

# IRSIEC Technique - Integral Revision, In Semester Examination and Evaluation of Content/Course

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**Abstract:** In this paper a new active learning method is discussed, IRSIEC - Integral Revision, In Semester Examination and Evaluation of Content/ Course. Method of revision, examination and assessment is done. This method can be implemented to any class of UG/PG programs. Group formation in class, instructions are given to the student, topic for each group is given with drawing sheets for presenting their topic on it. Monitor/Teacher observes and assesses students. Revision, examination and Assessment are done simultaneously. Implementation of this method requires less time and more student involvement is possible. Each student revises the content and is examined; he/she is given full chance to expose his/her learning skills. This technique has enhanced students learning compared to traditional way of teaching learning method.

**Keywords:** IRSIEC, Active Learning, Innovative best practices, teaching learning method.

## 1. Introduction

Method of educating is quite transforming for making students to learn rather than teacher's effort to teach them. It is understood that more effort should be

on students learning than the teachers teaching. To get this into practice an exercise is discuss in this paper. There are different researchers and educators who have contributed in Examination, Evaluation and different study methods, while this paper presents the Integral Study, Revision, Examination and Evaluation/Assessment process in a single turn. It is practiced/ experimented on Automobile Engineering students in Rajarambapu Institute of Engineering Islampur. After some lectures delivered or after completion of Unit/Chapter, usual practice is to ask some questions to revise the taught topic. In this revision, it is time frantic to attend each student and also will require more time. So a method that will help to take revision as well as make all students to take part, this method is designed.

It is also sometimes practiced to take a written test after completion of every chapter, this will only let you know whether student has gain from chapter/Unit delivery and for that a full lecture and assessment time has to be spent.

Assessing the paper will be the third task that has to go for each student's written paper.

All above cases discuss if could be clubbed, then that will save time as well as some more outcomes can be drawn. Forming some new method i.e. nothing but blending the teaching learning process from passive to active methods have been observed to improve teaching learning in education system. A wide

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literature survey was made and different active techniques were studied and experienced. Many researchers and education practitioners have applied various teaching learning approaches, such as jigsaw method, project based learning, problem based learning, think pair share, flip classroom etc. Few are very time taking which cannot be applied for one or two hour lecture such as project based learning which may take a semester or a year. While we have proposed a technique that can be conclude in two hour lecture time with learning, examining and evaluation. IRSIEC differs with many researched active learning techniques that have been practice.

Nirmal Mandal [1] experienced that the student satisfaction and their understanding about teaching and learning of undergraduate engineering units can be more enhance by using active learning tools, techniques, methods etc. then the traditional delivery in class room. Alejandra J. Magana et.al [2] Characterize Engineering Learners by preferences for active and passive learning methods. His experiences was that, active learning can be achieved by more involvement and experiential learning. Mingxin Li and Ardeshir Faghri [4] applied Problem-Oriented and Project-Based Learning which was little addition to project based learning and it could yield good learning to learners, as projects were given among the student and they have to complete this project. So for thorough completions of project they have to get educate their self and more field of knowledge was required which was grabbed by them, learning by doing was happened. But the issue with this was that this required few weeks, few months or may be more time consuming. Michael Prince [5] proved with evidence and experienced that the active learning technique are most relevant for engineering faculty and useful for critically examining the core element of each method, they found the broad but uneven support for core elements of active, cooperative and problem based learnings. Clive L. Dym, et.al [6] implemented design thinking in engineering curriculum, engineering design can be more enhanced by most favoured pedagogical model of teaching design, project based learning along with assessment data on its success. Rim Razzouk and Valerie Shute [7] deliver more on design thinking, they define design thinking as an analytic and creative process that engages a learner in opportunities to experiment, create and prototype models, gather feedback and redesign several characteristics such as visualization , creativity etc., that a good design thinker could have

possess from literature. Their goal with design thinking is to promote students problem solving skills in 21st century. Chi, M. T. H. et.al. [8]. Have frame for different learning activities which tells the learning activities can yield more learning. However Godfrey, E. et.al. [9] gave a theoretical model for engineering education, learning with new tools. Sparks, G. [10] Discuss teacher attitude toward improving new learning methods and new tool, that can add value in teaching learning. Debra J. Mesch, [11] A way to establish individual accountability in a group is done by jigsaw technique, a technique that creates heterogeneous groups, each member in group gets expertise on topic and then group splits in a such a way that newly form group has expertise of each topic and all learn and teach, this technique can be applied re modified to get some more outcomes.

