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Consultants to Business & Government

**UNCLASSIFIED**    **Government Effectiveness Advanced Research (GEAR) Center**  
**Request for Information**

# **Massive Open Online Courses (MOOCs) Transformational Learning for the Federal Government**

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**KMS Solutions, LLC | Government Effectiveness Advanced Research (GEAR) Center | MOOCs**

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# Massive Open Online Courses (MOOCs) Transformational Learning for the Federal Government

*Through applied research and live pilot testing, the GEAR Center would connect cutting-edge thinking with real-world challenges the Federal Government faces in serving Americans in the Digital Age. This means re-imagining possibilities for how citizens interact with the Government; rethinking the delivery of citizen services and data; reforming core processes (e.g., procurement, budget, IT investment and capital allocation); and exploring how the public-sector workforce can be developed, reskilled and redeployed in creative ways.*

*Government Effectiveness Advanced Research (GEAR) Center  
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## Introduction

The Government Effectiveness Advanced Research (GEAR) Center seeks to create research-driven pilot opportunities to address operational and strategic challenges that face the Federal Government, now and in the immediate future. One area of concern for the Federal Government is in reskilling and upskilling Federal employees.

Current approaches to learning in the Federal Government have relied heavily on instructor led training (ILT)/classroom-based training (CBT) and eLearning. While both have advantages, they each have glaring disadvantages that involve elements of efficiency and effectiveness. For example, while ILT/CBT is excellent for sharing new content and learners sharing experiences and knowledge around the content. However, ILT/CBT are expensive, require learners to travel to a central location, and for emergent requirements and large groups, difficult to scale. While eLearning is relatively cheap to develop and highly scalable, eLearning doesn't allow learners to share their knowledge and experiences.

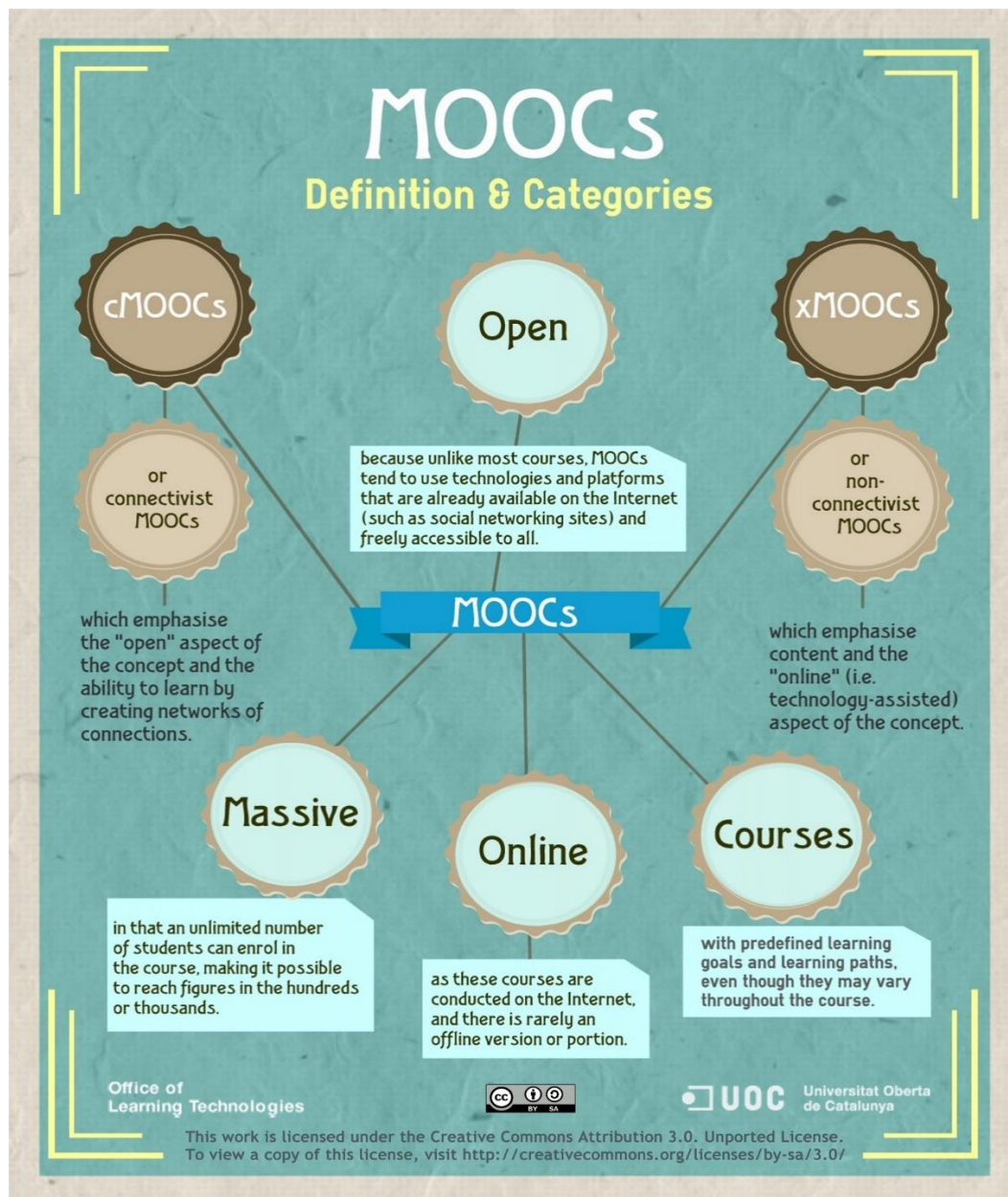
A transformational learning solution for the Federal Government, and referenced in the GEAR RFI as a pilot opportunity, exists that benefits agencies and the workforce by:

