

Career Exploration

October 19, 2017

Michael Lesiecki – Good day everyone we're right at the top of the hour and it's time to begin our webinar for today I'm your host Mike Lesiecki and this webinar is brought to you by the Centers Collaborative for Technical Assistance. I have a few announcements to make and our brief information about the system that we're using today.

Webinar Details

Michael Lesiecki - Let's take a look at this webinar details you will be in listen-only mode I think most of you know this but there will be an opportunity to ask questions via the Q&A window make sure when you type in your question that you hit send and we'll be asking you questions via the polling function. This webinar will be recorded, I'd like to ask Christina to make sure that the recording is switched on, thank you Christina.

The CCTA is Led By

Michael Lesiecki - The Center's Collaborative for Technical Assistance is led by five different centers that you see here. These centers are all funded by the Advanced Technological Education Program at the National Science Foundation and they include CTC in Texas; the South Carolina SC ATE Center; the Florida FLATE Center; the Bio-Link Center out in San Francisco and the Networks Resource Center at the Maricopa Community College's in Phoenix, Arizona.

CCTA Purpose

Michael Lesiecki - We acknowledge our grateful support to the National Science Foundation as well. The CCTA purpose is to respond to requests from the Department of Labor to share our resources and activities that are relevant to not only DOL but NSF grants as well. What do we do? Well we deliver webinars like this one, we document best practices and we host convenings we'll tell you more about that as we proceed today.

Poll #1: Your Affiliation

Michael Lesiecki - But let's begin, Christina will you please open the poll. Folks tune your eyes turn your eyes not tune your eyes, turn your eyes to the right and it says what is your affiliation are you involved within an NSF Grant, the TAACCCT grant, both or neither and please hit submit on that. Most of you know the answer to this question, I'll just give you five more seconds and then ask Christina to close the poll and show us the results. So five, four, three, two, one make sure you hit submit. Christina let's see who's here today, does take a moment for the polling to go up into the cloud for the answers to come back down and for them to be displayed. So we'll hold on just a moment, I don't know about you folks but I've had the fortunate to be involved with both. Oh look at those results some of us involved with the NSF, the TAACCCT, both but the majority of us have not have been involved with these grants. Well that's good because there are opportunities in the future that we might explore together. Let's take a look at the next slide.

Poll: How many people are listening with you?

Michael Lesiecki - Which is the next poll, go ahead and close that one Christina. Now for our purposes of the National Science Foundation reporting our information to the NSF we often ask if there are more than one person listening with you. For example you could click on the radio button and say nope there's nobody else just me or one other person or two or three so please check those radio buttons

and then hit submit it will just take a moment. Christina I'm going to count down five, four, three, two, one, let's close that poll and take a look at the results and see how many multiples of us are listening today. Information is being sent up to the cloud being sent back down to us so that we can see it on your screen. I remember in our work group one time we all had lunch and there were six of us in the room watching the webinar. But most of us as you see by the results are just there by ourselves and a few of us have colleagues with us. Well thanks, that helps us understand; go ahead and close it Christina; that helps us understand the impact of the event that we're doing today. Now in the next slide.

Today's Presenters

Michael Lesiecki – It is my opportunity to introduce today's key people there's me on the right Mike Lesiecki but also joining us is Sandra Porter, Dr. Porter is the President of Digital World Biotechnology LLC and she's the Co-PI with Bio-Link. Sandy I see you that you've unmuted your speaker could you please say hello to everyone, we'll do a final audio check.

Sandra Porter - Hello everyone, thanks Mike.

Michael Lesiecki - Good that sounds good Sandy, thank you for joining us and also today joining us is Elaine Johnson, Dr. Johnson is Executive Director and Principal Investigator of the Bio-Link National Center. Welcome Elaine, thank you very much for joining today.

Making a conscious effort to include career exploration

Michael Lesiecki - I'd like you now to come on and tell us what you described as making a conscious effort to include career exploration, go ahead Elaine.

Elaine Johnson - Thanks Mike. It's a pleasure to be here and that's really fun to have so many participants and I hope that you'll all be thinking of questions and interacting with us as we go through this presentation. The conscious effort part is one that we've learned about as we've developed programs across the country in biotechnology and other ATE projects with the big interest in providing skills, the hands-on skills, the workplace skills that students need in order to get careers in emerging technologies and we've also worked very closely with industry partners. One of the things however that is characteristic across the country is that there are many programs that don't realize the lack of information for the students, counselors, the parents, all people are involved in these programs. So we came up with the idea that we need to make that conscious effort to include a career exploration in these areas of emerging technologies that might not be so evident to the students like nursing or automotive technician for example. Now how do we do that, well there are a lot of resources available that have been created over the past 22, 23 years as part of the ATE program and using these resources is a wonderful way to start. The resources can be indexed and found at ATE Central so there is a common place where resources are linked and made available to everyone. And these ATE Central you can also find links to O*Net, the Department of Labor site and too many of the others including the different projects, the national centers, the regional centers, that have engaged in career exploration and generously shared it so that we can all benefit from that. In addition to knowing what careers are out there there's also this part of discovering oneself and what one likes and what the strengths of an individual might be and that's an important piece that we will also touch on in the next webinar when we're talking about career coaching. Other ways that students and faculty and people in general find out about these careers is having guest speakers from industry and we now have the luxury of having many of our students now working in companies and they are absolutely outstanding speakers when they come back and share their own stories about how they have come through a ATE program and be a