Active teaching learning is nothing but technique or tools by which learners learning can be enhanced by watering their uniqueness of learning. Many techniques discussed above require time such like week, month or year for conducting, there should be less time consuming with simultaneous revision examination and assessment which give a scope for new method of teaching learning. A new active learning is experimented with give good outcomes and a new tool for teaching learning which is proposed as Integral Revision, In Semester Examination and Evaluation of Content/Course.

## **2. Methodology**

After completion of chapter/Unit of any course In Semester Component (ISE) Test is taken. Now traditional method of conducting test will be written or oral questions asked to the students. This type of examination will yield with only those outcomes, what course teacher has taught and students has gain in standard format. For example for a specific content student will write text but, will they be able to connect this content with other topics in Chapter? Answer is No. This IRSIEC – Method reveals more of student or group members learning interest. This work method is effective for any class/year/semester of engineering students and other.

Following are the steps involved for carrying out this method

### **A. Group Formation**

Class of student may be of any strength (E.g. 66 students) in a Class. Students of male, female, only male or only female gender depending upon program and division formed or gender available but preferably go with mixed group formation. Effective groups should be formed with more preference, a Heterogeneous type of groups, Male and female in a group - equal members and equal no. of groups (For 64 students, 8 Groups with 8 members). In case of student strength is 66 then 8 groups with 8 members in each and two students can be ask to join in any other groups, free to add as per monitors decision.

### B. Drawing Sheets Distribution

For exploring their answers, knowledge/ or response to the given topic, drawing sheets of minimum of A2 size or bigger size (A1 or A0) should be given to each group or Ask student to get sheets by them self. Sheets should be blank and usable on both sides. Students can stick sticky notes on these sheets as well.

### C. Topics/ Content to each group

Content on which this method is to be conducted is Bifurcate into Chapter/Unit or Section in a Course or Complete Course in same number as number of groups is formed. Assign each group with topic name and their group numbers.

### D. Instructions to the groups

Groups are formed, Drawing sheets are distributed, and Topics to each group is given. Students should consider a column of width 10-12cm at left side to write their Topic name, Name, Possible Questionnaires' etc.

Ask students to write their group number in left

**Table 1. Student Details Table**

| Group No :- 01 |          |                     |            |
|----------------|----------|---------------------|------------|
| Sr. No.        | Roll No. | Student Name        | Signature. |
| 01             | 1401019  | Alamwar Shubham     | Signature  |
| 02             | 1401030  | Waingankar Onkar    | Signature  |
| 03             | 1401032  | Babar Somnath       | Signature  |
| 04             | 1401041  | Shaikh MD Huzaiifa  | Signature  |
| 05             | 1401058  | Deshmukh Nilesh     | Signature  |
| 06             | 1404028  | Honmane Abhijit     | Signature  |
| 07             | 1401034  | Babar Karanjeetsinh | Signature  |

column, followed by Title of Content given, and Table containing Details such as Serial No, Roll No, Student Name, Signature (for attendance). Student information should be mention as per Table. 1.

Possible Questionnaires for given content should be written so that questions with different orientation can be drawn, students thought process and their expectation of questionnaires on the content can be learned. Use of both sides of sheet should be done and all efforts to work for better content and representation in best manner that they will understand in a glance to instructed.

Student should be allowed with all possible sorts of resources that they could find with, e.g. Class notes, Internet, mobile Internet, eBooks, journal papers, publications, thesis reports etc. but ask them to mention respective references to the respective content.

