NVC Annual Report
August 2015
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Classrooms:
We continue to upgrade a few classrooms each year, primarily to add audiovisual or networked learning capacity. Our long-term goal is for every classroom to support networked learning in some form. Specific upgrades for the past year are listed below.

NVC 207 formerly had Polycom connectivity using an 8000 series codec, two 42" monitors on a fixed stand, and a Soundstation phone in the center of the room. The system was upgraded to two 60" wall-mounted screens and noise/echo canceling microphones were installed in the ceiling. This has dramatically improved usability by enhancing the audio quality, improving the visibility of the screens, and eliminating the need to move the phone in and out of the room for different types of classes.

NVC T3 formerly had no connectivity. The room was upgraded with a Epson Brightlink Pro 1430wi interactive whiteboard, Vaddio HD steerable camera, and ceiling-mounted microphones with noise and echo cancellation. At the same time, the instructor station was upgraded to a SmartDesk to enclose all computer and audiovisual hardware. The end result is a high quality WebEx enabled classroom that can easily act as both receiver and broadcaster. Moreover, the interactive whiteboard supports collaboration and sharing over a local wireless network or the internet, bringing new possibilities to our faculty.

NVC 326 formerly had no connectivity. The room was upgraded with a wall-mounted Logitech webcam and Acoustic Magic beamforming microphone array. This is a low-cost upgrade that provides the room with basic WebEx capacity.

Working with Digital Media Services (DMS) and Technology-enhanced Learning and Online Strategies (TLOS), we have recently begun to upgrade the remaining 5 DMS classrooms at the NVC. When completed in early 2016, this will be a significant technology overhaul for the many classes that are taught using a shared virtual classroom between Blacksburg and the National Capital Region (NCR).

Other technology or space changes:
We have invested in a "padcasting" setup that allows any room to broadcast content to a WebEx meeting or over videostreaming services such as Periscope, Meerkat, or YouTube. This setup includes 2 wireless lavalier microphones and 2 wireless handheld microphones for improved sound quality. Although the system is limited by the overall performance of the building wireless network, it has the advantage of being able to move from room to room quickly and easily.

NVC 200, the former shared registration offices for UVA and VT, has been emptied out on the VT side in preparation for turning this room into a large classroom that would seat approximately 48 students. The NVC currently has no classrooms of this size. The VT half of this room is currently being used as an informal meeting space and group study area while we wait for UVA to be ready to move ahead with a full room renovation.

Graduate student space:
Classrooms 203 and 205 were converted into graduate student offices for the Marriage and Family Therapy program. This move enabled the graduate students to be much closer to the MFT clinic and faculty offices (previously, the graduate students had been located on the 4th floor). The move also enabled the graduate students to have one room dedicated to quiet solo work and one which could support small discussions and workgroups, which had previously been impossible.

A small 3rd floor classroom (NVC 316) was converted to shared graduate student offices for ECE and CS, primarily to deal with an increase in the number of graduate students in these programs.

Makerspace:
A strategic investment by the Graduate School during 2014 provided a NextEngine 3D laser scanner and MakerBot Replicator 5th Gen printer for use as a community resource. This equipment was added to the computer learning laboratory (NVC 102). Because NVC 102 connects to the NVC Library, the room could be accessible to students, faculty, staff, and community members during specified hours of the week.

Following on this investment, the NVC applied to join the 3DSystems MakerLabClub, which is designed to familiarize more people with 3D design and printing. Our application was accepted, and 3DSystems donated 4 Cube 2nd Gen printers to the NVC. An additional 2 printers were donated by a member (Kaye Ebelt) of the Einstein Fellowship program, a nationwide competition for teachers. Ms. Ebelt's fellowship was to work with the NSF Engineering Directorate to design engineering curricula for K-8 students that would take advantage of the unique capabilities of 3D printing. 3DSystems also donated 25 licenses of Cubify Sculpt, Invent, and Design. This software was installed on workstations in the computer lab, enabling users to have free access to expensive and professional design programs.

During the Spring 2015, NVC worked with Ten80 Education, 3DSystems, and the Einstein Fellows program to offer an in-depth 3D printing class to 15 of the Einstein fellows, which is most of the current cohort. This class gave each teacher several hours of practical instruction on Cubify Design and the operation of a 3D printer, plus a similar level of attention to curriculum development. This experience was featured during the Capitol Hill Maker Faire and will be the basis of an upcoming book by Ms. Ebelt.

Using a Meetup [http://www.meetup.com/Virginia-Tech-NVC-MakerLabClub/], we continue to hold periodic classes on 3D printing and related topics. These classes are open to the community at large and have provided a great way to introduce visitors to the scope of VT programs at the NVC and in the National Capital Region.

In summer 2015, the Graduate School invested in further capabilities for the lab, including two handheld 3D scanners (Cubify Sense and iSense), a Microsoft Surface tablet, a second desktop 3D scanner (Makerbot Digitizer), and a more powerful computer desktop workstation to handle complex scanning or design tasks.

We have also connected with many other entities in the community to offer collaborative programs based around 3D printing. These entities include Fairfax County Public Schools, Fairfax County Public Libraries, Northern Virginia Community College, Falls Church City Public Schools, Arlington Central Library, and the Children's Science Center (Herndon). Our goal for the coming academic year is to have the lab open for use at least 30 hours per week.