- Allowing learners that need to reskill or upskill to share experiences and knowledge, no matter where they are.
- Providing highly scalable ability to get 100s, 1000s, or 10,000s of learners from multiple Federal agencies in a course simultaneously.
- Costing less than ILT/CBT to develop, launch, and maintain.

That transformational learning solution are **Massive Open Online Courses** or better known as **MOOCs**. In today's world, the Federal Government needs the means to provide learners relevant and engaging content at scale that can reskill/upskill learners at the pace of operations. Content that allows learners from multiple Federal agencies to participate and share their knowledge and experiences. This transformational learning approach will open up new ideas and approaches to learners and their organizations. MOOCs will drive higher employee engagement by providing new learning opportunities and experiences to supplement existing Federal agency learning strategies and investments.

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## MOOCs Defined

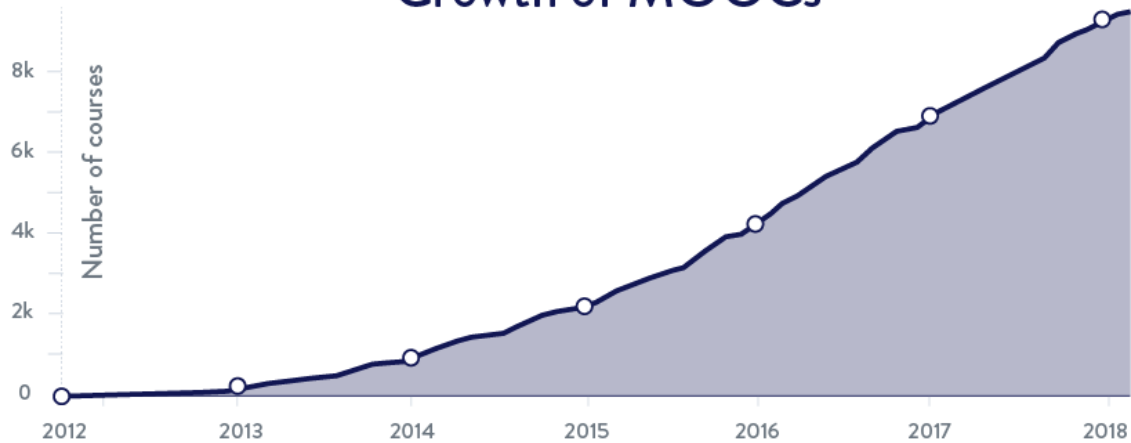


MOOCs continue to grow as a learning solution with over 9,400 MOOCs available to learners that number over 81 million. Provided by over 800 universities and private organizations, MOOCs continue today as a means to get content to learners at scale.

