

IT Career Guide 2017



GOVERNMENT OF BERMUDA

The Ministry of Economic Development

The Department of E-Commerce



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Letter from the Minister

Dr., the Hon. E. Grant Gibbons, JP, MP
Minister of Economic Development



Welcome to the 2017 ICT Career Guide.

At a time when Bermuda, and indeed the world, is increasingly accessible to us through technology, the ICT field is definitely rich in opportunities. This ICT Career Guide is here for you to explore the different ways that information technology could prove to be an exciting career path for you.

In this issue of the ICT Career Guide, not only will you find a listing of highly-rated colleges and programmes overseas, you'll also find a directory of scholarships available locally. Importantly, you will see articles that show the diverse palette of career options available to ICT students and read about the rich variety of professionals that use ICT at work.

Since the last issue of the IT Career Guide, we've seen students of all ages prove that technology is a tool that can be used in a variety of ways and often with remarkable success.

StartUp Weekends have seen children and teenagers compete with adults – and win – having developed concepts for winning apps and websites in just over two days.

TechAwards have brought forth the same level of innovation and creativity from Bermuda's youth exhibiting tech-savvy which we would expect from seasoned computer scientists. Our middle and senior-school students are working on amazing projects both in and outside the classroom – and the Fishhackathon proved that Bermuda's teenaged students have what it takes to develop solutions for the Island's marine environment and the world's oceans.

Nowadays, anyone with a smartphone can find user-friendly, problem-solving mobile apps that are developed on the Island and allow us to find a taxi, check the weather, choose from a schedule of events in Bermuda – or find our way through an island-wide map. It's just the beginning, and it starts with ICT.

This is your Guide. Please use it. Take charge of your career and prepare yourself for a future in ICT.

Dr., The Hon. E. Grant Gibbons, JP, MP
Minister of Economic Development

One Woman Defying the Odds in a Man's World

Coral Wells, a 45-year-old software developer, project manager and ICT specialist, got her start in the traditionally male dominated ICT field 20 years ago.

Since then, she launched not one, but two businesses – W&W Solutions, a company offering software development and marketing support to local businesses, and CONNECTECH, a technology incubator providing co-working space to entrepreneurs and a tech training centre, teaching coding and ICT classes. This year, she was named Inspiring Woman in ICT.



She tells us more about her professional journey...

What first sparked your interest in ICT?

It was probably during my last year of college. I was completing a computer graphics degree and our final project was to create a website. The process was harder than it is today as we didn't have WYSIWYG editors - we actually had to hand code the website ourselves. In the 1990s, websites had just started to pop up and in those days they weren't as advanced or sophisticated as they are today – and in many cases even more difficult to build.

We were tasked with creating the New York State Library's website using Notepad as the HTML editor. This was an extremely challenging process which intrigued me and made me want to learn more about coding.

How has your IT career evolved since then?

My career originally started in the computer graphics and marketing area. However, it didn't take me long to see that my passion was more on the technology side of things with web development and programming. Therefore, in order to evolve and grow in my career I took it upon myself to learn more about ICT.

It grew from marketing and graphics to programming and project management. These disciplines complimented each other very well and provided the opportunity for the creation of my first company, W&W Solutions Ltd.

Have any challenges arisen from being a woman in this field?

Absolutely. Generally, technology has always been a man's world. It's something women struggle with all the time. In the boardroom, you are usually the only woman. There have been significant improvements in equality over the last few years, but more still needs to be done to encourage women in the technology industry. I am very thankful there are women like Kimberly Bryant, the founder of Black Girls Code, and Sheryl Sandberg the COO of Facebook, who are helping to change the face of the industry and pave the way for others.

Why have you personally chosen to pick up that mantle?

I truly believe there should be equal opportunities for everyone in technology. I know from experience it can be a challenge for women to enter this industry and be taken seriously and that's made me determined to make an impact and help the young women of Bermuda to achieve their dreams.

The reality is when women help each other amazing things can happen. Case in point, my daughter Ciarra is nine and she loves everything tech. I continue to encourage her to learn, create new things and be innovative. I believe this early exposure has been key to her development and interest in technology. As far as she's concerned, she's going to be an engineer when she grows up and I certainly hope so! As long as she is happy and it is what she loves to do.

How does it feel to be named the inaugural winner of the Inspiring Woman in ICT Award?

It's wonderful to be recognized but I know it's not about me. It's about what we as a collective of women are trying to do to raise the profile of females in ICT.

I'm honoured that I was chosen to be the Inspiring Woman in ICT for Bermuda, but I want to use this platform to educate and inspire other young women in the industry. I want to provide them with tools, knowledge and guidance so they can seize the opportunities available to be our next leaders in ICT, not just in Bermuda but on a global scale.

What's the most important advice you'd give to these young ladies?

There's a quote from Oprah that constantly resonates with me, 'Passion is energy. Feel the power that comes from focusing on what excites you'.

My advice to our young women of Bermuda is to follow your passion and love what you do. Life is too short not to pursue your dreams.

This May Just Be What You're Meant to Do by David Petty

During my initial year of teaching and while pointing out that different IT areas of expertise require a greater level of use of soft skills, I found that I needed to give more context on the subject to better illustrate my point. So I asked the students to take a free test on www.16personalities.com. It is a test is based on personality profiling which was developed from the theory of psychological types described by C. G. Jung. It outlines 16 personality types which are based on where our answers to the test fall, on the spectrums of:

