



# PRAGATI ENGINEERING COLLEGE

(Autonomous)

#1-378, ADB Road, Surampalem – 533 437, Near Peddapuram, E.G. Dist., A.P.  
(Approved by AICTE, Permanently Affiliated to JNTUK Kakinada & Accredited by NBA)  
(Recognized by UGC Under Sections 2(f) and 12 (b) of UGC act, 1956)  
Ph. 08852 – 252233, 252234, 252235 Fax: 08852 – 252232, website: www.pragati.ac.in

DEPARTMENT OF MECHANICAL ENGINEERING

Academic year: 2023-24

Date: 09-03-2024

## CIRCULAR

Additive Manufacturing Club of Mechanical Engineering Department in association with Career Guidance Cell is organizing a Seminar to the Engineering students on 12<sup>th</sup> March 2024. The Theme of the Seminar is “3D Printing in Education”.

**Event** : Seminar  
**Date of the Event** : 12<sup>th</sup> March 2024  
**Venue** : MF-10.

INCHARGE

Copy to:

1. HOD-ME.
2. Departmental file.
3. AM Club In-charge – ME.
4. Career Guidance Cell In-charge – ME.





**PRAGATI ENGINEERING COLLEGE**

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INDUSTRY 4.0 CLUBS

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# **ADDITIVE MANUFACTURING CLUB**

ORGANISED BY DEPARTMENT OF MECHANICAL ENGINEERING IN ASSOCIATION WITH CARRER GUIDANCE CELL

## **"3D PRINTING IN EDUCATION"**

### **SPEAKER :**

**Mr. M.Sunil Raj**

Assistant Professor

### **FACULTY COORDINATOR**

**Mr. P. Ram Prasad**

Assistant Professor

Mechanical Engineering Department

**VENUE: MF-10**

**DATE: 12th March 2024**

**TIME: 2:00 PM Onwards**

### **STUDENT COORDINATOR**

**Mr. D.Ashish Varma**

III Year Mechanical Engineering Department

Contact No. : +91 7095338669





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DEPARTMENT OF MECHANICAL ENGINEERING

## Participants List

Name of the Event: 3D printing in Education  
Venue : MF-10  
Date : 12/03/2024

S.No	Roll No	Name	Signature
1	23A31A0326	K. Kameswara Rao	K. Kameswara Rao
2	23A31A0332	N. Yaswanth	N. Yaswanth
3	23A31A0330	M. Hemanth	M. Hemanth
4	23A31A0346	S. Naga Veerendra	S. Naga Veerendra
5	23A31A0333	V. B. V. Krishna	V. Vamsi
6	23A31A0321	J. Satya Sai Suresh	J. S. S. Suresh
7	23A31A0349	V. Saiganesh	V. Saiganesh
8	23A31A0344	R. Karthik	R. Karthik
9	23A31A0342	R. Manidheep	R. Manidheep
10	23A31A0315	B. Siva Sai	B. Siva Sai
11	23A31A0313	B. Sai Teja	B. Sai Teja
12	23A31A0337	P. Vamsi	P. Vamsi
13	23A31A0350	V. V. V. Satyanarayana	V. Suresh
14	23A31A0351	V. Koushik	V. Koushik
15	23A31A0341	P. Prasanth	P. Prasanth

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HOD-ME





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Venue : MF-10

Date : 12/03/2024

S.No	Roll No	Name	Signature
1	23A31A0352	V. Veera Bhadra Trinath	V.V.B. Trinath.
2	23A31A0311	Bh. S. D. Mrdhy Unjay.	B. Mrdhy Unjay.
3	23A31A0343	R. P. Arun Kumar	R. P. Arun Kumar
4	23A31A0325	K. Veera Manikanta	K. V. Manikanta
5	23A31A0314	B. M. Venkatesh	B. M. Venkatesh
6	23A31A0331	M. Kiran Teja	M. Kiran Teja
7	23A31A0319	Ch. Mohan Krishna	Ch. Mohan Krishna
8	23A31A0338	P. V. Venkatasiva	P. V. Venkatasiva
9	23A31A0310	A. Rajesh	A. Rajesh.
10			
11			
12			
13			
14			
15			

Total

24



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# 3D Printing in Education

Elena Novak

## Abstract

3D printing is an additive manufacturing process of producing solid 3D artifacts. Creating a 3D printed object involves designing a 3D model of the object, usually using computer-aided design (CAD) software or a scan of an existing object. The 3D model is then converted into a 3D CAD file that is used for producing the object using a 3D printer. Rooted in the maker movement, 3D printing offers real educational benefits by promoting the culture of active learning, innovation, design, and problem solving. It is holistically tied to STEM education connecting multiple STEM subject areas, particularly the areas of engineering and technology. However, just putting a 3D printer in place will not create these learning opportunities. Educators need technical and curriculum support to effectively utilize 3D printing technology for teaching and learning.

