Rachel: Welcome back everyone. We are so glad to hear you --

to see you on day two of HI-TEC 2020.

-- 2021. I have been lucky enough to be

the chair of the HI-TEC committee this year. Want to

thank the National Science Foundation for their support of

this conference. We also want to thank our supporters and

sponsors.

Also, as you could see from the schedule, we have a great

program lined up. Grab a cup of coffee, tea, your beverage of

choice, sit back and enjoy our wonderful keynote and are

inspiring panel of faculty and students.

Speaking of, don't forget to view the 80 plus on-demand

sessions. You should have received the link earlier this

week and we will put it in chat again.

The sessions are available for six months and you will get a

receipt -- a recording of this live event from yesterday and

today. Also, just a reminder to
complete the day two conference survey which you will get as you exit the program. It makes a huge difference to us as we work on planning future conferences. A quick reminder to put your questions in chat. Both for our keynote and also for our panelists. You can turn on closed captioning if you like, and set zoom in side-by-side view.

At this time I’d like to jump into our program and introduce our day two keynote speaker, Jessica Gomez. She the founder and CEO of RO Valley Microdevices Inc.

Please join me in a very warm welcome for Jessica Gomez.

Jessica: Hi, everyone. I'm excited to be here. I've been watching the chat area and how many people are on, this is an amazing conference. I look forward to attending in person at some point. I even saw someone from Long Island hop up.

Thank you for being here.

I wanted to start by sharing a little bit about my own personal
journey.

I think there is this misperception that in order to
be a CEO you are born with this silver spoon in your mouth.

Are you have to be some sort of math was, -- math whiz or a boy
genius like Mark Zuckerberg read that's not true. I'm living
proof of that fact. I have spent my early years in
a low income Hispanic neighborhood on Long Island, in
New York.

One of the things my parents decided early on, they were
nontraditional and they decided they would homeschool as kids. I
am one of four. The home part went OK but the
school part did not happen. I think it was more difficult than
they anticipated it being. I had to struggle much later on
in life to overcome those challenges. At 12 we made a big
move, from a very urban area to the middle of nowhere in
southern Oregon. About five miles past the
nearest gas station. We moved at the worst possible
time, the entire economy in Oregon wasn't collapsed due to

the shutdown of the forest. There was a lot of controversy

over the spotted towel -- the spotted owl and the

environmentalist and loggers were fighting with each other

and nobody had any money. My dad was a cabinetmaker in his dream

was to have his own company.

I think that financial stress, coupled with being separated

from our extended family was too much. Our family fell apart. I

left home early. I had to figure out how to survive on my own.

I spent a little over a year couch searching, -- couch

searching -- couch surfing. During this I had my very first

experience in a classroom. I remember it distinctly because I

was terrified.

My fear was that I was going to walk in and the teacher would

ask me to write something on the blackboard, like they do in

the movies. And everybody would find out how far behind I was.

That didn't end up happening but I didn't stay long. I spent a

couple of months in the ninth grade, I maybe
completed half of 10th grade. That was hard. It was a 

brand-new environment for me. I never really got used to that. 

What ended up happening, my grandmother, a bilingual teacher 

back east tracked me 

down and said uh-uh, you’re not doing that anymore. She brought 

me back to New York and Tommy value doing hard work. She 

encouraged me to set goals for myself. She expected I would do 

well. That I would graduate high 

school and go on to college. She was probably one of the most 

influential people in my life up to this point. She was an 

incredible woman. I went back to New York. I started the first 

day of 11th grade. I completed 11th and 12th grade. One of the 

crazy things about being in school in the New York school 

district at that time was that we had access to tech school. 

Which I was really excited about. 

I happen to be pretty creative, I wanted to go for videography. 

We had access to that.
That's a big part of what made that experience more enjoyable than it otherwise would have. The model they had, we called it boses at the time. You would spend your morning going to class, and the kids who were going to tech school would get on the bus and they would take us to a school in Bellport. We would get there and it was great. We would have one day of learning the theory behind our area of study. So I was taking videography and we learned about depth of field, how to set up a camera, how to put lighting on the subject. The theory behind it. The next day we would put it into practice. It was amazing. I learned skills that I still use today. I learned how to work in a team. I learned leadership. I learned that I could manage a project and be effective. I learned to be self-confident and how to set up equipment. Those are all skills I still use. I do see that somebody just
put

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up the BOCES Board of Cooperative educational services. Thank you for that.

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I couldn't afford to go to a four-year university, and

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Suffolk community college was close to where I lived. I had an incredible experience. It was great. We had a lot of mentors.

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People who care deeply about making sure that I had what I needed to be successful. I first tried going full-time. That was a struggle.

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And my grandmother said that you have to pay for groceries and car insurance. She really wanted me to be responsible. So I had to work.

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I had to work part time. That wasn't jiving together. I was struggling. So I decided I would go to school part-time in my very first full-time job was in the industry that I am in now.

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I started at a company that was making microchips, inkjet chips. I remember the first couple of
weeks, I thought they were going to fire me because I took
a batch of silicon wafer's. They were in this cassette and I
dumped them by accident upside down on the table. That had to
be about $5,000 worth of material. They were great.
They gave me the opportunity to learn and grow. I remember
looking into the microscope for the first time.
It was just incredible. You could see things in the scope
that you could not see with a naked eye. I thought wow. I was
hooked. I have to learn more about this industry.
So I learned how to run all the equipment during that job. I
would sit with the maintenance guys and get them
to explain to me the theory behind what they were doing and
what was wrong with the machine. How they were fixing it. I got
an opportunity to work on the manufacturing execution system.
At that point it really looks like DOS and was confusing. We
had to do that implementation and get people to start using
software so we could manage the workflow of chips.
That was a great experience in how and operation -- an operation supposed her run. A couple years later I met my husband there. We got recruited out to a company in Southern California. This company was in competition to develop the first all optical switch. That was back in the early thousand's. Everybody was looking at these all optical networks. This company had micromirror technology which was incredible. We got recruited out of there. It was your typical Silicon Valley experience through there was here and P that -- beer at -- beer and pizza nine hours a day. And I would walk by and somebody would be snoring because they had been there all night. The CEO was also inspiring. He expected us to tackle our jobs in a very entrepreneurial way. He was like, listen. You are young and innovative. We expect you to use that in your job string not that he wanted us to go off and start our own
companies but he expected that we would be creative about how we solve problems. Later on, the company did not end up surviving, but many of the people I knew there went on to start their own companies.

A few years later, this company had invested heavily in bringing up their own manufacturing equipment and facility, which was really expensive. They built a clean room and they outfitted it with lots of chip manufacturing equipment. It was really expensive. I think part of that was to signal to investors that they were manufacturing ready, but it ultimately didn't work. We found ourselves running out of money.

My husband and I years later were laid off from this job that we moved 3000 miles to work at. We just purchased a house, we were in the middle of a remodel and got laid off. We had to reevaluate what we wanted out of our careers. What we wanted out of life. We loved the start of
We really enjoyed working on new technology but moving every three years and chasing that dream across the country didn't seem like a great idea. We are also passionate about being close to our families. We decided that we would move to Oregon. One of the challenges with doing that is that there was not any tech jobs there. We were struggling to figure out what we were going to do. Throughout the conversation, it happened over couple of months. We got a call from last friend of ours who was the facilities or send at the company that shut down. He said hey, remember the clean room, they left it in the building to get out of the lease. And we said yes. He said the new owners of the building have hired me to get it ready. They are putting a data center in the building and they don't want any of that equipment. They have hired me to sell it or take it out. I'm in the process of trying to find
someone who wants this. Do you know anyone?

We said yes, we would want that, but we don't have any money.

He said OK, I'm still working through my Rolodex.

Put in a zero bid offer, let me know how much you want, if

nobody decides to buy it we will just give it to you.

I thought gosh, this was a longshot. We worked up the email

and figured out how much we could use. We sent the email

off.

They accepted our offer. We hired a couple of people

from labor ready, that was the temporary staffing agency global

-- local to us.

We put it in a box truck and drove it to somewhere where we

spent the next eight months putting together a business

model. We made probably 30 trips to Oregon.

We would get in the car at 4:30 in the afternoon.

Battled through rush hour, get up to Oregon at 3:00 in the

morning and commenced our real estate agent and the plans
examiner from the city, the Fire Chief, our local bank to meet

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with us on Saturday mornings. I think during that time I

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probably sent out 25 or 30 business plans with financials

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to different financial organizations to try to cobble

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together funding for this company. It was only 320,000 at

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that time. It was a small amount. Only one bank would talk

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to me. It was a local guy where we

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live now, we are still friends. He goes to my Rotary.

