TRAINING MODULE PRODUCT INFORMATION
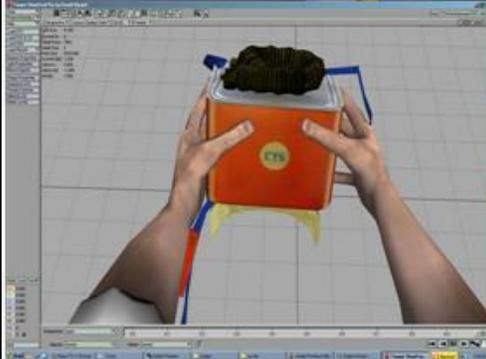
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ABOUT COMMERCIAL TRAINING SOLUTIONS

Commercial Training Solutions, LLC (CTS) creates high-impact safety and operations training solutions using virtual reality and 3D animation technology. Our products and services help customers deliver more effective training that:

- Reduces costs related to workplace incidents and workers compensation.
- Decreases the total cost of training.
- Enables trainees to be active learners and take personal responsibility for safety.
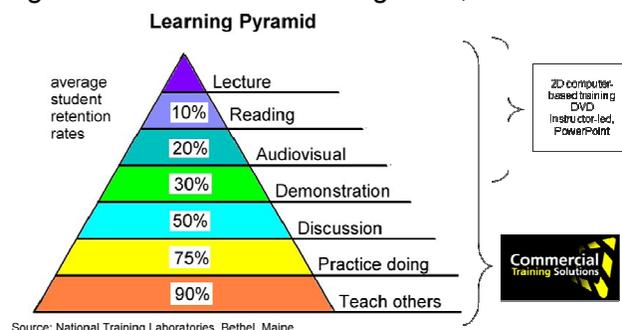
CTS solutions include:

- Virtual reality safety and operations simulations.
- Immersive display systems.
- Incident re-creations videos.
- Product films.

About Virtual Reality Training

In order to achieve the highest retention possible, training should strive to meet both knowledge and performance-based training objectives. That is, complete training includes two stages: 1) knowledge learning, and 2) practical application of that knowledge. Conventional training would address the knowledge component through instructor-led PowerPoint presentations, videos, or sometimes 2D computer-based training. The practical application of that knowledge is commonly handled through live, real-world training simulations or on-the-job training.

Using virtual environments mimics on-the-job training in that performance-based training can be incorporated. Trainees are given knowledge then immediately asked to apply that knowledge to a task or situation in the virtual environment. The application of the knowledge often requires comprehensive knowledge, including hazard recognition and decision-making skills, to complete. The virtual training environment provides learners with a context for what they are learning which contributes to a higher retention.

The figure on the right shows retention rates using various training methods. Conventional training typically achieves 20-30% retention while training using virtual reality environments can achieve 70-90% retention.

Learning Pyramid

average student retention rates

| Lecture |
| 10% Reading |
| 20% Audiovisual |
| 30% Demonstration |
| 50% Discussion |
| 75% Practice doing |
| 90% Teach others |

Source: National Training Laboratories, Bethel, Maine

The Business Case

Improving safety is the primary objective of the training resulting in lower incident rates, workers compensation costs and turnover costs. However, a more efficient and effective training process also provides significant return on investment (ROI).

Because new employees who have been trained in virtual environments will be better prepared, on-the-job training (OJT) can focus on assessment, not training. Training and practice will happen in the virtual world and decrease the time and expense of hands-on training by as much as 50%. If the average new employee trained by conventional methods receives 40 hours of OJT over his first 3 months, the employee would receive 20 hours of OJT (most of it assessment) after being trained using virtual environments. Given 100 new employees at $15/hour and supervisor/foreman at $25/hour, the combined 2000 hours would result in an estimated **$80,000 cost benefit based on *unburdened* direct labor** ((2000*$15)+ (2000*$25)). Productivity would also increase by 2000 hours.

TRAINING MODULE LICENSING

CTS currently has several lessons available for using in new miner training, annual refresher training and task training. Descriptions follow.

