RAMCO INSTITUTE OF TECHNOLOGY

Department of Electronics and Communication Engineering

Academic Year: 2019-2020 (Odd Semester)

Innovative Practices Description for Unit-I

Degree, Semester& Branch: V Semester B.E. CSE

Course Code & Title: EC8691 Microprocessors and Microcontrollers

Name of the Faculty member: Mr.A.Azhagu Jaisudhan Pazhani

Name of the Topic: 8086 Architecture and 8086 Programming

Name of the Innovative Practice: Animation video and MASM Simulation Tool

Date & Duration: 05.07.2019 (15 Minutes) & 11.07.2019 (15 Minutes)

Description:

(i) Animation video

- Use of audio-visual aids help in maintaining discipline in the class since all the students' attention are focused in learning. This interactive session also develops critical thinking and reasoning that are important components of the teaching-learning process.
- Students learn when they are motivated and curious about something. Traditional verbal instructions can be boring and painful for students. However, use of audio-visual provides intrinsic motivation to students by peaking their curiosity and stimulating their interests in the subjects.

(ii) Simulation Tool:

- Simulation software is based on the process of modelling a real phenomenon with a set of mathematical formulas. It is, essentially, a program that allows the user to observe an operation through simulation without actually performing that operation.
- A primary advantage of simulators is that they are able to provide users with practical feedback when designing real world systems. This allows the designer to determine the correctness and efficiency of a design before the system is actually constructed.

Goals (Learning Outcomes):

- The students will be able to analyse basic concepts of 8086 microprocessor
- The students can be acquired better knowledge about working principles of 8086 microprocessor.
- The students can be program the 8086 processor using MASM Tool.

Use of appropriate method:

Justification for choosing the following Activities:

- **Audio & Video Tools:** According to the Webster dictionary, audio-visual aids are defined as "training or educational materials directed at both the senses of hearing and the sense. Audio-visual provides opportunities for effective communication between teacher and students in learning.
- **Simulation Tool:** It allows the students to create their own solution for the problem and they will get the real time result.

Effective Presentation: (Implementation (Plan & Execution) with Proof):

- **Animation:** Sometimes audio video tool were lengthy session, so I choose the video clips which more essential to the students.
- **Simulation Tool:** The students completed their activity within the planned time because the procedures are simple.

UNIT I

Animation video for Addressing Modes operation on 10.07.2019

Pentium Programming Using MASM Simulation Tool on 17.07.2019

Significance of Results: (Assessment of Effectiveness/Success of the Activity):

- **Animation:** This technique helps to give lively working of how the processor gets data for the instructions from memory using different addressing techniques.
- **Simulation Tool:** This activity gives the real time solution for their coding.

Changes required for future (if required):

- Need to plan extra hour for simulation tool activity.
- Good Quality animation video is required.

Reflective Critique:

Challenges:

- **Animation:** Sometimes there is no audio in animation so faculty member need to explain the step by step working.
- **Simulation Tool:** Few students were not able to follow the procedures in the software.

Benefits:

- **Animation:**
  - The animation is attractive, It is useful when quickly getting and holding the audience's attention
  - The animation can show the imagined objects in the motion, It is ideal for demonstrating processes
  - Interactive learning with live-action animation keeps learners interested and reinforces skills
- **Simulation Tool:** One of the primary advantages of simulators is that they are able to provide users with practical feedback when designing real world systems.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	1	1			1	1	1	1	1

CO1: The students will be able to describe the architecture of microprocessor 8086 and execute programs based on 8086 microprocessor.

References:

- Yu-Cheng Liu, Glenn A.Gibson, "Microcomputer Systems: The 8086 / 8088 Family - Architecture, Programming and Design", Second Edition, Prentice Hall of India, 2007
- *https://www.youtube.com/watch?v=LUvN70k5Cpo*
- *http://www.visualmasm.com/*

RAMCO INSTITUTE OF TECHNOLOGY

Department of Electronics and Communication Engineering

Academic Year: 2019-2020 (Odd Semester)

Innovative Practices Description for Unit-II

Degree, Semester& Branch: V Semester B.E. CSE

Course Code & Title: EC8691 Microprocessors and Microcontrollers

Name of the Faculty member: Mr.A.Azhagu Jaisudhan Pazhani

Name of the Topic: Advanced Processors and Timing diagram

Name of the Innovative Practice: Audio & Video Tools, Minute Paper

Date & Duration: 31.07.2019 (30 Minutes), 16.08.2019 (10 Minutes)