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It was a tough start up. By the time we were ready to

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make that move and start putting together our facility,

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we had sold her house. We put every penny into that business

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to try to secure our loan. We had the clean room.

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By the time we got up and running we had about $50,000,

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$60,000 in credit card debt. That was unheard of at that

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time. Nobody did that. It was great. We started out with

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cement floors.

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Unfinished walls, a tiny 2800 square-foot space. I remember

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doing actual construction, building our office.
I learned how to glue PVC pipe together, how to bend stainless steel tubing, work on the equipment, we had to install our oxidation thermos ourselves. It was two of us and we worked day and night for probably two years before we hired our first employee. Fast-forward forward to today.

We have almost 30 people. Our company is thriving. We have had the opportunity to work on some really incredible technology.

I will share some of my slides, so you could see what we are working on. You should be able to see that now.

This is me, in high school.

This is when we first started the company. Our company today's considered a pure play men's foundry. That means we don't develop our own technology. What makes us unique is that we started very early on in the chronic development cycle and we support those products all the way through duction.

We serve a whole bunch of industries, automotive, health
care, industrial. We work with a lot of different types of customers.

But because of where we set in the supply chain, we have had this new emerging technology that's being developed for probably at least 10 years. We have had a full foundry. We have worked on things like molecular diagnostics. We have made different versions of high temperature pressure centers. We worked on continuous glucose monitoring.

We are working on LiDAR technology which is going into autonomous vehicles and AgTech equipment. We make a graphene enabled biosensor in a company in San Diego doing incredible things. One of the more interesting projects was with a team out of the University of California San Francisco. This team was a cross functional team. They had people who were high tech chip manufacturing folks, mechanical engineering, biotech people were involved.
They developed a bio artificial kidney to replace dialysis.

This was an implantable device, about that big.

It goes inside your body, as if this was a kidney, so you never have to sit through a dialysis treatment. Absolutely incredible.

They put very tiny holes in silicon chips to create one part of that filter. They take a biopsy from your kidney and grow part of that kidney and use it to filter out the other biomaterials. It is still early, obviously, but this shows you the breath of things being worked on today. Which is incredible.

Over the last five or six years, something we have been seeing and we have watched evolve over time is that we as an industry are running out of manufacturing capacity.

I think I have mentioned it earlier, our company is one of the few peer play MEMS foundries in North America.

We are seeing an explosion of need for manufacturing and we don't have a way to satisfy it. So lead times are going further.
and further out. You have probably read about

the chip shortage. We have high demand, limited capacity, some

of what's driving that has happened

recently with COVID. Consumer demand for electronics has gone

up. When schools are shut down

every child needed an iPad or a Chromebook. Every educator had

to be able to connect.

Anybody who could work from home probably needed new equipment,

phones, tablets. All of that.

We used up our inventory, these

companies have a stockpile of chips to satisfy manufacturing

and that's just gone now. You can see leadtimes being

stretched out further and further. We see that in the

automotive industry and others. Other things driving this our

high-performance computing, artificial intelligence. We hear

a lot about AI. Data centers and 5G, the world

has been rolling out 5G technology
on this other offshoot in the industry I work in, there is still a lot going on. Some of that we have talked about, but there's other things. There's a lot going on in diagnostics and medical imaging. You look at IOT you look at the potential for what IOT can do in communities. There is a company that's developing technology. You could put a chip on a parking space and if you are driving around in a populated area, your car will hook up to that ship and it will guide you to the nearest open parking space. Things like managing electrical grids, traffic management throughout the cities. These are things that are coming and we have to keep up with demand. That's become more and more difficult, the longer we wait to bring up that extra capacity. In the semiconductor and MEMS industry can we saw a 20% increase in manufacturing. We also are seeing 20% this year.
That's 40% growth in two years on top of what we were already seeing for the last five years. We were pretty tight, the leadtimes are going far out and there's a lot of momentum around bringing up new facilities to satisfy this need.

Right now there's 52 new manufacturing facilities coming online. They are scheduled to do that by 2024.

That represents $900 billion in global investment. This is a significant amount of investment. This is all over the world.

So if China is trying to build in its own, they want to be independent technology wise, we do have Korea and Taiwan looking at additional capacity.

Europe is looking at bringing up capacity, also here in the U.S..

We are finally taking notice that we have to develop an incentive program to build and resilience into our own supply chain.

If you look at what we used to be, we used to manufacture 37 percent of all semiconductor devices in the U.S. in 1990.
It's down to 12% today.

There's a lot of concern around this. Microelectronic supply chain and resilience is important. It's actually an issue of national security. We have seen rising tensions between the U.S. and China. We also see vulnerabilities in the supply chain because much of this is clustered in certain parts of the world.

If we have a pandemic, like we are experiencing. If we have a natural disaster, if we had geopolitical tensions, something unexpected that happens to disrupt that and all of our eggs are in one basket, that's a real problem. There is a momentum to onshore that and diversify this my team so we are less vulnerable.

Congress is likely to invest $52 billion through the chips for America act. It made it through the Senate, it's in the house and I think that will happen. That investment will be twofold. It
will be building and more resources for research and development. I’m sure there are many of you watching this carefully. It will impact how public education institutions and what resources NSF has, it’s huge.

The other piece is building in an incentive package for companies that want to develop manufacturing capabilities. I am bringing some of that back to the U.S. Including materials and equipment.

We are trying to push them to look at the whole continuum. It's not about chip manufacturing only comments about getting the materials you need to deliver on that promise.

All of this is happening. We have all of the momentum, it's an amazing opportunity and at the same time, we have a dropping labor participation rate. That’s a challenging environment.

We see companies all over and small businesses are struggling with this.
In 1990, even in the 2000's, we have a workforce participation rate of about 67 plus percent. That means it's everyone working age, everybody currently working whether it's part-time or full-time, and everybody who is looking for a job at that time. We have seen that go down.

It's now 61.6%. We have less people participating at a time where we absolutely need more.

We have a 6% unemployment rate which is not helping.

There was a recent survey, the National Federation of Independent business saying 46% of small businesses have jobs they can't fill.

91% of those people who responded said they are not getting qualified applicants. It's extremely challenging.

I did this interview with a local newspaper a couple of weeks ago. We had a great conversation.

The gentleman who recorded it was wonderful. He thanked me for coming in and he said I just want let you know, I have no idea when the story will run. We are down to reporters and an
editor. It's happening everywhere.

And it has really slowed us down.

I'm sure you have heard from your areas, how much they are struggling through this time.

I want to spend some time thinking about beyond our traditional workforce and education system, what can we do? There's tons of momentum around this.

When I was looking at your sponsors I was so impressed by the level of creativity that people are tackling this issue with. I think it's phenomenal.

The future of work will be important. What will this really look like for us? We have listened to countless presentations from futurist, there's a lot of thinking around things like agricultural harvest will be automated.

We will have these big manufacturing facilities that are automated.

Humans are obsolete as much of the messaging that's out there.
I don't think that's true. If you are in industrial like mine

and you have to do these specialty types of

manufacturing, we need -- too much automation is bad for us

because we don't have the ability -- the flexibility we

need. That's true for many small businesses.

But as we prepare for automation, what are things that

are really important?

What are things that everyone can agree on? Humans need to be

able to add value beyond what is done by automated system and

intelligent machines. What is that? We need to be adaptable.

We need to be able to operate in a digital environment. We are on

a virtual conference right now. That's cool. We are adapting to

this new way of working. I think it's phenomenal.

One of the things I was brought was this integration of home

life and work life.

We used to look at work life balance and now it's work and

home life integration. We can do more of what we are comfortable
with and our families can see the work that we do. There's a

lot of value in that. Skills that we need to build

for success.

People think that math and science and these stem fields,

it is important to build the stem skills. But there are some

basic things that are not going to change.

They are the same skill gaps that I'm struggling with when I

bring in new technicians and engineers. This has not changed

on long time. His leadership and decision-making skills.

Complex problem-solving, critical thinking, social and

emotional intelligence, collaboration.

We need to build more resilience, stress tolerance and

flexibility. Those are important. They are not skills

you can be taught on paper. You have to develop them over time.

You need that on-the-job training to build up those

skills.

