

**Program:** 3D Printing

**Speaker:** Leo Doyle, Indiana Internet Entrepreneur

**Introduced by:** Alan Schmidt

**Attendance:** 119

**Guests:** Muffi James, Renee Ratermann, Jim Stohler, Dee Saul, Steve Conger, Dick Hansell, Cathy Roy, Karen Steiberger, Patrick Milligan, Gary and Louise Fredericksen

**Scribe:** Russell Judd

**Editor:** Ed Nitka

The speaker today was Leo Doyle and he was introduced by Alan Schmidt. Mr. Doyle is a former professor of electrical engineering and computer science at Purdue University. He is now with the Cyber Defense Force and Division of Homeland Security and city of Indianapolis.

Mr. Doyle spoke about "How to get started in 3-D printing for under \$150." There are three varieties of printers:

- 1.Fused deposition(FDM)
- 2.Stereolithography(photopolymer)
- 3.selective laser sintering(powder)

The most often used is the FDM variety. This is also known as additive manufacturing (AM), a process used to manufacture a three-dimensional object in which layers of material are formed under computer control to create an object. Created objects can be of any shape or size. After building five printers from kits, Mr. Doyle found that he could save a lot of money when compared to the costs of ready built printers. Kits usually come from China, cost about \$90 and can be purchased on eBay. All kinds of objects are being made now with 3-D printers from tiny needle sized objects to furniture and

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even houses. In an effort to save money and time, the military is experimenting with printers making weapons and even submarines. He uses a printer kit called A8 that he gets on E-Bay. Its print volume is 8.6 by 8.6 by 9.4 inches in size and works well for his purposes. Mr Doyle listed several features to consider when buying a particular printer: the print size, the brand, speed, auto level, nozzle size, support and repair.

3-D printing is versatile and exciting. It can be learned and used by all ages to make many things. Students in high school are learning and doing printing. Thanks to Mr Doyle for showing us how to save some money and print.



Leo Doyle