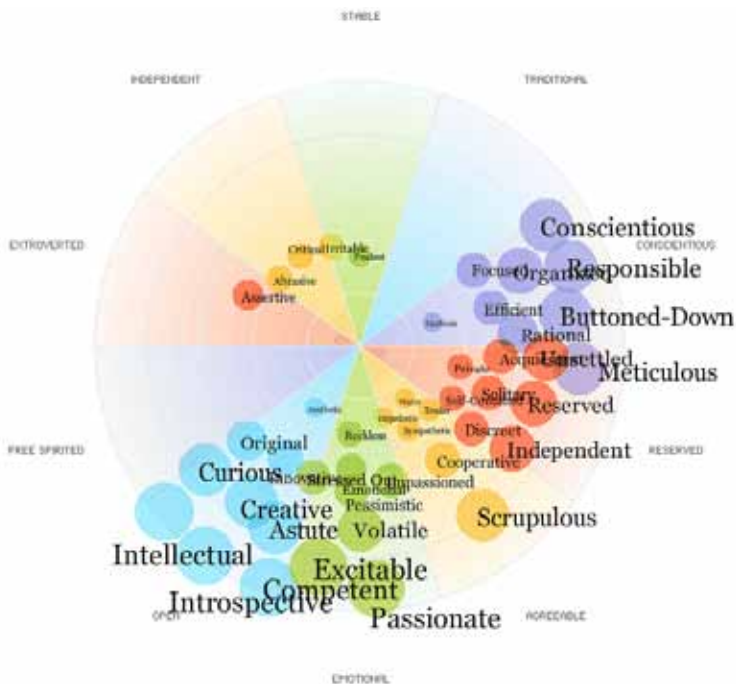
- Introvert to Extrovert
- Intuition (internally-factored decision-making) to Observation (externally-factored decision-making)
- Thinking to Feeling
- Judging (organised) to Pioneering (spontaneous)

So once the students had their tests results, we discussed what they meant for them and what roles in IT might suit them better based on their personality type. The surprise for me was how much this resonated with them and demonstrated to them the breadth of roles in IT that may suit virtually every personality type. This illustration of suitable roles for different personality types was so popular that in my second year with



During my lifetime, I have witnessed stereotypes attributed to IT professionals. For instance, that they may lack some of the soft skills attributed to other professions. The truth is that technology underpins and pervades almost every aspect of life in today's world so the same must be true of those who develop and support such technology. To achieve that, there is a need for IT professionals with not only the soft necessary to understand what technology solutions are required, but also with the technical skills to build those technology solutions.

If you are considering whether a role in IT might suit you, I invite you to better understand your personality type and how you might use that knowledge to make a success of your IT career.



Udacity

– a MOOC for Students who Believe in Tech and Innovation

What's a MOOC?

Sounds like a strange animal from an exotic land, doesn't it? Not so: MOOCs are simply Massive Open Online Courses which are courses that are offered on the Internet, many for free or at a radically low cost, providing hundreds of thousands of students with the possibility of obtaining higher levels of education at excellent universities without the astronomical costs with which they would normally come along.

It all started in early 2011 when Harvard, Stanford and M.I.T. started companies to allow anyone in the world with an Internet connection to access their MOOCs. The courses were free and millions of students signed up. Other highly-rated institutions followed, such as UC Berkeley and Yale.

In addition to online affiliates of specific colleges and universities, more portals have now entered the marketplace who are acting as more general gateways: Khan Academy, Udacity, and Udemy are but a few sites through which millions of students are gaining access to thousands of courses from computer programming to accounting to gastronomy, design, and music. Recently, even Amazon joined the MOOC-provider group, offering online courses on its own platform.

Today, innumerable classes are offered free of charge through the Internet. Millions of learners of all ages and backgrounds worldwide are enrolling and taking advantage of materials and professors which, until recently, were only available to a select few.

For Those Interested in Working in Tech

Udacity opened the artificial intelligence class taught by its co-founder Sebastian Thrun at Stanford to the world in 2011, causing 160,000 students from 190 countries to enroll. It has since then grown into an online university that:

- teaches the skills that industry employers need today
- delivers credentials endorsed by employers
- educates at a fraction of the cost of traditional schools

Two examples of Udacity's work are:

- In partnership with Georgia Tech and AT&T, Udacity offers a Master's Degree in Computer Science that is developed by Georgia Tech professors. If taken online, it's free, self-paced, and boasts an open admission. If taken at Georgia Tech, it falls under the usual criteria (students go through the Application and admission process, pay tuition, and follow a semester-based schedule.)
- Working with the likes of Google and Facebook, Udacity offers the Nanodegree programme which offers a combination of online courses and hands-on projects. The courses are co-created with partners such as Google, Amazon, AT&T, and Facebook. While not free, it targets those who want to be in tech as web developers, data analysts, mobile (iOS and Android) developers, etc. Udacity claims that "all Nanodegree students receive career support. Nanodegree Plus students receive a job guarantee" or their money back.

Things to Note about MOOCs:

While some MOOCs do provide certificates and diplomas, or even transferable credit, very few are credentialed or provide college credit. So while you may have received an excellent education, you are not always able to earn the corresponding degree. This is no deterrent for the millions of students of all ages currently taking MOOCs: instead of enrolling to merely earn transferable credit, they take courses online for other reasons such as to gain more knowledge, to improve job-related skills, or even just to have fun.

As a student taking advantage of the myriad MOOCs available to you, know that motivation is the driving factor here. Since a MOOC is voluntary, often provides learning in chunks, takes place at the student's own pace, and imposes penalties for dropping out or lagging behind, your motivation to learn the material and your commitment to finish it are your only way to course completion.

The Technology Leadership Forum

By Maryem Biadillah-Starling, Senior Analyst at the Department of E-Commerce



The Purpose

The Technology Leadership Forum (TLF), a registered charity, was founded in 2007 through a public-private sector initiative with the Department of E-Commerce. The mission of the organization is to build an efficient and sustainable Information and Communication Technologies (ICT) sector in Bermuda by providing mentoring and career guidance to young Bermudians interested in the ICT field.

The Summer Internship Programme

In 2009, the TLF introduced its Summer Internship Programme which is an intensive 12-week internship where college students acquire experience in the ICT industry through hands-on fieldwork, classroom instruction and team projects. The classroom training is taught by industry professionals and over 20 courses cover business continuity, project management, data warehousing, programming, and networking. In addition to the technical courses, the interns also receive soft skills training such as time management and customer service. During the summer they are given exposure to top ICT leaders in Bermuda through networking opportunities and mentoring which is intended to help them with professional development.

After successful completion of the programme, the TLF interns receive a certificate of excellence and are set on their way to becoming esteemed and skilled members of the ICT community.

Every year, the TLF seeks dynamic, enthusiastic and motivated students. The programme provides them with the opportunity to be mentored by leading local executives, assisted by like-minded TLF graduates who form the beginning of a valuable network for each other. It also allows them to benefit from training and hands-on experience to expose them to the various aspects of ICT and to encourage them to take further college or university courses in the disciplines that they find they are interested.

