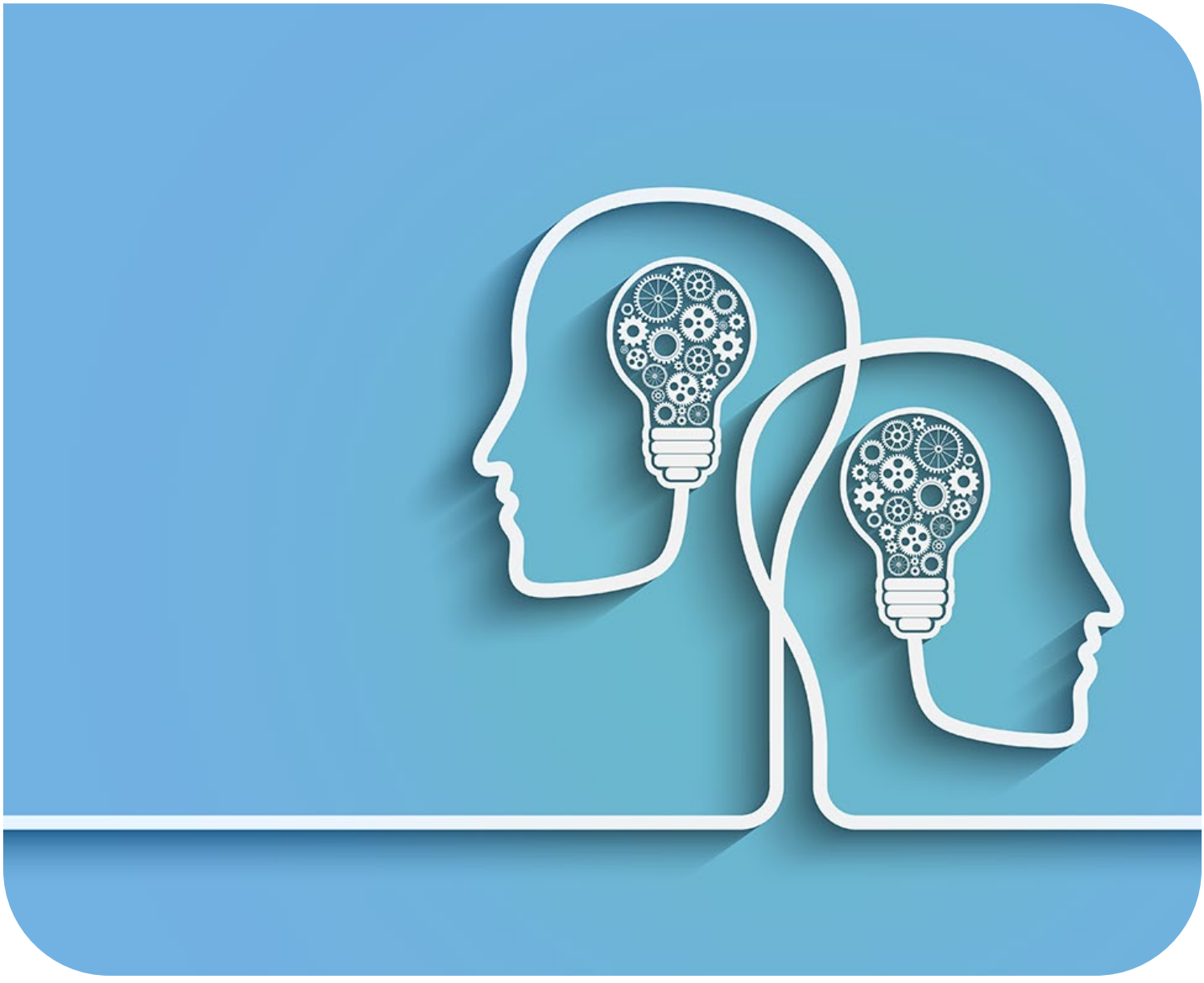
WHITE PAPER

Determining **Effective Training Methods for Your Team**



We'll focus on eight different Training Solutions

1. Online Training
2. Video
3. Games and Simulation Training
4. On-the-Job Training
5. Coaching
6. Learning Resources
7. Social Learning

In the utility industry, training is not only critical to ensure tasks are performed correctly and the power stays on, but it is also an essential part of compliance. Training requirements may vary based on entity registration and individual responsibilities, **but training is necessary for all areas.** With so many options available, it can be overwhelming to decide what type of training best fits different situations.

