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# **Validating Performance Measurements:**

## **Government Performance and Results Act (GPRA) Applied In Web-based Law Enforcement Training Simulations**

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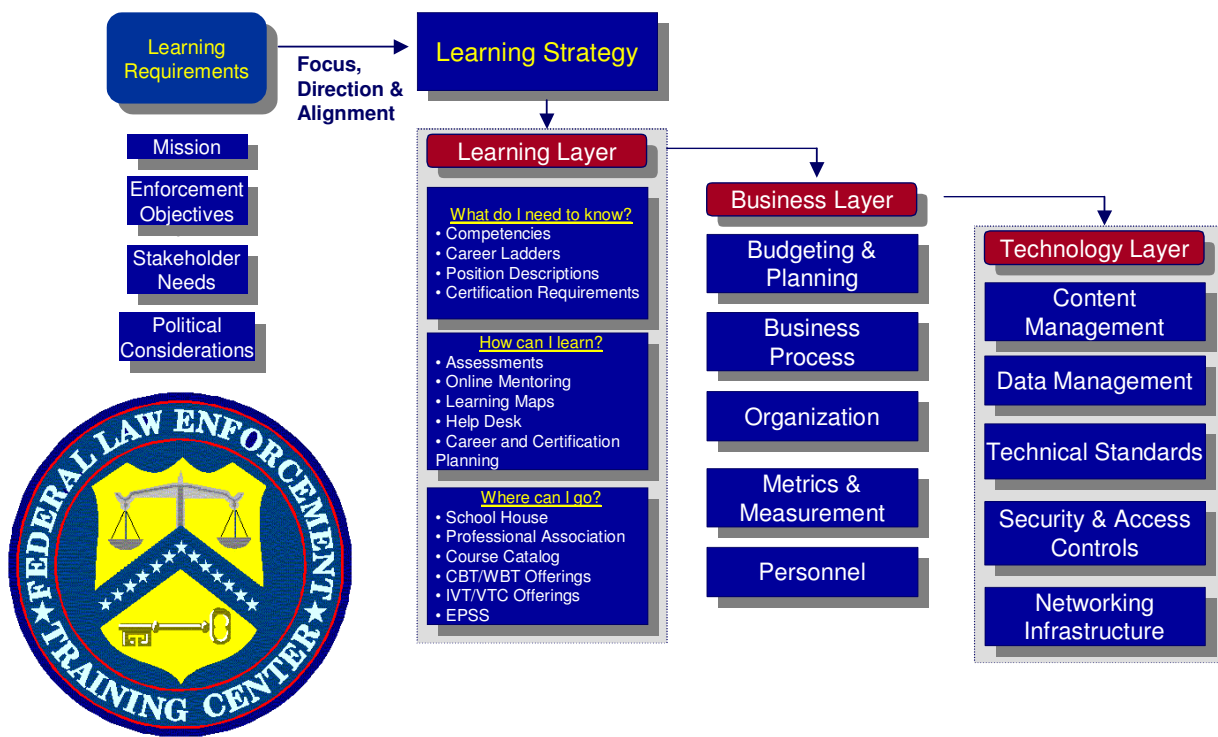


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The Federal Law Enforcement Training Center (FLETC) established a virtual FLETC learning portal to help fulfill its mission to train law enforcement officers' cost effectively at their duty locations. Prior to creating its virtual academy, the FLETC completed a distributed learning architecture assessment, which provided the three-layer model used to implement its online learning portal. The virtual FLETC offers 1900 course hours covering professional, computing and law enforcement topics. The model consists of the learning layer, business layer, and the technology layer.

# Distributed Learning Components



The law enforcement curriculum contains virtual training simulations (practical exercises). These simulations allow the learner to test their knowledge acquired in the virtual training to determine how well they understood the training content by applying it to real world situations. These trainees must use the knowledge gained through the online training courses to solve real-world problems posed in the simulations. In our view, some academies are less than successful in implementing elearning due to four factors that are addressed later in this paper.

