

Career Planning for the Future

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Here are the links to my four articles on LinkedIn with the information from my Alberta Career Development Conference Presentation if practitioners would like to share this information with their clients:

<https://www.linkedin.com/pulse/one-truism-all-career-decision-makers-ann-nakaska-ba-med/>

<https://www.linkedin.com/pulse/space-one-next-big-industries-ann-nakaska-ba-med/>

<https://www.linkedin.com/pulse/career-planning-future-what-we-all-need-know-ann-nakaska-ba-med/>

<https://www.linkedin.com/pulse/what-each-demographic-needs-know-ready-future-work-nakaska-ba-med/>

I have also included all four articles here if people prefer to read them from this document:

The One Truism for All Career Decision Makers

By Ann Nakaska- Constructive Career and Life Designs

Written May 12, 2019

(A version of this article entitled **One Truism for Future Career Decision Makers** was first published in Career Momentum: 21st Century Trends in Career Development Spring 2019 for the Career Development Association of Alberta)



A September 2017 CBC online news article stated that the World Economic Forum estimates roughly 75 million jobs worldwide will be lost due to increased automation by 2022. With headlines like these, how can career decision makers have confidence that they are making good solid career choices.

Very simply: Know your industry!

Parsons said, "In a wise choice of a vocation there are three broad factors:

1. A clear understanding of yourself, your aptitudes, abilities, interests, ambitions, resources, limitations, and their causes;
2. A knowledge of the requirements and conditions of success, advantages and disadvantages, compensation, opportunities, and prospects in different lines of work;
3. True reasoning on the relations of these two groups of facts." (p.5)

Here are 5 reasons why knowing your industry the way Parsons describes is the best advice all career decision makers can follow so they can be prepared for a rapidly changing workplace.

1. Jobs will come and go but industries survive and transform

Regardless of the industry we choose, that industry has most likely gone through some radical changes over the past 50-100 years. Over time, jobs in every industry have come and gone but the industry in some form or fashion survives. Let's use telecommunications as an example. Alexander Graham Bell is credited with inventing the telephone and founding the company American Telephone and Telegraph in 1885. Since the inception of ATT, over time many jobs have been lost in this industry as a result of technological advances. On the other hand, thousands of other jobs have been created. We no longer have switchboard operators or telegraph operators, but we still have a thriving telecommunications industry that employs people in selling and support of our cell phone industry.

Years ago, if we had decided to become a switchboard operator, focusing on a job title, instead of thinking of ourselves as someone in the telecommunications industry, we would have most likely found ourselves out of a job. However, if we were paying attention to "the opportunities and prospects in different lines of work" within our industry, we would have most likely seen the opportunities available to us in the telecommunications industry and made a shift in employment strategy when we needed too, including doing some retraining.

2. Computers and automation are eliminating jobs but new jobs are being created

Anyone around in the late 60's and early 70's will remember this. Computers ended up creating more jobs and allowed us to work on more complex problems. Computers have allowed us to send "letters" instantly around the world and outsource work across the globe. Jobs were lost in many industries; while general labor jobs were lost, many new jobs were created in the computer sciences and technological industries. Job creation was not evenly distributed across all industries.

While the World Economic Forum estimates that machines will be responsible for the loss of 75 million jobs world wide, they also predict it will create 133 million new jobs. All industries will be affected but which industries will be impacted more than others is another reason to know your industry. These jobs will require more technological skills and more education. Which means that in all industries and at all levels of education, people will need more skills. The best career advice we can follow:

Education is more important than ever and to stay employed it is everyone's responsibility to be continually updating their technological skills and education.

Career decision makers need to think about doing a gap analysis of their career skills and continually update their training to stay relevant in their industry.

3. Different factors will impact different industries, it's not only about automation

Career decision makers need to know and understand what factors are influencing the industry they are interested in working in. While automation is a major concern for many industries, it is not necessarily the major concern for all industries.

For example, on a recent flight to Calgary I had a conversation with an engineer from Saskatoon who runs his own asphalt company. When I asked him which workplace factor would be impacting him the most in the future (for example, the baby boomers retiring, automation, technology, globalization, or the environment) environmental concerns were number one. He cited making more environmentally friendly products, environmental taxes, and questions concerning the recycling of old road materials as his industry's biggest concerns. While autonomous cars may be taking over many driver related jobs, these vehicles will still need roads to drive on. These roads will need to be maintained and replaced over time. This engineer's business will still be needed to do this work. Career decision makers need to understand the impact that workplace factors will have on their chosen industries.