trajectory for their own career path. Industry tours is also a very important piece, internships where our students get out and actually work and there are others and as you think of those and you might in addition to just putting in a Q&A; you might put in something that you can identify with as something in your own program that helps with this whole understanding of these emerging technology careers. With that being said I'm going to turn this over to Dr. Porter who has a vast amount of experience working in the workforce development and career exploration area and she will take over now.

Poll: What is your background?

Michael Lesiecki – Sandy its Mike, make sure you come off of mute okay, there you go, thank you.

Sandra Porter- Okay thanks there a couple more things that we'd like to know about you and you should be able to yea exactly, so the poll should be showing up on the right hand side we'd like to know a little bit about your background. So if you could click the option that fits the best and be sure to hit submit that'd be great thanks. I suppose I should do this too, huh how are we doing with information coming from the cloud Mike?

Michael Lesiecki - It looks good let's give them a 5, 4, 3, 2, 1 now the polls close it'll take just a moment Sandy for those information to appear you'll see them in just a second so right it going up to the cloud back down from the cloud.

Sandra Porter - Wonderful thanks.

Michael Lesiecki - We blame the cloud for any small delays.

Sandra Porter - Always a good practice.

Michael Lesiecki - So let's hold on just one second, there's a result Sandy. Take a look at that the biggest one is administrators.

Sandra Porter - Wow I'm not sure I would have expected that, but that's interesting.

Elaine Johnson - I think that's different from any of our other previous webinars and this is really exciting because we need administrators to support some of the career exploration activities.

Sandra Porter- All right we have another poll coming up on the next slide.

Poll #4

Sandra Porter - Here we're wondering about for those of you who are coaching students in careers or teachings we're wondering what you do if you teach classes, what you do, do any of you incorporate Career Exploration in your courses or have your instructors do that. So again if you could click the answer that fits best in the poll that's showing up on the right and be sure to press submit.

Michael Lesiecki - So we see the information coming in Sandy their responses are yes they do sometimes; that's me I hate to say; not yet but maybe in the future or Never so let's give another countdown not too hard a question Christina let's go ahead and close this poll in five, four, three, two, one. Okay good folk's thanks for your responses it takes just a minute to process that information and then we'll see the results in just a second. Sandy so let's hold on here. I should do it more often than

sometimes you know, I'm just thinking of myself here. There's the results oh, that's good a very strong yes for those who incorporate career exploration right in their classes that's excellent.

Sandra Porter -Oh yeah that really is great let's continue onto our next slide.

Favorite websites for job info

Sandra Porter - And we're really glad that you're here and a lot of you are doing this because we have a favor to ask of you before we go any farther you've seen where you can enter information in that Q&A box, we'd like you to consider sharing some of your favorite approaches for career research during the webinar by entering by typing them there and then also if there are any questions that you come up with during the talk put those in the Q&A area so we can get to those during the question times. And we'll share your strategies towards the end of the webinar. There are four kind of main areas or sites that I'd like to highlight today, that we'll be talking about a few more as well, these are the US Bureau of Labor Statistics job site or statistics site that is. A related site also developed by the Department of Labor called O*NET, a site that we built called Biotech-Careers and a site called ATE TV which was developed by the Advanced Technology Education Community and funded by the National Science Foundation and we're going to talk about three different jobs examples today one from computer related careers, one from manufacturing and one from biotechnology. So we'll show you how we might research those careers at the different sites. At the end of the talk because we are going to have a few different websites that we're covering we do have a resource slide with URLs and that will have all the resources that we talk about, you can visit them later on your own, on the next slide.

What's important to know when researching careers?

Sandra Porter - I want to just highlight some of the guiding questions that you probably use or we also use when we're advising students on research and careers and I have the ones in bold are the ones I'm going to kind of hit on them first. Which is what do you like to do? What do you find interesting? What do you value your time off, your time away? Where do you want to live and along those lines where are the jobs? Because your choice about where you live is really going to limits the kind of jobs that you might be able to look for and then along the lines about where the jobs are it's important to know what they pay, let's continue to our next slide.