The programme only accepts a limited number of students each year. The application process includes a written personal statement, reference letters, as well as an interview. Applications are available on the TLF website starting in December. Go to www.tlf.bm to find out about the application deadline.

Taking Care of the Alumni

Alumni of the TLF Internship Programme carry a prestigious reputation and their on-going career development is a top priority for the organization. Exclusive training opportunities are offered to TLF Alumni to assist them along their career path including: management in action training and refresher soft skills courses.

Exciting New Developments

Since inception, the TLF has focused primarily on mentoring college-level students. Starting January 2017, the organization intends on offering programmes to middle- and high-school students. The goal is to help them prepare for their university choices and provide them with more exposure to ICT via after school camps.

Sandra DeSilva, TLF Chair and Managing Director of Nova Limited had the following to say about this latest development: “We are excited to expand our programmes and to reach out to students early on in their education by providing further exposure to ICT at the middle- to high-school levels. We hope to inspire students to become curious about ICT and to carry on our support after completing their formal education and into adult professional development. Whether training to become the next CIO or a professional with specific deep subject-matter expertise, these new programs will contribute toward a sustainable and progressive ICT community.”

If you would like more information on the TLF please visit www.tlf.bm or email at info@tlf.bm.

Your Road Map to ICT

By Sandra Dill, EDcellerate

Preparing to study Computer Science in college? What do you want to know? Who do you know in the industry? Where do you start? When do you start? Why are you even interested in a career in the industry? What fascinates you most about it? So many questions!!

Answers please!!

The field of Computer Science is broad and the job outlook for individuals in the industry is very promising. There are many specializations in the field. Here is a basic overview of careers in the industry. Continue to research and investigate the details of each to find which specialty areas are of interest to you.

Computer Engineers design and build computers. They focus on creating faster, better and more powerful computing systems.

Computer Scientists are generally concerned with creating and implementing software and operating systems. They design and develop computer programmes, software and applications.

Information Technologists focus on how information and computer systems support business. They design, maintain, and manage the varied programmes, software and applications. They ensure everything is working to support businesses.

Explore

It's never too early to plan for a college degree in computer science. Computers are all around us. Middle school is a great place to start exploring and continue on through high school as you investigate the multiple specializations in the industry to find what suits you. Actively engage in work shadows, summer internships, extracurricular activities in coding, and talk with your school counselor about finding a mentor.

Your Academic Journey

- Courses like math, physics, chemistry, computer science and English are important if you choose to pursue a degree in this field.
- Students pursuing a degree in computer science are required to take high-level math courses in college. Prepare yourself well. This is really important. If math is not your strength, it's ok. Just start working on getting better at it. Study with peers who understand math well, participate in homework clubs, and check out some online resources that you can watch over and over until you gain a firm understanding of a topic.
- Find out what courses your school offers in computer science, math and science.
- Consider Advance Placement courses, enroll in the dual-enrollment programme with Bermuda College. If your school does not offer these options, consider taking extracurricular courses with CTY or another advanced-level programmes.

Your Road Map from Middle School to College

This very basic road map is a beginner's guide to preparing for a college degree in Computer Science, no matter which specialization you choose.

As you focus on high school graduation requirements, also look into college entry requirements. The two sets of requirements are not necessarily the same. Many students meet high school graduation requirements but still have to do development or college prep classes before starting college level courses.

This situation increases the cost of college and the amount of time to complete a degree.

Middle School

- Take coding courses.
- Talk to individuals in the industry at your school's career day.
- Earn good grades in math and science.



First Year of High School

- Meet with your counselor and map out a plan to get from the first year to the senior year and eventually to college.
- Focus on getting good grades.
- Get involved with community-based activities.

Second Year of High School

- Explore career options – work shadow, intern, etc.
- Research colleges that have majors in Computer Science that might be a good fit for you.
- Take the PSAT
- Take challenging courses

Third Year of High School

- Get involved in job shadows, internships and summer jobs that align with careers in Computer Science
- Meet with your counselor about finding mentors
- Take the SAT
- Chat with college representatives. Visit college campuses and attend the Bermuda International College Fair.
- Take AP courses
- In the summer, at the end of your third year, spend time with a mentor in an internship programme.
- Research and identify colleges. Make a list of colleges in which you are interested.

Take ICT and Computer Science courses

Senior Year of High School

- Take the SAT
- Narrow down your list of colleges
- Complete and submit college application forms
- Focus on your final grades
- Visit college campuses
- Complete scholarship applications
- Graduate from high school

As you work on your plan, remember to have some fun, stay focused, keep your grades up, and engage with people with careers in the Computer Science industry.

Find your Tribe

By Sloane Wilson-Chinapoo

People ask me all the time why I love my job. The answer is simple: I love my industry. When you choose an industry you become a part of that "tribe:" a community of like-minded individuals with common goals. My tribe consists of shakers, movers and innovators. Technology enthusiasts and experts are the people that make the world go around.

There are many successful career paths that you can choose when studying IT. With technology ever-changing and ever-evolving, technologists are constantly finding ways to keep up, move forward and innovate. That's what makes us special.

A big part of my job is supporting young people as they brainstorm, create and push past boundaries, urging them to think outside the box. It's important that you have the mindset of becoming the best at what you do and my job is no exception. My passion has become making sure that Bermuda's youth test the limits of technology and safely break down barriers, with minimal impact to their digital reputation. I am able to exercise it through my activities as part of the Cybertips initiative.

Cybertips conducts workshops on a variety of topics surrounding digital literacy, digital citizenship, and cyber-hygiene. With the assistance of the Bermuda Police Service, my colleagues and I provide students with factual information on how the choices they make online now could affect their lives later.

Although geared mostly towards students, we also offer Cybertips workshops to parents, counselors, PTAs, teachers and seniors. We discuss the importance of digital citizenship and good online practices and we offer tools to help them keep abreast of what their young people are doing online and to help families

understand and navigate the potential dangers of raising children in the digital age.

Recognition and comprehension of the laws that guide our digital practices locally are also a huge part of the learning process. We introduce legislation such as the Electronic Communications Act 2011 to students and parents to ensure they are aware of its value and importance.

