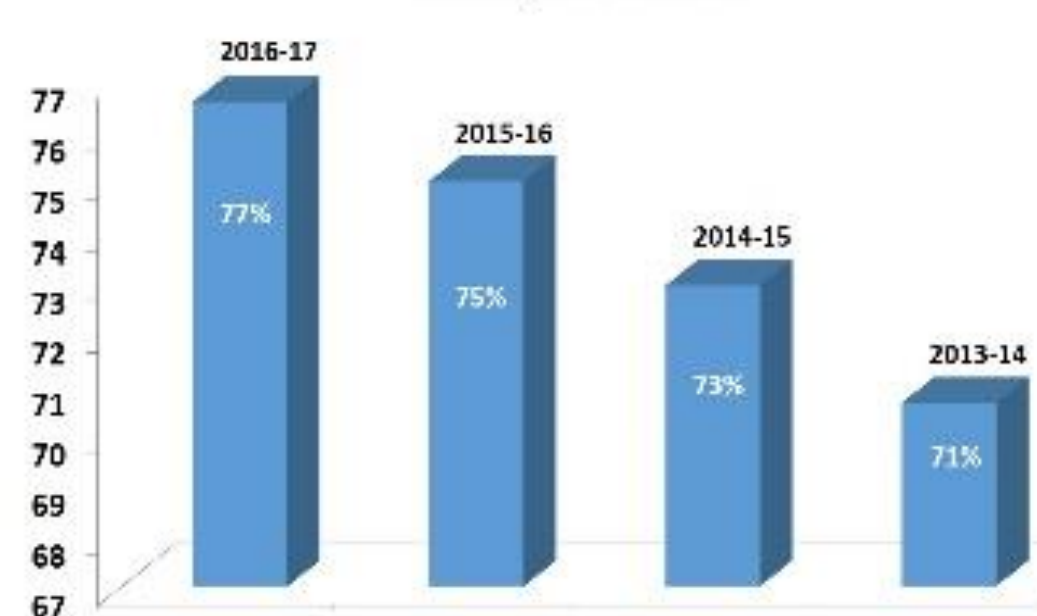
ACHIEVEMENT

F. Y. Physics



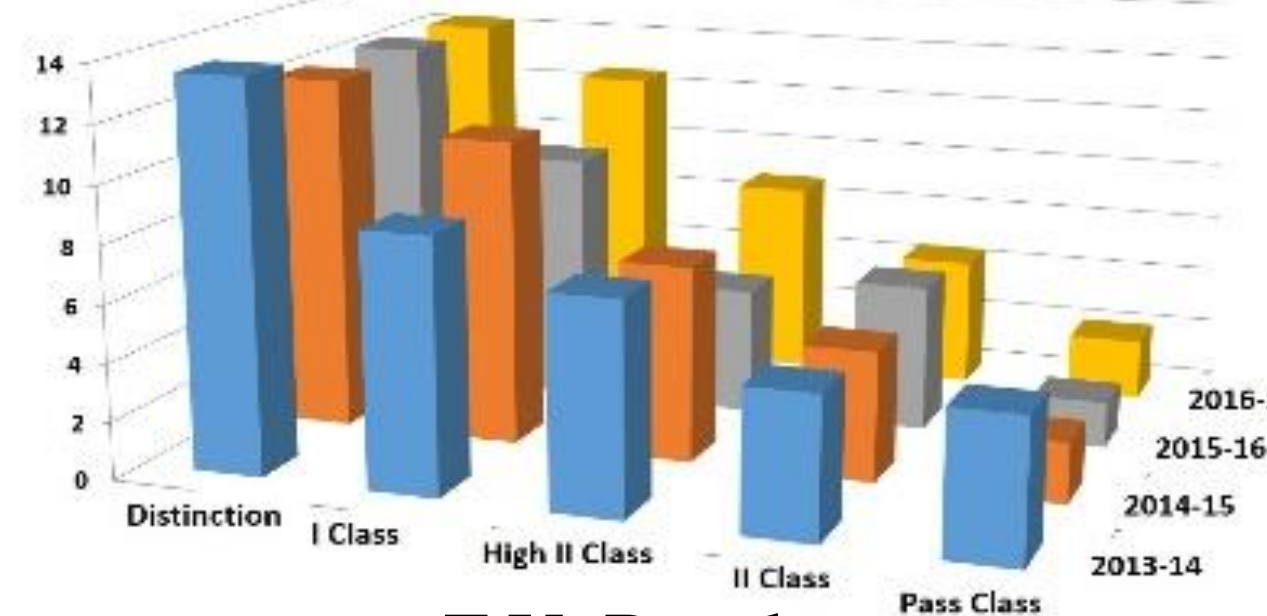
Year	Percentage
2016-17	53%
2015-16	47%
2014-15	39%
2013-14	34%