Occupational Outlook Handbook

Sandra Porter - So we're starting off here at the Bureau of Labor Statistics which can be pretty overwhelming but the most useful part I find for occupational research is the Occupational Outlook Handbook at the Bureau which is a great comprehensive source of data. I think the best part of this site actually let me back-up for a minute, so careers in this handbook are organized into 25 occupational groups and they cover over 800 occupations. So we're going to drill down through one of these groups to see what we can find, Mike can you highlight where the arrow is pointing to the group for computer and information technology. Okay let's click that arrow and drill down to see what that occupation looks like.

Occupational Outlook Handbook

Sandra Porter - Ok so we can see on this page we've got descriptions of a few of the careers in computer and information technology and I'm only showing you a small part of the top of this page its really quite a few here. Interestingly up at the top that we can see that this area is really projected to grow and we see the median salary in this area is \$82,000 per year which is twice as high as the median salary for all other occupations. Though salary shouldn't be your only factor in considering a career but it's good not to ignore it you don't want to miss out on opportunities just because you didn't know what the

difference is. Mike can you click the arrow at the bottom and let's take a look at the computer systems analyst position.

Occupational Outlook Handbook

Sandra Porter - Ok so this is an example of some of the information that we can see for one of these occupations we can see kind of a breakdown of median pay, we can see the outlook are the number of jobs in this area projected to increase or decrease which is really good to know. And we're only looking again at a really small fraction of information on this page every single tab at the top takes us to a heading down farther in the page to the house more information is linked to other things. And if I were to scroll down or click the tab for the state and area data part, let's do that Mike, you can just click the next slide.

Occupational Outlook Handbook

Sandra Porter - It would take me to a part where I have information about states and areas in that section there are links to all kinds of maps and the maps are really nice because maps show us where jobs are expected to grow usually a darker color shows you the amount of employment for somebody in a particular state and we can also see the mean wage for that job by state. So it's interesting I think to see that some occupations grow in some states and it's interesting to see how the pay varies from state to state, I think that's important let's continue on to the next slide.

Occupational Outlook Handbook

Sandra Porter - Ok now let's look at another occupation here in the occupational handbook and this right now we're looking at production occupations ok and this is why I think it's really important to look at salary and job outlook because production occupations are those occupations that fall into manufacturing and you can see here that the number of jobs that are projected between 2014 and 2024 they're going to decline by about 3% you can also see that unlike our computer analyst positions where the median wage was 82,000 a year the median wage for jobs in production occupations is 33,000 a year, good to know. So Mike can you click the arrow next to assemblers and fabricators?

Occupational Outlook Handbook

Sandra Porter - So the assemblers and fabricators are people working in manufacturing plants that build engines and computers and aircraft and ships and boats and toys and electronic devices, control panels, a lot of stuff. Now this job doesn't require a lot of education, but you can also see it doesn't pay very well because the median salary is about 31,000 a year. So this is the kind of thing I think students should know before they pick a job. Okay, before we continue I'd like to see...

Questions?

Sandra Porter - ... are there any questions about thus far about the Occupational Outlook Handbook?

Michael Lesiecki - Sandy I do have not so much questions but remember we asked people to put in their own ideas of resources that we use and let me talk a little bit about some of the things that have come in. From one of our participants he encourages his students to connect with graduates of the programs who are employed in the workforce he feels that's a good source of how it really is. Do you do that for your students in your bio tech as well, do you have an active alumni connection?

Sandra Porter - Oh absolutely, in fact at Shoreline Community College in the fall they have a welcome new students day and they bring back alumni to talk about their jobs and what they're doing so it's really helpful.

Michael Lesiecki – Oh good.

Sandra Porter - Elaine?

Elaine Johnson - In San Francisco we also have numbers of speakers and including a course that is offered for a dual enrollment by high school students and industry speakers and particularly former graduates come back and talk about what they're doing and we also have a networking event and invite our former graduates to come and talk to the current students and to review the poster sessions and there's a common and very interesting and dynamic interchange. We did have a club and now we don't have that club and that might be something to reconsider, to reinstate so I'm glad that question came up where or that comment came up.

Michael Lesiecki - Thank you Elaine. You know Sandy others have commented in the Q&A window ideas of their own you mentioned some of the sites that you use some of their favorites of course are the Bureau of Labor Statistics that you mentioned as well as O*NET, something called MERIC M, E, R, I, C which I didn't know of its apparently specific to the you know state of Missouri labor so I think there are some state specific resources as well. Workforce Investment boards, EMSI, burning glass many of us are familiar with those job forecasting things I don't think our students can have direct access to burning glass or EMSI; do you use either of those tools burning glass Sandy in your work?

Sandra Porter - I do look at burning glass from time to time um not so much for forecasts but every now and then.

Michael Lesiecki – Good.

Sandra Porter - EMSI this is the first I have heard of that one.

Michael Lesiecki – Go ahead Elaine.