We started this with our kids early. We used to do our own

maintenance.
We would work and because of this movement toward specialization we don't do that. So kids have less opportunity to build those skills organically. It's going to be important that we collaborate on how to get this done. Industry specific skills that I see we are lacking, and community college and university for our engineering people and people going into technical fields, we need to pay more attention to safety. Making sure that people understand basic safety systems. I have had challenges with this end of had to retrain. You could ask new college graduates, has anyone talked to you about this and they would say no. We are working with a lot of dangerous chemistry and chemicals and have something coming in at an engineering level. I would encourage employers to reach out and try to provide some guidance on that.
I think it's going to be -- the other areas are on the quality system side. It's something that a lot of people roll their eyes that. Especially when they are busy developing technology and they don't want to be bothered with quality systems. It's important, and hard to backtrack and force that discipline and how we tackle quality from a manufacturing perspective area those are my two industry specific skills that I think are missing. I think the rest we could do a better job at acclimating people for work. Part of that is that we need a demand driven workforce development system. We have a lot of people and workforce development here so I will not spend tons of time on this. But we need to dig down a little deeper and align K-12 and postsecondary education. We are working on that in my local community. It has been a challenge. Part of that beginning conversation, we started eight years ago now is that the workforce board level we
invited our partners and community college president.

The president of our university to participate in those meetings. To start a conversation on how we can align and provide better paths for kids that are going through the K-12 system. So that we have a better output.

Collaboration across agencies. I'm not telling you anything you don't know. But it's a challenge.

We have dollars coming down from the federal government. They hit our states, and they bounce around between a couple of different state agencies and they can allocate it to our local workforce. At the end of the day, those folks are expected to coordinate and weave together those resources across some state agencies to make sense of and develop programs that are meaningful. It's a lot of hard work.

I know we are leaving dollars that are not making a down to the community.

I always advocate that we need more flexibility so that we
could develop specific workforce programs that work for those regions. Not every place is the same.

The last thing is meaningful data. This drives me nuts.

As somebody in an engineering field, we have a hard time getting longitudinal data.

Who are we helping and our programs effective? There's a lot of work to do in this area.

This gives us the right feedback to nurture things are working well. Inspiring our use, this is important.

These are my two little ones. I have a 10-year-old and a six-year-old. I brought them to our clean room and let them see what we do.

It's really important. The one on the left is seven years old now. This is an adult sized clean room outfit so I put a bunch of rubber bands on and we walked around and we talked about the process. And now we have a much better understanding of what mom and dad do.
I think that's important for kids. We have to inspire kids to be creative. To think about innovation in a very different way. Early connections is important. It's not just how are you going to support your family when you grow up, it's what are you, as an individual, going to give back to your community. What can you offer the world that's unique and different? If we tackle it that way, we are going to get much more engagement. When you talk about cultivating our next generation of innovators, we need them to be creative. To really have a heart for the work they are doing. That's when the magic happens. Sometimes that takes inspiring kids early. And hooking them up with mentors and sponsors and role models. I had that throughout my early career. It was phenomenal. It's part of the reason I'm here today. We talked about K-12 alignment. We need industry involved we have to have everyone, not just
the larger companies, companies that are 200 people, 300

people, 50 people, sometimes they have the resources and the

knowledge to get more involved in digging down and building

that awareness with kids about what they do. Some of the

smaller companies are just as important and valuable but they

don't have a structure and infrastructure to plug into. One

of the things that our company did early on to build

awareness about what we do a kids in our communities is that

we got involved with first robotics.

If you have not heard about first robotics, it's a great

program. The kids get together in teams and build a robot from

scratch. The purpose is to compete.

They go through this obstacle course. It's really cool. The

most impactful thing about this program is that at the end

of the day they have a notebook where they are recording what

their thought process was during the build of this robot.

They are required to present this during competition time to

the judges.
We sponsor this team. We also brought them to one of the biggest semiconductor tradeshows. It used to happen every year in July. It's amazing. You can see all of the latest and greatest equipment with industry professionals there. We brought these kids and they got to show off their robot and talk to people who are in their industry.

Something we have not done well on the semiconductor side is that we have not promoted ourselves as a career option for young people. People find out about it when they are in college. If you talk to a 16-year-old kid, and you ask them, I hear you want to be an engineer, do you have any idea where you want to work? I could guess what they want to say. There will not sound want to work at rogue Valley Microdevices. They will say Google and Facebook. They will name those
products and platforms that they know best. That they are actively using. So we has industry leaders have to work harder to get in front of these kids and build the awareness early. And getting involved with things like first robotics and doing activities like this is great. Our industry Association has an amazing program called high-tech you -- U. These kids participated in that as well. It's a two day program that they put on through their foundation. It's an introductory course in what it's like to be a semiconductor engineer. It was fantastic. If anybody is interested in learning more, I'm happy to give you contact information. They are rolling this program out to businesses and companies and helping to train their staff on how to deliver this program. Career technical education, you all know how excited I am about this and the impact it has had on my journey. I think it's
At the time I went I did not have access to dual credit programs. I'm really excited about this.

As we look at the needs moving forward, what can we do? How can we build on career technical education? What does it mean to take that to the next level, to building out a really innovative workforce? I am looking at the apprenticeship model, where I think is where we will end up going. This is the model, you have probably heard about this which was developed in Germany and the Swiss have had -- the Swiss have had great success in this model. It starts in high school, the Jr. year of high school, and you get paid to do on-the-job training in high school.

Your senior year, you are working half-time, classes are aligned to that field of study. When you graduate you can continue on through university or community college. But you are also learning a trade.
This helps to address that lag. Especially for at risk kids.

For graduating kids who are maybe not exposed to these options in high school. What ends up happening is they fall down this rabbit hole and they don't know what to do.

It is scary to be 17 and 18 and to know that the graduation date is looming and you have no plan. This provides a path.

We have 20,000 youth apprentices in the program now. Half are in Wisconsin and North Carolina. If you are from those states.

Amazing job. Thank you. We have other states that are developing these programs, Colorado is doing that. He started in 2018. We are starting to look at how do we adapt this to our U.S. education model. It's fantastic and I'm excited.

I have a video I'm going to share with you about what kids are saying about youth apprenticeship models. I will play this quickly and come back.
Jessica: I'm going to stop share, can you hear me OK now?

I love that video, it's really inspiring. We don't have to watch it now area really it's about how inspired these kids are about their youth apprenticeship experience.

The thing to recognize is that this used to be focused on trades. You think about construction, electrical, this is had -- this is extended to all kinds of things. I.T., business, health care, engineering.

This is really providing that structured path for kids to get inspired and figure out what they want to do in life. Some of the pushback that I have heard is we don't want to lock people into a particular career, they may not know what they want to do. What I have to say about that is that it doesn't matter.

Those skills we talked about earlier, they are so transferable.
We need people to get out of the world, though that those skills,

and get ready to contribute.

And once you feel that, the benefit is huge to employers. I
can tell you, for me, when we start from the beginning and we
have someone who has never been exposed to our industry, even
with the raw ingredients, it takes about six to eight months
to train that person to do a process technician job.

I encourage people to get involved in youth apprentice
ship models because you are investing in your future
workforce.

Really phenomenal.

I think what I will do is stop here, I want to leave you with a
couple of messages, encourage your kids to do their best work.

I did not start out -- but I had some incredible mentors.

I'm really dedicated to figuring out those pathways to education
and I know you are as well. Don't forget to encourage them
and have high expectations.

It is so important to have that expectation and give them the
confidence to work hard at that. I will end it here.

Do you have time for questions?

Jessica: I do.

Peter: Do you think we will ever have fully automated manufacturing facilities where employees can work remotely?

Jessica: I think we will have some of that.

Jessica: I think we'll will have some pretty sophisticated manufacturing facilities for certain things. It will be important to have skills -- skilled people who can manage that. When it comes to maintenance and the facilities part of that equation, we need human beings. I don't think we will get away from that.

Peter: This has been a tough year and a half are a lot of people. How has your company and business been affected by COVID?

Jessica: It was really challenging. I can tell you that first couple of months, part of the business that we were doing completely dropped off. The other part doubled.
We had to make a shift from doing one and two step processing for other manufacturers to do full device fabrication for everything. And we had our challenges. People coming down with the common cold. We didn’t know how to manage that. There was very little guidance at first. I now know more about our employees than any CEO should. But it was the nature of the time. We are stronger and better off for it.

We work a lot to build and efficiency and we now have people who have flexibility built into their schedules and it was not something we got to do. And we are really getting the benefit of that. Overall, it was a great thing for us.

Peter: When you hire technicians, what’s a key marker that convinces you and your team to make a job offer?

Jessica: We look for people who can focus. It’s one of the things we see missing in general. We look for people who can multitask and do that.
Bartenders are typically really great at that. It sounds weird but they are great at it. Pharmacists are really good.

Anybody in the medical care, they tend to do really well.

But it's more about, to me, the attitude and the work ethic. If you come to the table and you are real -- and are willing to work hard and learn, that's what we are looking for.