Description:

(i) Audio & Video Tools:

- According to the Webster dictionary, audio-visual aids are defined as "training or educational materials directed at both the senses of hearing and the sense. Audio-visual provides opportunities for effective communication between teacher and students in learning.
- Use of audio-visual aids help in maintaining discipline in the class since all the students' attention are focused in learning. This interactive session also develops critical thinking and reasoning that are important components of the teaching-learning process.
- Students learn when they are motivated and curious about something. Traditional verbal instructions can be boring and painful for students. However, use of audio-visual provides intrinsic motivation to students by peaking their curiosity and stimulating their interests in the subjects.

(ii) Minute Paper:

This method used at the end of class for assessing student performance. Advantage of this technique is that it provides quick feedback on whether the concept is reached to the students. Additionally, by asking students to add a question at the end, this assessment becomes an integrative task. Sometimes, instead of asking for the main point, a professor may wish to probe for the most disturbing or most surprising item

Goals (Learning Outcomes):

- The students will be able to draw the timing diagram of 8086 microprocessor.
- The students will be able to describe various advanced microprocessors.

Use of appropriate method:

Justification for choosing the following Activities:

- **Audio & Video Tools:** According to the Webster dictionary, audio-visual aids are defined as "training or educational materials directed at both the senses of hearing and the sense. Audio-visual provides opportunities for effective communication between teacher and students in learning.
- **Minute Paper:** The great advantage of Minute Papers is that they provide manageable amounts of timely and useful feedback for a minimal investment of time and energy.

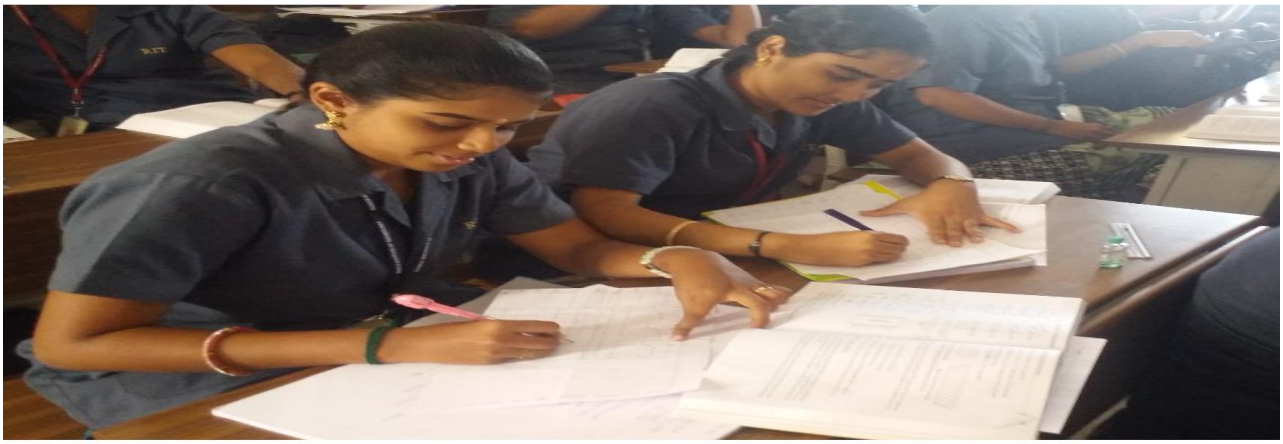
Effective Presentation: (Implementation (Plan & Execution) with Proof):

- **Audio & Video Tools:** I planned to play the animation video for 30 minutes but it took 10 more minutes to complete because in between interaction about few topics with students.
- **Minute Paper:** I went with cut paper to execute the activity, due to on spot topic few students were not able to finish the activity.

Innovative Teaching Method Execution

Audio & Video Tools for Advanced Processor on 31.07.2019

Minute Paper for Timing Diagram on 16.08.2019



Significance of Results: (Assessment of Effectiveness/Success of the Activity):

- **Audio & Video Tools:** The animation video gives the clear working and function of each block so students understand the function of Advanced Processor.
- **Minute Paper:** Helps the students to recall timing diagram concepts.

Changes required for future (if required): Nil

Reflective Critique:

Challenges:

- **Audio & Video Tools:** Sometimes audio video tool were lengthy session. Student Distractions, visual aids are more of a distraction if used throughout the entire presentation versus during key points.
- **Minute Paper:** It takes more time compared to planned time period.