Elaine Johnson - I'd like to add that the state of California put together an entire statewide report on both demand and production of workers through the community colleges for the bio tech industry and the individual who worked on that used burning glass and went into the job announcements and this was particularly interesting because the job announcements what they were asking for did not necessarily match with the academic career requirements namely they would put in bachelor's degrees but the job itself wouldn't really require a bachelor's degree and so to use burning glass to dive deeper into what the jobs were actually asking for was a very important piece.

Michael Lesiecki – Cool. One last comment before we go on from this question thing, Sandy is one of our colleagues said they have an interesting approach during Student Orientation day they encourage former graduates to Skype into orientation sessions where students can ask questions of the former graduates who's currently in a work force. That sounds pretty cool, so I thought that was a good idea. Sandy its working people are using their Q&A window to tell us their ideas and to tell us things that have made sense for them.

Biotech-Careers.org

Michael Lesiecki - Let's take ourselves forward and talk about now biotech-careers.org.

Sandra Porter - Thanks Mike biotech- careers.org is a site that we built as part of Bio-Link and we did this because while sites like the Department of Labor Bureau of Labor Statistics and O*NET are great they do require I think kind of a high reading level and sometimes the high tolerance for clicking links and getting lost and figuring out where to go. So what we did was to try to make something where the navigation was a little bit more intuitive now this site also focuses on biotechnology but I want to stress that it really includes multiple areas of the entire bio economy such as bio manufacturing, consumer goods, fermented and engineered food, bio safety, fashion, material science via agriculture and a lot more. I recently attended conference actually where the keynote speaker claims that everything we make with oil products is going to be made in the future through biotechnology. I thought that was kind of a bold statement but who knows. There are also groups talking about how we're going to be using DNA to replace our hard drives in our computers because where we might change the technology that we use to read stored information we are always going to have technology to read DNA sequences that was really interesting I know I think back about all the floppy disks I have sitting around my desk and I'm never getting to get the information out of them so I know what they mean. Okay so anyway biotech-career.org has a lot of resources for students, let's continue on to the next slide.

Bio-Link.org

Sandra Porter - I mentioned before briefly our sponsors but I want to come back to that so this was funded by the National Advanced Technology Center of Excellence in biotechnology from the National Foundation ATE program and most of this came from Bio-Link, but we also received funding from the AC2 Bio-Link Regional Center based at Austin Community College and NBC2 the Northeast Biomanufacturing Consortium which is based in Pennsylvania, we'll continue on to the next slide.

What's important to know when researching careers?

Sandra Porter - Okay so we mentioned those questions right, what would you like to do? What you find interesting? What do you value? We talked a little bit about some of the information about where jobs are and what they pay but let's continue on to helping students figure out what they like. Let's look at the next slide.

Bio-Link Alumni

Sandra Porter - Okay as many people have noted the best, well the people that know the most and the best experts you can get to talk to students are alumni and people that have graduated from the Bio-Link or whatever community college or whatever programs. So here at biotech careers we actively seek out our alumni and we ask them to share photos of themselves on the job and answer interview questions so that we can learn a little bit more about the day. Can you go the next slide?

Bio-Link Alumni

Sandra Porter - Okay we think it really helps them to see other people like them working as professionals in positions of responsibility because we think oh yeah they look at them and go well they're not so much older than me and they can do that maybe I can do that too. Let's continue on to the next slide.

Bio-Link Alumni

Sandra Porter - So here is an example of one of the interviews with one of our alumni and she talks about where she went to school, the degree that she got, what she does during the day, kind of what advice she would give and we asked them to is there anything they would like to add and then we also list any other kinds of degrees or certificates that might be helpful. Let's continue on to the next slide.

ATE TV: 228 Videos - students

Sandra Porter - One other thing that we've done at Biotech Careers is to compile a lot of video interviews with our students as well and some of the video interviews that we got we were able to get from ATE TV. ATE TV has at the top 228 videos and they're wonderful because a lot of them have students, they show students on the job, they show people in school and it's a really great resource. Elaine is there anything that you'd like to add to that?

Elaine Johnson - Well I think that the thing that I would like to add is the fact that there are numbers of teachers, high school teachers, community college faculty that use some of this material in different ways and one of them in particular George Catriona from Lincoln High School in San Francisco has used the videos but they pass out cards in a classroom or actually larger sheets of paper with different colors and the students are either assigned or they can choose a career that they want to research and then they write a little bit about it and post it with clothespins around the room and pretty soon you've got a room surrounded by colorful descriptions of different entry level technician positions and some you know the green ones can be environmental, the blue ones can be laboratory, the red ones could be manufacturing and so there's a visual surrounding of the whole entire room and the students can describe what they researched and they can also go up and look at these different careers and get an experience that is partially their own because they put together some effort into going in and looking at the videos and this could be also the ATE TV videos as well.

Sandra Porter - Okay let's go onto the next slide.