This white paper outlines the best solutions for various training needs, looking at parameters including l**earning style, subject, situation and requirements.** It is important to note that regardless of the option selected, a Systematic Approach to Training (SAT) should be applied which includes analysis of training needs, design, development, and implementation of training, and evaluation of the training's effectiveness.

Keep in mind these training options aren't exclusive. **The best training blends different styles to meet your company's and the individual learner's needs.** You can introduce a concept through online or video training, then practice applying those concepts in an instructor-led class. Simulation is also good for hands-on application of new concepts. Video, learning resources, and online resource search are great options for reinforcing concepts after training is finished.

Different training methods fit with different learning objective types. **The following chart outlines some basic objective types, including examples and key verbs.** This information will help ensure training methods match your objectives. You can match verbs with the training methods in our white paper for the most effective outcomes. Our Writing Learning Objectives white paper has more information on how to develop effective learning objectives.

Examples of Objective Types

	Examples	Key Verbs
Decide	• Recite a policy • Know the safety rules • Define a term	Arrange, define, describe, identify, know, label, list, matche, name, outline, recall, recognize, reproduce, select, state
Do	• Rewrite the principles of test writing • Explain in your own words the steps for performing a complex task • Translate an equation into a computer spreadsheet	Comprehend, convert, defend, distinguish, estimate, explain, extend, generalize, give an example, infer, interpret, predict, rewrite, summarize, translate
Know	• Identify the difference between real (active) and reactive power • Apply the correct use of three-part communication	Apply, change, compute, construct, demonstrate, discover, manipulate, modify, operate, predict, prepare, produce, relate, show, solve, use
Believe	• Write a company operations or process manual • Design a machine to perform a specific task • Integrate training from several sources to solve a problem. Revise processes to improve the outcome	Categorize, combine, compile, compose, create, devise, design, explain, generate, modify, organize, plan, rearrange, reconstruct, relate, reorganize, revise, ewrite, summarize, tell, write
Feel	• Select the most effective solution • Compare the difference between voltage phase angles and power angles • Explain and justify a new budget	Appraise, compare, conclude, contrast, criticize, critique, defend, describe, discriminate, evaluate, explain, interpret, justify, relate, summarize, support
Create	• Troubleshoot a piece of equipment by using logical deduction • Recognize logical fallacies in reasoning • Gather information from a department and select the required tasks for training	Analyze, break down, compare, contrast, diagram, deconstruct, differentiate, discriminate, distinguish, identify, illustrate, infer, outline, relate, select, separate

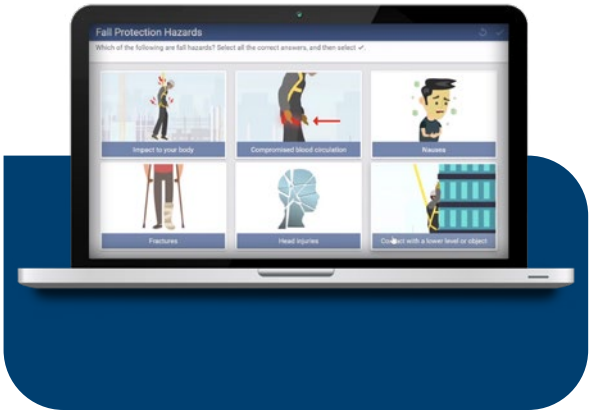
Online Training

Online training is flexible and compatible with a wide range of students, particularly those who prefer to learn alone and at their own pace. It does require a moderate level of self-motivation, so it is important that students are able to meet goals independently.

This form of training works well for a wide range of broad fundamental skills complimentary to the utility industry. It partners effectively with simulation necessary for meeting some standards requirements. Online training works best for established, explicit knowledge such as power system fundamentals and voltage control, not necessarily for rapidly evolving implied knowledge such as system protection and relaying. It is economical and effective in teaching common work skills – it can be used again and again, justifying the investment. **Online training works best for Decide, Do, and Know objectives.**

Because online training can educate many people in a wide range of subjects, it is an economic long term solution. It provides students access to the same level of training and a uniform standard of performance. Students experience individual training by following specific paths targeted to their roles or scenarios. Because of this advantage, it works well for role-based training.