**Keywords:** 3D printing; Educational technology; Problem-based learning; Project-based learning

## 1 Definition

3D printing technology is believed to change the way things are designed, manufactured, and distributed. 3D printing, or Additive Manufacturing, was developed in the 1980s revolutionizing existing 'subtractive' manufacturing process. Instead of subtracting pieces of raw material to create an object, 3D printing builds layers to create the desired products. This small but important difference between adding vs. subtracting has offered a new approach for engineering design and manufacturing that has major implications for the world's economic, geopolitical, industrial, sociocultural, and environmental landscape (Campbell, Williams, Ivanova, and Garrett 2011). 3D printers can be used to produce low-cost, customized goods that are important to modern technological societies, thus providing a more uniform access to tools and materials, enabling small-scale manufacturing, reducing waste, and supporting innovation.

Nevertheless, the 3D printer revolution only began in 2009, when 3D printing suddenly became accessible for public use. The 3D printing process involves designing a 3D model of the object, usually using computer-aided design (CAD) software or a 3D scanner, and sending the 3D CAD file to a 3D printer that creates the object by forming layers of material. A wide variety of CAD technologies are available for users with various skill sets and needs, ranging from simple applications for young or novice users to more sophisticated

instructional approaches in history/social studies education and teacher-as-expert/student-as-novice classroom dynamics.

#### 4 Research and open questions

3D printing is an emerging educational technology that is gradually making its way into mainstream use in education. As such, relatively little research has been done on 3D printing in education. A vast majority of the existing literature on 3D printing describes how this technology was introduced to educators and students through various workshops, extracurricular activities, and informal learning (Ford and Minshall 2019). Very little research has been done on 3D printing in formal education (Novak and Wisdom 2018).

Researchers and educators agree that 3D printing can create new learning opportunities that broaden STEM participation and expose students to STEM fields. However, there are many barriers to effective integration of 3D printing technology in education, including lack of systematic teacher preparation for using 3D printing in the classroom (Dalton and Musetti 2018; Novak and Wisdom 2018), lack of careful integration of 3D printing into the curriculum (Chamberlain and Meyers 2015), lack of continued teacher proficient development (Irwin 2015), and inequitable access to 3D printing technology. Many details of how to design, implement, and evaluate meaningful 3D printing learning experiences that lead to desired learning outcomes remain unexplored. Equally important is to develop a better understanding of how to enhance educators' knowledge, skills, and motivation to use 3D printing technology. It can be expected that future research will examine what foundational knowledge and skills students gain from 3D printing learning and how to create 3D printing learning experiences to engage underrepresented populations in STEM.