## Metrics

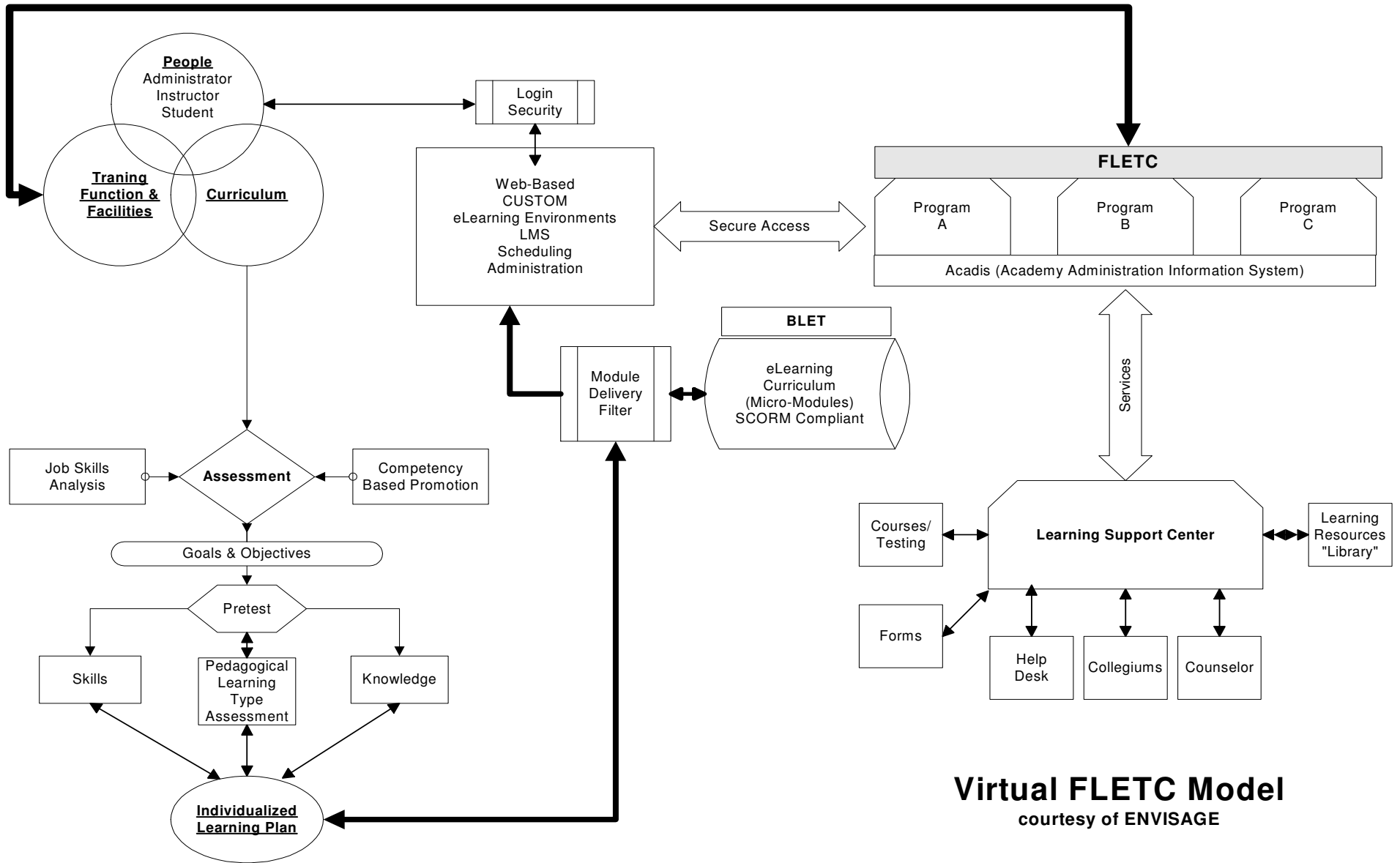
GPRA is the measuring rod established by the federal government to provide a framework for determining the quality, efficiency, effectiveness, and return on investment of work and training provided by federal agencies. As a matter of practice, the Distributed Learning Program utilize 37 performance measures, that stem from GPRA, to determine the effectiveness and quality of its training delivered online. All these metrics are identified in a listing that appears in the Appendix. Four of the GPRA performance measures serve as the framework of objectives for evaluating the effectiveness of Problem Based Learning which utilizes fully immersive multimedia online law enforcement training simulation and testing. These performance measures include: 1) improved learner reaction to training; 2) improved instructional accuracy; 3) improved employee skills; and 4) improved workforce readiness. Each of these metrics forms the beginning point for a series of questions that comprise the evaluation sheet administered to the Park Police trainees in the Mixed Basic curriculum at FLETC.

## Learning management system features and functions

Through the use of a knowledge management database that comprises the Learning Management system (LMS), the trainees of the Park Police Academy access and take course online. They take courses online, and participate in law enforcement training simulations. A fully integrated LMS tracks and aggregates all recordable actions taken by the learner, in both online and classroom environments. The data collected is analyzed using selected objectives from the 37 performance measures that stem from the Government Results and Performance Act (GPRA). The quality of the curriculum and its delivery via the World Wide Web are assessed through the use of an accrediting process.

