CTE Educator Collaboration Forums – COVID-19

Zoom Meeting Notes
Thursday, March 26, 2020

Automation/Robotics/Mechatronics

- Automation/Robotics/Mechatronics GDrive folder:
  https://drive.google.com/drive/folders/1_BYudyOnGhWFuwuskqoa_4-3nqg337mf
- Automation/Robotics/Mechatronics resource list:
  https://docs.google.com/document/d/1tN8vEL1i6snORhbWa7FJB_iL7D4HRkHftTKTuHnamho/edit?usp=sharing

We have listed (and are adding to, with the help of attendees) curricular resources and links to assistive services and programs to support students and instructors coping with mental health, food insecurity, income loss, reliable internet access, and other concerns in the above "resource list" link.

Issues, concerns, comments, and suggestions:

- **Multisim** will let you run/simulate circuits as an alternative to in-person lab experiences. There are lots of previously created circuit simulations available to use, in addition to being able to create your own:
  https://www.multisim.com/
- **Fluke** is another site offering e-simulation tools as an alternative to in-person lab experiences. It has been difficult to get loaner kits, but there are fairly cost-effective breakpoints for purchasing their physical materials:
  https://www.fluke.com/en-us/learn/student-discounts-and-resources/teaching-materials
- **Flate** provides links to engineering technology courses in different discipline areas and related resources:
  http://flate.pbworks.com/w/page/49891236/ET%20Modules
- Concerns regarding how a lack of internet access for some students will widen the achievement gap, and what pedagogical needs can be met with remote instruction and simulation tools vs. what must be met via in-person lab work.
- Some institutions have been deploying WiFi hotspots on busses, in parking lots, and at other public sites to enable students to get online while still maintaining appropriate social distance (typically from their vehicles).
- Many schools and colleges are also trying to keep as many computer labs open as possible, although they're often being physically reconfigured to allow for greater social distancing.
- Some campus IT departments are exploring the ability to lend out Wifi hotspots, laptops or equivalent devices, although there are supply-side shortages or many of these things.

- Cloud-hosted software solutions for technical software (CAD, Project Management software, SPSS, etc.) are being explored, with the aim of making hardware-intensive software available to students remotely on mobile devices and personal computers.
- Some companies are making extended software trials available to students and instructors. Similarly, some software providers that have contractual agreements with existing schools or educational systems have been willing to loosen normal usage restrictions to allow for greater and easier use of their software during this period (for example, allowing.
- Some cellphone characters are providing unlimited data for the next 30-60 days, and internet service providers (ISPs) are also offering free or greatly-discounted internet access for those in need: https://www.fcc.gov/keep-americans-connected?utm_medium=email&utm_source=govdelivery
- There is still a persistent need for hands-on training and lab experiences, and the limitations of virtual, remote, or equivalent simulation tools aren't likely to go away. This is leading some to (temporarily) move more in-person lab content and training into the future – for example, moving SP20 and/or FA20 content into 2021 when possible – to try and even out usage as much as possible, while using remote instruction techniques for theory and other "hands-off" instructional work.
- "Flipped classrooms" are sometimes difficult to implement, since most students aren't looking for remote experiences with inherently hands-on areas of training.
- **Project Lead the Way** has relevant software available for students to download and use on their personal devices. Vic Dreier can be reached at vdreier@pltw.org for those that have questions about PLTW or their ongoing with VEX robotics to make VR training resources more widely available. Links of note:
    o https://www.vexforum.com/t/coming-soon-vexcode-vr/78215
    o https://store.robotmesh.com/hoc2017
- **Career Success Skill Modules** were suggested as a valuable resource: https://www.yourfutureinmanufacturing.com/
- Ongoing concerns regarding how to address students and/or instructors who are unwilling or unable to attend even modified in-person training experiences. Also, adapting to and trying to address current needs while continuing to build out remote teaching capacity in the event of future pandemics.
- There has been a lot of discussion regarding modified pedagogy, like how best to use Zoom and related security issues, variants on the traditional written exam (like oral exams), and similar modifications.

CAD/CAM/Drafting/Design

- CAD/CAM/Drafting/Design GDrive folder: https://drive.google.com/drive/folders/1loqi_R7oN1lrKe0xfmjgpdnIIp2S9Sx2
- CAD/CAM/Drafting/Design resource list: https://docs.google.com/document/d/1MvJ8ooFapEscLE5aiSbhVxRTTmaNDprvzYaI9jXmrKk/edit

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Issues, concerns, comments, and suggestions:

- Despite having the ability to download and install high-end CAD software, many students lack the high-powered machines needed to run it. Cloud-based solutions are one option, including:
    o https://www.onshape.com/
    o https://caminstructor.com/
    o https://web.autocad.com/login
- Some software providers like **camInstructor** are also offering free upgrades of for prior users.
- Pre-recording some of your (remote) lessons prior to the resumption of classes next week might be a good idea, in the event of service slowdowns or outages with Zoom when everyone goes back to classes.