Peter: There were some questions about increasing the number of women in tech programs. From your perspective, what things have you found to be effective. What hasn't worked so well?

Jessica: Having great examples of women in technology is probably the very first thing.

Me being in the position as CEO has changed that for our company. I think we have most of our management team, -- I think we lost them. All of our managers at our company are female.

Including our sales and engineering manager.

I think we need to do a better job at providing family
resources. Something that I tell all of my incoming engineers is that you should not have to compromise your family to do this job. Yes it's difficult, but doable. And you have a supportive environment. So somebody needs to bring their child to school -- to work, bring them in.

I am a big believer that as employers, we might need to look at having on-site childcare again and finding better ways to do that so that moms and babies can be more connected. That's the deterrent. If you’re a process engineer you are on your feet all day long, in the FAB, keeping your skills fresh. It's tough to manage a family.

Peter: What do you see is the biggest obstacle that your business faces to recruit high quality, entry-level talents.

Jessica: I see that inflation is going to continue to impact our ability to attract and maintain.
We are now, in some ways, competing with government programs. We will see what happens in September. We know that materials are more expensive.

We have to raise our prices because we now have to increase our salaries by quite a bit just to keep up with the normal job market pressures that we have now.

I am hopeful that will settle down. And we have to get more people back to work.

We have the 61% participation rate. That's not enough to support the level of people that we need.

It's not enough to support the volume of people we need working and thinking about building a career.

Some new technologies are continuing to mature. One of those is virtual reality.

Do you think training in virtual reality can replace hands-on experience?

We are seeing some really incredible things. It's
not so much virtual reality as much as it is augmented reality.

Augmented reality mean I purchased a brand-new piece of equipment. We have an augmented reality headset.

What the hope is is that that manual will be digital. We can do maintenance on the machine to put on the headset and we have an overlay technology. It says OK, here's what you are looking at to get to that particular O-ring to change this out. Here are the tools you need.

We want you to turn this valve, look for these particular things. Here's how you get inside the machine on change that out.

Here is what this looks like when done correctly.

That's what I'm hoping we can gain from augmented reality. I am really excited about how that's going to impact our ability to do our own maintenance and be able to learn more about the facilities that are being built now. They are highly sophisticated.
Jessica: The technology that is going into the modern manufacturing plants, that already exists.

We are going to see more sophisticated ways to manage things like chemistry flow, gas flow, just the facility side of what needs to happen in order to keep people safe and keep a facility running properly is pretty sophisticated. All of that is now connected. I think we will be able to manage those things a little easier and more efficiently.

And some of these, you don't even touch the product anymore.

It's amazing. I think that's coming.

My hope is that we don't forget about the foundational skills.
We look at these things and it appears like magic. How are they doing this? Look at what we can do with our cell phones. It's amazing. We forget to teach kids the basic mechanics of how it's done. And that's where you have to build up those skills. You have to understand that if you are going to be working in an environment because we need people that not only -- that we can train on the software side.

But people who really understand how the systems are put together.

Peter: Thank you so much for sharing your story and supporting technician education.

Jessica: thank you for having me.

Peter: Rachel, back to you.

Rachel: Thank you. That was a terrific keynote.

It's great to hear your story.

Everyone, we are going to take a short break. We will be back for our final
panel of the day at 1:10 Eastern. I will see you soon.

01:19:48.000 --> 01:19:53.000
Rachel: Welcome back.

01:19:53.000 --> 01:19:58.000
We are excited to hear from her our panel of students and

01:19:58.000 --> 01:20:03.000
educators. This time I will turn things

01:20:03.000 --> 01:20:05.000
over to our panel moderator. Mary?

01:20:05.000 --> 01:20:09.000
Mary:

01:20:09.000 --> 01:20:14.000
Welcome back tod day 2. They are sharing some of the

01:20:14.000 --> 01:20:18.000
teaching and learning practices introduced during the last

01:20:18.000 --> 01:20:23.000
pandemic year they hope will stick around. We have all

01:20:23.000 --> 01:20:24.000
experienced the best stories on how this went. What are the

01:20:24.000 --> 01:20:29.000
things that folks would like to see persist?

01:20:29.000 --> 01:20:31.000
I will go ahead and introduce you to them quickly. We have

01:20:31.000 --> 01:20:37.000
three instructors. James Brown from Shaw University.

01:20:37.000 --> 01:20:42.000
Welcome, James.

01:20:42.000 --> 01:20:44.000
We have Pam Silvers from Asheville-Buncombe technical

01:20:44.000 --> 01:20:45.000
community college.

01:20:45.000 --> 01:20:50.000
And we have Jason Tucker from North Central State College in

01:20:50.000 --> 01:21:07.000
Ohio. We welcome them and thank them for taking time with us.
We have three students.

The first is Cheryl Batista from Asheville. Welcome, Cheryl.

Cameron Schulz, who recently graduated from north-central --

And Elizabeth Sanders, a senior at Shaw. She is trying to get

login. We will go ahead forward and when she joins us we will

take a moment and recognize her as well.

Good morning, panelists. How are you today?

Great follow-up to Jessica’s presentation. We will hear

straight from the horses mouth. -- horse’s mouth.

We will settle on context. We have talked about this already.

We don’t want to go too deep into the particulars.

We will ask the instructors, the faculty members, and I will

start with Pam. When did your institution go online?

How long were you fully online? What did this do for your

classes logistically?

Pam: Thank you. We went online on March 11, 2020.
We headed a two week break instead of a one-week spring break and came back and were online. I have been teleworking since that time.

Probably the biggest transition was having students at the technology. I'm a computer instructor.

I was ready to be going online.

Mary: James, do you want to go next.

James: My story is interesting.

Last spring I was at Forsyth community college. I was a full-time PhD student.

Going face-to-face at the time, that switched to online. We started around March and that I moved to Shaw University in the fall. We were planning on going online.

The biggest issue was the learning management system.

Getting that in order.

Even to this day having attendance be translated into the database as we take attendance, that has been a
That was pretty much the hardest part of the transition.

Mary: Thanks, James. Jason, you had a little bit of

a different circumstance.

Jason: It was interesting here in Ohio.

Early March of 2023 diverse was -- I hope it was the most

challenging time of my career. I don't want anything to try to
top that. We had a meeting right before

spring break about zoom.

We might need this for a couple of days and then it stretched

out the two weeks and all of our lectures are still online today.

Our lab is done in-person or with the industry partners.

I had a lot of students who

tried to avoid it early. I know you have questions about the

lab. I'm trying to figure this out as we speak.

We had virtual labs the rest of that semester. Over this

previous school year, both the fall at the spring, both

electric components were online.
Most of the labs, including our labs, were in person. 90% of the time. We had to take them online because of COVID numbers.

It was extreme here in Ohio. The biggest challenge was developing labs. Trying to figure out the best way to assess certain labs, get scheduling figured out. When I had students in-person, how can I design labs that would give the biggest bang for the buck before the students got to graduation and got to their worksites.

Mary: That was something, Pam, you were teaching computers. James as well. It makes a little bit of an easier transition.

A lot of audience members are things like advanced manufacturing and biotech, where those hands-on labs are a critical thing. That became a big challenge. That was impacted by which state they were in.

We had such a patchwork system of restrictions and allowances.

Thank you for sharing that. A little bit of a context they are about what you guys were facing. Students, we will turn to you
now. Elizabeth, thank you for joining us.

We introduced you but there you are. We can say hello to Elizabeth. You were sitting there and you got the announcement and you are like holy cow.

What were your first thoughts when your campus when fully online? Did you have logistical or technical issues you had to deal with? Cheryl, you want to go first?

Cheryl: hello, everybody.

My concerns in the beginning were availability of campus staff and resources. Hands-on learning. We talked about the labs. Also the ability to interact and study with students, other students. I felt that was important for part of the learning as you were going through college.

One of the things that technically was a challenge in some instances but not others was how well the learning
management system was organized for the students so we knew when

things were due and what chapters we needed to have

One of the benefits was that to a great degree we had to rely

on our initiatives to find information, to get through the

learning chapters or week or whatever, because some

professors were not always as immediately available if they

were on campus. You had a class the next day and asked the

question.

If you could not do that -- it inspired confidence that we were

able to get answers without just going right to the professor.

There were pros and cons. In the end the professors did

great, the colleges did great and we all learned a lot moving

forward with this virtual learning thing.

Mary: Did you have technological issues? For you OK/-- were you

OK there?

Cheryl: it was less about the service being there then if the

company was throttling down service.
That was a rural Internet access challenge.