4. Choosing "Top 10 Jobs of the Future" makes for an easy decision but not always the best decision

What are the top 10 jobs of the future? According to one online article (Mejia, 2017) the top 10 jobs of the future are:

1. App developer
2. Computer systems analyst
3. Nurse practitioner
4. Physical therapist
5. Health services manager
6. Physician assistant
7. Dental hygienist
8. Market research analyst
9. Personal financial adviser
10. Speech language pathologist

This list is similar to many of the other top 10 or top 20 best jobs of the future you can find on the internet. Just pick one of these jobs and you should be good to go. Right? When we ask people: What do you want to be when you grow up? It's probably the hardest question they will ever have to answer in their lives? Therefore, it is a question that creates great anxiety. Career decision makers want to know what job will guarantee that they will be working full time and not have to do career decision making/ job search ever again. People are often looking for a career guarantee not necessarily the best job opportunity suited to their interests and abilities. Too often, we can focus too much on the top careers of the future as a way of guaranteeing our long-term employment, instead of looking at opportunities that are better suited to our interests. Parson's words still hold true today. For example, if we want to be working with horses in a non-horse and buggy era, as long as we do our research and understand the market, that is what we should be doing. The truth is, we

only need one job not all 5,000 jobs that are opening up in a new career area. Even if there are more jobs in data analysis, if we are better suited to work with horses and it is a financially viable career then that is the industry we should explore for our options. Our job as career decision makers is to make sure we have done our research and understand the limitations of job opportunities in a particular field. By following Parsons' work, we can make better career decisions.

5. Focusing on the work versus the job will guarantee more employment opportunities

In the 1994 book *Jobshift*, William Bridges stated, "We all will have to learn new ways to work...While in some cases, the new ways of working will require new technological skills, in many more cases, they will require something more fundamental: the "skill" of finding and doing work in a world without clear-cut and stable jobs...Today's workers need to forget jobs completely and look instead for work that needs doing, and then set themselves up as the best way to get that work done." When we know and understand the industry we want to work in, we will see the "opportunities, and prospects in different lines of work." (p.ix) We will be more agile at making career decisions that help us move forward within our industry instead of being left behind when jobs are eliminated. We all need to be able to recognize if our company is staying on top of industry trends or falling behind. We will become better at seeing "the work that needs to be done" and the career opportunities that exist within our industry.

To be successful, all career decision makers will need to be better equipped to move with their chosen industry, becoming more agile and strategic career planners. In summary, future career decision makers need to remember that overall industries will survive and transform, new jobs are always being created, automation is not the only factor influencing industry, the best decision is not always the most popular decision and that focusing on work is more important than focusing on a particular job title. By following Parsons and analyzing our industries, we will become better career decision makers. Lastly, by shifting towards the model Bridges outlines in his book *Jobshift*, we will all be better prepared to look for work and move forward with our industries as they keep up with all the changes happening in today's work place.

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Will Space will be One of the Next Big Industries?



Written by Ann Nakaska- Constructive Career and Life Designs

May 12, 2019

Have you ever watched films about the early aviation industry? These films showed ridiculously styled aircraft taking flight while others collapsed and crashed. At the time, I am sure many people thought the idea of an aviation industry was ludicrous. Today the aviation industry is still expected to continue growing.

In many ways, our current space industry probably looks a lot like films of the earliest airplanes. We watch while some space projects blow up on launch pads and others successfully soar to the stars. The question is why isn't this industry on everybody's radar as one of the next big industries?

As a career consultant, it is part of my job to be aware of industry trends and labor market information. While I have looked at a number of lists for the top 10 or 20 jobs of the future, I rarely see this industry even mentioned. Yet it is an expanding industry not just in scope of projects but also within many countries around the world.

There are three reasons why I believe we will see this industry take off more and more in the future:

1. Privatization
2. Public Support
3. Expanding Global Involvement

Privatization

While space programs have always been supported by a combination of public and private organizations, we see more and more companies stepping into this space, taking on a wide variety of projects in various areas of the space industry. Wikipedia has a wonderfully compiled list of private spaceflight companies. By reviewing this extensive, but by no means complete list, it becomes obvious how many companies around the world are joining a growing industry. Companies such as Blue Origin, Virgin Galactic, SpaceX, Zero 2 Infinity, One Space, and Moon Express are chasing the dreams of space flight, space tourism and space manufacturing. What I liked about this compiled list is that it also included spaceflight dates, highlighting the number of developing projects that should be happening within the next couple of years.