Instruct students about total marks distribution (Total marks=50 % Individual marks +50 % Group marks)

### E. Teacher/Faculty/Monitor Role

Teacher should observe each group and monitor them, whether all students are participating, spot for every student's contribution, Give marks for 50% of total marks for individual students.

50% marks will be given after completion of sheet to the groups as per the Assessment Table 2 given

**Table 2 . Assessment Table**

| Group No :- 01  |                     |                        |                   |                    |
|-----------------|---------------------|------------------------|-------------------|--------------------|
| Student Details |                     | Marks                  |                   |                    |
| Roll No.        | Student Name        | Individual Marks (50%) | Group Marks (50%) | Total Marks (100%) |
| 1401019         | Alamwar Shubham     | 35                     | 40                | 75                 |
| 1401030         | Waingankar Onkar    | 45                     | 40                | 85                 |
| 1401032         | Babar Somnath       | 40                     | 40                | 80                 |
| 1401041         | Shaikh MD Huzaiifa  | 37                     | 40                | 77                 |
| 1401058         | Deshmukh Nilesh     | 33                     | 40                | 73                 |
| 1404028         | Honmane Abhijit     | 30                     | 40                | 70                 |
| 1401034         | Babar Karanjeetsinh | 30                     | 40                | 70                 |

### 1. Automobile Vehicle Body And Structure

**ISE COMPONENT - I**

Name Of Students Roll No.

1. Alamwar Shubham 1401019
2. Waingankar Onkar 1401030
3. Babar Samnath 1401032
4. Shaikh Md. Huzefa 1401041
5. Deshmukh Nilesh 1401058
6. Hanmane Abhjeet
7. Babar Kavanjeethsinh 1401034

#### Possible Questions-

1. Define and explain automobile visibility.
2. What is the importance of downward visibility?
3. How forward visibility of a vehicle can be improved?
4. Discuss method for improving all vehicle visibility with neat sketches?
5. What are visibility regulations?
6. Explain how forward visibility of a vehicle can be measured in laboratory?
7. How to improve visibility at night?

### Driver's Visibility -

"Maximum distance at which the driver of vehicle can see and identify prominent object around the vehicle."

The parts of the vehicle that influence visibility includes -

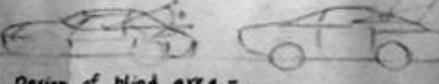
1. Windshield
2. Dashboard
3. Pillars

#### Factors affecting visibility of Driver-

- (i) Location and position of driver.
  - (a) Forward visibility - Distance between passenger and front wind screen.
  - (b) Downward visibility - Driver position high.
  - (c) Angle of vertical visibility - see traffic lights.



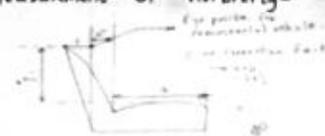
- (ii) Rearward Visibility - Increase glass area required to maintain given rear view angle.



- (iii) Design of blind area - Considering drivers position, the various blind areas have been shown.



### Measurement Of Visibility-



- Forward Vision -
  1. Semi-circular visibility.
  2. Mid-point of Driver's eye on cylindrical axis of screen.
  3. Area visible to driver are outlined by shadows the wind screen, pillars, wind screen wiper sections on the screen.
- Rearward Vision -
  1. Light reflected by mirror falls on two screens.
  2. Area illuminated on screen is developed by shadows of reflecting mirrors.
- Methods for improving Visibility -
  1. Structural Method.
    - (i) Arrangement of pillar (minimum blind area)
    - (ii) Location of driver as front as possible.
    - (iii) Location of rear mirror.
  2. Tilted and Curved Windshield Method.
  3. High quality front screen glass -
    - (i) Night driving.
    - (ii) Rainy Season.
    - (iii) Heavy Fog.
    - (iv) Safety glass.
- Methods for improving space in car.
  - Type of layout.
  - Engine location.
  - Longitudinal direction.
  - Transverse location.
- Shape of car.
- Types of seat.
- Controls.
- Provision for luggage.