Sitting in the parking lot at McDonald's to connect, which was not easy in the cold weather for hours.

Mary:

I know in some areas libraries, like the County libraries would set up Wi-Fi spaces and their parking lots and such to try to address that. There is a lot of different strategies people ended havd to deal with with those issues.

Cameron, do you want to go next? Go ahead and your first thoughts when you went online. Did you have logistical issues or technological issues you had to deal with?

Cameron: Thank you for having me.

When we first went online I was concerned with lab work. The degree is his extremes with different techniques we have. I was fortunate enough to live in town and have a pretty decent computer set up an Internet speed that allowed me to stream the lectures and lab work in videos. I was fortunate in that
Honestly, my first thought was this might be the time to take a break after this semester. I was super skeptical about online learning. I need a professor in-person.

After the first -- we shut down for the semester and I got rid of all my fears. D worked out great in our professor was amazing.

Mary: Thanks, Cameron. Elizabeth, how about you?

Did you have any kind of logistical or technological issues you faced?

Elizabeth: Well, at first we were told to be sent home right after spring break.

I was prepared for the rest of school to be online.

Since I was a computer science major, usually most of the assignments I had were on my laptop. I was able to transition more smoothly online.

At Shaw specifically, the platform, we used for their
online schooling which was usually just for summer school

01:31:16.000 --> 01:31:20.000 classes, it was converted to all schools. They already had an

01:31:21.000 --> 01:31:25.000 infrastructure set in place.

01:31:26.000 --> 01:31:30.000 Once the online school happened, they transitioned everything

01:31:31.000 --> 01:31:35.000 onto that platform they were using. It was kind of easy on

01:31:36.000 --> 01:31:40.000 that front. Yeah.

01:31:41.000 --> 01:31:42.000

Mary: I will go a little off script and I apologize to my

01:31:42.000 --> 01:31:45.000 student participants. I promised I wouldn't.

01:31:45.000 --> 01:31:50.000 None of you three really had any issues.

01:31:50.000 --> 01:31:55.000 Did you hear any stories of your peers?

01:31:55.000 --> 01:32:02.000 Elizabeth mentioned a little bit about how they got sent home and

01:32:02.000 --> 01:32:06.000 people did not have what they needed. Notebooks and materials

01:32:06.000 --> 01:32:11.000 and books and things.

01:32:12.000 --> 01:32:17.000 Did any of you have stories of students who cannot get on or

01:32:17.000 --> 01:32:22.000 did not have the technological means to get on or anything like

01:32:22.000 --> 01:32:27.000 that?

01:32:27.000 --> 01:32:29.000 Cheryl: Several people in my community did not have service.

01:32:29.000 --> 01:32:32.000 They did not have any service.
This -- most of the students around my area are younger.

They are in the high school situation and middle school. I think many of them were just pulled out of school.

Parents have lost their jobs.

I think there was a lot of children that were not in school. They did not have access to the Internet and did not have materials to connect, for the resources, the devices.

I think that changed probably the fall. They worked through summer. They had the opportunity to get the support they needed from the county and so forth. That is what I saw in my area.

Elizabeth: My mother owns a daycare. For all the students that would usually come for afterschool programs and things like that, they kind of worked with the daycare's in the wake County area to make sure to make sure all the students were able to have their own hotspots, headphones, and the issued computers to as many students as possible. With that it was kind of in
partnership with other institutions.

A child that would traditionally go to a YMCA, they facilitated them full-time to make sure there was some type of productive learning environment. Some of the summer camp teachers had to wind up facilitating around three to five different students from completely different schools.

They all had different schedules. It was really a wild time. We were definitely able to help as many kids as we could that we already serviced.

Mary: Thank you, Elizabeth. That says our context. Everybody scrambling. We are trying to make it up as we go.

In all of that some positive things happen. Let's move on to those questions.

I will ask each of you, and I will start with an instructor because they have been sitting silently for too long and instructors don't like to do that. Pam, what changed to doing business as usual?
Improved your teaching your environment for educating?

01:34:55.000 --> 01:34:58.000
Pam: I have to say I always thought

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it was a good teacher but I have some tips I picked up that I

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plan on continuing. One of the biggest parts is I had more of a

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tendency to come to the office and do my work.

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I would check emails at night but maybe not as much. I think

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as an instructor a split day is much more beneficial to students

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who are learning. online Even students coming to

01:35:22.000 --> 01:35:27.000
class are often doing their work at off hours. They need answers

01:35:27.000 --> 01:35:30.000
to questions when they need it. We are due back in the office on

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August 16. If I go in the morning for a bit and then go

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home and have my break time and then to work again in the

01:35:37.000 --> 01:35:40.000
evening, that's more beneficial for students.

01:35:40.000 --> 01:35:45.000
I definitely had created videos and I still do it. I grade

01:35:45.000 --> 01:35:51.000
homework via videos. I give weekly announcements via videos.

01:35:51.000 --> 01:35:57.000
I had in my student evaluations

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of students that I was concerned, but I see you so much

01:36:02.000 --> 01:36:08.000
for the videos I feel like we are in-person and I know you.
In the third one is great communication.

Noticing with students don't turn in work, sending an email and finding out what is happening. I had one student who only had his telephone hotspot.

He had two kids doing school at home, and his wife and himself.

His time to get the hotspot was really at midnight to 2:00 a.m.

I asked if I could call you. He said if my phone rings, he kicks everybody off the hotspot.

Remembering our students are nontraditional. I think this really helped drive home how many different things they have happening and how as instructors we need to be flexible and have good communication. I think those two things going forward with help students -- would help the students.

Mary: James, why don’t you go next.

What changed and improved your teaching, or your learning?

James: Sure. To Pam Posey point, I thought I was a good instructor too. COVID really tested that.
It throws you for a whirlwind.

In a traditional sense, I never considered myself creative. I can't paint a picture. I don't think I can.

I don't think it will look very pretty as a stick figure.

Because of COVID I discovered my creativity in terms of instructing, right?

When I first started showing in the fall, it was a mix of communication.

Are we going to be online or face-to-face? We were going to be online. But teaching computer science, specifically programming, I thought it was important for them to see me work through problems in real time, in a somewhat face-to-face environment where I could have a whiteboard and step through logical expressions. I had to complete the redesign my class.

Mondays and Wednesdays were online. There were lectures.

On Fridays I would go face-to-face. That was optional.
for the students. I would go face-to-face and work with the

labs with them. At least they had the

opportunity for me to help them through labs. We had masks in

safety precautions. I thought it was so important for them to see

me and have me help them through those

problems. Another thing about the creativity was, again, I

thought it was important for me to have a whiteboard to step

through problems. I found myself with some classes, I would log

on with my desktop. I had a little touchscreen laptop.

I would log on with it touchscreen laptop and write on

the laptop while giving a lecture on my desktop.

Everything was an effort to help my students to try to get

those concepts, to login logical concepts. The biggest take away

I had from business as usual is very simple but for me it is a

very powerful tool we have in our arsenal. Recording a

lectures. -- the lectures.

Making those recordings accessible. I started a YouTube

channel. I watch YouTube.
I had no idea how to start a channel but I started uploading my lectures to that channel to make it successful. I uploaded into the YouTube channel.

Granted, about the LSMS, I don't think it was as intuitive as I would have liked. I would upload it to the LMS and the YouTube channel so the students had as much accessibility as possible. In the event the LMS went down, hopefully YouTube never does. That is something I will continue to do, even as we go face-to-face. Set up a camera and record lectures so I can upload those to whatever platform for the students to ingest at a later time. It helped me as I was administering the labs. They would ask a question and I would just say, did you watch the video? It made it real simple. That is definitely something I will continue to do as hopefully we transition to a more face-to-face modality.

Mary: Thanks, James. I have spent some time as a tech
support for faculty. 

There is a lot of resistance to doing recordings. I think this was one of those things that now that we have done it it is not so bad. It is very convenient. I am betting we will hear from students that they were -- they really appreciated that as well.

Jason, haven't you?

What shifted that improved your teaching and learning?

Jason: After we survived the craziness and had a chance to breathe, we have a new bioscience program. We were having a meeting with our external evaluator talking about some of the challenges we had. Jim had a great phrase I have probably used more in the last 12 months the neighbor used a phrase in my career. COVID-19 provided us the disruptive innovation opportunity. It was drastically changing how we did things, but it forced us to reevaluate our lab assessments, our whole curriculum.
Look, if any of this is just busy work that maybe we can loop

in instead of having two or three separate labs, maybe

having one larger one that can

test certain techniques and documentation practices and

writing lab reports.