Just how big is this industry and what are these companies working on? By examining all the different areas that private companies are involved in, we start to get an idea of just how big this industry could become. Here is a list of specialization areas within the space industry and some of the private companies involved in these areas:

- Cargo Transport Vehicles: SpaceX
- Crew Transport Vehicles - Orbital: Blue Origin, Boeing, SpaceX
- Crew Transport Vehicles - Suborbital: Blue Origin, TSC (Virgin)
- Launch Vehicle Makers: Blue Origin, Interstellar, One Space, SpaceX, Virgin Galactic
- Landers, Rovers, & Orbiters: Moon Express, PTS, Space IL
- Research Craft /Tech Demonstrators: Zero 2 Infinity
- Propulsion Manufacturers
- Satellite Launchers
- Spacecraft Component Developers and Manufacturers
- Space liner companies: Virgin Galactic
- Space Based Economy including:
 - Space Manufacturing
 - Space Mining
 - Space Stations
 - Space Settlement

Public Support

Interstellar Technologies is a Japanese company that is developing the MOMO launcher. The company has plans to complete a rocket by 2020 that would launch small

satellites into orbit. While the project might be relatively ordinary, what makes this project interesting is that the company raised 30 million Yen or roughly \$250,000 US dollars through crowdfunding. To me this demonstrates the growing public support of the space industry. It is no longer just the government of the country that is driving the space industry but the people themselves.

People are investing in the Space industry. For example, China's One Space founded in August 2015, has managed to raise a total of approximately \$116 million. Since China has changed its policies to allow private space companies within the country, at least 10 more companies like One Space have emerged.

By signing up for space flights, investing in the industry and support through crowdfunding, we see a pattern of public support for this growing industry. We have moved beyond a government funded industry.

Expanding Global Involvement

If I asked you, where do you think the jobs in the space industry are going to be? I doubt you would have answered Scotland. Yet this country has just launched its 100th satellite as of April 2019 with more launches set for the near future. Why these launches are significant is because Scotland only launched their first satellite in 2014, a mere 5 years ago. In the meantime, they have developed a growing space tech sector and have created 1000's of jobs. There are more Glasgow-built satellites in orbit than any other European city (Macdonald, 2019).

But Scotland is not the only country expanding into this area. Finland (Amos, 2019) launched its suitcase space radar in January 2018. In the UK, firms are proposing a low-cost satellite radar set to go April 2019. The Space Israel (SpaceIL) Beresheet mission is set to land on the moon April 11, 2019. PTS, a German firm has a mission to the moon planned for 2020. Spain's Zero 2 Infinity is using high altitude balloons to launch payloads into near space and low earth orbit.

While many may argue that the Space industry is still very much in a research and development stage, as a career consultant it is part of my job to look at industry trends to help my clients make better career decisions. The one reason people miss trends is because they start with small pieces adding up over time until a critical mass is created and then the change becomes obvious. With increased privatization, public support and global involvement in this industry, I see a vibrant Space industry just over the horizon. Today the Space industry may resemble the early days of the aviation industry with weird and wacky airplanes crashing on the beaches, but in other ways it looks very much like an industry ready to take flight to places few of us have ever seen. The question is will we be ready when it does?

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Career Planning for the Future: What We All Need to Know!



By Ann Nakaska – Constructive Career and Life Designs

May 25th, 2019

When you were little, what predictions were being made about the future?

Maybe people thought we would all be driving flying cars. When I was a little girl, people were predicting we would be flying everywhere with jetpacks. I'm so disappointed we don't have jetpacks! People also predicted we would have robot maids, like Rosie the Robot, in the Jetsons' cartoons. Again, I am so disappointed. Last time I checked; I was still scrubbing my own toilets!

When you think about the future of work, do you think that robots will replace all of us and no one will have any work? Or do you think of a more optimistic future, where people will use technology to help solve complex world problems? The World Economic Forum estimates that roughly 75 million jobs worldwide will be lost due to automation by 2022. How will this impact people around the world?

In this article, my purpose is to:

1. Offer you hope about the future of work.
2. Emphasize the need to stay current with technology and industry skills, and to focus on work opportunities rather than job titles.
3. Help you explore some of the exciting work opportunities that will be available in the future.