This year, I had the pleasure of working with Common Sense Media, becoming one of only two Certified Common Sense Media Digital Citizenship Educators on the Island. Common Sense Media is a leading independent nonprofit organization that is dedicated to helping kids thrive in a world of media and technology. The organization empowers parents, teachers, and policymakers by providing unbiased information and innovative tools to help them harness the power of media and technology as a positive force.

The information and tools obtained through my training with Common Sense Media have allowed me to better assist students in making positive changes and adopting healthy digital habits. These will, in turn, have positive results in the future, thereby ensuring that they have a high-quality digital learning experience, that their online data and privacy is protected and that their digital reputation is unspoiled.

For me, going to work every day as a Certified Digital Citizenship Educator is a pleasure. I know that each day, I have the opportunity to make a difference through the effective and safe use of technology.

"Do not limit your challenges, challenge your limits"find your tribe.

For more information about Cybertips visit www.cybertips.bm



Study ICT at the Bermuda College!

By Thaa Dill of the Bermuda College

We exist in a world where the extraordinary has become mundane. The ability to see and talk to someone on the other side of the planet in real time using the kind of bog standard cell phone your great aunt could comfortably navigate is so very unremarkable that the *absence* of that kind of functionality feels strange. It's like we live in the not too distant future. It's a place where you can interact personally with the most famous people on Earth, buy products that are made two continents away and find that music video produced by that group you saw that time that summer – all this can be accomplished without needing to leave your bed as long as you slept with your tablet within arm's reach. All of this extraordinary normalcy, more than anything else, is made possible by the development and use of information technology.

The hardware and software powering this amazing thing called life that we experience as participants in the 21st century did not spontaneously rise from beneath the shifting sands of a faraway desert, packed tightly within a dense, dark obelisk. This incredible innovation, along with all the freedom and inspiration it generates simply by existing, that we are all surrounded by always was and always will be made by people. People like us, people like you. People who are deeply inspired by this extraordinary world and are full of the kind of necessarily unique, utterly singular ideas that can make it that much more incredible. This is what's on the table – the chance for you to change everything.

But.

The only way for you to participate in the process that manufactures the future is to be prepared to seize the opportunity to do so. Otherwise, when the chance comes for to join a software development team poised to launch the first iteration of the Web 3.0, you won't be able to get in the room. Or, when Google Glass begins their Smart Contact Lens development cycle, you will not make it through the interview process. When the first company to commit to the construction of tech that can 3D print city infrastructure is recruiting new staff, unless you meet their requirements for application, you won't be able to be part of their world changing exercise.

The best possible way to maximize your chances at seizing these opportunities is to get educated with the necessary range of skills. With that in mind, Bermuda College has partnered with the University Of Ontario Institute Of Technology to significantly expand the range of and access to opportunity for aspiring IT professionals. Basically, BC and UOIT have an agreement that means your BC credits are pre-approved for transfer – so everything you take at BC will directly apply to your UOIT Programme, shaving tens of thousands of dollars and years off the money and time you'd have to spend there in pursuit of your degree. This gives you more room to learn while reducing your overall costs, debt and pressure.

It is normal to live in an extraordinary world. Come to BC to find out how you can make it even more amazing than it already is.

Call 239-4099 or email tdill@college.bm to get started.



Want a Scholarship to help you study ICT? Here's a list!

Study Level	Scholarship Name	Amount	Deadline
Associate	BELCO C. Eugene Cox Post Graduate STEM Scholarship	\$25,000	31 May
	Bermuda College Sir William Stephenson Entry Scholarship	\$4,400	31 May
	Bermuda College STARR Foundation Entry Scholarship	Cost of Tuition and Fees	31 May
	BFIS Bermuda College Scholarship	\$3,500	31 June
	Department of Workforce Development Local Training Award	up to \$5,000	31 May
	Department of Workforce Development National Technical vocational Training Award(NTVT)	up to \$10,000	31 May
	PartnerRe Undergraduate Scholarship Award	\$25,000	31 May
Undergraduate	ABIC Education Awards	\$15,000	8 April
	BFIS Undergraduate Scholarships	\$25,000	30 April
	BTC Sir John W. Cox Career	\$20,000	31 May
	Department of Workforce Development Local Training Award	up to \$5,000	31 May
	Department of Workforce Development National Technical vocational Training Award(NTVT)	up to \$10,000	31 May
	Ewan Sampson Scholarship Trust	\$12,500	31 May
	Green Family Scholarship	\$5,000	3 August
	PartnerRe Undergraduate Scholarship Award	\$25,000	31 May
	RenaissanceRe Undergraduate Scholarship	\$25,000	8 April
	The Digicel Bermuda Scholarship	\$5,000	7 August
	Validus Scholarship	\$20,000	29 April
Post Graduate	ABIC Education Awards – Post Graduate Scholarship	\$20,000	8 April
	St. John's IT Scholarship	\$10,000	30 June
Other Scholarships	Bank Of Bermuda Foundation Information Technology Scholarship	\$12,000 annually	31 March
	St. John's IT Scholarship	\$10,000	30 June

By Tyshée Gibbons, Summer Intern at the Department of E-Commerce

Innovative Technology Careers

Technology careers are about skills, knowledge and information. An undergraduate degree is often the standard academic credentials that employers look for when hiring. However, those with Training Certificates or an Associate Degree are still able to find quality employment. If you have a degree in Computer Science, Engineering, Mathematics, and Science (e.g. physics) these can all lead to technology-related careers. There are dozens of technology jobs and endless career paths for technical professionals that depend on specific training, interests, and job requirements and responsibilities. Listed below are some of the prominent technology career paths, along with their median salary that the average STEM student might be interested in. However do not limit yourself to just the few jobs listed, because today's technology is endless when it comes to choosing your best path.