#### References and further reading.

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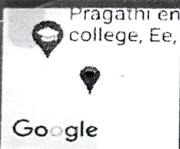
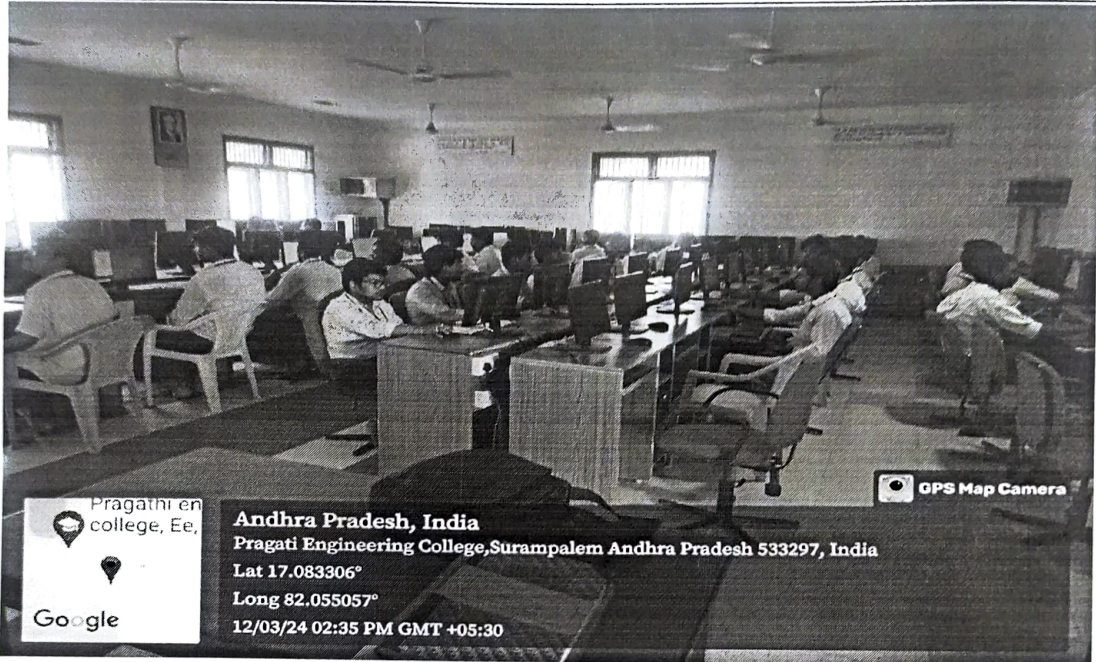
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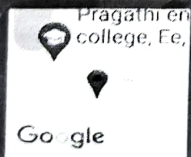
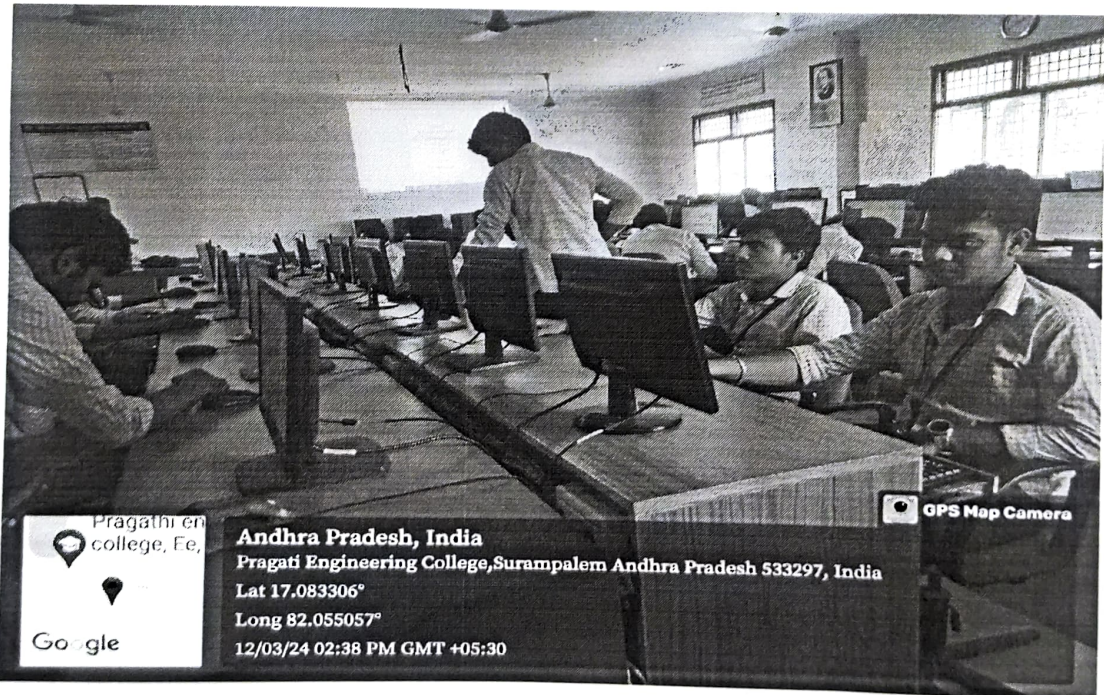
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Coordinator



<b>PRAGATI ENGINEERING COLLEGE (Autonomous)</b>					
<b>STUDENT SESSION FEED BACK</b>					
<b>Additive Manufacturing Club Organized By Department Of Mechanical Engineering In Association With Career Guidance Cell</b>					
Topic:	3D Printing in Education			Date : 12/03/2024	
INSTRUCTION: - Put <input checked="" type="checkbox"/> mark in the box					
Q1	Indicate the rating of the session as per your Opinion				
	1. Poor <input type="checkbox"/>	2. Average <input type="checkbox"/>	3. Good <input checked="" type="checkbox"/>	4. Very Good <input type="checkbox"/>	5. Excellent <input type="checkbox"/>
Q.2	Please provide us with ideas and suggestions if any				
THANK YOU for your feedback. Happy Learning!					

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Q.2	Please provide us with ideas and suggestions if any				
THANK YOU for your feedback. Happy Learning!					





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## Certificate of Participation

*This is to certify that*

**N. Yaswanth**

*has participated in a Seminar on "3D Printing in Education"*

*under Additive Manufacturing Club*

*Organized by Department of Mechanical Engineering*

*in*

*association with Career Guidance Cell on 12<sup>th</sup> March 2024.*

*P. Ram Prasad*

Mr. P. Ram Prasad  
Convener



ADDITIVE MANUFACTURING CLUB  
PRAGATI ENGINEERING COLLEGE

Dr. G. Avinash  
HOD-ME