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## CLASS CENTRAL

### Growth of MOOCs



By the Numbers: MOOCs in 2017

MOOCs are self-paced or instructor-paced depending on the course topic and provider. MOOCs allow learners to apply learning directly to the problems or challenges they face on the job. Introducing real-work assignments and activities are an important part of the learning retention aspect of MOOCs, like other learning solutions.

This short YouTube video does an excellent job at explaining the details behind a MOOC and its transformational learning capabilities.

## [What is a MOOC?](#)

### Types of MOOCs

Today, there are various types of MOOCs that are based on the provider and purpose. For the Federal Government, all of these types of MOOCs are appropriate avenues for learners to access relevant content in support of their continuous development.

**Extended MOOC (xMOOC):** These MOOCs are based on traditional university courses. They are typically delivered by one or more university faculty members. The advantages of xMOOCs are that they expand access for learners to content from well known and recognized universities. xMOOC platforms include edX, Coursera and Udacity.

**Connectivist MOOC (cMOOC):** cMOOCs vary from xMOOCs primarily by the delivery. While in cMOOCs learning is delivered by faculty, cMOOCs involves groups of people learning together. In a cMOOC, all participants are considered teachers AND learners.

**Small Private Online Course (SPOC):** While MOOCs indicate “massive” numbers of learners in the same

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course, another version of MOOCs are SPOCs. These can be groups from 5-50 in size working and learning together.

### Who is a MOOC learner today?

When MOOCs started in 2012 with the launch of companies Udacity and Coursera, it was believed that MOOCs would become a new disruptive learning solution for academic institutions to reach student learners. However, six years later, while MOOCs may not have disrupted the higher education market, it has disrupted the labor market. While it was assumed that students would be the primary consumer of MOOCs, it has transitioned to a focus on “professional” learner as the main consumer of MOOCs. As former Coursera CEO, Rick Levin, indicated in a conference presentation in 2017:

*“The real audience is not the traditional university student, but the “lifelong career learner,” someone who might be well beyond college years and takes these online courses with the goal of achieving professional and career growth.”*

This perspective is backed up by data Coursera shared indicating that typical Coursera learners are between the ages of 25-45. Additionally, 89% of Coursera learners are over the age of 22.

For the Federal Government, its workforce in the 25-45 age group will need to develop new skills and more quickly to account for impending Baby Boomer retirements.

### Why MOOCs are Transformative for Federal Government Learning Needs

Over the last 20 years, there were efforts to standardize course content for use by multiple Federal Government agencies to reduce cost and duplication of effort. In this time frame, there was also work done to create relevant courses that would bring together employees from multiple agencies to foster greater collaboration, communication, and sharing of ideas to benefit the entire Federal Government. As discussed earlier, most of this work was focused on ILT/CBT and eLearning courses.

These initiatives, while vitally important and successful in creating the high-performance workforce and organizations that the Federal Government needs, couldn't be supercharged to take advantage of scale and cost. MOOCs transform the Federal Government learning landscape by their ability to scale to the entire Federal Government at once, if necessary, as well as, a cost structure that doesn't require millions of dollars to maintain and update.

Federal Government employees need access to learning that can enhance their careers and professional capabilities and can enable rapid reskilling/upskilling depending on the situation. Learning that is available when they need it, as well as, continuing as performance support they can access over and over when working their daily jobs. MOOC courses from academic institutions, Federal contractors/consultants, or Federal agencies themselves are the key to a broader learning strategy across the Federal Government.

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MOOCs support and better enable blended learning programs by offering the means for learners to engage with one another before critical ILT/CBT sessions. Thus, creating a more collaborative learner group earlier in the learning process and drastically cutting travel costs for agencies.