1. Hope for the Future of Work

While the World Economic Forum predicts job losses of 75 million worldwide, they also predict job creation of 133 million jobs. But before we explore these job opportunities, we need to understand the fundamental shift that has taken place in the workplace. In the 1994 book, *Jobshift*, William Bridges explained how we are shifting from the industrial or factory era to an information or technology era. Now in 2019, we are living it. For the average worker, it means we will no longer be guaranteed a job until retirement age. We will be responsible for our own pensions, as well as, our own professional development. Lastly, many of us will be working most often on a contract basis versus a full-time employment basis. These changes are primarily due to technology, but they also caused by increased globalization and competition within world markets. Companies need to be more flexible and adaptable to compete in a global marketplace.

In his book, *A Whole New Mind*, Daniel Pink identifies the need to shift towards more creative, or right-brain jobs; if we want to stay employed. He predicts that we are more likely to keep our jobs if the jobs cannot be easily automated or outsourced to the other side of the world.

As a result of these industry changes, people will need more education in both business and economics. This will give them the skills necessary to shift from an employee role to an entrepreneurial work role. It will also help all employees to stay on top of their industries' changes. Armed with a knowledge of economics, the general public will be able to understand major factors impacting their workplace and specific industry. These factors include

demographic trends such as the retirement of the baby boomers, technology, globalization, immigration and the environment.

Very few people like change, however; understanding why these changes are happening can help people manage and even become part of the change. Explaining how we have shifted from an industrial era to a technological one, can be very beneficial in helping baby boomers embrace new technologies. It also allows them to take advantage of all the exciting opportunities available to entrepreneurial thinkers in their respective fields.

Without a basic understanding of business and economics, it's much more difficult to become part of the new resulting gig economy. To be clear, the gig economy in this article means a shift towards short-term work contracts and entrepreneurship. It does not mean everyone working part-time jobs at minimum wage. For example, when working with clients who have been out of work for awhile, my clients and I will examine business opportunities that combine skills from their previous work in a whole new way or with a whole new industry. It is so gratifying to watch clients go from feeling hopeless about their careers to being excited and engaged in their field again.

To remain hopeful about the future, all career decision makers and career planners will need critical thinking skills. These skills, otherwise known as higher order thinking skills, encompass not just gathering information but also learning how to use that information at a much deeper and more sophisticated level. These skills include analyzing and evaluating our knowledge and using it in new and creative ways. We know from Daniel Pink's work that we will need these skills to be successful in the future.

2. Industry and Technology Skills and a Focus on Work Opportunities

As part of the industrialized factory era, we have become focused on jobs and the process of job search. Being part of the information age and technological era, we need to focus more on work and less on jobs. When we hear that an industry is losing thousands of jobs, people often shy away from making career choices in those fields. What we need to learn is that jobs will come and go but industries will survive and transform. With the changing world of work, in every industry, there will be growth and there will be decline. We need to ask ourselves where are the new work opportunities in my industry?

To illustrate this point, let's examine the entertainment industry, specifically the circus industry. The Barnum and Bailey Circus, The Greatest Show on Earth, started in 1871 and closed their doors in 2017. Part of the reason for this, was that they were unable to respond to two industry changes, pressure from animal activists and a shift towards an experience economy where being an audience member is less about observing and more about participating.

Compare the circus of old to the new modern-day Cirque du Soleil, a Montreal-based company started in 1984, which is still going strong today. They are the circus reinvented. They grew from one show to nineteen shows and have performed in 271 cities; on 6 continents. They

employ 4,000 people in 40 countries. Their business model thrives on being more engaged with their audience, in line with an experience economy, and rarely using animals in their shows.

They demonstrate how important it is to know your industry. Cirque du Soleil's annual revenue is roughly \$810 million US dollars a year. Their Las Vegas shows are seen by almost 9,000 people each night, and over 90 million people worldwide have seen a Cirque show. Using their industry knowledge, Cirque du Soleil helps people find work in their field even when jobs are not available and helps create new jobs for people around the world.

Industry knowledge is extremely important, and it is even more important as we move forward in a rapidly changing work world. To better understand the ebb and flow of industry growth and decline, we will take a macro view of industries over a hundred-year period. To do this, we will use the one-hundred-year edition of Forbes Magazine, where they used an article summarizing the industry trends of the top 50 companies in the United States. While some readers may prefer strictly Canadian content, I like this information for two reasons: the US has very similar industries to ours, and it's a much larger country, giving an overall bigger picture of industry trends.

In 1917, the top fifty companies worked in these industries:

1. Steel
2. Oil and Gas
3. Mining
4. Food
5. Telecommunications

These industries make sense too, because we are building railroads, automobiles and skyscrapers. The use of radio, telegraph and telephone are starting to grow, introducing the telecommunications industry.