The budget for developing online training may be higher than other types of training, regardless of whether you use internal or external resources. Like other forms of training, it requires time to research, design, develop, test, refine, and deploy your training. A Learning Management System (LMS) is required to run the online training and track completed training. An organization may use its own LMS or work with a vendor. **In the utility industry, it is beneficial to use an LMS to help upload Continuing Education Hours (CEHs) to the NERC System Operator Certification and Continuing Education (SOCCED) system for Certified System Operators.**



Video

Video training is versatile and flexible, appealing to a broad range of students. It offers an immersive learning experience, holding the viewer's attention better than print. An Insivia 2023 report says viewers retain 95% of a message when watched as a video as compared to 10% when reading in text.

Video training works well when providing fundamental information about a skill. It can show multifaceted aspects of a topic which can't be experienced in other forms of training. Video is suited for messages that need to be delivered consistently, over and over, to all learners. Animation can be incorporated into video to allow the student to get inside equipment in a way other training can't replicate. 3D animation dissects large scale equipment and demonstrates its functionality, so students understand how it works.

Similar to online training, video is an economic long term solution. As with other forms of training, a systematic approach to training must be followed. Video training must be as carefully analyzed and planned as any other training. It requires several steps, including writing the script, storyboarding images, designing the video, recording, and post-production.

Viewing video:
95%
is retained

Reading text:
10%
is retained

This training works well for measuring engagement by providing details such as the number of views and how many people watch the videos from start to finish. These real-time metrics on engagement can give the company valuable feedback on the quality of the training materials. Video training also can be prerecorded and shared with employees as many times as needed without any additional cost. Employees can then watch the video on their own time in whatever location best suits them. Because viewers can learn at their own pace, videos are a great communication tool for people with disabilities and those in the neurodiverse community.

Using videos for training purposes can also help deliver **a more consistent all around training experience because all team members watch the same video with the same content, rather than having different instructors.**

Games and Simulation Training

Similar to online training, games and simulation training also fit a wide range of students. However, the students must have some technical skills and subject matter knowledge. This training applies to solitary students or teams learning through social learning and is helpful to students who need extra practice to master a subject or a skill.

Games and simulation training make a range of abstract, general subjects accessible to students through concrete examples. The strength in this type of training is teaching fundamental principles and rules of a field, so it is better for explicit rather than tacit knowledge. **Game and simulation training works best for Decide, Know, Do, and Believe objectives.**

Games and simulation training is a good long term solution to educating many students who need to master a specific subject area. In the utility industry, emergency operations procedures and voltage control training are two examples of areas that can effectively use games and simulation. However, development is too expensive to teach broad subjects thoroughly or require frequent revisions. It is better to focus on segments of broader training.

Time and budget are needed for game and simulation development which is more involved than online training. Both methods can be incorporated into online and instructor-led training. **Time must be allowed for introducing non-gaming students to the game to ensure their success.**

Instructor-Led Training

Virtual Training (Web-Based Video): Virtual training is ideal for students who enjoy the classroom model and perform better with additional motivation from an instructor. It is a good solution for a novice learner with low technical skills and the classroom setting often overcomes anxiety about a new form of learning. Few technical skills are needed.

Because the training is led by an instructor, topics can be broad, covering fundamental, general, and abstract subjects. Virtual classrooms are flexible, and an experienced teacher can adapt interactions to teach tacit skills and emerging knowledge, an advantage not available with the previous training options. This training format also works well with established, explicit knowledge. **It works best for Know, Believe, and Do objectives.**

While you should always follow SAT guidelines during development, virtual instructor-led training tends to take less time to deploy than online or gaming and simulation. **It is important to have experienced subject matter experts (SMEs) available to ensure students receive the maximum benefit from the experience.**

There are numerous virtual instructor-led systems or online meeting tools currently available, many free of charge. As always, course development requires a budget, and timeframe to deploy depending on training complexity.

Virtual instuctor-led training tends to take less time to deploy.

Instructor-Led Training

Face-to-Face: Similar to virtual instructor-led, face-to-face instructor-led training is good for beginner students who lack technical skills and know little about the subject.

Many of the students who excel in an instructor-led setting require direct social interaction and rely on the authority of experts to validate the information they are receiving. These students usually depend on external motivation. Breakout sessions and group exercises help reinforce the subject matter and encourage students to exchange ideas and information, ideal for highly complex or tacit knowledge.