ICT Occupations by Median Actual Hours of Work and Median Gross Annual Income, 2015	Median Actual Hours of Work	Median Gross Annual Income1
Computer programmer/analyst (2131)	37	\$103,500
Computer programmer (2132)	38	\$109,500
Software engineer / computer science designer (2133)	41	\$114,000
Computer professional nec (2139)	37	\$87,231
Systems Analyst (2611)	38	\$84,000
Software Engineer /Developer / Application programmer (2612)	38	\$120,000
Web and Multimedia Developer (2613)	38	\$102,000
Database Designer and Administration (2621)	40	\$132,000
Systems Administrator (2622)	37	\$70,500
IT Networking / Communications Analyst (2623)	37	\$93,000
Information and Communications Technology Operations Technician (3511)	38	\$93,000
Information and Communications Technology User Support Technician (3512)	37	\$70,500
IT Networking and Systems Technician (3513)	38	\$85,200
Web Technician (3514)	0	\$0

Source: 2015 Employment Survey, Department of Statistics, Bermuda

Not All Schools Work the Same Way

Each year, students look for innovative ways to continue and improve their education. There are numerous paths to follow for learning; the traditional classroom is no longer the only option. The cost related with higher education is rising faster than inflation. Luckily, since tuition has been tremendously increasing, a plethora of inexpensive online options has become available. These websites help learners gain a better understanding of a wide variety of subjects like computer programming and computer animation. It's not every day that your average Bermudian gets accepted to MIT, Stanford University or even Harvard University. However, with new methods of learning, we will be able to participate in lectures, assignments and exams just like the actual students in a Computer Science course at MIT.



Here are some of the best options for people who would like to participate in online courses from the comfort of their own homes without coming out of pocket in tuition:

Khan Academy	www.khanacademy.org
Coursera	www.coursera.org
University of Reddit	www.universityofreddit.com
MIT Open Course Ware	www.ocw.mit.edu/index.htm
Stanford	http://webcast.berkeley.edu/series.html#c,s
Open Yale Courses	www.oyc.yale.edu/
Harvard Extension School	www.extension.harvard.edu/open-learning-initiative

These websites provide learning resources for all ages. They offer instructional videos and practice exercises that allow learners to study at their own pace in and outside of the classroom. These methods allow the learner to have the most personalized experience, therefore eliminating anxiety and stress from the equation, which allows the learner to achieve great success.

By Tyshée Gibbons, Summer Intern at the Department of E-Commerce

Business is Simply Better with Technology

By Jamillah Lodge, Information Education & Communications Officer for BEDC

Is technology an important part of operating a successful business? The short answer, yes. Can you imagine not having a cell phone? It would be like going back into the dark ages! Almost unimaginable – but in reality, cell phones have only been around for 40 years. Heck, I'm 42 and as far as I am concerned, I'm still young!

Ok, I digress; the point is that even though the technology that was used to create the cellphone is relatively young, it is hard to imagine life without one. The same can be said about technology that is used to make businesses operate more effectively. It is accepted that in order to operate business successfully and efficiently you have to use technology but is that really true..? To find out, I asked two entrepreneurs how technology impacts their business. Both of their businesses operate in different industries, so I wanted to know more about how they use technology to achieve their strategic goals.

Kidist "Pinky" Emery, opened Salon Pink in 2011 after 19 years of working in the industry. She says that she "always had a passion for hair since the age of five so it was natural to start my own business." Pinky explains that she uses technology to maintain her status as a leader in the industry: "We use a salon-based software made by salon owners to specifically aid in growing the business. We also use a separate software that tracks client satisfaction." This works! Salon Pink was recognized as a leader in the industry and won the Best of Bermuda Award in 2013.

Using technology allows businesses like Salon Pink to maximize productivity and creates a platform for them to realize true success. Pinky

continues, "The first software I mentioned allows to track inventory, client retention, accounting, cash flow projections daily, time usage (which aids in booking and allowing us to track the time being wasted or used for each stylist), target marketing to the individual client, client booking online, access remotely, appointment book with all features, all elements that help grow our business successfully at our fingertips. The second software helps track client satisfaction, market our goods and services, and perform damage control very quickly if needed."

Like Pinky, Dr. Roland Samms, optometrist and owner of Atlantic Vision Care, uses technology to help manage the complexities of his practice. "We use several different types of technology given the diverse nature of our business. This can include medical diagnostics, electronic medical records, patient/ customer communications, inventory control, order tracking and internal marketing/ education."

Another commonality amongst both Salon Pink and Atlantic Vision is how they use technology to manage productivity. Dr. Samms states that technology "helps us leverage our staff productivity, allowing us to stretch our payroll dollars as far as possible. It also helps us keep track of all the many moving parts within our business. Finally, it allows us to provide the most efficient and highest level of patient care possible."

Technology allows entrepreneurs to realize a depth and breadth of service offerings. "We definitely couldn't manage as many clients or provide as many services without technology. Our growth would therefore have been limited. Payroll, which is any business'



Business is Simply Better with Technology

continued

largest cost, would also be a lot higher”, says Dr. Samms. Pinky, agrees: “Because everything is in one hub and managed by technology (as opposed to manually), I would say I need it all. I wouldn’t be able to run my business effectively without [it].”