Job Areas & Careers

Sandra Porter - A couple of things we did for organizing information at Biotech Career is to group the types of jobs by job area so we know there are some students that might want to work for example in biofuels or they might want to work in agriculture, they might want to work in defense. So jobs are organized that way. We also organized jobs by the job title so that students can take some mysterious jobs title like pilot plant operator and see how that fits in and what that person might actually be doing on the job. And, continued to the next slide.

Exploring Careers

Sandra Porter - When students come to the site they can explore by education level, they can explore by job area and then they can also search for jobs by starting salaries, so they can get an idea what jobs are going to pay more where they're at. So, all these things are kind of linked to each other so that they can drill down and go farther. I want to point out too that in biotechnology at least many times a student might start out at a job a lower paying job with fewer responsibilities like glass washing or a greenhouse technician and there are many biotech companies that actually pay for additional trainings a student might start out at a lower position but then there might be opportunities to advance. Let's go to the next slide.

National Convergence Technology Center

Elaine Johnson - This is one where I wanted to make a comment about our whole topic for the day we called it career exploration the last slide that Sandy showed was about exploring careers but if you go to some of the other national centers, regional centers you get similar information but if you notice the National Convergence Technology Center for the for information technology if you look at this list of how they have organized their information you don't see the word Career Exploration instead it's under a category called job forecast and then you see career outlooks, salary outlooks, job titles, salary range, internships, find jobs and future trends and much of the same information that Sandy has described for

the Biotech careers site is similar to this but organized in a different way so that's an important piece to remember in case you Google career exploration and don't find anything that may be the different language, different words will bring up some of the same information. Let's go on.

Exploring Careers- Hot? Or Not?

Sandra Porter - That's a really good observation Elaine. And actually can we go back just one quick okay great and I think that really is a nice lead-in to our next resource which is O*NET. O*NET where I think Biotech Careers is designed for students of multiple ages from high school starting at high school and the Bureau of Labor statistics is almost designed for people with PhDs. O*NET I think really kind of focuses on returning people who are returning to work although there's resources for a lot of people at a lot of different levels and I really like the hot technologies you can go see what computer languages you should learn. Let's go onto the next slide.

Exploring Careers- Hot? Or Not?

Sandra Porter - So if I take those menus at O*NET and I open them up you can see on the left that in crosswalks you can see that they have specialized information from people who are coming from the Department of Transportation or from the military. If we look in the middle you can see that they have ways that you can browse here by your work values and your work activities and styles and knowledge and abilities. And if we go over to the far left side this is where we could look for careers that have a bright outlook or we can look for careers in the grieving economy or STEM careers or by education or by industry. Mike can you click that link and let's look deep down in industry.

Exploring Careers- Hot? Or Not?

Sandra Porter - So when I looked at manufacturing before at the Bureau of Labor Statistics it looked a little bit bleak, here at O*NET let's go look at manufacturing here one of these selections.

Exploring Careers- Hot? Or Not?

Sandra Porter - We can see that okay there are we're only looking at part of the page and a lot of things do say decline which is not great but there is a bright spot at least here in the middle of this section of that page from O*NET, we can see that there actually is at least one manufacturing career that's projected to grow much faster than average with 70 1,200 jobs expected to be added before 2024 and that's the computer controlled machine tool operators let's click that link and explore a little further.

Exploring Careers- Hot? Or Not?

Sandra Porter - Ok so if we go here we can see a list of some of the tasks that these people might do, we can see some of the technology that they might use when they're on a job and every single one of those links at the top would take you to somewhere down the page where you would get more information about this type of career and what kind of education you need and where this would fit. So I find this pretty encouraging and I find this just a really interesting site to look at. Let's go to the next slide.

Questions?

Sandra Porter - Do we have any questions so far? Anymore?

Michael Lesiecki - We had a comment and several questions Sandy one as you showed that area of the lingo on the website several of our participants found that to be interesting and engaging so that's a that's a good feedback for you on that. The number two several people have asked this question I'll paraphrase it I'll combine their questions another way of determining career information is by actually getting on-the-job experience through something like an internship where you get to experience the

job. Do you think that's a common thing or is it limited because the number of internships are not that great? What's your take on that Sandy and then we'll ask Elaine the same question.

Sandra Porter - I think internships are really important I worked at a number of part-time jobs when I was figuring out what I wanted to do for a career and I found I worked for a veterinarian for a while and as I thought I might want to be a veterinarian and I realized most of the veterinarians I work for are really bored and not that happy with what they were doing because it just wasn't that interesting once they were doing, once around a job and I wouldn't have known that just from having a pet or reading about it or reading you know all things wise and wonderful all the whole creatures great and small right. It was working there that made me maybe realize whether I liked it or not. But there's other ways you can do internships there's job shadows, you can do informational interviews, visiting companies but I think internships are the best.

Michael Lesiecki - Okay cool here's let me bring this question forward to you.

Elaine Johnson – Can I answer that too.

Michael Lesiecki – Oh yeah I promised I would let you go ahead.