An added advantage to face-to-face instructor-led training is the close observation of physical behavior, body language, facial expressions, and gestures of the student to help the instructor tailor information to the class and identify areas requiring additional focus. This type of training works well for teaching fundamental, general, or abstract subjects and is as flexible as the instructor in charge. **It works best for Know, Believe, Do, and sometimes Feel objectives.**

Face-to-face instructor-led training is the best alternative when there is insufficient time to develop e-learning and experienced SMEs and instructors are available. **However, students must be able to afford the time and money to travel to the training location.** In addition to a physical classroom, training resources, and travel, an LMS is needed for tracking purposes.

On-the-Job Training (OJT)

On-the-job training (OJT) works well for students who have trained on concepts and are ready to apply what they've learned. Students gain hands-on experience under the direction of a trainer or veteran employee.

An effective OJT program must be organized and structured with activities such as scenario-based training and simulations to accompany online training. Every position must have specific skill development that challenges the individual to perform their job responsibilities before they do so unsupervised. This process allows the student to perform tasks related to the job under the watchful eye of the trainer, so they don't make mistakes. OJT gives the student practical experience with the tools and equipment they will work with each day.

OJT combines book knowledge with real-world knowledge, then demonstrates how to exercise and test that knowledge. This training is better for explicit rather than tacit knowledge. **OJT works best for Decide, Know, Do, and Believe objectives.**

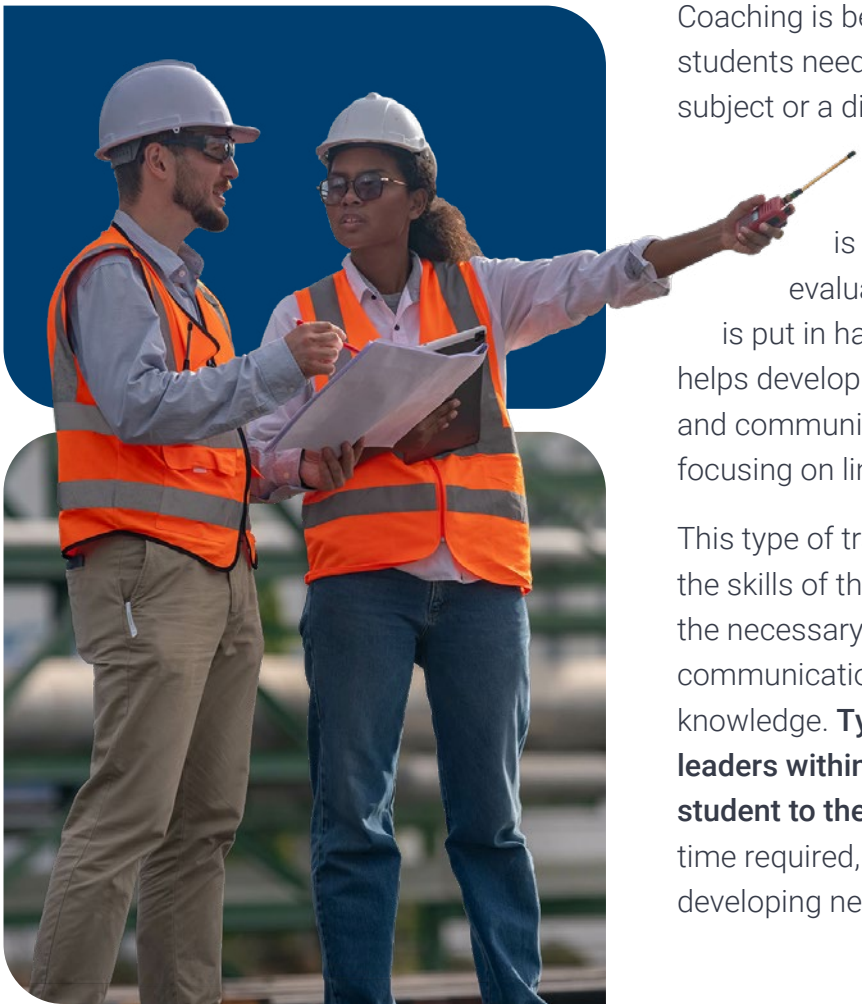
OJT develops a student's ability to make the best decision which requires skills beyond memorizing procedures. Students must identify situations accurately and understand the long-term impact of their actions. OJT challenges decision making in real world situations.