Just like Pam and James mentioned, especially with

James, I literally blew up a course of my two or three times.

I changed the schedule and my

Dean had asked, are you OK? I'm on schedule five of this course.

When the semester started I was on schedule six.

One reason I blew it up was because I wanted to maximize not

knowing how long we were going to have students in the lab. We

all figured on the traditional flu season started everybody was

closer together. COVID my get to a certain point where we lose

the un-person lab. -- in-person left.

I wanted to look at my critical in-person lab, the one I report

to the advisory committee on.

We assessed student abilities to analyze scientific data, to take
what they took in their notebook and put it to an effective lab report. Normally those labs for that course happened in October and November. I was terrified I may not have student.

I blew my schedule up, rearranged the course, granted by the instructor two or three times. Am I going crazy with this? I was able to get those assessments done earlier in the semester before we lost the labs. That set our students up for success the following spring semester where Cameron was able to do this, go to the industry partners during their practicum when they get the hands-on lab experience. It provided the opportunity -- it forced me really to look at the program.

What are the critical lab assessments that I know our industry partners want to have students have experience with? Tools under toolboxes I like to call it. James and Pam both mentioned this. I want to hear the students' perspective. Being very deliberate in Mike indication to students. Not just in the lab but in our element. I have some working students.
Our program is also part of our college now initiative on campus. I had 16-year-old students coming in as juniors in high school. All of a sudden in the online hybrid.

My first thought was I do not want to lose these kids because they were 16. I wanted to be very deliberate and having the instructor presence.

Having those instructor videos was huge. Having MINI lecture videos. I recorded about 400 last year.

I will use them as long as I can. Students really like the shorter videos, because some students all they could look at their material late at night because of work or family obligations. Daycare was a significant challenge.

Being deliberate, not just in communication. I did not want to be a hurdle to them. With the craziness going on with COVID, going into quarantine, I did not want to contribute to the anxiety students had around COVID. That was a big driving force. That in the disruptive innovation
opportunity provided by having me look at the whole curriculum and make sure everything was lined up to maximize our students for success.

Mary: Pam, you had something you wanted to add?

Pam: This was a tremendous advantage I never expected, guest speakers for classes.

For the fall semester, year ago last fall, fall of 2020, I had 14 guest speakers. I could line of people every week. They came on zoom. I recorded them on to those available afterwards.

It was hard to get speakers to, the classes sometimes because it was a half-day for them to drive to campus, talk to the class, go back to work. I had so many speakers.

I have the luxury of having so many recordings from graduates and employers that I get to pick through and decide which ones to use. That is something that has been a tremendous carryover.

I will given the option of coming in via Zoom to save their time.

Mary: Thank you for that edition. We have heard from
instructors. They like the fact they can record their lectures.

They like the communication tools.

They enjoy being able to maybe -- we enjoy is a strong word but

restructuring the classroom so they are tighter and a little

more intentional. As Pam mentioned, the ability

to bring in lots of different folks you could not necessarily

do if you are asking them to campus and such.

Now we want to hear from the learners side on the other side

of the screen receiving all this crazy -- and the crazy times.

Good things but in crazy times.

What is something your school did or instructors made to how

they instructed that really was beneficial to you? It turned out

to be a big plus. I will start with Elizabeth.

I will let her start us off.

Elizabeth: I guess one thing was the

structure of how class was run.

Some of my classes that were typically more of a lecture
style, it kind of flips where we -- our homework was to look at the lectures and then do the labs together as a group in class.

That allowed us to spend that time we needed to look at the lectures beforehand and take the detailed notes and not rush through the process of learning while cramming all the information within maybe the one hour slot we had.

Actually spend that time asking the questions we would not have had been able to ask if a lecture was going on or asking questions for problems that we did not understand. It may just be more accountable to what we were learning.

If you did not watch the lecture, it was not beneficial to sit in on the classroom discussing things we already study prior.

I only had one class like that before COVID happened. That was a math class. It was an experiment they were doing to see what type of teaching style and learning style was more beneficial.
Seeing more teachers adapt that style for more classes outside of math, which is mostly formulaic. It was interesting to see how that was being contributed through all of my classes throughout. It became more of a Socratic style of teaching so we could discuss things that were happening in real time and feel more in-person versus coming online to listen to a lecture.

Mary: You would like to see that persist. You would like to see that be the model folks use? Go ahead.

Elizabeth: You are fine. It would be a split. If there is a potential opportunity for us to discuss topics and have information prior, that would be beneficial. The lecture style is also necessary as well.

Mary: Depending on the content you are doing. Cameron, do you want to go next? What do you want to see keep going?

Cameron: My favorite take away was the asynchronous lectures. I am a nontraditional student. I started school at 29.
I have to work to pay my bills and go to school.

The interesting thing is the lectures allowed me to view the lectures and material at my own leisure.

We were in advanced techniques for pharmacology and toxicology.

These are three hour lectures in person. To have to sit down and watch those every morning in one bite might have been a little bit much. With them being broken up as Professor Tucker did, they were easier to use and follow along with. I could do them on my own schedule.

It made things a little difficult. I was fortunate that I could actually listen to my lectures while I was working.

That gave me the benefit of being able to use the material and digest material that I was working hands-on with things we were talking about.

Mary: Similar to what Elizabeth was saying. Being able to digest through what you have and apply it, well, in your externship.
Cameron: It was very beneficial. Mary:

That might is right up with what the faculty and instructors are talking about. We are in a get alignment now. Cheryl, what about you?

Cheryl: OK. Going back to what Elizabeth was saying in terms of more flexibility for learning as opposed to that one hour in class. It offered a lot of opportunity to grow and learn.

With regard to that, the time issue -- I don't know how it is for other students. For me, it is about an hour and a half round trip drive to my college. That's an hour and a half a day for learning.

The travel was a concern, at least for those of us who are not closer to the college. That is beneficial from the virtual perspective. I wanted to add something with regard to what Pam was saying that was beneficial also.

In the virtual environment, and not all professors were doing
this but I think that they were able to share among each other

01:53:23.000 --> 01:53:28.000
the advantage of doing it. That is timely grading.

01:53:28.000 --> 01:53:33.000
That was a huge advantage from the perspective that if you have

01:53:33.000 --> 01:53:37.000
learned material and you have taken the test and you

01:53:37.000 --> 01:53:42.000
have gotten things wrong in the test, you are already into the

01:53:42.000 --> 01:53:44.000
next week of learning the next material. To have quick grading

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made it possible to ask questions right then, get back

01:53:46.000 --> 01:53:51.000
in touch with your instructor.

01:53:51.000 --> 01:53:57.000
Then I would add having instructors who are using that

01:53:57.000 --> 01:53:58.000
video as an opportunity to interact. Pam was doing a great

01:53:58.000 --> 01:54:01.000
job with this. They were immediately available.

01:54:01.000 --> 01:54:06.000
If you set up an appointment, you could get the information

01:54:06.000 --> 01:54:11.000
you needed and learn what you did wrong.

01:54:11.000 --> 01:54:24.000
Sometimes it is systematic. Those were all very beneficial.

01:54:24.000 --> 01:54:26.000
I want to thank the instructors for your dedication to the

01:54:26.000 --> 01:54:30.000
students. I saw many people who are close

01:54:30.000 --> 01:54:35.000
to retirement as teachers who went ahead and retired because

01:54:35.000 --> 01:54:41.000
it was also difficult to comprehend. Jason, with regard
to all the videos you made.

This is just an idea for a potential work-study opportunity for one of your students. They will learn all about your terminology and so forth. I don't know if they have closed captioning. That's a great work-study opportunity. Not all students need that, but with the rules of assess ability for Internet, I think it's a good work-study opportunity.

Mary: Good suggestion. That is a great suggestion.

Pam, I want to ask a follow-up question. You were using the videos to do the lectures, clearly.

Were you using video to give feedback to individual students or to the class as a whole?

Pam: If the assignment is really good, even then I might create a video. I create videos that range from amended up to five or six minutes. If they're doing an Excel assignment, I have the Excel sheet open I can tell them what
they did wrong with the formula. I have a class now that they are
doing a lot of papers. I can have the paper on the screen and
say instead of saying use paragraphs, which
for some student -- reason students don't like paragraphs,
I can say this would have been a.
-- a new paragraph.
In a typical week where I have assignments due, I create videos
for probably 90% of them as feedback. I really try to also
do it for students who did it right so I'm not just getting
very good but giving them a very good -- a video feedback.
One thing I did before COVID and I now do also is I have two due
dates a week. If a student gets behind, they are not behind by a
lot of work. Only behind by two or three days of work.
I do two due days a week.
I probably am a little bit too compulsive of a greater. --
grader. If it's been there for longer than three hours I feel
bad about it. I think students have to get feedback right away
when it's an online class. That is something to carryover.