A fully integrated LMS not only mirrors the “bricks and mortar” training academy but also supports it’s mission by augmenting the Academy’s ability to provide effective, pedagogically sound learning experiences outside the confines of the classroom while allowing managers and administrators to benchmark learning effectiveness of both classroom and virtual training. The LMS contains the three essential components of an academy, namely: people, facilities, and curriculum. A model of the virtual FLETC follows.

Technology alone cannot elevate the effectiveness of the Academy’s ability to provide an effective, pedagogically sound learning experience, no more than a modern training facility with inexperienced faculty. The LMS must be complemented with content that reflects the level of quality fundamentally required for this program to succeed. The deployment of problem-based learning courses, facilitated by and delivered via the LMS delivery platform provides the total solution. The Academy must deploy a catalog of programs containing quality content, relevant context, and tested to ensure performance measures are achievable.



**Virtual FLETC Model**  
 courtesy of ENVISAGE

The composite functions and features of the LMS are a natural supplement to the academy/training institution, providing a seamless transition to a technology-based solution that supports the Learning Strategy. The major functions and features are contained in the learning layer and the technology layers of the LMS architecture. The administrative processes track and record student performance, and provide a catalog of courseware. The learning layer provides an individual development plan process (generator, similar to a plan of study in a college or university; electronic student services division with an assessment center for students.

## ***Learning Layer of the FLETC Distributed Learning Architecture***

### ***Major Questions Examined***

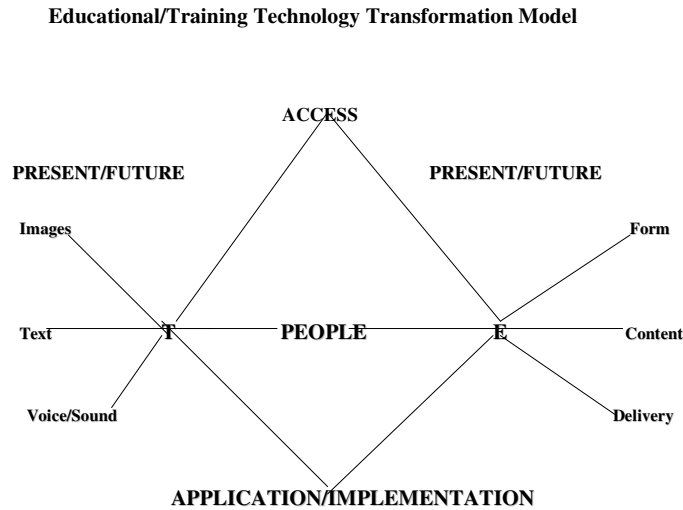
The learning layer of LMS architecture contains competencies, career ladders, position descriptions, certification requirements, and accreditation standards. It focused on the question how can I learn? This question is answered through assessments, online mentoring, learning maps, and career planning. Essential to the learning layer is answering the question where do I go for learning? A number of locations provide the training and education, namely: the online academy, professional associations, courseware catalog, computer based training (CBT) and web-based training offerings (WBT), simulcasts, and electronic performance support systems.

***The Individual Development Plan (IDP)*** The IDP is a competency modeling component that includes a 360 degree Skills Assessment Survey, skills gap analysis, recommended learning activities, coaching abilities, and an administrative console for managing core competencies at the corporate level. The FLETC Virtual Academy Individual Development Plan has four types of user roles: the Administrator, who inputs jobs, competency models, competencies, and KSAs, and associates learning activities with appropriate levels; the Coach who reviews and modifies the IDP resulting from job assignments or training requirements; the Manager, who serves as a mentor and oversees the trainees as they engage in the online learning program; and the User or trainee who takes the training online. Each role has its own interface: the Administrator Competency Management Console, the Coach IDP Console, the Manager IDP Console, and the User Individual Development Plan. The FLETC Virtual Academy combines the functionality of a robust Learning Management System (LMS) and a Knowledge Management system. It is Section 508 and SCORM compliant and provides for scalability and modularity in delivering online training.