If we fast forward fifty years, the top fifty companies in the United States are now involved in the following industries:

1. Oil and Gas
2. Technology
3. Telecommunications
4. Film
5. Automotive

At this point in history, ten of the fifty top US companies are all oil and gas companies. This is also the time where the top company in the US is IBM. The technology age has now started and is gaining traction. Telecommunications has become an even larger industry with the invention of television. The automotive industry is growing and we are seeing the start of families having more than one vehicle. The trucking industry is taking over from rail for transporting goods.

As we move to present day, the top fifty companies are now involved in the following industries:

1. Technology
2. Financial Services
3. Medical Services
4. Conglomerates
5. Telecommunications

The oil and gas industry dropped from number one to number six and only three of the top fifty companies are now oil and gas companies. It would be easy to think that this is because we are going green and driving electric cars. But that is not what this trend represents. It also does not mean that the oil and gas industry has shrunk as a result of the recession, because the US oil and gas industry has been booming in the US. This shift in trends is a result of other industries growing faster and becoming larger than the oil and gas industry. Technology is one of these industries.

This is an important point. The steel and the mining industries, which were on the 1917 list, no longer make the top five in either of the next two lists. That does not mean that the steel industry has gone away or that mining has disappeared. It just means that other industries have taken their place as the leading industries. Steel and mining are still important industries employing thousands of people. There are still jobs in these industries and there are still work opportunities in these two industries even though they are no longer leading industries.

Of the top six companies in the US, five are technology companies: Apple, Alphabet, Microsoft, Amazon, and Facebook. It is important to get an idea of just how large some of these companies and industries are in order to understand the number of work opportunities in this industry. In 2019, two of these technology companies, Apple and Amazon, were both estimated to be worth a trillion dollars US. To give you some idea of how big this is, Canada's GDP in 2017 was 1.653 trillion US dollars. This means two companies in the US are equal to more than our country's GDP for one entire year. What we need to seriously think about is, are our cities and our country keeping up in these industries or are we falling behind, becoming outdated? Should we be concerned? I believe we should be. I think we should even be a little bit afraid. We should be looking at the numerous opportunities available to us as a country. What is our vision for our country economically? What industries do we want to invest in? I believe we need to start developing more of our own technologies and industries, such as aerospace, to better compete in the world.

3. The Exciting Work Opportunities of the Future

If we look at predictions for jobs of the future, we can simply Google any number of compiled lists. Most future job lists are like the one I am using from an article by Mejia. I have grouped his 10 top jobs-of-the-future under industry headings, so it is easier to see both job opportunities and industry opportunities at the same time.

Technology:

- App developer
- Computer systems analyst
- Market research analyst

Medical:

- Nurse practitioner
- Physio therapist
- Health senior manager
- Physician assistant
- Dental hygienist
- Speech language pathologist

Financial

- Personal financial advisor

What I find most interesting about this list is that we are now entering what is known as the fourth industrial revolution, which is described as “the blurring of the lines between the physical, digital and biological spheres – cyber physical systems.” The fourth industrial revolution is a fusion of technologies. I have grouped these technologies together under industry areas to make it easier to compare with our jobs-of-the-future list.

IT and Computer Programming:

- Robotics
- Artificial Intelligence
- Quantum Computing

Engineering:

- Nanotechnology
- Biotechnology
- 5th Generation Wireless technologies
- Additive Manufacturing/3D printing
- Fully autonomous vehicles

If we compare these industry areas of the fourth industrial revolution with the typical list of the jobs of the future, we can see that there is quite a difference, and very little overlap. If these technologies will be the disruptors of our current workplace system, then shouldn't the jobs naturally be in these areas? Why isn't there more overlap? I am curious to know why the disruptive technologies of the fourth revolution very rarely appear on job lists of the future. What is important is to know, is that both the jobs-of-the-future list and technologies of the

fourth industrial revolution, can be used as predictors of industries where there will likely be work. However, if we really want to be prepared for work opportunities in the future, its more important for all career decision makers to be asking the question:

How will the fourth industrial revolution impact my industry or the job I am interested in pursuing?

As well, career decision makers need to also ask themselves the question:

How will the factors that are impacting the workplace in general (demographics, technology, globalization, immigration and the environment), be impacting my industry and the jobs I am interested in?

The reality is for those using their critical thinking skills, there will be numerous opportunities available to people now and in the future. Industry trends is an area of career development that I am very interested in and I have used my interest in this area to start digging into some career areas that I believe will be growing in the future. These are just a few of the work opportunities I explored.