To succeed, an OJT program must be formal and documented, so all students receive the same instruction regardless of who is training them.

Coaching

Coaching works best for dependent students who respond well to external discipline. Delivery is flexible and can be delivered by phone, email, virtually, or face-to-face. It helps all types of students.

Coaching works well for fundamental subjects or very advanced ones, but depends on the expertise and communication skills of the coach. It assists students in building tacit skills without written rules and principles. The one-on-one interaction spurs student innovation and gives authority and credibility to ideas because the interaction makes the information relative to specific situations. However, coaching is not efficient or broad subjects or large numbers of students. **It works best for Create, Do, and Believe objectives.**



Coaching is best used in cases where a few students need to learn a different aspect of a subject or a different degree and standard of performance. It should be used when the cost of individual failure is high as the coach can thoroughly evaluate the student before he or she is put in harm's way. In addition, coaching helps develop strong situational analysis to see and communicate the big picture as opposed to focusing on linear thinking.

This type of training depends exclusively on the skills of the coach who must possess the necessary expertise and interpersonal communication skills in addition to subject matter knowledge. **Typically, the best coaches are leaders within the organization who can take the student to the next level.** Because of the intensive time required, investment is high, but the benefit is developing next generation leaders.

Learning Resources

Using learning resources as a training option works best for advanced students who are self-motivated and take initiative to learn more. It is risky for naïve, dependent students who lack the self-discipline to learn and do not have fundamental knowledge of a subject. Its best use is to complement training and provide performance support before, during, and after the event.

Learning Resources:

- Textbooks
- Workbooks
- Podcasts
- Social Media
- Websites
- Videos
- Charts
- Models

Using learning resources allows the student to pursue side interests outside of the narrow scope of a specific course. Learning resources provide effective prerequisite knowledge when needed and allow students to explore additional information. **It is most reliable for established, explicit knowledge and works best for Decide, Do, and Know objectives.**

Learning resources provide a quick and inexpensive solution for a smaller group of students who have the internal motivation to complete training. These resources work well when there is a large variation in students' needs and their starting abilities. They perform well as a quick job reference or job aid to use after training to help students perform at a peak level.

Prior to using, learning resources must be located, analyzed, and tested to ensure they will accomplish the objective. Materials must be made available either online or in hard copy.

Social Learning

Training through social learning is not for everyone. Students need to understand the vocabulary and principles necessary to interact productively. They require the self-discipline to keep conversations focused and be willing to question rather than blindly accept new information.

Social learning is especially effective for refining existing skills and seeing concrete examples of abstract ideas. Students can find specific applications for general principles and refine their conversation, negotiation, and collaboration skills. Similar to coaching, students can build tacit skills without clear rules and formulas. Social learning is effective for teaching rapidly emerging subjects. **This training is best for Create, Decide, Believe, and Feel objectives.**

Social learning can be a good solution when an entity is lacking time and budget. It works best over long periods of time and should be used to round out learning efforts. Social networks can handle concerns and needs of individual students to provide learning needed by only a few and to illustrate standards of performance.

To successfully use social learning, an entity needs to provide the essential expertise and include individuals willing to share. In addition, students need time to join groups, identify experts, build trust, and carry on conversations. Tools may need to be added to make collaboration natural and easy. **Organizations should consider adding policies that provide parameters for sharing information while encouraging students to effectively use their networks.**