## **Educational/Training Technology Transformation Model**

Technology and its constant changing nature transform all aspects of life in our global community, especially education and training. The general components of education include form, content and delivery systems. Today's major technology components include image, text, voice/sound carried on the electronic superhighway accessed and traveled through the use of computers and networks. New and expanded ties between computer technology, telecommunications, and software development; juxtaposed with the immense cost savings of online delivery, fuels the transformation of education and training. Technology is

transforming the access to education; teaching and learning; and the application/implementation of knowledge gained through learning. The following diagram depicts the major components and entities that comprise the transformation model.



The educational/training technology transformation model consists of three sets of components: set one contains objectives, context, assessment that comprise the performance evaluation and reinforcement techniques used in the online learning environment; set two contains access to the online classroom, the people (both students and instructors), and the application/implement of the learning environment; and set three consists of the form, content and delivery of the curriculum. All three sets of components interact with each other producing a dynamic, active online learning environment. As technology advances the transformation model dramatically changes the learning environment, and how students engage in learning. Technology possesses the power to transform the learning experience, the participants; locations; learning supports; and learning environment.

Faculty can access online teaching materials, which combine an immersive, interactive, and engaging environment to produce virtual learning experiences, changing pedagogy. These materials far exceed hypermedia capabilities by allowing students to learn more material in less time. Instructors of the future do research through online data collection and analysis, do it collaboratively from a multidisciplinary perspective, synthesize and produce new findings. The electronic classroom transforms the styles of learning among students and provides more flexibility to meet the needs of diverse learning styles, and self-paced learning. Students are transformed from passive participants to active, self-directed learners sharing ideas and working in collaborative teams in this global class.

The locations for learning are transformed by technology. The electronic university campus introduces new forms of collaboration, without the construction of new buildings. Students gain electronic access to take courses, upload and download class assignments and discuss

material through an electronic chat with other class members at any time. Students attend class anywhere, anytime their schedules' permit. Technology transforms the learning supports of education. Student services interact with their clients through online interchange. Functions such as admission, registration, and academic counseling can all take place electronically reducing costs and support staff. Learning resources experience a dramatic change. Now learning materials include virtual books and digital libraries. Ways to access information exceeds the boundaries of one campus and includes all the World Wide Web databases for knowledge.

The learning environment's transformation includes the expansion of electronic institutions and creation of new ones; curriculum brought to the individual level and holistic in nature. Professional development now occurs frequently and in collaborative groups addressing the constantly emerging issues and changes electronically. Wireless access means continuing education can take place in the institution or at any other location. Access to the knowledge needed to solve day-to-day business problems, reinforce skills, and enhance the ability of the employee is now available when needed, where needed. Fully interactive video conferencing breaks down the barriers between the instructor and students allowing all participants to be accessible to each other. Evaluation both of learning and teaching shifts to include different types of time spent in class preparation for both instructors and students. Beyond the economic considerations, the value of technology and its transforming effects on training rest in the intangible benefits. These transformations enhance the instructors and trainees' morale, create a sense of community, and increase innovative course design and flexibility in teaching and learning. Technology increases the spectrum of training and makes it more accessible to more people. Yet, it is essential that education/training remain a value in itself and not just a means to an end. Instructors still remains central to the learning process, as the representative of the discipline and its knowledge. He/she establishes the goals for learning and charts the course for this exciting journey. The transformation of the teaching role in education/training is enhanced, not replaced by computer learning systems. Technology enables training now and in the future not to be bound by time or place.

### ***Optimal Solution***

The optimal solution for training is the combination of “bricks and mortar and online clicks” known as blended learning. A hurdle needing to be overcome for the FLETC is the lack of a consolidated information infrastructure to collect the training data, track the pedagogical techniques used to determine at the effectiveness of the online learning as opposed to stand up instruction. According to Ari Vidali, -- Chairman and Founder of ENVISAGE, a leading eGovernment and eLearning provider specializing in Law Enforcement applications, -- academies should consider 4 things in order to succeed in the future:

- 1.) **Design and implementation of a viable eLearning strategy** that supports the ultimate mission of the Academy. Too many institutions have rushed into eLearning, spending millions on LMS infrastructures without an in-depth understanding of how to implement a functional eLearning program. One must begin the analysis process by reviewing the skills and knowledge students will be required to possess in order to excel at their job functions and then, determine which

of these can be effectively taught online, offline or via a blended approach. -- Though this would seem to be common sense, far too often, textbooks and PowerPoint presentations implemented via the internet are labeled as eLearning and these do not deliver on the promise of distributed education. By employing content, *context* and student interactivity, eLearning simulations and problem-based scenarios are proving to be the next evolution in distributed education. Unfortunately, many current eLearning deployments are not *context* driven and do not possess either the information infrastructure or the methodology/process to assess eLearning through a longitudinal study that examines both online and stand up instruction. -- Once skills and knowledge are assessed and categorized, the institution must consider additional factors that will impact the deployment of eLearning such as cost, timing, process and change management, resource availability, overall compatibility with the academy mission and most importantly, impact on the learner. By careful consideration and implementation of an eLearning strategy, the institution can be assured that eLearning will extend and support the stated mission of the academy.