Imagine a situation where a large-scale catastrophic event occurs. It could be a West coast earthquake or an East coast Category 6 hurricane. Here multiple Federal Government employees, from multiple agencies must get up-to-speed quickly requiring reskilling/upskilling. No ILT/CBT or eLearning can meet those dynamic demands like a MOOC-based course can.

### How to Proceed with a MOOC-based Learning Strategy

To take advantage of MOOCs to enable mission success, consider the following questions when faced with a new or existing requirement:

1. **What is the timeline for learning solution delivery once developed?** This answers how important it is to get learners through the course in a shorter time frame. For example, if an emerging requirement dictates getting large numbers through the content in three months, then MOOCs might be an option to consider.
2. **What is the importance of learner interaction and collaboration with respect to the learning content?** This answers how important it is for learners to engage around the content through the sharing of real-world work, knowledge and experiences. For example, in a leadership development program, how leaders deal with various case studies and scenarios might be a key aspect of the learning. If yes, a MOOC is an excellent way to create that learner interaction.
3. **What is the learner population size to determine scalability aspects?** This answers what the scalability requirements are for the learning solution. For example, if the learner group is 500, 1000, 10,000 or more, MOOCs offer the scalability quotient to reach multitudes of learners across multiple geographic areas simultaneously.

An important aspect of discerning a MOOC-based learning strategy is not to answer these questions in seclusion from one another, but to understand the dynamics of the learning requirement and come to the most efficient and effective solution for Federal Government learner needs.

### Proposed GEAR MOOC Pilot

KMS Solutions currently has the first MOOC-based learning platform dedicated to Federal Government and contractor learning needs called FedLearn. Based on the Open edX digital learning platform, FedLearn can pilot a MOOC-based course to determine the effectiveness of MOOC-based learning approaches to reskilling/upskilling Federal Government workers. KMS Solutions recommends the following components to a MOOC-based pilot program:

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1. **Focus on Critical Thinking Skills:** Critical thinking is a core skill for any Federal Government employee at any level and location. Critical thinking is what allows people to take charge of their thinking and how they apply that thinking to their jobs and roles every day.
2. **Pre-Assessment of Critical Thinking Skills:** KMS Solutions has successfully used the Watson-Glaser Critical Thinking assessment to measure workforce critical thinking skills historically. Prior to putting a dispersed Federal Government population through the FedLearn Critical Thinking MOOC, we would provide everyone the Watson-Glaser Critical Thinking assessment to baseline the learner group.
3. **Launch the FedLearn Critical Thinking MOOC:** FedLearn's Critical Thinking MOOC is a 4-week course that requires students to spend up to 2.5 hours per week going through the content, participating in discussion board activities, and working on practical exercises to expand their critical thinking skills.
4. **Provide Performance Support Materials:** Over the duration of the course and up to the post-assessment, provide *Critical Thinking Tip-of-the-Day* content to the learner group. This is intended to overcome challenges with the Ebbinghaus Forgetting Curve that indicates the further a person gets away from learning, the more likely they are to forget the learning and its application. By providing daily performance support materials, the pilot seeks to limit the impact of the Ebbinghaus Forgetting curve.
5. **Post-Assessment of Critical Thinking Skills:** After the completion of the FedLearn Critical Thinking MOOC, KMS Solutions will re-administer the Watson-Glaser Critical Thinking assessment to the learner group to determine the difference in scores based on factors, such as those that fully complete the course, those learners that complete portions of the course, etc.
6. **Write Reports on the MOOC Pilot Outcomes:** After the conclusion of the pilot, KMS Solutions will provide a detailed research report on outcomes of the pilot, recommendations for future research, and recommended future pilots in important skill areas.