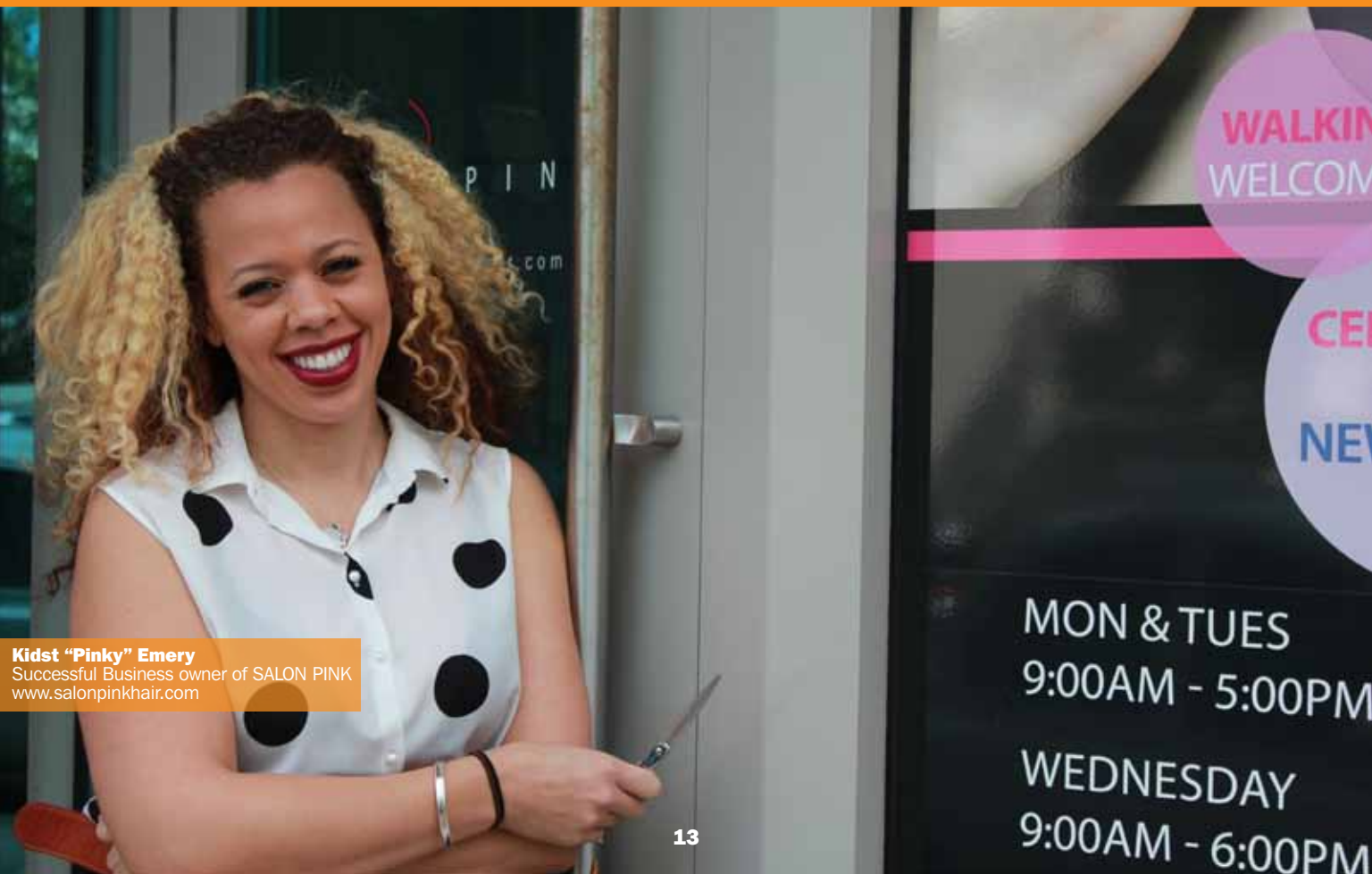
Technology addresses most business functions, including communication, marketing, customer service, client management, and productivity. Pinky

considers technology “the way forward; a great tool to help grow business.

Dr. Samms shares “I’ve always just had a natural affinity for technology. That has been a good fit with the profession of optometry as it can involve a lot of “toys”. Beyond that, I just love how technology allows you to do new things in a new way. It’s a great way to keep things fresh as it’s always changing.”



Jamillah Lodge,
Information Education &
Communications Officer for BEDC



Kidst “Pinky” Emery
Successful Business owner of SALON PINK
www.salonpinkhair.com

CYBERTIPS



Ms. Parry's¹ Guide to Correct Online Etiquette (Netiquette)

It's so easy for anyone to misunderstand e-mails and cyber-communications. We have to be very careful to make ourselves clear and to be good netizens.

Think Before you Click

- Is it worth sending? Don't waste people's time or bandwidth with junk mail, chain e-mails and false rumors.
- Don't attack others online! Saying anything that could be considered insulting or controversial can mushroom into a big issue.

Respect privacy

- Don't forward other people's e-mails or share their personal information without their permission.
- How private is the message you are sending? Are you willing to have others read or forward it to others without your permission?

Don't reply to spam, even to ask to be removed from the sender's mailing list

If you reply, you either sent a reply to a fake address that was used to send the e-mails from, which is not working, or you have now let the spammers know that your address is a good one and you likely will receive many more messages.

They could even sell your address for more money, since they can now confirm that you read the spam messages you receive.

¹Parry Aftab founded the world's first cybersafety and help groups 21 years ago and has been on the front lines of protecting children, families, vulnerable communities and consumers.

Top 20 Colleges for Women in STEM

Women have been undervalued in the STEM field since its origin and fewer women have been seeking and earning STEM degrees than their male counterparts. However, there has been a steady increase in the number of women proving to be academically capable, earning degrees in the STEM field. What is the secret to helping women thrive in STEM? Supporting, mentoring and career guidance so that they can work towards achieving their goal. Below, we have listed the top ranking STEM colleges for women in the U.S.A. These colleges are excellent environments which will help women take the first yet difficult step in furthering their education in the field.

Ranking	School Name	Location
1	Westminister College	Pennsylvania
2	Colby College	Maine
3	SUNY College of Environmental Science and Forestry	New York
4	Harvey Mudd College	California
5	Williams College	Massachusetts
6	Tuskegee University	Alabama
7	Polytechnic Institute of New York University	New York
8	California Institute of Technology	California
9	United States Coast Guard Academy	Connecticut
10	Colorado School of Mines	Colorado
11	Worchester Polytechnic Institute	Massachusetts
12	Earlham College	Indiana
13	Embry Riddle Aeronautical University	Florida
14	Wofford College	South Carolina
15	St. Marys University	Texas
16	Albion College	Michigan
17	Colorado College	Colorado
18	Massachusetts Institute of Technology	Massachusetts
19	St. Lawrence University	Colorado
20	Stevens Institute of Technology	Massachusetts

Top U.S. STEM Colleges 2016

As the interest in technology careers rises, the ratio of STEM degrees make up 40% of degrees obtained by students according to the Department of Education’s College Scoreboard. Although the top STEM Colleges don’t fall in the top College rankings, they still fall within the best value list for schools worth the investment. Below are the top 21 ranking STEM colleges in the U.S. that are small but pack a lot into the academics for the investment of tuition dollars being spent.