Elaine Johnson - The internships I think are incredibly valuable and there are a couple of things I'd like to add to what Sandy's said one of them is that this is an entry into real jobs for a number of our students especially students that especially companies or research labs that say they require a bachelor's degree and when our students get into the internship and demonstrate the skills that they have that are superior to many people who already have bachelor's degrees they're hired and that is a true incentive for students to go into the internships. Another piece that is problematic and we have a number of administrators on this call and I would really like to make sure that we understand that many of our students are required essentially by their families to bring in income sometime especially during summers and some of the internships are paid and some of them are not and the students will gravitate toward paid internships and if we can figure out that piece it would be a great value to numbers of students who really need to have some kind of income and not only pay their tuition and take care of themselves but actually contribute to their families. So that's another whole piece to the internship that I think is really critical so those are a couple of additional comments.

Michael Lesiecki - You know Sandy and Elaine one of our registrants excuse me one of our participants says that initiatives to develop apprenticeships are becoming much more popular especially for CTE students including those that are dual enrolled high school students. Do you find any barrier to under the age of 18 Sandy for this? I'll ask you Sandy and then I'll turn to Elaine. Is there an age barrier for these things?

Sandra Porter - Yeah it's really hard to find jobs in biotech for students who are under 18 there used to be a point where it wasn't so hard and then it's like somebody said all the companies lawyered up.

Michael Lesiecki – Yeah, yeah.

Sandra Porter- Yeah it's difficult to do at universities and colleges maybe not so much but companies yes.

Michael Lesiecki - You know I work in the advanced manufacturing area and that's another barrier that eighteen year old is a barrier for many of the manufacturing of things. Elaine any quick comments on that eighteen year old barrier.

Elaine Johnson - No I totally agree we have a lot of trouble getting anyone under the age of eighteen into a biotech company. We even have trouble getting them on tours sometimes I mean it's that these companies are a pretty secure and so it's a real challenge and that's why some of the camps, some of the other experiences are the opportunities for the industry people to come and explain to the students. Student videos those are helpful to get over that particular barrier and I think that the whole apprenticeship thing is growing but it depends on the industry. I think manufacturing in particular is going to benefit greatly from the apprenticeship.

Michael Lesiecki - Thank you both one last question for this question period its going right back to washing dishes Sandy in fact I remember when I was a undergraduate and had a job in a chemistry analytical lab and they assigned me to washing dishes so here's the question many of my students have a hesitation about dishwashing or doing simple jobs. Sandy how do we convince them they need to start out simple with an AS or BS they are not going to start out running a lab?

Sandra Porter – Right, no I think that's a really good question, I started out as a dishwasher. But the way we sell it to them I think is to explain to them that when they get their foot in a door it gives them an opportunity to talk to other people and many companies post their jobs internally first so they might have a job where they're dishwashing but then they've got somebody who can recommend them if a job comes along they have the opportunity to apply for it before others. So they will learn a lot.

Michael Lesiecki - Good point.

Elaine Johnson - Yeah we don't want to minimize the value of dishwashing in biotech for example many of the pieces of glassware are rinsed with triple distilled water they have to be very, very clean you're going to be growing organisms in them you know the value of a really good dishwasher is very critical so it might be a you know a beginning and a starting place but it's also very important and the scientists and the people that run the lab rely on that quality of dishwashing.

Michael Lesiecki – Fascinating, let's leave dishwashing to the side for a moment let's take us forward.

What's important to know when researching careers?

Michael Lesiecki - Sandy you've talked about these guiding questions tell us more about them.

Sandra Porter - Okay so just a quick return to what you find interesting and where are the jobs let's look at the next slide.

Navigation at Biotech-Careers.org

Sandra Porter - I'm going to show you a little bit about some of the navigation tools that Biotech-Careers.org at the very bottom of our main page we have this jobs, salaries, terms or careers and it takes you to this giant word page with word clouds now the size of the word reflects the amount of resources we have in job areas in business areas the bigger the word reflects the number of companies that have indicated that they're involved in this kind of activity. We have hundreds of words in here, let's look at autoimmunity.

Maps

Sandra Porter - If we click any one of those words it takes for the companies all over the world that are engaged in that kind of research or that kind of kind of activity let's look at the next slide.

What's important to know when researching careers?

Sandra Porter - So that helps us you know you can look at all this words see what things are interesting read about what the companies are doing let's think now back to where we want to live and where the jobs might be, let's go to the next slide.

Maps

Sandra Porter - We have different kinds of maps so that students can see where jobs might be located on the right we have a map that shows the world we're not going to go to that right now but we really want students to understand that biotechnology at least is a worldwide industry many companies have sites all over the world and if they do get into this industry they can employ talents like languages like their knowledge of other cultures that might be useful to them and useful to the company. If we look in the middle map we have biotechnology in the United States, can you click that Mike, take us to the next slide.

