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**Why is 3D Printing and Design Important?**

3D Printing & Design is one of a small number of technologies which countries around the world have identified as necessary during the next generation. Our country and each person in our country is in direct competition with individuals in other countries. We have to master these technologies to stay competitive.

Like most emerging technologies today, 3D Printing & Design is “multidisciplinary.;” electronics combined with engineering, biology, chemistry and physics, etc. This is Robotics combined with Material Science and, sometimes, Biology.

3D printing is a Disruptive Technology: A disruptive technology is one that displaces an established technology and shakes up the industry or a ground-breaking product that creates a completely new industry.  Examples are electric light, automobile, personal computer, Windows, email, social media.

**Why should you care about 3D printing?**

Students interactions could be with hardware, software, design, innovation

* + Medicine - prosthetics, growing tissue, joint replacement, medications, dentistry, print organ to practice difficult surgery
* Manufacturing of almost any kind
	+ Automotive, flight, parts invention and replacement, full size car – Oakridge, TN
	+ Rapid prototype design – cars to shoes to race cars
	+ Construction – print houses, architecture design and model
* Art
	+ Jewelry design –prototype and custom manufacturing
	+ Theater set design
	+ 3D printed family “photographs”, movie character development
	+ Sculpture and original intricate designs
* Archaeology and architecture building prototype
* Food Industry
	+ Decorate cakes, print in chocolate and sugar
	+ Custom made pasta and chocolates
* "Foodini" machine that uses 3D printing technology to create meals
* Fashion industry – prototype, design and manufacturing
	+ Print flowing fabric dress, earrings, necklace and bracelet, shoes, hair accessory
* Building construction

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**Why do you need to know about quads, drones, UAV (Unmanned aerial vehicle)?**

* A disruptive innovation is an innovation that helps create a new market and value network
* The probability that you will work in a field that is impacted by drones is very high
* Interactions could be with flying, hardware, software, design, innovation
* Jobs, jobs, jobs – over 100,000 new jobs by 2025
* You can get everything from a certificate to your bachelors, masters and even your PhD.
	+ 15 best Drone colleges: http://successfulstudent.org/15-best-drone-training-colleges/
	+ Drone colleges: http://dronetraininghq.com/drone-schools-list/

**10 Industries Today Using Quads**

1. Energy: Energy companies monitor miles of pipeline and oil rigs with autonomous drones.
2. Real Estate and Construction: Drones photograph, prospect and advertise real estate from golf courses to skyscrapers; they also monitor construction in progress.
3. Rapid Response and Emergency Services: Drones aid in search and rescue operations ranging from forest fire fighting to searching for people buried in rubble or snow using infrared sensors.
4. News: It’s faster and safer to deploy drones to cover breaking news/disaster/war zones than news crews.
5. Package/Supply Delivery: Companies like Matternet (founded at Singularity University) are building networks of UAVs to deliver food and medical supplies to remote villages around the world.
6. Photography/Film: Visual artists use drones to capture beautiful new images and camera angles.
7. Scientific Research/Conservation: Drones assist in everything from counting sea lions in Alaska to conducting weather and environmental research to tracking herd movements on the Savannah in Africa.
8. Agriculture: Drones watch for disease and collect real-time data on crop health and yields. This is an estimated $3B annual market size.
9. Law Enforcement: Drones can be used during hostage situations, search and rescue operations, bomb threats, when officers need to pursue armed criminals, and to monitor drug trafficking across our borders.
10. Entertainment/Toys: Good old fun.

Information taken from Forbes Magazine Aug. 11, 2014