One career area that I examined was cyber security. I chose this area because of all the problems due to hacking of computer systems and our increased reliance on technology. It seemed only natural that cyber security should be an in-demand career area. While the job of computer analyst makes the top of the list for jobs of the future, the job of cyber security analyst does not specifically appear on the list.

Originally, it was estimated that we would need roughly 1.5 million cyber security analysts worldwide by 2019, this year. However, it has been determined that these numbers are most likely on the low side and we will need to fill nearly 2 million jobs worldwide. There is also an expected job growth in this area in the coming years of 37% within the next two years. Currently, only seven out of every ten jobs are being filled. We will need cyber security managers and we will also need post-secondary programs to be responsive to these growing demands with up-to-date programs and instructors. Furthermore, with more hackers using artificial intelligence, cyber security analysts will need lots of training. One can see that this is a career area with numerous work opportunities on the horizon.

Another up and coming trend is that of farm-to-table in the food industry. More and more, we are turning to fresh healthy food. This trend is growing in response to obesity issues. It is also creating better dining experiences and addressing the environmental push to reduce the amount of trucking needed to bring food to consumers. In fact, in an online article Vyawahare states, "proponents of vertical farming call it the "third green revolution", analogizing the developments to Apple and Tesla. They tout the potential of such technology to address food shortages as the world population continues to grow." This desire for reduced transportation costs has led to a growing industry of food factories. Aero Farms having just developed a \$30 million food farm in New Jersey.

In addition to the farm to table trend, there is also a trend in helping cities go green with a move towards vertical gardening, growing plants on the sides of skyscrapers and on interior walls of buildings. These trends are significant because they are on point with the values of the younger generations. Green agriculture is healthier, is more efficient for growing more food in the same space, involves less trucking, less water, less genetically modified foods, and less fertilizer entering the water system. It also allows for reclaiming land for other uses.

Some may argue that there will be lots of automation in this field, so there will not be a lot of job creation, but we also need to think about supporting industries. We will need people to convert warehouses into food factories or to build new ones. We will need people in sales and marketing and for the creation of home and office vertical gardening products. We are already seeing some of this work being done, but it will increase over the next five to ten years.

I would like to add a side comment here to discuss careers in sales. I frequently hear that businesses are crying for good salespeople. I am not talking about general retail jobs that pay minimum wage but rather business to business sales. This is a job that suffers greatly from job snobbery. Very few people consider this job because they associate it with used car salesman stereotypes. The reality is sales is one of the top paying jobs and is necessary for all businesses to be successful. Yet some business programs do not even offer sales courses as part of their programs. This is a career area that should be considered more seriously by people.

As we explore a future of vertical gardening and food factories, we should also explore China's Sky City. Sky City is designed to be a fully self-contained sustainable skyscraper that can house up to 30,000 people. It is planned to contain gardens for food production, a hospital, a hotel, and five schools, and to be fully self-sufficient. Construction was to begin in 2016; however, they experienced environmental difficulties and construction has been delayed. Whether or not Sky City is ever built is not the issue. It is more important to look at the overall concept that fits with a model desired by the younger generation. It represents the future of buildings and multi-functioning living spaces. Even if Sky City is never built, it is a real possibility that smaller versions of this project will be constructed in the not too distant future. They will take up less space than conventional construction and be more environmentally friendly.

Another growing field I like to explore is green energy. It is an area that will continue to grow because it is very well-supported by the younger generations who want a better world for their children. This means more work and products being developed in solar, wind and geo-thermal energy. It means the development of more green products and the development of more environmental cleaning techniques. It also includes more passive construction techniques, where buildings being constructed will not require any energy because they will produce enough of their own energy to be self-sustaining.

Lastly, I think it is important to explore at least one sector which is expected to decline over the next few years. We should examine declining industries because there are often lots of work

opportunities still available and it gets us in the habit of not dismissing entire industries when we hear there will be fewer jobs there.