Fig. 1 SHEET 01

### Crash Test



Crash Test - It is one of the form of a destructive test to know safe design intended to crash vehicles.

#### Why crash test?

Ans - It gives idea of damages that occur in accident.

- Strength of vehicle against various impact.
- Leads to improve vehicle safety.
- Leads to improve passenger safety.
- checking the safety features (Air bags, seat belt) their use working or not.

#### Type of crash test :-

- frontal
- side
- rearly overtake test
- offset
- rollover impact
- compare model test

#### Rating of crash test.

Star rating

Combine the score from 5 test.

14 + 16 + 18 = 48 maximum point.

48 is a maximum point for advanced seat belt.

Star rating

- \* less than 14 score
- \* 14 to 16 score
- \* 16 to 18 score
- \* 18 to 24 score
- \* 24 to 32 score
- \* more than 32 score

"more star means more safety" of vehicle.

#### Frontal Crash test scenario

You are heading north in a car and you reach a junction. You are driving straight in during the night. The driver of the other vehicle is in the left lane of the road and you are going into the junction. The other driver is in the middle of the road.

#### Test setup

- An average 1.8 m adult male in a large car.
- A small 1.2 m adult female in a small car.
- All distances are measured from the seat.

#### Conclusion of test

Head, neck, chest, and torso.

#### Side Barrier crash test scenario

- Driver up to a full way before the vehicle is complete stop. Look to see if it will begin to accelerate into the intersection. Another vehicle approaches the same intersection. You cannot see it due to the side of the vehicle on the driver's side.

#### Test Details :-

- A professional adult female in driver seat.
- The dummy is secured with seat belt.

#### Evaluation of Impact

- head, chest, lower spine, abdomen, pelvis.
- ~~Other parameters that should be~~
- you drive your car on its left.
- Highway & suddenly you come upon a sharp curve.
- You try to regain the curve, but your handling you feel a loose control of your vehicle & your vehicle departs the road & rolls over.

Fig.2 SHEET 02

below. Group marks will contribute their sheet work and group presentation.

Group will stand in front of all other groups and each member will contribute to explain/present their drawing sheet.

At last each group will be asked to present their content to other groups in front of all together.