Slides disappear

Sandra Porter - Oh we're getting an update to flash player wasn't expecting that.

Michael Lesiecki - Excuse me folks I thought I had disabled that just one second here I'm sorry for that interruption, Sandy.

Sandra Porter – Oh no that's okay, what we'll see as we go on, click that link we can go to the next slide.

Locations of US Biotech Employers

Sandra Porter - Okay is that we can see that biotechnology at least is concentrated in different parts of the United States and but it's actually spread out sometimes you might think it's just California or just Boston but it's actually many parts of the country. Let's go on to our next slide to show another aspect of navigation.

Maps

Sandra Porter - And now I want you to click Puerto Rico.

Employers in Puerto Rico

Sandra Porter - Which is actually not a state but it's a really important part of the United States when it comes to manufacturing biopharmaceuticals. 10% of all prescription drugs are manufactured in Puerto Rico and most major biopharmaceutical companies have facilities there such as Amgen and Visor and Eli Lilly and Merck and Astra Zeneca and you may have heard that they'll be probably some shortages possibly of up to 40 different drugs including treatments for cancer and HIV and rheumatoid arthritis and because they're made only in Puerto Rico, and there's 14 drugs that are only made there. So we can see one more thing about this slide before we go on is we can see that biologics and manufacturing and drug delivery those are the things that they do a lot of in Puerto Rico, let's go onto our next slide.

Employers in Washington

Sandra Porter - And we're going to look at a different part of the country, Washington State and I'm bringing this up because it's kind of fun, if you click different states in the country map, the state map

you can see that every state has their specialty where Puerto Rico doing manufacturing in Washington you see there's a lot of cancer therapeutics and immunology. Just really kind of interesting to see state-by-state what the specialties are. Ok, let's go to our next slide.

What's important to know when researching careers?

Sandra Porter - So I just like to summarize, we talk to students about what they like, what they find interesting, what they value, where they want to live and you know what kinds of jobs there are and what jobs are where. Now let's go on...

What strategies/activities do you use to teach about careers?

Sandra Porter -... and let's share some more of our strategies for teaching about careers. Do we have some others that we haven't really hit on yet?

Michael Lesiecki -We'll give people a few minutes while we're discussing here Sandy for them to add things they've been doing pretty well about adding things into that Q&A window. We've talked about apprenticeships and a number of other opportunities connecting with alumni and things like that so as we go forward we'll just look for people's input into the window.

Elaine Johnson - I'd like to add that some of these emerging jobs are really clean jobs and this is working in clean rooms, working in manufacturing, working in biomedical devices and often times when you mention the word manufacturing to a student or to their parents they think of something that they remember from their past. I often tell a student that has allergies that think about working in a clean room because you know there's no pollen in there it's really good air quality. So there's things to consider that people don't necessarily think of.

Michael Lesiecki - Thank you Elaine. Sandy while we're waiting what's your favorite strategy I going to put you on the spot.

Sandra Porter - Okay thanks Mike. Well this isn't I can't take the credit for developing this but one of the high school teachers that I've worked with told me that his favorite strategy which I like a lot too is he has each student pick a career to research and then he has a small little party for them with crackers and juice and stuff and they pretend they're at a cocktail party and they interview each other and ask each other about their jobs so and then they have to share you know what they learned from the other students, but it puts them in a position of having to make small talk, having to learn about a job, actually having to talk about it. And I find that when students have to learn about something to the extent that they actually have to talk about it it makes them pay a lot more attention. Plus I think it's kind of fun.

Michael Lesiecki - Sure you give them a performance task right you say look now I want you to go out and do this that's interesting I like that idea. Let me turn this question phase two to Elaine. Elaine, who would you say benefits from this career exploration the whole thing we've been talking about who benefits.

Elaine Johnson - Well everybody, I think benefits.

Who Benefits from Career Exploration in Emerging Technologies?

Elaine Johnson - Because the companies benefit, because the students know more about the careers that they might be going into. The students certainly benefit by finding out more about themselves, what they like, what they're good at and what careers are out there and in their immediate area and

region. And I think the ones that we don't necessarily think of are counselors and parents and the importance of understanding these emerging careers and opportunities of coming to community on Technical College's and the huge importance of saving money. We've got reports out about student loans about repaying loans forever and just the idea that a student can come in and actually get into a workplace and have the companies pay for the rest of their education or move forward within companies is a tremendous advantage that many people don't recognize.

Michael Lesiecki - Good comments there Elaine thanks.

Questions?

Michael Lesiecki - Folks if we look at our time you can see we're perfectly on time we're almost at the end of our hour together. While we're taking our final questions let me advance to this slide,

Contacts

Michael Lesiecki - Which has the contact information and as you saw both Elaine and Sandy are very knowledgeable in this area they've really pushed the all of these technologies hard particularly in the biotech but lots of lessons that can be shared into other technologies as well and they will respond to you if you send them emails to talk. Elaine I've got you on the hot seat for right now here's the question for you. How can you help a student who is unsure about what he or she likes? What advice do you give this student?

