

***Lifelong Learning: Leveraging Open Educational Resources (OER) and Massive Open Online Courses (MOOCs) to Continuously Learn with Minimal Financial Investment***

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The Osaka Conference on Education 2020  
Official Conference Proceedings

**Abstract**

This presentation will be an overview of resources for how to continuously learn with online resources for minimal cost. Open Educational Resources (OER) such as free online classes, digital textbooks, and YouTube channels will be reviewed. Massive Open Online Courses (MOOCs), Class Central and initiatives around COVID-19 and free classes will be reviewed. Subscription services like LinkedIn Learning, Udacity, Future Learn, and Udemy will be reviewed. Large businesses with free training resources such as Google, IBM, and Salesforce will be reviewed. Career pathways such as IT helpdesk, cloud administrator, and digital marketing manager will be discussed with how to take online courses for minimal cost to get official certificates to prepare you for future job opportunities.

Keywords: Professional Development, Just-In-Time Training, On Demand Training, Training, Upskilling, Workforce Development, Free Training

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## **Introduction**

Learning how to learn, engagement in learning new skills, and the ability to unlearn legacy skills is a cornerstone assumption in our knowledge economy. Gratton and Scott (2017) have published data talking to the increasing length of careers corresponding to increased lifespan. Thomas and Seely Brown (2011) have published data on the importance of learning new skills and the corresponding shortening of the half-life of a skill (5 years) and the shortening average tenure in a job (4.5 years). Peter Drucker is quoted as saying the only skill that will be important in the 21st century is the skill of learning new skills. In the book *Learn or Die* (2020), Ed Hess discusses the importance of understanding artificial intelligence, machine learning, and the jobs robots will command in the near future compared to jobs that are uniquely human. The theme is the importance of continuous learning and upskilling.

In this paper, I will review open educational resources (OER) and massive open online courses (MOOCs) that are available for free. These resources range in target audiences from K-12 through higher education to workforce upskilling. There are two types of resources that will be presented, those that are always free and those that are temporarily free due to COVID-19. For those that are always free, most are OER content or content developed by businesses so that more people become knowledgeable in using those specific technology tools. For example, OER content would be an open textbook that you can access through MERLOT and a company sponsored free resource would be Amazon Web Service (AWS) training from Amazon. The lists of OER include those that have been reviewed for quality so sites like YouTube which have hundreds of excellent education channels (Veritasium, Crash Course, Amoeba Sisters, etc) are not included in this paper. A good landing site for exploring learning content on YouTube is <http://www.youtube.com/learning>.

## **Class Central**

Class Central (<http://classcentral.com>) is a site where learners can review online courses with over 120,000 independent reviews by learners across dozens of platforms. This site also produces reports and is an excellent reference site for those looking to find free online courses due to COVID-19. A sample report from the site includes *The Most Popular Free Online Courses, 2021 Edition* (Patra, 2020) at <http://classcentral.com/report/100-most-popular-online-courses-2021/>. The report *Free Online Learning Due to Coronavirus* (Ma and Cortes Mendez, 2020) details free courses on Coursera, LinkedIn, FutureLearn, Skillshare, Udemy, Great Learning, upGrad, Netflix, Redis University, openHPI, SAP, SAS, PWYC.training, Microsoft, IBM, Oracle, Progate, Product School, Project Management Institute (PMI), Young Screenwriters, Real Python, Makerdemy, Creativebug, Milk Street, Packt, Annual Reviews, JSTOR, Unity, Fortinet, Elastic, Lightbend, and Osherove Bundle at <http://classcentral.com/report/free-online-learning-coronavirus/>.

## **MERLOT**

According to the MERLOT site (<http://merlot.org/merlot>) “the MERLOT system provides access to curated online learning and support materials and content creation tools, led by an international community of educators, learners and researchers.” There are tens of thousands of materials in MERLOT, many of which have gone

through a peer review process. This repository of free resources are designed to be utilized by educators incorporating content into their lessons so that the cost to students is reduced. Since many of these materials have been peer reviewed, there is a quality standard to these open resources beyond what one could find with a Google search.

### **Carnegie Mellon Open Learning Initiative (OLI)**

According to the OLI site (<http://oli.cmu.edu>), OLI “provides dozens of college-level courses, and a platform that enables research and experimentation with any aspect of the learning experience.” The main goals of OLI are to improve learning and teaching through science, democratize learning, and foster a community. Many courses on this site have nominal fees, for example, the course Modern Biology is \$25 per student.