01:56:59.000 --> 01:57:01.000
When I started teaching there was no Internet or emails. Once

01:57:01.000 --> 01:57:02.000
a week you printed it out on a dot matrix and turned it in. A

01:57:02.000 --> 01:57:08.000
change in life.

01:57:08.000 --> 01:57:29.000
Mary: Do you use -- did your feedback loops shift?

01:57:29.000 --> 01:57:34.000
Jason: They certainly did. I knew it would be critical to

01:57:34.000 --> 01:57:36.000
try to turn feedback around the students. One thing I did was

01:57:36.000 --> 01:57:39.000
dashcam and probably hated me for this. The first years did.

01:57:39.000 --> 01:57:44.000
I had two quizzes a week. They had different due dates.

01:57:44.000 --> 01:57:46.000
The first was just a very introductory quiz. I have been

01:57:46.000 --> 01:57:50.000
loving seeing what folks are saying. A couple of people

01:57:50.000 --> 01:57:55.000
mentioned something similar. The first quiz due early in the

01:57:55.000 --> 01:57:56.000
week was just to show students looked at the lecture materials,

01:57:56.000 --> 01:58:01.000
started to watch the videos. They do with the word

01:58:01.000 --> 01:58:08.000
transcription meant. They knew it PCR said for.

01:58:08.000 --> 01:58:13.000
The later in the week was the module quiz, the summative

01:58:13.000 --> 01:58:20.000
assessment. What are the three stages and where they critical?

01:58:20.000 --> 01:58:26.000
Those types of questions. Students can have feedback on
where they work with the material. They could get that feedback before they got to one of those dreaded exams worth a lot more points. I really leaned on those.

The lab reports, I kept those traditional.

I tried to begin with turning things around with grading. It takes a little time but I tried to let students know I know this is on my docket but here is what. -- here is why.

Being transparent with students. It is taking me a couple of extra days but here is why.

It was leaning on LMS to do heavy lifting for the quizzes. That way students can have the feedback weeks before they get to that exam so they can spend some time on it then. Instead of getting the exam back and doing poorly.

And blowing up my class, I was trying to find ways to inject into my class opportunities for students to catch up. Even for my own personal experience, I don’t particularly like online
learning. It is not really my forte.

This is the circumstance we were given.

As a teacher I was looking for ways for how I could give those students who do fall behind opportunities to catch up in some ways. To Jason's point, I had pretty much every week two quizzes. They were basic reading quizzes.

I took them from the book.

They might have been out there. The answers might be on the web but don't tell my students that. It was essentially just so they would have the opportunity, or were given the opportunity to look at least some of the concepts we were going to cover. The quizzes were due prior to the lecture covering the material. The way I said this quizzes up, they were all extra credit.

But, how I did it was your total overall quiz grade could replace your lowest exam grade. Whichever one was higher.

The overall quiz grade. The ones you miss, you get a zero.
Whatever the overall quiz grade, it could replace the lowest exam grade. If they did poorly on their first midterm, they could technically get a much greater great audit if they were doing their reading quizzes up to that point. Most students took advantage of it?

Not really. They did not realize the advantage until they did that on the midterm. When the reading quizzes close, that could not -- they could not go back. That was a missed opportunity. Another thing I did was -- I lost the thought. It was another opportunity -- I know it is.

During the semester I gave Raikes. -- breaks. During class time I would answer any questions students had.

I would help them walk through problems they had in their code, whatever it may be. I gave them the opportunity to make up any assignments or labs they missed for 50% credit. That was another opportunity for them to make up whatever assignments or labs they missed.

At two times throughout the semester, right after the
midterm and right before the file.

Any assignments before the midterm, they can make up during

the first rest period. After that it was too late.

Same for the last makeup period. I try to give them opportunities

to catch up. I knew going on my is a drastic shift, just a

change from what they were used to. Inevitably some students

were going to fall behind. I tried to give them the

opportunity to catch up.

Mary: I know touching back to Pam's

point about video feedback, some LMSs allows you to just hit a

record button. When you're looking at someone's work and

hit a screen capture and voiceover, that was a big

lifesaver for me personally. I was notoriously behind on

migrating. When I got that rubrics and video thing, it was

like Pam described. You put it on the screen and are walking

through. Because it is an individual

student, the close captioning is not as much of an issue. You can
given the option to say if this works for you, that’s great. If it doesn't, I will write up my notes. In all the time I have done that, many, many years because I have taught online for a long time, never had a student say will you write that up. They do want to have to be the feedback. Just give me a nice five minute video where you point of my stuff and you were talking about it. I will take that over a written, long diatribe about what I did right and wrong.

Pam: The only student who wanted it in writing was, I'm sneaking looks at things on my phone at work and I can't do the videos. If you would write it up, I can look at it while I'm at work. That has been my only complaint from a student. Wait'll you get home and look at it.

Mary: As mentioned by Cheryl, there is the accessibility issue. In the chapter has been some great tools mentioned. This would be a chat to save and hang onto as an instructor.
There has been some stuff in the chat. One of the threads going
on is this conversation around enrollments.

Students coming back or not coming back. Coming to campus
were not coming to campus. Some said we are seeing a dip
in a moment because students are waiting to make sure they can be
on campus. Others say if it's not online, they're not
interested. Online or in-person?

What is your thinking? Cameron, you get to go first.

Cameron: Definitely was not a fan before. After these last two
semesters where I experienced it without signing up for it, I'm a
huge supporter of it. It made things so much easier
for me to do and take care of my work life and home life, and on
top of that school. It made it drastically easier.

Mary: Online.

What about online versus blended? Would you be able to
come in and have face-to-face a little? With that be your preference over straight online?

Cameron: He would have to be a blended but that is my bias because the degree path they went down. I would have nothing because I would not have the actual skills to do what I need to do. Definitely blended.

I would take math and English another classes online happily.

Mary: Good to know. Elizabeth, how about you?

Online or face-to-face?

Elizabeth: It would be the same for me.

Most gen ed classes, I would prefer to take them online.

Maybe some of my major courses where I even want to network with students that are going to the same boat as me, I would like to have the blended opportunity. We can create study groups. He will be more of an organic experience.

Mary: Cheryl, what are your thoughts?
Cheryl: To kind of depends on your major, for my major I guess

I would say. I prefer online classes with

the exception of those that would build a ton of team

skills, and also involved labs.

A veterinary tech student. I would not to the anatomy class

online.

You really need to examine those bones. I think a lot of it

depends on what I was studying.

As far as enrollment, we find out that we were going to have

on campus classes in the fall. That had a lot to do with

academic planning. Not only for that semester but long-term.

It was great news because for some of those classes we need to

be online. James, you may have this with your students.

Doing that networking stuff, you need to get a feel for what is

plugging into what. I guess you can do that online

but that hands-on would make a difference. I guess they agree

with the blended. It depends on the course and the major.
Mary: Blended is such a broad, gray zone.

Think of the full spectrum of having a lab and having every
ting else online. Navy twice a week and

everything is online -- maybe twice a week or everything else

online.

It is really an interesting but difficult thing to pin down.

Back to the instructors what are your enrollments looking like?

From Jason, when you go first?

Jason: We have another three weeks before the semester

starts. Enrollment is slightly lower

than what we had last year by a little bit.

We have more high school students coming in for the

college now program. Most of the high schools in the

area will be fully face-to-face. We had some hesitancy when we

talked to parents. They wanted to have their

children with the online hybrid. Our numbers without route are

up.

A lot of the other hands-on programs, from the limited ones
from the directors here, they have seen a little bit of a dip.

I do think our liberal arts type courses for transfer, they are almost busting at the seams because of students, like Cameron was saying, getting more acclimated to it.

Even if they are wanting to go to a four-year university or beyond, they can stay home for a year and do a lot of those gen ed. Hands-on is a little over but we have another three weeks before the semester starts.

Mary: Pam, any reporting from you?

Pam: Our enrollment is a little lower but we have over a month until classes start. They are starting to market it.

If we had three sections of a class, one was totally online, one was synchronous with zoom, and one was coming to campus, the online classes have been filling first or all of them. We are having to shift around. We thought there was going to be people of wanting to come back to campus. That is not the direction we have seen it going. Our chair has been moving
classes around. If we added sections, it has been adding online sections.

Mary: James? James:

Throughout the pandemic our enrollment stayed fairly consistent, fairly steady. That was pretty surprising. One of the challenges we face with many students have limited resources at home.