Elaine Johnson - The students frequently don't know what they like and they haven't had the experience to know that and so there are high strength finders is one possibility where people learn about their own strengths, their own personalities, sometimes they don't think about the different times of day that the jobs take place, sometimes they're on weekends and shifts and they haven't thought about that. So it's like oh would I like to work in the evenings or on weekends and have some extra time during the week. These are things that all come up and so there are they're kind of a checklist and there's also the importance of really talking to the person and listening, many of the students don't realize what wonderful things they bring to the table like maybe they're studying English as a Second Language and they're fluent in their native language they can bring that to the table. Sometimes they're veterans and they have experiences that they don't see how they fit with the possible careers. We had one example of a baker who was working in a pastry shop and wanted to get into biotech and now has for years been in charge of the media kitchen at the University of California San Francisco and the researchers rely on getting superb media and he likes to follow recipes and now he's got benefits and retirement and a number of things that he didn't have as an individual baker. So these are things that I think that people learn and they but to listen to people's stories and then carry on a conversation is a really important piece of that.

Michael Lesiecki - It's a really good point Elaine thank you for making that one. Elaine and Sandy I'm going to ask you to hold on for a minute because we're going to have a wrap-up question for each of you but let me take our attendees through the next couple of slides as we close out for today.

Join Us- All Webinars 3 pm Eastern

Michael Lesiecki - Remember this webinar is going to be recorded so you'll get an automatic link to that but pay attention to our upcoming webinars on Thursday, November 16th the role of advisor, counselor and career coach as you can see it's sort of tags on to our topic today and focuses on that segment of things. Also Elaine we'll be one of our key presenters for that so thank you Elaine.

Join us in National Harbor!

Michael Lesiecki - Please join us in National Harbor, many of you know about the League for Innovations Conference March 18th through 21st, it's going to be a half-day CCTA workshop held during that so look forward to that in the spring in March.

Join us in Miami!

Michael Lesiecki - And also join us in Miami get out your rollerblades and your other gear for the boardwalk there for the High-Impact Technology Exchange Conference notice the dates July 23 through 26. A great opportunity to interact with your colleagues.

Register for HI-TEC and DOL and NSF Workforce Convening

Michael Lesiecki - And there's going to be a HI-TEC and Department of Labor and National Science Foundation workforce convening event typically that's held on the final day the following day that would be Friday July 27th for that event so look for that information go to the website [highimpact – tec.org](http://highimpact-tec.org).

Resources

Michael Lesiecki - Sandy mentioned that there's a number of resources and as you get these slides you'll see things like ATEtv.org, ATE Central of course, direct links to Career One Stop, O*NET, U.S. Bureau of Labor Statistics. So thank you Sandy for providing that information for us.

Webinar Survey

Michael Lesiecki - Folks I'm going to talk about the webinar survey, well tell you about it right now. As you close today you can't escape because a new browser window opens and there are four questions that we'd like you to click the answers to, it just takes a minute takes you a minute to help us improve. Thank you again. Sandy and Elaine as we wrap up today I'd like to ask you Sandy this is a hard question I know, but of all the things we've talked about today what's the one thing that you think if you know if you had limited resources what's the one thing you should start with or do to help career awareness, career resources?

Sandra Porter - Okay that's a good question I think if I had limited resources and it would depend on who I knew I would actually try to reach out especially if I teach in a the college I would definitely try to reach out to alumni get as many alumni to talk to your students as possible I really like the idea of having them Skype in because then it's not going to inconvenience them with their job and probably be a lot more successful. So I think yeah I think that is your best resource.

Michael Lesiecki - I like that answer, I like that Skype idea to. Elaine we have 30 seconds left so the last question is for you what about older students right we sort of have been thinking about younger students but suppose your military or older or your re-careering does the advice change or what do you suggest if you're an older student?

Elaine Johnson - The advice changes some but the welcome mat is out and the programs definitely encourage students who are retooling to come back to the Community College to if they haven't been at the Community College before to enter and there are resources for these students this is a part where we have internal partners at our college they have veterans of programs, the counselors have resources to support these students and so the bottom line is that the jobs are available for these students they're welcome to participate in the programs and we encourage them.

Michael Lesiecki - Excellent comment there Elaine. Elaine and Sandy thank you both just such a pleasure of talking with you today seeing your insights having the participation by our participants through the Q&A window and the polls that's appreciated friends this officially ends our webinar. Thanks to Christina Titus who is working the system and the communications in the background at the CTC Center, thank you Christina. So colleagues look forward to let's say in about 48 hours an announcement from us that gives you the link to the recording and to the slides from today. That officially ends our webinar please as that survey pops up as you close take a few moments and respond thank you again, good bye Sandy good bye bye-bye Elaine.