### **British Columbia (BC) Campus OpenEd**

BCcampus OpenEd provides a collection of open textbooks. In addition to having their own collection of textbooks, BCcampus also publishes links to other open textbook collections. The British Columbia Open Education Librarians (BCOEL) have developed a quality rubric for selecting open textbooks that can be found at the main <http://open.bccampus.ca> site. Some of these other open search sites for finding OER include the Maryland Open Source Textbook Commons (MOST), Mson OER Metafinder (MOM), and the Openly Available Sources Integrated Search (OASIS).

### **Arizona State University (ASU) Center for Education Through eXploration**

The ASU ETX site (<http://etx.asu.edu>) is a new program that provides open access to three dimensional and immersive learning experiences. A great example is one of their projects on Immersive Virtual Field Trips where one can go to Australia, United States or Mexico and explore a location immersively. Beyond the virtual field trips, there are dozens of domains covered with thousands of videos.

### **Public Broadcasting System (PBS) LearningMedia**

This site (<http://pbslearningmedia.org>) has a range of resources targeted at K-12 students with curriculum and materials in science, mathematics, social studies, language arts, engineering, technology, health education, world languages and the arts. You can sort through resources by grade level, geographic location, or by subject. The site also has professional development resources for teachers including planning, effective instruction, assessment, and learning environments.

### **Kahn Academy**

This site (<http://kahnacademy.org>) is another open educational resource that is mainly targeting K-12 learners. The site was originally launched by Sal Kahn and was created to help his niece to really understand her math studies. After Bill Gates famously said that Sal Kahn was his favorite teacher, the Kahn Academy site has exploded in use, expanding domain areas, target ages, and becoming integrated in

many K-12 school curriculums. Domains now include math, test prep, science, computing, arts, humanities, economics, reading, language arts, and life skills.

### **Netflix/World Wildlife Foundation (WWF) Our Planet Series**

Netflix and the World Wildlife Foundation (WWF) have created a series called Our Planet. This series has full length documentaries and is posted for free on Netflix. Episodes include One Planet, Forests, Frozen Worlds, Jungles, Coastal Seas, From Deserts to Grasslands, High Seas, and Fresh Water. You can view the playlist at this site

[https://www.youtube.com/playlist?list=PL7rb3uMaYmjHqT\\_JUcQYCBa4nEtfDKuSa](https://www.youtube.com/playlist?list=PL7rb3uMaYmjHqT_JUcQYCBa4nEtfDKuSa).

### **Duolingo**

Duolingo (<http://www.duolingo.com>) is a language learning platform that offers free and subscription versions. This platform promises immediate feedback, personalized learning, and gamification with rewards. The site has over 35 world languages and is available in a mobile version.

### **Coursera**

Coursera (<http://www.coursera.org>) is the most popular platform for massive open online courses (MOOCs) with over 75 million enrolled learners, more than 200 partners, and thousands of courses. Coursera was launched in 2012 and continues to grow steadily increasing the scope of their services including more partners, more content areas, and expanding from courses to certificates, degrees, and project-based courses. There are hundreds of free options and most courses can be audited for free. In the audited version, it is typical that the assessments are not available to learners. Coursera also offers robust financial aid and scholarships so anyone looking to learn on their platform is encouraged to reach out to their Coursera Help Center. Coursera has increased their social impact campaign which originally started with providing free courses to refugees. They are increasing their social impact programs and have several pilots currently including working with incarcerated adults and high school students preparing for college. Coursera also has several products including Coursera for Enterprise, Coursera for Government, and Coursera for Education.

### **edX**

edX (<http://www.edx.org>) is another MOOC platform that has over 140 partners, 2,500 courses, and 20 million learners. edX was a joint program with Harvard and MIT. Content providers include elite universities and businesses. edX is an open source platform that allows people to download the source code and create learning tools and new features. edX is also offering stackable credentials where learners can take courses, certificate programs, microdegrees and degree programs.

### **Udacity**

Udacity is a MOOC platform that specializes in technical skills. According to the <http://www.udacity.com> site, “only at Udacity” areas include artificial intelligence,

deep learning, digital marketing, flying car and autonomous flight engineer, self-driving cars, machine learning engineer, and robotics software engineer. Featured programs include hybrid cloud engineer, machine learning engineer, RPA developer with UiPath, agile software development, data science for business leaders, DevOps engineer, introduction to cybersecurity, intermediate JavaScript, AI for healthcare, and Sensor Fusion Engineer.