- 2.) **Appropriate Infrastructure.** Needless to say, eLearning in the context of Law Enforcement will never succeed in a vacuum. Proficiency with firearms cannot be taught solely online. As a result, it is absolutely critical that academies consider basic infrastructure needs *prior to* deploying LMS. It is astonishing to see how many academies are rushing into enormous expenditures in eLearning without possessing robust Student Information Systems, scheduling, budgeting and tracking systems that are critical to daily operations. One cannot stress enough that without data aggregation, mission-critical systems integration and accessibility of student, instructor, cost, schedule, inventory, training asset availability and numerous other critical data elements, the success of an eLearning deployment can never be ascertained and thus the academy's objectives will ipso facto remain unachieved. If however, infrastructure is in place to support eLearning, the LMS that is ultimately deployed must be completely integrated into the academy infrastructure in order for the valuable data it contains to be contextualized within the academy's overall performance metrics.
- 3.) **Effective Content** Access to relevant and instructionally effective content complements the efficiency of technology-based delivery. Just as a quality classroom course is directly dependant on the quality of the faculty, the effectiveness of online education is directly dependant on the quality of the course content. Immersive, engaging, contextually relevant courseware, produced using effective pedagogy can ensure that the performance measures outlined in the learning strategy, and measured by the LMS, produce a complete solution. Effectiveness of e-learning has been well publicized as falling short of expectations due to the lack of quality in many online course catalogs. E-learning holds great promise, but only if the courses are *designed well*. Problem-based Learning provides a learning environment that simulates real-world experience and has been demonstrated successful at producing performance in an online environment.
- 4.) **Academy Benchmarking.** A solid benchmarking initiative is the sine qua non of an effective deployment. Without it, academies run the risk of losing focus.

Currently, integration, benchmarking and tracking are nearly impossible due to the level of cost and effort required to track critical metrics across all academy functions when data is based on paper records or systems that cannot aggregate this data into meaningful information efficiently. This state of affairs is no longer acceptable in today's post 9/11 law enforcement and military training environment. The demands of increased throughput, less time to accomplish training, and additional subject matter students are required to master, are driving the need for Academies to find means of benchmarking performance in "Real Time" and adapting quickly to the ever changing exigencies of law enforcement and military training. Benchmarking requires that there be stated goals and objectives that can be measured and tracked over time. It is important therefore, that the institution plan how to accomplish the important task of tracking progress against the stated objectives and have the ability to a.) Identify a problem and b.) Maintain a flexible enough approach to correct problems quickly as they arise.

In summary, Mr. Vidali, acknowledges that the benefits of eLearning are extraordinarily compelling. However, many intuitions do not realize these benefits e.g. average drop-out rate for most eLearning implementation is 65-70%. This is largely due to the lack of a solid and realistic eLearning strategy, absence of an integrated technology infrastructure to support it, static and un compelling content, and an inability to track progress against measurable goals objectives. Fundamentally, the curriculum must fully engage the learner by immersing the student in a pedagogical experience that engenders true understanding. This requires solid instructional design and deployment of new techniques such as problem and scenario based learning which simulate real-world situations; delivered using the power of web-based technologies. Only then will the full potential of eLearning be realized.

## **Results**

For the purpose of our research, we provided Park Police with a pedagogically sound and fully interactive version of the Description and Identification course online and juxtaposed that to the traditional "Page turner" approach. The key objective of the course is to provide the student with knowledge, skill and experience in dealing with witness questioning and an understanding of the conditions that can affect the perception of an event or crime. We then evaluated the test scores for each version and provided the students with evaluations designed to track the GPRA metrics already discussed. The evaluations consisted of 25 questions, 10 focusing on the traditional page-turner, 10 focusing on the problem-based scenario and 5 general questions that compared the 2 learning experiences. The findings indicate that the students rated both the interactive online course and multi-media test significantly better than the page-turner and standard text based testing approach for the specific course material that was tested.

## **GPRA Metrics Tracked**

In order to benchmark the effectiveness of the learning approach according to the four GPRA metrics discussed above, individual questions were formulated to allow for the tracking of these metrics for both the traditional as well as the problem-based learning approach.