Introduction to Risk Assessment (underground mining)

Miners are educated in hazard recognition and risk assessment processes to help them identify, evaluate and manage hazards and risk in the workplace. Training currently consists of group classes provided by instructors and some hands-on training. In the classes, the risks and hazards of a task are explained and shown using pictures or videos. However, ensuring the process is internalized by individuals cannot be accomplishing using this method. Without the ability to assess individual performance, ensuring the risk assessment process is effectively transferred to the worksite and used properly requires trainers or supervisors to observe and evaluate employees while on the real worksite.

In an effort to help instructors improve hazard recognition training, CTS has developed a computer-based training module using virtual reality environments. Like the current training classes, the virtual reality simulation helps to introduce and explain risk assessment methods such as SLAM or Job Safety Analysis (JSA) methods. However, the virtual reality simulation also allows individuals to practice and apply the process in a variety of virtual environments similar to the ones employees will actually be working. The training lesson:

- **Effectively helps employees learn risk assessment.** By repeatedly applying the risk assessment process to specific tasks, the trainees are "trained" in the specific processes and "educated" in risk assessment principles. That is, repeated use helps miners internalize the risk assessment process to the point where they can apply it naturally and to a variety of tasks. Helping miners internalizing the process is a primary objective of the training module.
- **Establishes norms.** Recognizing hazards early helps to minimize risk. However, employees must know the norm before they can recognize deviation from the norm. The use of virtual environments helps employees experience normal operations.
- **Put safety in the context of tasks.** Because trainees apply the risk assessment process to common tasks, the training module also assists with task training. The lesson scenarios include common tasks performed by miners.
- **Assess individuals based on performance metrics.** Employees will be assessed based on their actions, observation, and decision-making skills, not just on knowledge retention. The lesson will track individual performance.

Video clips of the training module can be seen at the following link:

http://commercialtrainingsolutions.com/products_risk-assessment-mining.html

Mine Rescue

CTS has developed and delivered the only (COTS) commercially available virtual reality mine rescue training scenario in the United States. Using desktop simulation, mine rescue teams are given a problem similar to those given at mine rescue competitions. The teams then work the problem in a virtual underground mine environment.

Video clips of the training module can be seen at the following link:

http://commercialtrainingsolutions.com/products_mine-rescue.html

Emergency Escape (Undergroud)

Trainees play the role of a miner working in a continuous miner coal mine section. Three hours into the shift the trainee learns there may be a fire in the section. In order to make it to the surface safely, the trainee must help the section foreman gather information and help lead the mine crew to safety.

Video clips of the training module can be seen at the following link:

http://commercialtrainingsolutions.com/products_mine-emergency-escape.html

Introduction to the Work Environment (Underground Coal) – available in 2011

Cribs, pillars, ribs, stoppings, mandoors, continuous miners, scoops, longwalls – these terms may seem like a foreign language to people unfamiliar with mining. Red hats (new, inexperienced miners) can be faced with an overwhelming volume of new terms, concepts and processes. Introduction to the Working Environment (Underground Coal) allows red hats to safely learn new terms and concepts related to underground coal mining as they explore a virtual underground mine.

Video clips of the training module can be seen at the following link:

http://commercialtrainingsolutions.com/products_intro-work-environment.html

Preshift Inspection (Underground) – available late in 2011

Trainees are asked to perform a workplace examination on a virtual mine section. Workers examine a section of the mine then identify and correct potential hazards and violations. If the trainee misses hazards during a workplace exsamination, the trainee is told which were missed and why they are noncompliant. Specific standards are referenced. The data related to which violations were missed during the inspection is stored for future use in estimating fines.

Video clips of the training module can be seen at the following link:

http://commercialtrainingsolutions.com/products_preshift-inspection.html

Pricing

The table below provides license pricing and volume discounts for each title.

	Seat Cost	Total Cost	Average Cost
Per Title Pricing & Volume Discounts			
1	$1,500.00	$ 1,500.00	$ 1,500.00
2	$1,250.00	$ 2,750.00	$ 1,375.00
3	$1,000.00	$ 3,750.00	$ 1,250.00
4	$ 750.00	$ 4,500.00	$ 1,125.00
5	$ 500.00	$ 5,000.00	$ 1,000.00
6	$ 500.00	$ 5,500.00	$ 916.67
7	$ 500.00	$ 6,000.00	$ 857.14
8	$ 500.00	$ 6,500.00	$ 812.50
9	$ 500.00	$ 7,000.00	$ 777.78
10	$ 500.00	$ 7,500.00	$ 750.00