Machine Tool Technology/Quality Assurance/Medical Device/Bio-Medical

- Machine Tool Technology/Quality Assurance/Medical Device/Bio-Medical GDrive folder: https://drive.google.com/drive/folders/18ken_hFfKoCnpHJQwVJVzgSCy4nkV1Qi
- Machine Tool Technology/Quality Assurance/Medical Device/Bio-Medical resource list: https://docs.google.com/document/d/1ybzQGTE-WewfIV3C7gxb2G_X5oQdn--993ti_sColbw/edit

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Issues, concerns, comments, and suggestions:

- Technical programs may be able to still hold in-person training, but with limited numbers of students (10 or fewer) and adequate social distancing. However, many colleges are in a "wait and see" pattern, since further state-level guidance is still needed. Higher-ed's exemption may be a means of allowing modified in-person training.
- More aggressively splitting off hands-on training into smaller pieces spread out over longer periods of time and trying to more strategically shift students between hands-on and theory work is increasingly necessary to manage limited lab spaces with social distancing constraints.
- Middle and high school instructors noted difficulties in tracking/verifying student participation when in a remote capacity, which is already difficult in an in-person setting.
- Many areas in the manufacturing sector have been deemed essential, leading to continued (and at times increased) job opportunities during this crisis. Some of these openings can be filled with high school and/or college student internships.
- Encouraging students and instructors to be more flexible when it comes to online file storage is helping both student work and instructor grading efforts. For example, using cloud-based services like OneDrive, Dropbox, Google Drive, or equivalent services let students store and access their work files from multiple computers more easily – whether at home, in labs, or via certain mobile devices – and then let instructors review and grade them directly.

Maintenance/Fluid Power/Electro-mechanical systems

- Maintenance/Fluid Power/Electro-mechanical systems GDrive folder: https://drive.google.com/drive/folders/1d6PX4IYXghiT83NpYZ1ykaJ9y7EGhLy1
- Maintenance/Fluid Power/Electro-mechanical systems resource list: https://docs.google.com/document/d/1duthMDbTHFXOD-F8OToNFgIXM4sDnKzAR9btwI531OI/edit

We have listed (and are adding to, with the help of attendees) various curricular resources and links to various assistive resources to support students and instructors coping with mental health, food insecurity, income loss, reliable internet access, and other concerns in the above "resource list" link.

Issues, concerns, comments, and suggestions:

- Reviewed supportive links and info that is included in the resource list linked above.

Welding/Metal Working/Brazing/Soldering

Welding/Metal Working/Brazing/Soldering GDrive folder:
https://drive.google.com/drive/folders/1y6QGNdc5eLEVA4o9JNeHSFaUuu_z_ivr
Welding/Metal Working/Brazing/Soldering resource list:
https://docs.google.com/document/d/1StXJEQRC2Yp2WN54J7WFt3SLQrTlvcZgMUA6F4-MBMw/edit

We have listed (and are adding to, with the help of attendees) curricular resources and links to assistive services and programs to support students and instructors coping with mental health, food insecurity, income loss, reliable internet access, and other concerns in the above "resource list" link.

Issues, concerns, comments, and suggestions:

- Reviewed supportive links and info that is included in the resource list linked above.
- From Tim Barrett:

  Mike Sandell received this information from Lincoln Electric - Below is information for a temporary solution for online ULINC curriculum:

  In response to the current social distancing teaching scenario, Lincoln Electric in partnership with NC3 will make all Safety and Certificates of Knowledge Exams (Principle, Theory, Non-hands-on) publicly available to ANY instructor who requests access for the next 30 days.

  This is a subset of our ULINC welding curriculum that Lincoln Electric created but is hosted on NC3's website typically for issuing certifications to students but right now the content will be available to support distance learning. This will be open to all schools, regardless if you are part of the NC3 Network.

  To access these resources please follow the steps below:

  Click the link: https://www.nc3.net/2020/03/19/keep-cte-moving/?utm_source=rss&utm_medium=rss&utm_campaign=keep-cte-moving

  There is helpful information on this page once you gain access.
- For secondary and post-secondary teachers that cannot have their students come to labs, there were questions about how best to approach teaching critical math skills. The Khan Academy was brough up again as being an excellent resource for this: https://www.khanacademy.org/
- Teaching strategies to replace limited (or sometimes non-existent) lab activities:
  - Encouraging students to use actual welded objects in their day-to-day life to evaluate and try to mentally model the steps needed to create them.
  - Scavenger hunt-style group activities to encourage students to go and find objects in the environment that have been welded, figure out what materials they're made out of, roleplay the different welding techniques requested for different materials, finishing techniques, and other practical insights – did they grind it, what techniques were used, etc. – to help students better understand welding in mechanical-spatial terms.
  - Welding simulation games/apps are great ways of generating interest in welding careers.
  - Have students make blueprints and conceptually work through the construction of a fishing ice house.
- Contacting AWS directly regarding non-destructive testing instruction was suggested. Also, Ridgewater College was noted as having significant expertise in this area.
  - The ANST store is closed through April 7th. If you want to purchase anything from them it will have to wait. https://asnt.org/store

- Reviewed take-home points regarding lab time from recent policy-related webinars from Minnesota State:
  - Middle and high schools are generally unable to meet with students at all. School remain locked down due to the need to sanitize facilities.
  - Further state-level guidance is needed from Minnesota State regarding college-level protocols, which are somewhat more flexible but still heavily restricted.
  - All-around issues such as lab management, how to handle lab requirements for specific classes/programs, how to handle students and instructors that are unwilling to attend (modified) in-person lab activities, how to alter grading protocols, how to triage financial aid issues for students, and differing feedback from local administrations regarding how (or if) labs can meet were brought up.
- Further discussion regarding filmed tours and other means of remotely experiencing welding careers and other manufacturing careers: https://www.youtube.com/user/DreamItDoItMN
- Career engagement strategies where folks take videos from their smartphone to provide "day in the life of"-type experiences for interested students. Examples include:
  - Tools and their uses
  - Safety/PPE
  - Tell us about your trade
  - Apprenticeship
  - Time lapse builds
  - Show us your helmet stickers
  - What's for lunch?
- The YouTube channel Weld.com was also suggested as a great resource: https://www.youtube.com/channel/UCM0kHJXSHR1k1wtLuliKmHg
- Welding videos from Steve Bleile were also cited as a great YouTube resource: https://www.youtube.com/results?search_query=Steve+Bleile+welding