### Recommended MOOC Pilot Metrics

Metrics for this MOOC pilot, specific to critical thinking skills would revolve around the Watson-Glaser Critical Thinking assessment scores pre- and post-course to determine improvements. Additional metrics for consideration on the efficacy of the pilot are the following:

1. **Learning Occurrence** – With the Zoomi AI for Learning solution, KMS Solutions would be able to determine at a 90% confidence level whether participants in the pilot course are actually learning the material. Zoomi, based on over 250 proprietary algorithms can reliably determine whether learning is occurring during the course. With this information and the Watson-Glaser Critical Thinking assessment scores, we will be able to make linkages to test outcomes.
2. **Learning Impact** – Three months after the completion of the pilot, we conduct a survey and interviews with participants and supervisors to determine if measurable on-the-job performance has



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LEARNING PLATFORM FOCUSED EXCLUSIVELY ON  
FEDERAL GOVERNMENT AND CONTRACTOR  
EMPLOYEE LEARNING NEEDS.

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occurred with respect to critical thinking skills.



## Massive Open Online Courses (MOOCs) Transformational Learning for the Federal Government

**KMS Solutions, LLC (KMS)**, founded in 2005, is a stable and mature SB dedicated to providing high quality instructional design, consulting, and technical services to our Government clients. KMS employees support decision makers at the highest levels of the Federal Government and industry by providing comprehensive and detailed human capital management and development. KMS is experienced at developing and delivering training materials at the Service and Joint levels, and within the DoD Intelligence Community (IC). We are dedicated to serving the needs of the Department of the Navy (DoN), the Joint Chiefs of Staff (JCS), the IC, the Department of State (DOS), and other Federal organizations. As a current Federal Government training support contractor, KMS understands first-hand the environment and challenges senior leaders face today.

### KMS Expertise for GEAR

- ✓ Core expertise in human capital management processes and solutions
- ✓ MOOC design, development and delivery experience
- ✓ Employs a cadre of talent management SMEs to include the former commandant
- ✓ Expert level knowledge of talent development
- ✓ Responsive structure with immediate reach back capability

KMS Solutions and our parent company, Subsystem Technologies, have experience with public-private partnerships currently focused on State and Local Health and Human Services work.

### Dr. J. Keith Dunbar



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Dr. J. Keith Dunbar recently joined KMS in the spring of 2017 as Director of National Capital Region operations. Prior to KMS he worked as an industry leading leadership consultant in

private practice. Amongst his many accomplishments, Dr. Dunbar is an adult learning theory, US Intelligence Community, and US Navy subject matter expert whose career in Government culminated as Director of the Global Learning Solutions Group and the Leadership Academy in the Academy for Defense Intelligence at the Defense Intelligence Agency (DIA). He also serves as the KMS-wide Instructional Systems Design and Adult Education competency leader. Immediately prior to joining KMS, he was the Managing Director of Potentious. He is also experienced as the Director, Learning & Talent Development for Science Applications International Corporation (SAIC) and subsequently the Director, Talent Management at Leidos.

Dr. Dunbar is a former US Navy Intelligence Officer whose career culminated with a tour of duty at DIA as a Training Program Manager for its Joint Military Intelligence Training Center. Dr. Dunbar is a learning strategy, leadership development, integrated talent management, instructional design, e-learning and content delivery expert who provides technical leadership and direction for tasks and personnel in these areas of subject matter expertise. He provides day-to-day management and technical/programmatic direction on KMS programs supporting the US Navy, the National Geospatial-Intelligence Agency (NGA), as

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well as the Defense Intelligence Agency (DIA) and its National Media Exploitation Center (NMEC) in the National Capital Region.

Dr. Dunbar's academic credentials include a Doctorate in Education from the University of Pennsylvania, a MS in Strategic Intelligence from the National Intelligence University, and a BA in Political Science earned at the University of New Mexico. Dr. Dunbar has also completed graduate certificate programs at the Wharton Business School's executive education program in Learning Theory, Business Leader Engagement, Learning Technology and Organizational Leadership.

Amongst his many military career accomplishments Dr. Dunbar is a graduate of the US Navy Nuclear Power training program and he subsequently qualified in Submarines onboard the USS Seahorse (SSN 669).

### **Sources**

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2. Growth of MOOCs, "By the Numbers: MOOCs in 2017," Class Central, January 18, 2018.
3. YouTube Video, What is a MOOC?, Dave Cormier, December 8, 2010.