Particularly for me teaching programming, one thing you have to have is a computer. Another thing is a computer with decent resources on it. That was one of the challenges we faced.

I think it was coincidence.

The school had a partnership with Google for Chromebook's.

Those are only for freshman and sophomores, and Chromebooks don't allow you to install the programming environment you need to program. There was a lot of work arounds we had to figure out. Enrollment stayed pretty consistent.

That was pretty surprising. I guess it was a good thing.
Mary: That sounds great. We'll get down to the last questions because we are running towards the end.

I am trying to -- do we want to go students last or instructors last? The students have been patiently waiting.

Final question to you guys. What is one think you would what instructors to know about the online learning experience from your perspective as a learner? One think you really would like them to take away? Not just these three but out there in the audience. Cheryl, do you want to go first?

Cheryl: Can I think about it for a minute?

Mary: Elizabeth or Cameron, do you want to jump on this one or go to the faculty and that you have a moment to think on it?

No one is opening their mic. Cameron, what would you want instructors to know? What impressed you the most about your students in all this pandemic disruptiveness? What impressed -- disruptiveness?

Pam, I will go to your first. Jason opened his mic. That's the way it works, buddy. Sorry.
Jason: For me it was the resiliency of students.

One thing I have tried hard to do -- Cameron, I had to make class for almost a year when COVID hit. I felt I had a good rapport with them.

My incoming first-year students I wanted to be very deliberate in connecting with them on a professional level, sharing with them. I was here for them.

Just like James's and nig -- ID of an off week, that's a phenomenal idea. There was a time after the first wave of exams for the first year students. It was like three or four classes.

The first lab I had them in, students have this look they are just exhausted. All my students have that.

Even the ones that are very jovial, they were dead in the water. You know what, part of my restructuring, I had a grace period. Shorter lab today. Here is your homework assignment. Go do something for 10 minutes for
yourself. Sleep in. I have two little boys.

That's acceptable. Go have a glass of lemonade. Go see a friend. The following lab I had a couple of students, homework? What did you do for yourself?

I was able to talk with them more. What is everybody struggling with? How is everybody doing?

Seeing the resiliency of students told me I had to go to quarantine because my parents were exposed. I had a loved one in the hospital. The fact that they buckled down and reached out more. I think having our courses structured this way where students could do work on their own time really allowed them to hang with it.

For me, without question, it was the resiliency and hard work of students.

Mary: Pam? Pam: I should have been faster with the unmute because my word was also resilience.

I have to say the other is the commitment students had. No
student starts the semester saying I hope I failed by the

02:16:20.000 --> 02:16:22.000
third week. It is helping them have that commitment.

02:16:22.000 --> 02:16:26.000
I think I emphasize all the time his communication. -- is commune

02:16:26.000 --> 02:16:29.000
occasion.

02:16:29.000 --> 02:16:34.000
-- is communication. If you can walk on the hall and see an

02:16:34.000 --> 02:16:40.000
instructor it is one thing. If you have to do it all, don't

02:16:40.000 --> 02:16:45.000
wait until you are sinking. Communicate earlier. As

02:16:45.000 --> 02:16:50.000
instructors we have to communicate when we notice that.

02:16:50.000 --> 02:16:53.000
That is hard when you have multiple classes and a student

02:16:53.000 --> 02:16:57.000
is just a little behind. Catching that and saying, how is

02:16:57.000 --> 02:17:01.000
everything? They can be really important.

02:17:01.000 --> 02:17:08.000
Mary: James, what impressed you about the students?

02:17:08.000 --> 02:17:10.000
James: They both stole my word. Mary: They were so quick on the

02:17:10.000 --> 02:17:14.000
little red microphone thing. Sorry.

02:17:14.000 --> 02:17:19.000
James: Shaw University is a small HEB you. Not only were my

02:17:19.000 --> 02:17:21.000
students dealing with the pandemic, which is beginning of

02:17:21.000 --> 02:17:22.000
-- the whole George Floyd situation. That can be mentally
taxing. They are getting hit from both sides essentially.

I had some students who contracted COVID. They had to quarantine, as well as dealing with the social issues that are ongoing inside the United States. For students to fight through that and still show up to class and still have a desire to get better, even outside the classroom. I am truly and thoroughly impressed by my students. I am happy to see them succeed and do much better in life.

That is really what has impressed me, the resiliency and desire and initiative to get through it.

Mary: Thanks for reminding us. That is true.

There was an additional -- all kinds of chaos.

I have given you your time. Cheryl has already clicked offer mic.

I'm going for, I'm going first. Fair enough. What is one thing you would save back to the educators about online teaching?

What would be one thing you think you
Cheryl: Interestingly enough, I would incorporate everything the instructors have said.

I think that I was most impressed with the dedication to student success. Different instructors handled the virtual learning think differently. Some had more experience with online. Some did not prefer it.

We had to get to know that also about each one of the instructors. I think in the end the faculty, the staff, they were all dedicated to our success. I think that Inc. what was going on -- incorporated what was going on in our lives. You did not experience that prior to COVID as much. I was heavily taken into account. Every single student had a variety of challenges they otherwise would not have had.

Prior to COVID.

Mary: Thank you, Cheryl.
Elizabeth, do you want to go next?

02:19:55.000 --> 02:20:07.000
Elizabeth: One thing I really appreciated

02:20:07.000 --> 02:20:11.000
was sometimes the professors wouldn't make having cameras on

02:20:11.000 --> 02:20:25.000
mandatory. That itself.

02:20:25.000 --> 02:20:30.000
Having your camera on for an entire class period could be

02:20:30.000 --> 02:20:34.000
really distracting. Sometimes people would not focus on what

02:20:34.000 --> 02:20:37.000
is actually happening. They would just be staring at

02:20:37.000 --> 02:20:41.000
themselves for an hour and some change. Sometimes it is taxing

02:20:41.000 --> 02:20:44.000
to have your camera on.

02:20:44.000 --> 02:20:48.000
I appreciated those that understood that piece of it and

02:20:48.000 --> 02:20:50.000
allowing us to listen and use one sensory tool at a time.

02:20:50.000 --> 02:20:53.000
Mary: That's a great point.

02:20:53.000 --> 02:20:57.000
We even saw a little bit of that on the side from the faculty

02:20:57.000 --> 02:20:59.000
talking about recording themselves. It can be exhausting

02:20:59.000 --> 02:21:04.000
to look at yourself forever. Cameron, you wrap it up for us.

02:21:04.000 --> 02:21:05.000
What you think?

02:21:05.000 --> 02:21:07.000
Cameron: Can you repeat the question?

02:21:07.000 --> 02:21:09.000
Mary: What is one think he would want instructors to know about
the online learning environment for yourself that you would like to ask them to continue?

Cameron: Continue being as responsive and dedicated as they have been. This last semester, Professor Tucker was amazing. If I sent a question and did not hear back in half an hour to an hour, something would be wrong. He was on the ball constantly, which was a massive help. I know it is 7:00 but I have a question. He would admittedly fire off whatever I needed from him.

It was amazing, helpful, and great for us and showed the cared.

Mary: That’s a great way to tie this off.

Thank you all for your commentary. It is a good -- it’s a nice feeling to know we all got through this together. There was a lot of dedication on both sides of the teaching-learning partnership. You have given us a lot of right thoughts.

A lot of good things to think about. The chat was great.
It is captured and will be posted so you can look back.

There are a lot of resources folks are sticking up for educators. With that I will hand it back over to our intrepid conference chair, Rachel Bauer, and say goodbye to our fabulous panelists. Thank you, guys.

Rachel: Thank you to all of our terrific panelist today. What a great group. A lot of great information for all of us.

A lot of transparency and sharing. It was wonderful. Many thanks to everyone who has joined us over the last two days, both presenters and participants. All of us who worked on the conference this year, I hope you enjoyed it. We hope it provides you with food for thought and help you with the critical work you doing to support STEM innovation. Don't forget to complete the evaluation is evicted the presentation. We value your input and it helps us with future planning.

Check out those terrific on-demand sessions we have.
posted. We hope to see you in-person next year.

02:23:53.000 --> 02:23:58.000
That is what we are shooting for at HI-TEC 2022.

02:23:58.000 --> 02:24:03.000
It will be somewhere wonderful. Keep your eyes open for a note

02:24:03.000 --> 02:24:08.000
about that in the coming weeks.

02:24:08.000 --> 02:24:13.000
Everyone take care, be well, be safe. Have a wonderful day and a

02:24:13.000 --> 02:24:18.000
wonderful weekend. Bye-bye.

02:24:18.000 --> 02:24:48.000
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