I thought we could look at several areas in the maintenance sector:

- Cleaning
- Repair and maintenance
- Restoration and renovation

As I mentioned at the beginning of this article it would be nice to have a Rosie the Robot. We are getting closer to the day, and many new cleaning technologies are available on the market. However, we still do our own laundry, clean our own toilets and generally do a lot of the same housework we've been doing for years. One of the big areas that is being taken over by technology and AI is in floor maintenance. Washing, cleaning floors and vacuuming have come a long way with technology. Soon, we may not have to do these household tasks at all. But for slightly more detailed cleaning jobs such as wiping windowsills, and dusting, we do not have robots that can do these tasks for us. If we add to that small and large home repairs, we now have a lot of work that robots still cannot do or not do well. When we think of repairing and repainting paint nicks in walls and rebuilding fences, it will be a while before robots are doing these tasks because they take a lot of different skills to complete the entire task from start to finish. That makes these good areas to get into. If we go to an even bigger scale of repair jobs, such as renovations and restorations, again these jobs require too many skills to be adequately taken over by a robot at this time. What's more, is that these jobs are not routine, so they involve different skills each time the task is done. For example, if I want a bedroom addition done to my house, it's a very different task than building a deck at my neighbour's house. The same is true for restoration work such as, if my basement floods or if someone's house catches fire; these are complex problems that require complex thinking skills and many different building skills, not easily done by a robot.

Repair work will also be available is in the area of specialized machines, such as medical equipment. While there are not a lot of people who repair MRI machines, we do need people with these very specialized skill sets. Also, for repairs of more complex machines, such as on cruise ships and in factories, we will need people to do the necessary repair work. The more complex the work, the longer it will be before robots are used for the work. In general, the more routine the work, the more likely a robot will take over that work, but it doesn't mean that all our work will be taken over by robots. At least not yet.

In addition to maintenance and repairs, we need to think about replacement parts and services. Sometimes machines are not repaired at all, but simply replaced, such as microwaves and printers; it is cheaper to buy a new one. But this leaves replacement parts as another area of business. If we understand that the ink cartridge for the printer is the money maker and not the printer, we see new opportunities for new businesses.

While disaster management may not be a cleaning and maintenance job per se, it does fall into the same general area. It is an area that also requires lots of complex thinking skills and experience. In areas where disasters happen, often there is no power which means that having technology to help with the problem is not likely going to happen. When huge areas are affected by floods, hurricanes and fires, we need lots of problem solving and critical thinking skills to determine what needs to be done to restore the area back to the way it was. This is often done with little or no available electricity or telecommunication services, which means robots and other technology are probably not going to be involved as much as humans in the cleanup and restoration of the area. The more we depend on technology, the more it will not be able to help us when disaster happens, and technology goes down. This is one time where it really is advantageous to be human.

Before we leave our discussion of the maintenance industry, we should explore a related field, the replacement of infrastructure. According to the Canadian Infrastructure Report Card 2016, it is estimated that one third of our municipal infrastructure is already due for replacement, with more work needing to be done in the near future. If this is the case, this opens the door for lots of work opportunities not only in civil engineering and trade jobs but also for work in the development of better building materials and new environmental techniques in construction.

A final point to ponder on this topic is that sometimes we can be so focused on what jobs are going to be available in the future that we miss out on job opportunities that are available right now. The Canadian Council for Aviation and Aerospace estimates that Canada will need an extra 300 pilots every year over the next few years. Between the new hires needed for a growing industry and those needed to replace the pilots of the baby boomer generation, they estimate that we may need as many as 6,000 pilots by the year 2036. Not only are commercial pilots in high demand, but military pilots are needed as well. The Canadian Air Force estimates we will need 275 pilots to fill both attrition and recruitment positions. We will also need instructors as the aviation industry takes instructors away from post-secondary schools to meet their needs.

It was my wish in doing this research to offer people hope for the future of work, to emphasize the need to learn industry and technological skills, and to examine some of the exciting work opportunities in a number of different industries. As we can see from this very limited industry review, there will be jobs in lots of industries and lots of work for people with the right skills sets. Therefore, it is important for everyone to take the time to do their research when making a career decision, get education or training that matches their industries needs, and lastly, continue learning to stay current with their industry. If we learn to look for work opportunities as Bridges outlined in his work in 1994, the future has a much more promising outlook.

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What Each Demographic Needs to Know to be Ready for the Future of Work



By Ann Nakaska – Constructive Career and Life Designs

May 30, 2019

What skills do you think you will need for the future of work? An article in Fast Company Magazine lists the skills they feel will be required for jobs in 2025:

- Technology and Computational Skills
- Caregiving
- Social Intelligence and New Media Literacy
- Lifelong Learning
- Adaptability and Business Acumen

As we move out of the industrial factory era and beyond the information age, into the fourth industrial revolution, it is a given that technology skills will be necessary to remain current. Using social media in positive work-related ways, as well as, business acumen will also be important skills for a gig economy of entrepreneurial and contract workers. Caregiving skills will be necessary to take care of aging baby boomers.