The first two metrics tracked e.g. 1) improved learner reaction to training; 2) improved instructional accuracy; relate directly to the pedagogical approach used and the findings of our research indicate that there is a clear link between the learning objective i.e. the skills and knowledge the instructional designer wishes to instill and the overall architecture of the specific eLearning implementation. The last 2 metrics tracked e.g. 3) improved employee skills; and 4) improved workforce readiness (which are critical in the law enforcement environment) clearly revealed the superiority of problem-based learning to the traditional linear approach for the learning objectives in the Description & Identification module.

## **Traditional approach**

The original “traditional” learning module forced students to progress in linear fashion through the course materials. This “one-size-fits-all” approach did not allow for the differences in learning styles, pacing or direct student participation. Students learned the facts while remaining passive observers. and were not required to analyze and apply what they learned to a variety of situations.

### **Summarized findings for the traditional approach:**

- Students found this approach easier
- Was generally less preferred
- Was navigationally more cumbersome
- Did not allow for individual pacing and exploration
- Provided a less authentic experience
- Was less likely to prepare them to apply what they had learned to the real world

Our conclusion was that the traditional approach provides the learner the opportunity to rapidly gather/learn facts and use them to answer predetermined questions. In certain instances, where memorization of facts is central to the learning objective, the traditional approach will be more effective than a simulation and should therefore not be dismissed out of hand. Some suggested applications would be courses or elements of courses relating to; ballistics, legal definitions, court cases, formatting search warrants etc.

## **Problem-based approach**

Based on the results, the problem-based approach was significantly more challenging as it required the students to engage in associative thinking that resulted in varied outcomes to the scenario. The learning module that included a witness interrogation simulation held the students attention and required more time to be spent in analyzing/thinking about the information presented while allowing the students to experience, and participate in, the “event” virtually and take action according to testimony presented by virtual witnesses.

### **Summarized findings for the Problem-based approach:**

- Was generally preferred

- Provided better flexibility in pacing and navigation
- Better prepared the students to apply what they learned on the job.
- Provided a more authentic experience
- Was more challenging overall

Our conclusion was that problem based simulations are an excellent approach when the desired outcome requires not only knowledge of the “facts” but also a synthetic blending of knowledge, skills and analysis. Through the learning experience – interactions between the student and the learning module relate directly to future job performance and workforce readiness. This is because in the field of law enforcement, knowledge, skills, and abilities must be coupled with sound analytical capabilities. Simulations reinforce skills and require direct application of knowledge thus providing students the opportunity to engage in decision making, direct actions and their consequences.

### **Differences between the two learning approach simulations**

The major difference between the 2 approaches can be boiled down to a juxtaposition of knowledge and application. Whereby it is relatively simple to learn facts, it is much more difficult to engender an understanding in our students which prepares them for the application of those facts and principles learned to the myriad situations they will encounter on the job. By providing “learning experiences” we allow our students to learn by doing, experience mistakes and as a result, better prepare them to confront the challenges of modern law enforcement.

## Appendix

### **GOVERNMENT PERFORMANCE AND RESULTS ACT RESULTS/PERFORMANCE MEASURES**

The Government Performance and Results Act of 1993 (GPRA) measures how well Federal programs are meeting intended objectives. It ensures the Federal government is held accountable for achieving results. FLETC has established the following 37 Results/Performance Measures by which to measure its success.

- Reduction in student travel
- Reduction in trainer travel
- Reduction in student time in training
- Reduced instructor time
- More accessible training
- Increased training certification rate
- Increased training application on the job
- Improved learner reaction to training
- Increased number of people trained
- Increased training consistency
- Improved speed of implementation
- Reduced publication costs
- Reduced postage
- Enhanced information security
- Improved information integrity
- Improved information reliability
- Reduced or more effective telecommunication costs
- Reduced training administrator's time spent preparing learning centers and maintaining documentation
- Reduced need for dedicated training hardware
- Improved instructional accuracy
- Less disruption of mission critical applications
- Improved employee skills
- Reduction in computer errors
- Reduction in interview errors
- Reduction in form errors
- Improved entry processing time
- Reduced requirement for supervisory assistance
- Reduced requirement for peer assistance
- Reduced requirement for help desk assistance
- Reduced processing errors at entry
- Increased productivity

- Improved workforce readiness
- Improved system reliability
- Improved employee job flexibility
- Improved employee morale and motivation
- Decreased legal challenges and concerns
- Increased customer satisfaction index

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