Ranking	School Name	Location
1	Massachusetts Institute of Technology	Pennsylvania
2	United States Naval Academy	Maine
3	Cornell University	New York
4	Rice University	California
5	United States Air force Academy	Massachusetts
6	California Institute of Technology	Alabama
7	Harvey Mudd College	New York
8	Carnegie Mellon University	California
9	John Hopkins University	Connecticut
10	Georgia Institute of Technology	Colorado
11	Cooper Union	Massachusetts
12	Case Western Reserve University	Indiana
13	United States Coast Guard Academy	Florida
14	Rensselaer Polytechnic Institute	South Carolina
15	Colorado School of Mines	Texas
16	Worchester Polytechnic Institute	Michigan
17	California Polytechnic State University	Colorado
18	University of Portland	Massachusetts
19	Rose-Hulman Institute of Technology	Colorado
20	North Carolina State University	Massachusetts
21	Clarkson University	New York

Top 25 Ranked Computer Science Programs in the World

Ranking	School Name	Location
1	Massachusetts Institute of Technology (MIT)	USA
2	Stanford University	USA
3	Harvard University	USA
4	University of California – Berkeley	USA
5	Tsinghua University	China
6	University of Texas – Austin	USA
7	Nanyang Technological University	Singapore
8	Princeton University	USA
9	University of California – San Diego	USA
10	National University of Singapore	Singapore
11	University of California – Los Angeles	USA
12	Georgia Institute of Technology	USA
13	Hong Kong University of Science and Technology	Hong Kong
14	Carnegie Mellon University	USA
15	University of Southern California	USA
16	City University of Hong Kong	Hong Kong
17	University of British Columbia	Canada
18	Swiss Federal Institute of Technology Zurich	Switzerland
19	University of Waterloo	Canada
20	University College London	United Kingdom
21	Huazhong University of Science and Technology	China
22	Shanghai Jiao Tong University	China
23	University of Cambridge	United Kingdom
24	Zhejiang University	China
25	University of Toronto	Canada

Top 25 Innovative Computer Science Programs in the U.S.

Ranking	School Name
21	Massachusetts Institute of Technology (MIT)
22	Stanford University
23	Columbia University
24	University of Washington
25	Carnegie Mellon University
26	Harvard University
27	University of California – Berkeley
28	Princeton University
29	University of California – Los Angeles
30	Cornell University
31	University of Texas – Austin
32	University of Illinois – Urbana
33	California Institute of Technology
34	Yale University
35	Georgia Institute of Technology
36	University of Wisconsin – Madison
37	University of Michigan
38	University of Southern California (USC)
39	University of California – San Diego
40	University of Chicago
41	Brown University
22	University of Maryland
23	University of California – Irvine
24	Rice University
25	University of Pennsylvania

Top 25 Ranked Computer Science Programs in the UK

Ranking	School Name
1	University of Cambridge
2	Imperial College London
3	University of St Andrews
4	Durham University
5	University of Bristol
6	University of Southampton
7	The University of Warwick
8	University College London
9	The University of Manchester
10	University of Glasgow
11	University of Exeter
12	The University of Sheffield
13	University of Birmingham
14	University of York
15	University of Surrey
16	Lancaster University
17	University of Leeds
18	The University of Edinburgh
19	Swansea University
20	University of Bath
21	University of Strathclyde
22	Cardiff University
23	Loughborough University
24	Heriot-Watt University
25	Newcastle University

Top 25 Ranked Computer Science Programs in Canada

Ranking	School Name
1	University of Toronto
2	University of British Columbia
3	McGill University
4	University of Alberta
5	University of Montreal
6	McMaster University
7	University of Ottawa
8	University of Calgary
9	University of Western Ontario
10	University of Waterloo
11	Laval University
12	Simon Fraser University
13	University of Victoria
14	Queen's University
15	University of Manitoba
16	Dalhousie University
17	York University
18	University of Guelph
19	University of Saskatchewan
20	Carleton University
21	University of Québec Montreal
22	University of Sherbrooke
23	University of Regina
24	Concordia University
25	Memorial University of Newfoundland

Using Social Media - What Matters Most to Your School

According to CommonSense Media, schools, universities and colleges are looking into students' social media feeds and getting to know them through their digital footprint.

This article lists some frequently asked questions and their answers for those of you who are trying to balance the freedom you want to exercise on social media with what could help -or hurt- your likelihood of obtaining acceptance, or that much-needed scholarship.

Should I delete my social media or make it all private?

Making your account private is a good idea for a lot of good reasons. On most social media, a private account means your name won't come up in search results. It also limits your digital footprint, which is how much stuff about you is available on the web. You don't have to delete your accounts, though. Colleges expect prospective students to have social media.

Do I have to delete every single party pic of me and my friends?

No. Colleges like to see that their students have a healthy social life. The main thing that could hurt you is posts that reflect poor judgment. Get rid of any photos and videos that contain inappropriate behavior such as drinking, sexy stuff, and lots of swearing -- and of those where you maintain hostile speech, rudeness, or negative tweets about a school to which you're applying.

The college I'm interested in contacted me through Facebook. Doesn't that mean that they're cool and won't care about my "youthful indiscretions"?

Not at all. For outreach purposes, colleges use social media to reach teens. Be careful: replying to the school through your social media (instead of your email account) allows them to view your account. So make sure it's a fairly good reflection of who you are before you start the process.

I once got in a public war of words with someone not on my social media but on another online forum. Will that hurt me?

It might. If you posted under the same username that you use on your other public social media, there may be a record of your rants and hostile posts that could come up when the school does an online search on you. You can't go back in time and revise what you wrote, so make sure that the primary account you want the college to see is clean. And if you feel like sounding off in a public forum, make your posts constructive and cordial.

Will the weird stuff I like on other people's social media reflect negatively on me?

Probably not -- unless it's illegal, extremely antisocial, or disturbing and it makes up the bulk of your feed.

Could the school look poorly on me if I follow provocative figures on social media?

It's unlikely that they would use this against you unless the majority of people you follow are very extreme and highly controversial. That could show that you're not open to different points of view, which could be problematic in college. If you're interested in a topic, seek out a range of opinions. Also, follow people who are influential in the area you're interested in -- including the colleges to which you're applying. It will help you learn about the field and shows you're serious.

What should I do if I think a school unfairly disqualified me because of my social media?

Because colleges receive so many qualified applications, they may look at social media to see if it tips the scales in anyone's favor. Maybe another applicants' social media just made that person seem like a better match for the school. But if you would like to know the reasons for the school's decision, do contact its admissions office and find out.



By Maryem Biadillah-Starling,
Senior Analyst at the
Department of E-Commerce

Using Social Media - What Matters Most to Your School Continued from page 17

Do my likes, followers, and other indicators of social media popularity help me or hurt me in the college admissions process?