Benefits:

- **Audio & Video Tools:**
  1. Make learning process more effective and conceptual.
  2. Its helps to grab the attention of students.
- **Minute Paper:**
  1. Provide a "conceptual bridge" between successive class periods.
  2. Improve the quality of class discussion by having students write briefly about a concept or issue before they begin discussing it.
  3. Increase overall creativity of the group.

Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO2	3	2	1	1	1	-	-	1	1	1	1	1

CO2: The students will be able to explain about 8086 system bus structure and design memory interfacing circuits.

References:

- *https://www.youtube.com/\watch?v=7LqPJGnBPMM*
- *https://www.humber.ca*
- Doughlas V.Hall, "Microprocessors and Interfacing, Programming and Hardware", TMH, 2012

RAMCO INSTITUTE OF TECHNOLOGY

Department of Electronics and Communication Engineering

Academic Year: 2019-2020 (Odd Semester)

Innovative Practices Description for Unit-III

Degree, Semester& Branch: V Semester B.E. CSE

Course Code & Title: EC8691 Microprocessors and Microcontrollers

Name of the Faculty member: Mr.A.Azhagu Jaisudhan Pazhani

Name of the Topic: DMA Controller & Traffic Light Controller

Name of the Innovative Practice: Buzz Session and Storyboard Teaching

Date & Duration: 29.08.2019 (30 Minutes) & 30.08.2019 (15 Minutes)

Description:

(i) Buzz Session:

- Buzz sessions are short participative sessions that are deliberately built into a lecture or larger group exercise in order to stimulate discussion and provide student feedback.
- In such sessions, small sub-groups of two to four persons spend a short period (generally no more than five minutes) intensively discussing a topic or topics suggested by the teacher.
- Each sub-group then reports back on its deliberations to the group as a whole, or sometimes combines with another sub-group in order to share their findings and discuss the implications.

(ii) Storyboard Teaching:

- The Storyboards teaching strategy helps students keep track of a narrative's main ideas and supporting details by having them illustrate the story's important scenes.
- Storyboarding can be used when texts are read aloud or when students read independently.
- Checking the thoroughness and accuracy of students' storyboards is an effective way for you to evaluate reading comprehension before moving on to more analytic tasks.

Goals (Learning Outcomes):

- The students will be able to describe operation of DMA controller.
- The students will be able to design traffic light system for different cases.

Use of appropriate method:

Justification for choosing the following Activities:

- **Buzz Session:** Buzz sessions are short participative sessions that are deliberately built into a lecture or larger group exercise in order to stimulate discussion and provide student feedback.
- **Storyboard Teaching:** The Storyboards teaching strategy helps students keep track of a narrative's main ideas and supporting details by having them illustrate the story's important scenes.

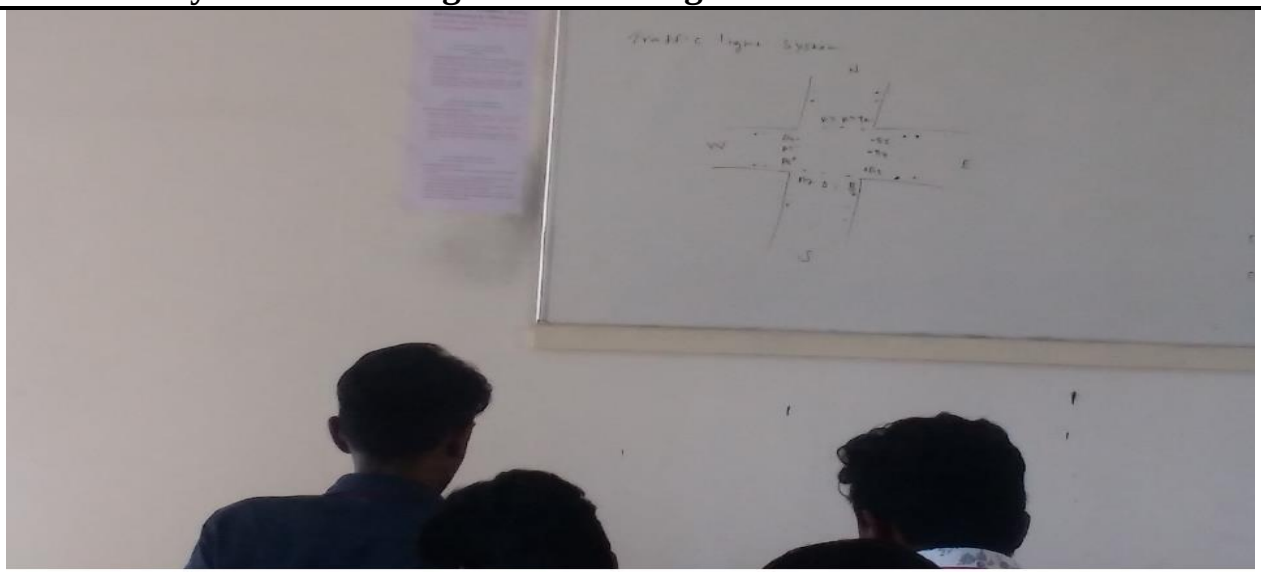
Effective Presentation: (Implementation (Plan & Execution) with Proof):

