Roughrider Area Career & Technical Center
Directors Report
April 2018

Meetings

April 18 and 19 CTE Administrators meeting in Jamestown

April 18 and 19 – 3D printer workshop at GTI in Mandan, I will be in Mandan with teachers.

April 24 and 25 – I have been asked to help pick the State FFA "Stars in Agriculture". I will be out of my office.

May 2 at 6:00PM MST – RACTC Board Meeting Klinefelter Hall DSU

May 3 – CTE planning meeting at 10:00CST in Dickinson

May Board Meeting

The main agenda item is to work out board policy for salary, benefits and working conditions for RACTC employees. This is an important meeting so that we can get contracts issued.

High Technology Equipment

The final rotation for the year has been completed. My plan is to pick up all of the equipment at the end of the school year and have Global Technology Incorporated go through it all this summer and have it ready for the 2018/2019 school year.

Currently there are 6 teachers from the RACTC that are signed up for 3D printer training April 18 and 19 at Global Technology in Mandan. The two day workshop begins at 8:30AM each day.

Missouri River Area Career and Technology Center Online Training Course

The MRACTC has invited RACTC teachers to be part of a continuing education/professional development activity for instructors teaching classes online classes. The MRACTC will charge RACTC teachers $150.00 each to participate in this training.

The MRACTC has hired Jessica Santini to conduct the training. Jessica has a Masters degree from the University of North Dakota and a BS degree in English from UND. She has 14 years of experience in higher education, dual credit education, leadership development training for adults and high school students, professional development, and online instruction. Jessica has been an invited presenter at conferences nationally and statewide, and has experience developing courses for multiple audiences, deliverable on multiple online learning management systems.

In this project, Jessica will develop a professional development course for instructors that will support them in leveraging free online tools and instructional methods to increase person-to person connections within their online classes. The course will include continuing education credits through the University of Mary or University of North Dakota and will provide instructors with support and confidence in bringing their subject matter expertise to the online classroom with 21st century tools. Not only will instructors be supported by Jessica's experience and content, they will have the opportunity to network with one another and share ideas in the online course. The work they will do in the class will serve as a model for the kind of activities they can build into their own courses. In this way, the course offers multiple modalities for learning-the delivery of the content, but also the experience of a modeled collaborative course using the very tools and instructional methods the instructors will learn about.

The following is the MRACTC timeline

- June 1, 2018: Complete application for professional development credit
- August 1, 2018: Course is developed and ready for deployment
- August 7, 2018: Meet with Instructors at showcase in Bismarck during the CTE PDC conference.
- August 15: Complete adjustments/enhancements to class based on August 7 conversations.
- Fall 2018: Deliver the course
- December 2018: Make adjustments for future versions of the course and prepare for spring 2019 if needed.
- January 2019: During this course, participants will have already tried interactive tools in their classes, but in this spring semester, they are prepared to deliver revamped whole semester classes with what they learned.

RACTC teachers if you are at PDC in August, come and check this out and see if this is something that might interest you. This is also an opportunity to pick up some credits for licensure.

SkillsUSA

Agriculture teachers have the FFA, Family and Consumer Science Teachers have The FCCLA, Business Teachers have FBLA chapters and marketing teachers have DECA. The trades, which includes Health Sciences have SkillsUSA for their student organization.

The RACTC currently has a student from Dickinson High School participating at the state Skills contest held in Wahpeton April 7-9. During the second year of existence the RACTC had a number of students participating at the state contest having a state winning team and state officers.

As CTE programs get evaluated, one question that is asked, is about student organizations and leadership opportunities for students. It is time to make SkillsUSA available to our online students.

The following is from the SkillsUSA website.

SkillsUSA is a partnership of students, teachers and industry working together to ensure America has a skilled workforce. SkillsUSA helps each student excel.

Mission Statement: SkillsUSA empowers its members to become world-class workers, leaders and responsible American citizens. SkillsUSA improves the quality of our nation's future skilled workforce through the development of Framework skills that include personal, workplace and technical skills grounded in academics.

SkillsUSA serves more than 335,000 students and instructors annually. This includes 19,500 instructors who join as professional members. Including alumni, SkillsUSA membership totals over 395,000. SkillsUSA has served more than 12.5 million annual members cumulatively since 1965.

Direct Deposit

I have been working with Gwen Ferderer, Fiscal Manager for North Dakota Career and Technology Education, and Mark Wagner, NDCTE acting Director, in getting RACTC payments directly deposited into our account. We have been having problems with the paper check process going back to a lost check last year.

I completed the appropriate paperwork for direct deposit and submitted the application to NDCTE. I got a call from Gwen Ferderer and Mark Wagner stating that the RACTC payments need to be deposited through Dickinson Public School according to bylaws.