### **FutureLearn**

FutureLearn (<http://futurelearn.com>) is a MOOC platform that was developed in partnership with the Open University in 2013. According to their site, FutureLearn has hundreds of partners around the world including many of the best universities and internationally renowned organizations. FutureLearn includes courses, microcredentials and degree programs. Many of their courses can be used for credit in the European higher education system.

### **Udemy**

Udemy ([www.udemy.com](http://www.udemy.com)) is a MOOC platform that allows anyone to upload content to their site. There are thousands of content creators who post courses in virtually any topic. The mission of Udemy is to improve lives through learning and they aspire to be the leading global marketplace for learning and instruction.

### **Microsoft**

Microsoft is one of enterprises that is now offering free courses and certifications to individuals that are learning how to use their technologies. Looking at the Virtual Training Days site (<https://www.microsoft.com/en-us/trainingdays>) one can find free virtual trainings in Azure Fundamentals, Azure Migrating Server Infrastructure, Azure Modernizing Web Applications, and Azure Intelligent Decision Making Through Modern Data Warehousing. In addition to the Azure trainings, there are also free virtual training events for Microsoft 365, Microsoft Teams, Securing Your Organization, Microsoft Dynamics, and Microsoft Power Platform.

### **LinkedIn Learning**

LinkedIn Learning (<http://www.linkedin.com/learning>) is offering free courses through March 2021 in four horizontal LinkedIn Learning paths: 1) Job seeker - Finding a Job During Challenging Economic Times (<https://www.linkedin.com/learning/paths/finding-a-job-during-challenging-economic-times>), 2) Critical soft skills - Master In-Demand Professional Soft Skills (<https://www.linkedin.com/learning/paths/master-in-demand-professional-soft-skills>), 3) Digital transformation - Digital Transformation in Practice: Virtual Collaboration Tools (<https://www.linkedin.com/learning/paths/digital-transformation-in-practice-virtual-collaboration-tools>), and 4) Allyship and inclusive conversations - Diversity, Inclusion, and Belonging for All (<https://www.linkedin.com/learning/paths/diversity-inclusion-and-belonging-for-all>).

## **Amazon**

Amazon provides free training and certification opportunities for their Amazon Web Services (AWS) at their site <http://aws.amazon.com/training>. Amazon offers a range of services including webinars, events, online courses and online certification programs. Amazon partners with several MOOC platforms to offer their online courses on those platforms and also hosts their own content at the above site. Amazon sorts their offerings by role (architect, cloud practitioner, developer, DevOps engineer, machine learning and operations) and by solution (advanced networking, data analytics, databases, game tech, machine learning, media services, security, and storage).

## **Google**

Google offers many free training and certification opportunities. Google has their Digital Garage site (<http://learndigital.withgoogle.com/digitalgarage>) with live sessions and online courses in data, technology, digital marketing and career development. In addition, Google offers a variety of courses and certifications hosted on a variety of MOOC platforms. For example, there are twelve Google professional certification programs on Coursera including Google IT Support, Google IT Automation with Python, Google Cloud Security, Google Cloud Networking, Cloud Engineering with Google Cloud, Data Engineering with Google Cloud, Cloud Architecture with Google Cloud, SRE and DevOps Engineer with Google Cloud. Some of these certification programs are offered in Spanish and French.

## **Conclusion**

There are thousands of opportunities for people to find open educational resources (OER) and free or low-cost massive open online courses (MOOCs). Several popular platforms, providers, and businesses have been highlighted in this paper including MERLOT, Carnegie Mellon Open Learning Initiative (OLI), BC Open Campus, Khan Academy, Duolingo, Coursera, edX, FutureLearn, Udemy, Udacity, Microsoft, LinkedIn Learning, Amazon and Google. Due to COVID-19, there are even more opportunities to take free courses. Class Central (<http://www.classcentral.com>) is a great site for seeing reviews of online courses and reading reports that include lists of free courses, in-demand courses, and highest rated courses. The ability to learn and upskill is imperative for the 21st century knowledge economy. These OER and MOOCs provide ample opportunities to learn and upskill for minimal cost.

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