- **Buzz Session:** Group created with 4 members with unique topic, asked individual participants to write their own views and discuss with group members at last ask each group to share their points.
- **Storyboard Teaching:** Asked the students to prepare storyboard either in paper or as an image file, with their creation students will explain the concept for the given topics. Few students came with much informative boards.

Innovative Teaching Method Execution

Buzz Session for DMA Controller on 29.08.2019

Storyboard Teaching for Traffic Light Controller on 30.08.2019



Significance of Results: (Assessment of Effectiveness/Success of the Activity):

- **Buzz Session:** Students delivered the different views on their topics and shared with each groups.
- **Storyboard Teaching:** This technique takes the message among students pictorially and they were interest to learn through storyboard method.

Changes required for future (if required):

- Need to allocate more time to give opportunities to all the students in future.

Reflective Critique:

Challenges:

- **Buzz Session:** Lack of participation by all group members. Some of the students are not attentive towards the accomplishments.
- **Storyboard Teaching:** Took more time to complete the activity and engaging students to make their own storyboards

Benefits:

- **Buzz Session:**
  - Encourage students to become actively involved in a topic.
  - Allow feedback to take place.
  - Short, intense and using trainees own information so there is ownership of the output by trainees.
- **Storyboard Teaching:** Storyboards can help instructors to quickly convey complex ideas to their students

Strengths:

- Can be used to achieve a wide range of objectives, both cognitive and non-cognitive.
- Encourage students to become actively involved in a topic.
- Allow feedback to take place.
- Storyboards can help instructors to quickly convey complex ideas to their students.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO3	3	2	1	1	1	-	-	2	1	1	1	1

CO3: The students will be able to design and interface I/O circuits with 8086 microprocessor

References:

- *http://www.kstoolkit.org/buzz-groups*
- *www.teachwire.net*
- *https://elearningindustry.com/create-storyboards-for-effective-elearning-8-tips*
- *https://oncourseworkshop.com/self-awareness/one-minute-paper/*
- SK Mandal, "Microprocessor and Microcontroller", Tata Mc Graw Hill Education

RAMCO INSTITUTE OF TECHNOLOGY

Department of Electronics and Communication Engineering

Academic Year: 2019-2020 (Odd Semester)

Innovative Practices Description for Unit-IV

Degree, Semester& Branch: V Semester B.E. CSE

Course Code & Title: EC8691 Microprocessors and Microcontrollers

Name of the Faculty member: Mr.A.Azhagu Jaisudhan Pazhani

Name of the Topic: Microcontroller 8051

Name of the Innovative Practice: Animation

Date & Duration: 12.09.2019 (30 Minutes)

Description:

(i) Animation:

- ✪ The interactive animation takes less time to learn the students complex things and it makes them enjoy more to learn difficult things, The education and training are higher when the information presented via the computer animation systems than the traditional classroom lectures.
- ✪ Animations help learners understand and remember information and animation is a brilliant and innovative new way to encourage students to learn. Animation teaches using the visual aids, It is a very strong proven way of learning, It brings a topic to life, It gains the attention of the viewer.

Goals (Learning Outcomes):

- ✪ The students will be able to explain the working principles of 8051 microcontroller.
- ✪ The students will be able to describe the functional blocks of 8051 microcontroller.

Use of appropriate method:

Justification for choosing the following Activities:

- ✪ **Animation:** It creates more interest over the topic because controller is a primary device for specific applications. So every student must know about the working procedure of 8051 microcontroller.

Effective Presentation: (Implementation (Plan & Execution) with Proof):

- ✪ **Animation:** Sometimes audio video tool were lengthy session, so I choose the video clips which more essential to the students.