Adaptability and life-long learning will be necessary for everyone to move along with the currents of technological and workplace changes. Continual learning will not be an option; people will be required to keep up with huge amounts of industry knowledge to stay employable. But besides these obvious skills, what will each workplace demographic need to know if they want to remain successful in their careers in the future?

Youth and Young Adults

What will youth and young adults need to focus on in career planning for the future? Before making their career plans, it will be important for youth and young adults to do lots of career exploration, learning about a wide variety of jobs and industries. With so many factors impacting the workplace and a multitude of industries to choose from, it is important for young adults to get the chance to learn about their options before making a firm career decision. Schools can support youth in this area by integrating more career development and industry knowledge into their current curriculum.

As the Fast Company article states, education and training will be a top priority. Robotics and automation will be more prevalent in every industry, replacing simple repetitive tasks. Our youth and young adults will be required to continually upgrade and update their skills. Finishing high school or post-secondary education will not mean they are “done with school.” They will especially need to continue learning the technological skills that relate to their industry.

As more and more schools around the world emphasize critical thinking skills, our youth will also need to focus on these skills. The book, *The Smartest Kids in the World*, states that schools in Poland and Finland are scoring top marks on international testing. These critical thinking skills will be essential as young adults move forward in their careers, taking on more managerial roles in industry.

The Fast Company article also states that business acumen will be crucial for youth and young adults as we move more and more towards a gig economy. While some North American youth may have the opportunity to work in family businesses, the article doesn't discuss how our youth and young adults compete entrepreneurially with youth from around the world who learn business skills in their families' shops and restaurants. Our young people are at a serious disadvantage in that they do not get the opportunity to develop business skills either in school

or firsthand in the real world. These business skills should include entrepreneurship, sales and marketing, including digital marketing, skills that are often ignored in business programs.

Mid-Life Career Decision Makers

Besides the skills listed in the Fast Company article, mid-life career decision makers, mainly Generation X and Generation Y (millennials), would be wise to learn leadership and management skills. This would allow them to step up and step into the leadership opportunities that will be created by retiring baby boomers. Not only will there be many baby boomers leaving the Fortune 500 companies, but there will also be lots of baby boomers wanting to retire from their own small businesses, leaving numerous opportunities for many Gen Xers' to buy into and take over successful small businesses.

For mid-life career decision makers, this will probably be the biggest opportunity of their lives if they are ready for it. Many companies are aware that they do not have succession plans, but they are also doing very little to prepare their organizations for the up and coming change-over in management. This means it is up to Gen Xers' themselves to invest in their own leadership training to get ready to move into these positions. Gen Y will also need to invest in their own leadership training to be ready to move into middle management positions left vacant by Gen X.

To make sure Gen Xers' and Gen Y's are keeping pace with their positions within industry, these mid-life career planners will want to embrace lifelong learning, keep up to date with their chosen field, and keep up to date with their technology skills.

Plus 50 Career Decision Makers

Plus 50 workers and career decision makers will also need to focus on keeping current with their skills and staying relevant in their industry and workplace. Technology skills are key, as well as, becoming educated about the factors impacting their industry. In the new economy, baby boomers cannot afford to cruise into retirement. This philosophy will result in them being let go with only a few years left to earn much needed retirement income. For boomers, the Fast Company article is on point, stating the importance of technology skills for the future.

Besides the other skills needed for the future, relearning how to work in the gig economy will be a key to success. When they were young, +50 workers freely engaged in the gig economy but didn't call it that. They ran lemonade stands, babysat, shovelled walks, and mowed lawns to earn extra money. As they got older, they gave up the gig economy and got "real jobs." By understanding that they already have experience as short-term contractors, boomers can embrace the gig economy and use critical thinking skills to understand all the opportunities available to them in their respective industries. Their cumulative years of industry experience can be extremely helpful in developing new work possibilities and new businesses while enriching their industries.

As we can see, each of these demographics will need to develop the skills listed in the Fast Company article, but they will also need to develop some additional skills as they get ready for the future. Youth and young adults will need to do more career exploration in making career decisions, develop their critical thinking skills, and build business acumen skills. Mid-life career decision makers will need to develop their management and leadership skills to prepare to step into leadership roles left by vacating baby boomers. Baby boomers will need to sharpen their technology skills and their critical thinking skills to take advantage of all the work opportunities available to them, and to remain active members of the workplace. The future world of work is there for those who embrace the skills necessary to stay actively engaged in the workplace.

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