I saved all of the minutes on a thumb drive that lead up to the formation of the RACTC. I sent the minutes to NDCTE. The following is the part of the minutes that talks about fiscal management. I hope this is enough to get setup for direct deposit into our account.

Wednesday, February 13, 2008 - Wayne Kutzer, Department of Career and Technical Education Overview - Mr. Kutzer gave an overview on guidelines for establishing a Career & Technology Center.

The CTE Center would have their own federal ID number, insurance reserve, unemployment, etc. The funding may run through the school district accounting system but it has to be separate and identifiable. They can contract with a school to do the payroll, pay the bills, etc.

Annual Plans

It is the time of the year to start planning for next year. This starts with the budgeting process for RACTC teachers. I will be asking schools for teacher and counselor contracts for the 2018/2019 school year. This information is recorded online for the North Dakota Department of Career and Technology Education so that calculations can be made to fund the RACTC.

Blackboard Training

Dickinson State University is changing from Moodle to Blackboard next school year. It is my understanding that the entire university system will be using Blackboard. Moodle and blackboard accomplish the same thing for the RACTC, in delivering teacher lessons and content to our students in an electronic format. The training will be held June 18 and 19 at Dickinson State University

What is Blackboard?
Blackboard is a web-based learning system used by schools for giving instructions to students, for online interaction, and for educational assessment. It is a program/software built to enhance teaching methods and the learning processes of students.

The Blackboard Learning System aids teachers and instructors in creating and managing course content, while allowing them to have an easy means of interacting or communicating with their students. The system also helps these instructors to evaluate student performance.

With Blackboard, course materials can be accessed online by the students. Activities and tests may also be administered on the web, allowing for student feedback. With online availability of information, group collaboration is easier as the system also allows for online discussions and chatting on virtual classrooms. Multiple formats of information can also be put on the Blackboard system, wherein students can choose which file format suits his/her learning style best. Students can also re-use and review previous tests and lessons, allowing for improved learning and improved grades. They also have the option to assess themselves through practice tests before taking the actual examination. And once a student completes an examination, his/her teacher can readily access the completed test and later exchange comments and feedbacks with this particular student. This allows for improved monitoring on the student's learning processes and skills.

Welding Academy

I have been in discussions with the Missouri River Area Career and Technology Center in Bismarck concerning the summer welding academy. The MRACTC was to host the academy in Bismarck this summer. The response I received is to put it on hold for a year.

Normally the RACTC and MRACTC split the cost of the welding academy. I am not sure that the RACTC has the funds to put this on by ourselves. Last fiscal year the RACTC was in the red for the budget year.

I started this academy nine years ago and still find it an important activity for the RACTC welding program. The Lincoln welders each school received was part of the welding project, along with the additional funding your school receives for welding supplies.

My thoughts are if the RACTC tries it alone I need to run this by the board because it will take extra funding from the RACTC that have not been budgeted.

Article of interest

With a 3D printer workshop on April 18 and 19, I thought this article did a good job of explaining some different uses in your school. Currently I am seeing Agriculture, Business and Science teachers using this technology in the equipment rotations.

Why 3D Printing Needs to Take Off in Schools Around the World
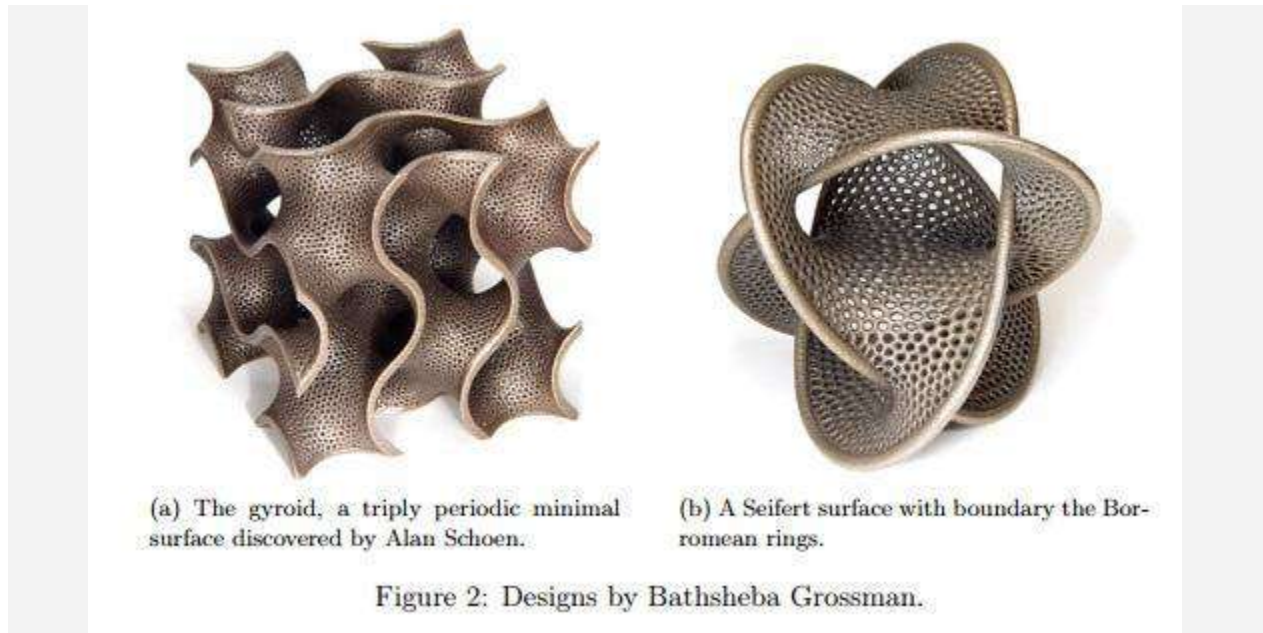
by Eddie Krassenstein