Innovative Teaching Method Execution

Animation for Microcontroller on 12.09.2019

Significance of Results: (Assessment of Effectiveness/Success of the Activity):

- ✪ **Animation:** This technique helps to give lively working of 8051 microcontroller to students and they understand the step by step process of microcontroller.

Changes required for future (if required):

- ✪ In future need to plan animation activity for entire period.
- ✪ Need to give chance to all students

Reflective Critique:

Challenges:

- ✪ **Animation:** Sometimes there is no audio in animation so faculty member need to explain the step by step working

Benefits:

- ✪ **Animation:**
  - ➢ The animation is attractive, It is useful when quickly getting and holding the audience's attention.
  - ➢ The animation can show the imagined objects in the motion, It is ideal for demonstrating processes.
  - ➢ Interactive learning with live-action animation keeps learners interested and reinforces skills.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO4	3	2	1	1	1	-	-	1	1	1	1	1

CO4: The students will be able to describe the architecture of microcontroller 8051.

References:

- ✪ *https://www.youtube.com/watch?v=B_Ysdv1xRbA*
- ✪ *Gene.H.Miller, "Micro Computer Engineering," Pearson Education, 2003.*
- ✪ *http://www.icaltefl.com/just-a-minute-speaking-activity*
- ✪ *NagoorKani, "Microprocessor and Microcontroller" Tata Mc Graw Hill Education*

RAMCO INSTITUTE OF TECHNOLOGY
Department of Electronics and Communication Engineering
Academic Year: 2019-2020 (Odd Semester)
Innovative Practices Description for Unit-V

Degree, Semester& Branch: V Semester B.E. CSE
Course Code & Title: EC8691 Microprocessors and Microcontrollers
Name of the Faculty member: Mr.A.Azhagu Jaisudhan Pazhani
Name of the Topic: Comparison between Microprocessor and Microcontroller
Name of the Innovative Practice: Exit Slips
Date & Duration: 10.10.2019 (10 Minutes)
Description:

(i) Exit Slips:

- They provide faculty member with an informal measure of how well students have understood a topic or lesson.
- They help students reflect on what they have learned.
- They allow students to express what or how they are thinking about new information.
- They teach students to think critically.
- At the end of your lesson ask students to respond to a question or prompt.
  - Prompts that document learning:
    Example: Write one thing you learned today.
    Example: Discuss how today lesson could be uses in the real world.
  - Prompts that emphasize the process of learning:
    Example: I didn't understand…
    Example: Write one question you have about today's lesson.
  - Prompts to evaluate the effectiveness of instruction:
    Example: Did you enjoy working in small groups today?

Goals (Learning Outcomes):

- The students will be able to elaborate difference between microprocessor and microcontroller.

Use of appropriate method:

Justification for choosing the following Activities:

- **Audio & Video Tools:** According to the Webster dictionary, audio-visual aids are defined as "training or educational materials directed at both the senses of hearing and the sense. Audio-visual provides opportunities for effective communication between teacher and students in learning.
- **Exit Slips:** It allow the faculty member to measure understanding level of the students.

Effective Presentation: (Implementation (Plan & Execution) with Proof):

- **Exit Slips:** It allow the faculty member to measure understanding level of the students. I gave brief introduction about how to write the exit slip with more informative.

Innovative Teaching Method Execution

Exit Slip for Comparison between Microprocessor and Microcontroller on 10.10.2019

Significance of Results: (Assessment of Effectiveness/Success of the Activity):

- **Exit Slips:** With in a time they can recall the specific topic and put it in the exist slip, which leads to remember the topic for long time.

Changes required for future (if required):

- In future exit slip activity should conduct through Google forms.

Reflective Critique:

Challenges:

- **Exit Slips:** More time required to conduct this activity.

Benefits:

- **Exit Slips:**
  - Prompts that document learning.
  - Prompts that emphasize the process of learning.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO5	3	2	1	1	1	-	-	1	1	1	1	1

CO5: The students will be able to implement 8051 microcontroller based systems.

References:

- *https://www.sdera.wa.edu.au*
- *https://technologyadvice.com/blog/marketing/brainstorming-activities-inspire-content-marketing-team/*
- *https://www.wrike.com/blog/techniques-effective-brainstorming/*
- *https://www.readingrockets.org/strategies/exit_slips*
- *SK Mandal, "Microprocessor and Microcontroller", Tata Mc Graw Hill Education*