Training Method Cheat Sheet

	Students:	Subjects:	Situations:	Requirements:
Online Training	• Wide range of knowledge • Moderate level of self-motivation • Self-paced • Ability to work independently	• Wide range of broad, fundamental skills • Establish, specific knowledge • Common work skills • Objectives: Decide, Do, and Know	• Economic long-term solution • Uniform standard of performance • Role-based training	• Adequate budget • Development time for SAT • Learning Management System
Video	• Wide range of knowledge • Moderate level of self-motivation • Low technical skills • Self-paced	• Wide range of broad, fundamental skills • Establish, specific knowledge • Objectives: Decide, Do, and Know	• Economic long-term solution • Uniform standard of performance • Specific content area	• Adequate budget • Development time for SAT • Learning Management System
Games and Simulation Training	• Wide range, but good for solitary student • Some technical skills and subject matter knowledge • Good for extra practice	• Abstract general subjects with concrete examples • Fundamental principles • Explicit knowledge • Objectives: Decide, Do, Know, and Believe	• Many students needing to master a specific area of a subject • Specific segments of broader subjects • Long-term solution	• Adequate budget • Adequate planning time
Instructor-Led Training	• Beginner student • Low technical skills • Instructor motivated • Comfortable in classroom • Exchange of ideas and information	• Broad, covering fundamental, general, and abstract subjects • Established, explicit knowledge • Tacit skills with experienced instructor • Objectives: Do, Know, and Believe	• Shorter development timeframe • Experienced SMEs and instructors	• Virtual instructor-led system or online meeting tool • Student budget and ability to travel as needed • Timeframe dependent on course complexity • Physical classroom and materials
Coaching	• Dependent students • Wide variety of knowledge • Flexible delivery	• Fundamental or advanced subjects • Tacit skill development • Information relative to specific situations • Do, Know, Believe, and Create Objectives	• Few students needing different areas of a subject • One-on-one interaction • Strong situational analysis • Big picture view	• Highly skilled coach with strong communication skills • High time investment • Organization leader involvement
Learning Resource	• Advanced, self-motivated students • High self-discipline	• Side interest outside of course scope • Prerequisite knowledge • Established, explicit knowledge • Objectives: Decide, Do, and Know	• Complement to training • Small student groups • Large variation in student need and starting abilities • Quick job reference after training	• Resource identification and aquisition
Social Learning	• Basic understanding of vocabulary and principles • Self-discipline keep conversations specific • Ability to question new information	• Existing skill refinement • Specific application for general principles • Tacit skill development • Rapidly emerging subjects • Objectives: Decide, Believe, Feel, and Create	• Good solution when lacking time and budget • Round out learning efforts • Learning needed by a few students	• Groups to join and SMEs to participate • Collaboration tools • Organization social media protocols
OJT	• Understand concepts • Ready for hands-on experience	• Specific skill development • Practical experience • Explicit knowledge • Objectives: Decide, Do, Know, and Believe	• Real-world situations • One-on-one interaction • Strong situational analysis	• Skilled, trained instructor • Adequate

Training Methods in Real World Application

Our NERC prep training program incorporates all the training methods highlighted in this white paper. Its success starts with a systematic approach to training which is applied across all areas. We've provided a brief summary of how each method fits within the program.

Online Training: The NERC prep training program starts with online training. This training covers the concepts students need to know before they take the exam. It walks them through basic electric theory and NERC standards to prepare them for the exam. Students can take the training at their own pace at times that work best for them.

Video: Each area of the NERC online training includes videos that further explain concepts covered in the online training. The videos dig deeper into areas where many students have additional questions. We identify the questions through our coaching efforts and provide videos to further explain concepts.

Games and Simulation Training: The HSI NERC prep program incorporates grid simulation training into online and instructor-led components. Once a student has completed a set of online training, they apply the concepts learned to simulated grid conditions. This simulation reinforces the completed training and provides hands-on experience for the student.

Instructor-Led Training: Once students complete the online training, they participate in an instructor-led class which they can take in either a traditional face-to-face environment or in a virtual classroom. The instructor-led class discusses application of the concepts learned in online training and how that information will appear on the exam. The instructor-led class includes simulation for real-world experience. The class also provides test-taking tips and advice for the day of the exam.

Coaching: Throughout the program, students can participate in weekly instructor coaching calls to get specific questions answered. They also work with the HSI students services team to ensure they're prepared to take the exam.

Learning Resources: HSI encourages students to use additional learning resources as they prepare to take the NERC exam. The two primary resources, which can be found online, are the EPRI Power System Dynamics Tutorial and the NERC Reliability Standards.

About HSI

HSI is your single-source partner for EHS, Compliance, and Professional Development solutions. HSI provides integrated e-learning content, training solutions, and cloud-based software designed to enable your business to improve safety, operations, and employee development. Across all industries, HSI helps safety managers, and technical employees, human resources, first responders, and operational leaders train and develop their workforce, keep workers safe, and meet regulatory and operational compliance requirements. HSI's focus is on training, software, and services for safety and compliance, workforce development, industrial skills, and emergency care. HSI is a unique partner that offers a suite of cloud-based software solutions including learning management, safety management, chemical SDS management, and more, integrated with content and training so businesses can not only monitor and manage multiple workflows in one system, but train employees via one partner.

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