When it comes to 3D printing, there are limitless ways in which the technology can be utilized. Businesses, hobbyists, and educational institutions are beginning to fully understand some of the potential benefits that the technology can provide. 3D printing has, and will continue to, provide a means for inventors, innovators, and visionaries to easily fabricate prototypes for designs which they could only depict via 2-dimensional drawings and diagrams in the past. 3D printing will certainly spur on new inventions, simply because inventors now have a way to test out their ideas with tangible models and prototypes.

Where 3D printing has yet to really make a huge impact, but provides an ample amount of opportunity, is within educational institutions. These range from elementary schools to high schools, universities, and maker spaces around the globe. One reason that 3D printing has been quite slow in making its impact in these institutions is simply because of the lack of knowledge of the technology by the decision makers in charge.

Because the technology is so relatively new, the greatest impact may come via the introduction of 3D printing into public and private grade schools. The younger a person is, the easier it usually is to introduce new ideas and methodologies. This is why young children are so quick to learn new languages, when compared to their older adult counterparts. This is what makes elementary schools, junior high schools, and high schools the perfect place to begin really introducing a curriculum based around 3D printing.

Just about every subject within a school curriculum could benefit from 3D printing technology. We will outline a few of these below:

3D Printing in Math

(a) The gyroid, a triply periodic minimal surface discovered by Alan Schoen.

(b) A Seifert surface with boundary the Borromean rings.

Figure 2: Designs by Bathsheba Grossman.

We have already seen many ways in which 3D printing and mathematics have converged. Most commonly it has been used to help students envision graphs and mathematical models. Some students have a difficult time grasping numbers and diagrams that they can only see on paper. This isn't a learning disability, but rather just the way that some of our brains function. 3D printing helps those students who have a more difficult time envisioning equations, elaborate graphs, and complex mathematical models to more easily see them through tangible representations. Most importantly though, 3D printing brings a "cool" factor into a subject which could normally be quite boring. The Simon Foundation has an excellent video on this.

3D printing in Geography

3D printing is an excellent way for students to better understand geological formations on a scale that is not presentable through 2-dimensional images. We have seen many interesting 3D printed geological forms come to the aid of those studying geography and geology. 3D printing has helped researchers land a shuttle on a comet, by aiding in picking the best possible landing spot. We have also seen a man 3D print earthquake data to help him better compare a recent quake in California to those experienced in the past. In addition to this, companies have been using 3D printing to better understand the cause and effect of oil/gas fracking. We live in a 3-dimensional world, so having a chance to envision the geography and geology that we are being taught using a 3-dimensional tool would obviously be the preferred option.

If writers of textbooks can understand the importance of 3D printing and want to integrate it into the lessons, then they could include files for 3D printable models with each chapter in their books. This would provide for a fun, educational experience for students and teachers alike. Imagine printing out scaled down models of certain mountain ranges, rivers, canyons, etc. It would be a way to give kids a hands-on look at famous locations around the world without having to actually be there.

3D Printing in History

History is probably the subject that has the most to gain through 3D printing technology. Museums all over the globe are finally beginning to see the potential that 3D scanning and printing can have on not only making replicas of ancient artifacts, but also backing them up and providing a more hands-on feel of them. Previously, when you were to visit a museum, you could "look but not touch" the artifacts. Now with the availability of high-end 3D printers and scanners, replicas can be touched, and many of these replicas are virtually indistinguishable from their real counterparts. Now imagine if every history class had the ability to 3D print replicas of artifacts from a massive library of downloadable STL files. Every classroom would now have access to museum artifacts from the luxury of their own school.