IRSIEC – Method was taken and its some pictures

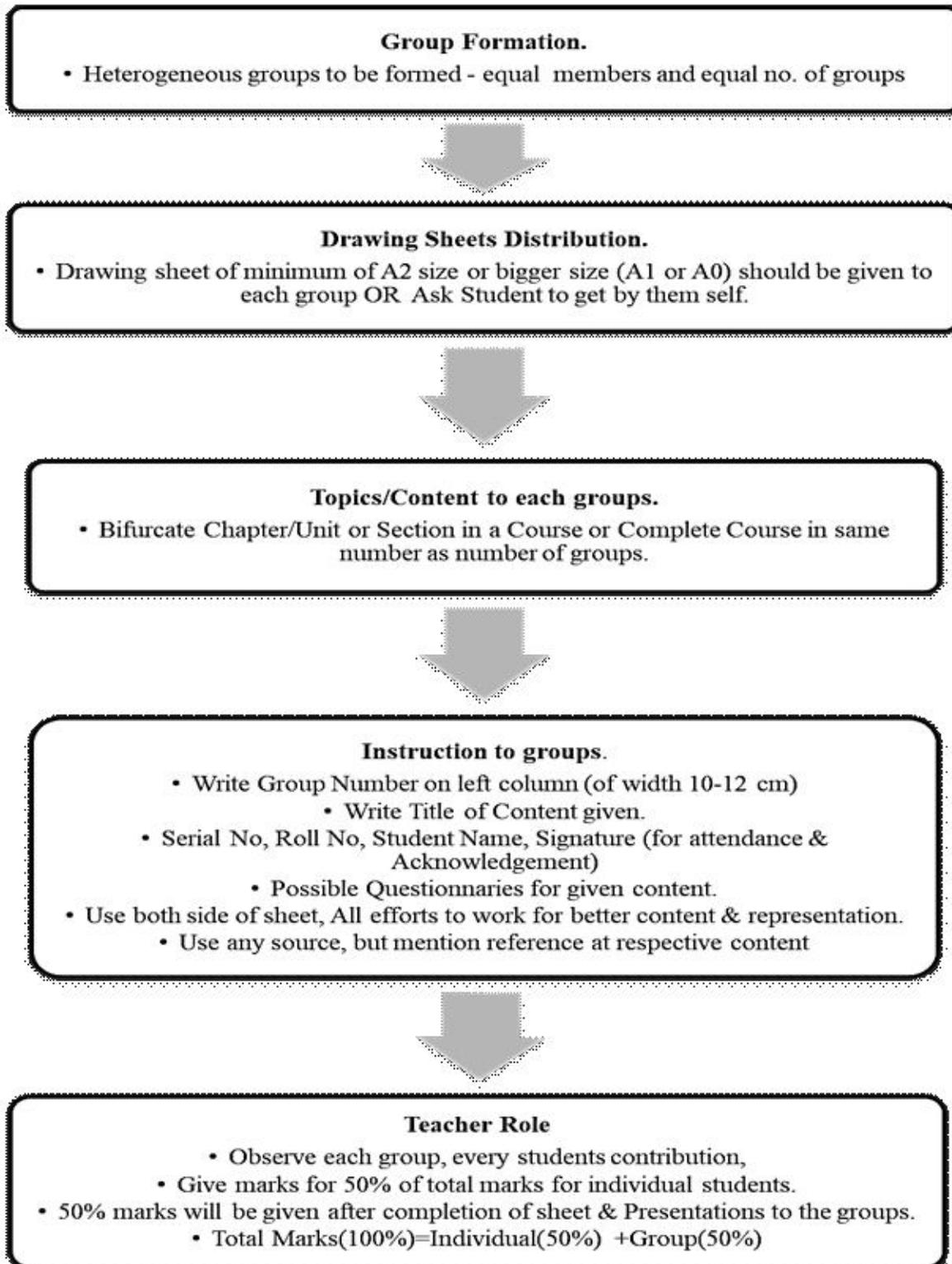


Fig.3 Flowchart for IRSIEC Implementation

can be seen in Figure. 1. Sheet 01, Figure. 2. Sheet 02 and Figure. 3. Sheet 03 below, these are the photographs of drawing sheets reflecting both the sides. Topic name, student's details, possible questionnaires' and content can be seen, in second photo Figure. 2. Sheet 02 student's effort to express their thoughts on their topic reflects with their artistic exposure.

Flow Chart in Fig. 4 Flowchart for IRSIEC Implementation, gives guidance to conduct IRSIEC for any course and class. IRSIEC Method was applied on Third Year of Automobile Engineering Students, at Rajarambapu Institute of Technology, Islampur, for course Vehicle body and Structure. After the successful implementation of method, feedback of students was taken and found that students were inundated. Students were interested to have such task rather than traditional methods, they ask for method to be taken after completion of every chapter/Unit. There was value addition in learning as well as examining purpose was also achieved.

### 3. Results and Discussion

This technique is easy for implementation and for experimenting on students to enhance teaching learning process learning examination and evaluation can be done simultaneously.

After successful completion of this method it is observed that, Taught content was elaborately revised. Hidden way of expressing knowledge of students was observed and sparked. Students were communicating the sub content/topic with each other in their group and titles. Much other relevant course content was correlated and connected. Students were seeking different source, class notes, Books, eBooks, power point presentations, videos on internet etc. - going beyond limited sources. Individual students learning techniques (e.g. visual-Diagrams, Connectivity-Arrow connections, Step by Steps learning Flow chart) are reflected.

Applying this Technique will add to teacher teaching and learners learning.

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