F.Y. Physics Practical

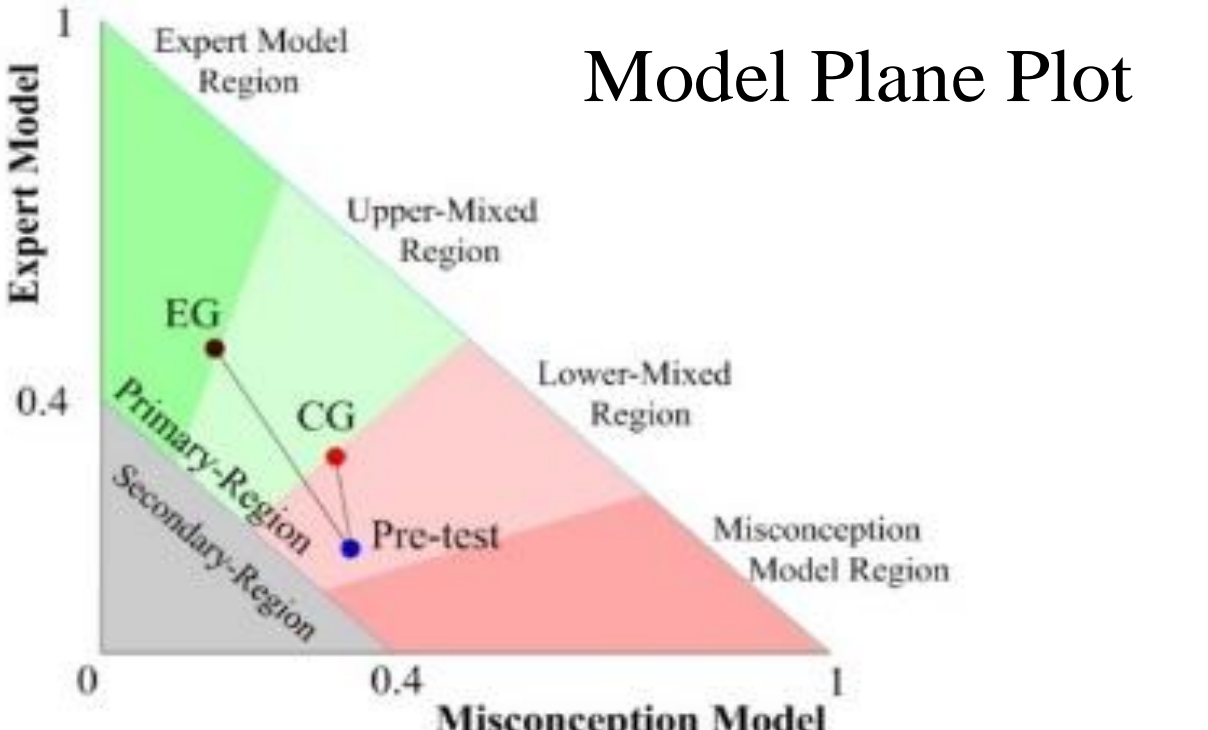


Year	Percentage
2016-17	77%
2015-16	75%
2014-15	73%
2013-14	71%

F.Y. Result



Model Plane Plot



CONCLUSION

A judicious mix of active & passive methods using the Hands-on-Activities with CAIM makes effective learning.

TARGET TO BE ACHIEVED

Science Activity for College & high School Students will be continued further with the help of facilitators to improve B.Sc. Result.