Again this is much more exciting than reading chapter after chapter in a textbook, with many students losing focus and not comprehending what they have read. Being able to relate to an object in history goes a long way in making that history lesson much more interesting.

3D Printing in Art

Art and design classes are surely going to see tremendous effects of 3D printing. The technology will open a whole new realm of possibilities for art teachers. Lesson plans could expand to include 3D design, and become much more interesting, with students being able to bring their designs to life via 3D printing. No longer do we have to rely on 2-dimensional screens in order to view 3-dimensional models. Comprehensive projects could be taken on, on a national or even global level, with the ability to share 3D printable art design with anyone, including other

schools in the world. Classes in New York could work on projects with classes in India, and then 3D print their final results in both locations. There are many unique forms of art that have come about in the past few years through the use of 3D printing, but we have not even begun to scratch the surface of what is possible.
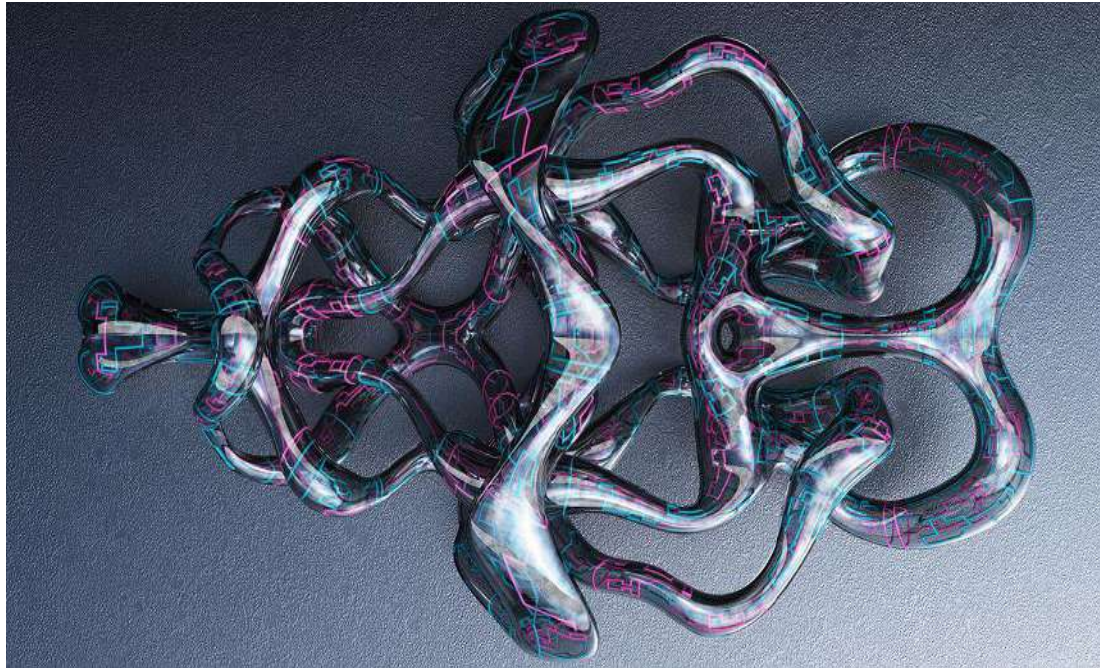
3D Printing provides a brand new method of creating art. With 3D printing available in art classes around the world, our future artists will be the ones to really help the technology reach its potential in all of the different fields of art out there.

3D Printing as a Tool
3D printing doesn't only provide ways of learning different subjects, but if done correctly there could be lesson plans built specifically around 3D printing in general. It is a learning tool, one which will only continue to evolve, and continue to provide benefits beyond standard educational curricula.

We are living in a realm of new technology, which includes that of 3D printing. Schools seem to be stuck in the past, presenting information to students in the same way as previous generations did. While new technology can be quite scary, especially to those older generations who have a tendency to be less keen on changing their ways, changes need to be made, and the introduction

of 3D printing into schools is one of these that should be taken into consideration by every single school in the world.

There are several companies trying to make inroads into the 3D printing curriculum space, and more of this is needed. The other thing holding the technology back in a lot of schools is the simple fact that schools work on small budgets, and 3D printing is not something many people are very familiar with. When it comes to budget decisions, those unfamiliar with a technology are more likely to vote it down. Because of this, there needs to be more initiative taken by state and federal governments, in educating these decision makers about the technology.

What do you think should be done to help 3D printing make its way to more schools around the globe? Do you think enough is being done, or is more needed?