If you've actively pursued a specific passion -- say, music, photography, or even the evolution of the shoe from ancient times to present -- and you've cultivated an active, engaged audience on social media, that's a plus. College admissions will see that you have drive and initiative. On the other hand, having a big audience for more typical random teen interests, such as internet memes and cat videos, may not even register (and won't likely be held against you).

Should I groom my social media specifically to look good for colleges?

Some colleges do want to see social media that's more résumé-like. You can ask the admissions office how much it will be considered. For the most part, your social media should reflect who you are. Make sure you don't exaggerate your achievements, though! (Colleges fact-check awards and accolades.)



CYBERTIPS

Using Technology at Work



Using Technology at Your Summer Job

- Comply with your employer's Bring Your Own Device policy (BYOD) at all times.
- Keep any personal use of your smart devices (phone and/or tablet) to a strict minimum.
- Turn notifications off and reduce all sounds to vibrate while in the office.
- If such is the policy, keep your devices off and away from you while at the job site.
- Keep your personal and professional emails separate and watch your grammar.
- Don't download attachments from a sender you don't know.
- Before downloading, scan any files or email attachments using your employer's antivirus programme.
- Be careful with USB drives. Where possible, use other methods for file sharing, such as online storage or email.

For information on responsible use of technology, visit

WWW.CYBERTIPS.BM



GOVERNMENT OF BERMUDA
Ministry of Economic Development

BIOS's Ocean Academy: Ocean Education and Technology Collide

Are you interested in exploring and understanding our ocean better? Ocean Academy allows students to interact with cutting-edge technology and scientific research at the Bermuda Institute of Ocean Sciences (BIOS). Utilizing the ocean as an overarching theme, Ocean Academy enhances local curriculum and experiential learning opportunities for students aged 8-22.

Ocean Academy teams up with contemporary research initiatives at BIOS with the aim of providing students like you first-hand knowledge of modern science, technology, and engineering. BIOS's Mid-Atlantic Glider Initiative and Collaboration (MAGIC) laboratory allows students to interact with and explore innovative technology, such as autonomous underwater vehicles. Whether you are interested in SCUBA diving or working as an intern alongside one of our scientists, Ocean Academy has something for you!

At BIOS, we encourage hands-on exploration of the natural environment. From the science of SCUBA to building underwater robots, Ocean Academy challenges students to think critically and work as a team to solve some of the most pressing challenges for our ocean.

If you are interested in learning more about Ocean Academy please visit us at: www.bios.edu/education/

Ocean Academy has five programs: which one will you join us for?
BIOS's Ocean Academy:

Curriculum Enrichment Program: supporting and enhancing local curriculum, partly through collaboration with partner organizations such as Bermuda Sloop Foundation, BAMZ, and numerous local schools. The program runs between September and June for students aged 8-22 and their teachers.

Mid-Atlantic Robotics IN Education (MARINE): providing experiential STEM training through the theme of underwater robotics for both students and educators that are members of the Bermuda Union of Teachers. Available between September and April for students aged 10+ and their teachers.

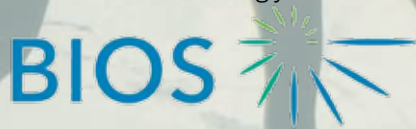
Waterstart: conveying the marine skills necessary for underwater exploration by providing SCUBA certification through week-long courses. The program is offered between July and August for students aged 12-16.

Marine Science Internship: delivering foundation scientific research training and scientific diving techniques while boosting academic credentials through 2-week internships. Internships operate between July and August for students aged 15-17.

Bermuda Program: training promising young scientists and educators through either 8-week or 4-week intensive internships. Bermuda Program internships are available between July and August for students aged 18-22.



We look forward to seeing you at BIOS soon!



Why Innovation is Important?

In your interactions with adults at home or at school you undoubtedly at some point have heard the phrase, “when I was your age, we didn’t have...” Many of these conversations probably involved technology.

Stop and consider that technology has progressed exponentially in the last 30 years.

Just think about it:

- Cordless phones replaced rotary and push button phones
- Cellphones replaced telephone booths

- Smartphones replaced cellphones
- Cassette tapes replaced 8 track tapes
- CDs replaced Cassette tapes
- MP3s replaced CDs
- Streaming services replaced MP3s

Innovation may be defined as exploiting new ideas leading to the creation of a new product, process or service . Consider the innovations above. The phones have become more mobile over the years, allowing people to communicate with each other no matter where they go. In the music example, the innovations also allow users access to a variety of music using methods that are easy to transport. Each evolution of the product has been a solution to a problem that was identified in consumers.

Many businesses consider innovation as a way to set themselves apart from competitors, a path to wealth creation and an avenue for the creation of new business ideas and technological revolutions. Management expert Peter Drucker said that if an established organization is not able to innovate, it faces decline and extinction. Also, the organisations that look for and take on opportunities, make changes and inspire employees to create through innovative organizational cultures are often the ones that can survive difficult business environments.

So the hype that innovation is only about new products is not true. Sure, new products are a great way to get people to think about innovation when they use their smartphone or tablet. While products are important to innovation, they are not the entire picture. When innovation is the foundation of an organisation’s way of doing things, it finds that it also benefits its functions, logistics, business models, employee development, and processes.

Innovation is about seeing, perceiving and solving problems in creative ways . As Albert Einstein said “we cannot solve the problem with the same thinking we used when we created them”. The size of the business is not an issue when built on a foundation of innovation. Whether you are a part of an entrepreneurial start-up or a multi-million dollar corporation, innovation allows all organisations to adapt to changing workplaces, markets and trends.

So what does this mean to you as a student starting on your career path in technology?

1. Build your own career on the foundation of innovation. Have an open mind as you approach problems.
2. Knowledge and experiences are an avenue to create solutions to the problems that you encounter.
3. Most technology professionals are lifelong learners. That new programming language that you learned or application that is used in a particular industry could be a springboard into a new business idea, a revolutionary business solution or the first step to being your own boss.



Dr. Marisa Stones,
Director, Department of E-Commerce



Get ready to eliminate Cyberbullying.
Take part in
Bermuda's first
Youth Cyberbullying Summit
2017



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