Baker Oil Tools uses 'whole-body' learning to accelerate HSE training, improve retention

By Fiona Grant, Baker Oil Tools

MANY HEALTH, SAFETY and environment (HSE) training programs are seen as low-value, boring and time-consuming – and with retention rates between 9% and 15% one month after program completion. The problem is compounded in international companies, where language barriers impede traditional "chalk and talk" training methods.

At **Baker Oil Tools**, a new "boot camp" program based on the Accelerated Learning (AL) theory is producing not only impressive retention results but also requests from employees to participate. In the process, it actually reduces course preparation and planning times.

AL is a systematic, holistic approach that encompasses the student's emotion, all the senses and personality in "whole body," active learning rather than passive "head" learning. Rather than have presenters or lecturers "pour knowledge" into the learners, AL programs create opportunities for the learners to discover the knowledge for themselves. Baker Oil Tools has used Accelerated Learning in its HSE education with impressive results, including:

• an average 20% increase in internal customer satisfaction of HSE specialists (surveys based on competence);

• dramatically increased knowledge retention and application;

• a 50% reduction in the time required to deliver HSE management system training; and

• transcendence of cultural and language barriers.

THE POWER OF SUGGESTION

Developed in the 1970s, Accelerated Learning is based on the work of Bulgarian psychiatry / psychotherapy professor Dr **Georgi Lozanov**, who used a method he called "suggestology" to emulate the natural learning process people use as children in order to accelerate the understanding and retention of content. The underlying theory of suggestology was that suggestions affect the outcome of learning and that everything makes a suggestion, either consciously or subconsciously. We learn through both our conscious and subconscious minds, and suggestion taps into the normally unused portion of the mind to help us learn faster and easier.

Above and right: Baker Oil Tools implemented an HSE learning program based on the Accelerated Learning theory and has seen impressive retention results. In 2007, the company applied AL theory in a training boot camp for a group of multicultural and multinational HSE specialists. Activities engaged students in "whole body," active learning rather than passive "head" learning.

Today's Accelerated Learning programs retain the "suggestology" foundation but also take into account recent findings in multiple intelligences, learning styles, neuroscience and cognitive psychology.

MULTIPLE INTELLIGENCES

While paper-and-pencil IQ tests have been used for decades to assess intelligence, there is strong evidence that these tests do not capture the full range of human intelligences. Rather, there are many forms of intelligence, which people have in varying strengths and combinations and use to learn and solve problems. Verbal / linguistic and logical / mathematic intelligences are the primary forms of intelligence that are used and measured in traditional classroom settings. However, at least five other forms of intelligence are prevalent in Accelerated Learning environments: visual / spatial intelligence, musical / rhythmic intelligence, interpersonal intelligence, intrapersonal intelligence and bodily / kinesthetic intelligence. Baker Oil Tools calls on all of these

forms of intelligence in its Accelerated HSE learning programs.

The programs incorporate a mix of music, photos, imagery, spoken and written language, and interactive activities that generate somatic, auditory, visual and intellectual responses in students and create "Ah-haa!" moments of true discovery and learning. The AL "events" are conducted in environments full of light, air and color – usually away from the daily workplace – designed to ensure that learners are relaxed yet engaged throughout the process. Daily schedules include outdoor activities and numerous water breaks to ensure that the brain receives the "essential ingredients" – oxygen (O_2) and water (H_2O) – for conducting electricity and processing knowledge.

TRAINING BOOT CAMP

Last year, Baker Oil Tools applied AL theory in a training boot camp for a group of multicultural and multinational HSE specialists who had failed to benefit from previous conventional training in risk and impact assessment (RIA). The specialists, who worked in Libya, Gabon, Congo and Nigeria, and spoke Arabic, French and English, were invited by their management teams to spend 10 days at a countryside learning center near London. Prior to the event, the delegates' interest and curiosity were aroused by personal communication and e-mail "teasers" from the training team.

Each day included at least 30 minutes of outdoor exercise designed to stimulate the brain and body, involve delegates in the learning process and encourage team-building. Throughout the event, delegates participated in activities to help practice their learning.

Following an examination at the conclusion of the event, each delegate was assigned a real-world risk/impact assessment, safety meeting and inspection schedule at his home location to apply his newly gained knowledge in the workplace as soon as practicable. End-of-class evaluation results and subsequent follow-up discussions with home location management teams indicated that the delegates had learned, retained and effectively applied significantly more risk assessment concepts than they had from past training programs.

PURPOSEFUL WORK, PLAY

The AL boot camp was designed to enhance the delegates' knowledge of risk and impact assessment, operational controls, roles and responsibilities, and meeting skills. For each area, desired learning outcomes and verification methods were outlined prior to the event and are summarized in Tables 1, 2, 3 and 4 (Pages 82-83).

Delegates prepared in advance of the boot camp by completing prerequisite computer-aided learning modules and preparing five-minute presentations on the HSE situation in their areas. Each delegate also brought an existing risk/impact assessment from his site and details (including notes, photos and film) of one task that would require a risk/impact assessment.

During the first three days of the camp, the delegates gave their area HSE presentations, which were video-recorded, and received immediate written and oral feedback on their presentation skills. They also worked together to complete "high ropes" and other obstacle courses. Facilitators explained the company's HSE vision for Sub-Saharan Africa and the role of each employee in achieving that vision. They also explained and demonstrated the role of the brain in learning and showed, using a voltme-

Table 1: Risk and Impact Assessment

Learning Outcome	Verification Method
Identify hazards and aspects in typical Baker Hughes work scenarios	• Conduct risk/impact assessments (RIAs) during training • Conduct assessed RIA as part of team • Conduct assessed RIA individually • Submit RIA as part of competency evidence
Understand the terminology used in the Baker Hughes Risk/Impact Assessment Procedure	Closed book exam
Understand the requirements of the Baker Hughes RIA Procedure	Closed book exam
Make a qualitative assessment of risk	• Conduct RIAs during training • Conduct assessed RIA as part of team • Conduct assessed RIA individually • Submit RIA as part of competency evidence
Recommend control measures that will reduce the risk as low as reasonably practicable	
Appreciate how RIA can protect the Baker Hughes business	End of course interview
Appreciate the criticality of good risk management	
Recommend go/no-go operating decisions	• Conduct RIAs during training • Conduct assessed RIA as part of team • Conduct assessed RIA individually • Submit RIA as part of competency evidence • End of course interview

Table 2: Operational Controls

Learning Outcome	Verification Method
Fully understand the Baker Hughes Operational Controls	• End of course interview • Open book exam
Identify which operational controls apply to your site	Homework: Make a list of all Operational Controls that apply to your site
Implement the requirements of the operational controls	• Conduct RIA (review control measures) • Open book exam (scenario based) • Observation during course exercises • End of course interview
Complete paperwork associated with some of the operational controls	• Open book exam (scenario based) • Observation during course exercises
Develop monitoring activities that verify implmentation of the operational controls	• Homework: Create monitoring activity for operational control of your choice • Submit examples as part of competency assessment
Appreciate how the operational controls can keep our operations safe	End of course interview

ter on a dry and wet sponge, why it is important to keep hydrated for maximum learning.

On Day Three, following a discussion of the purpose of an HSE policy statement, each delegate wrote his own HSE policy statement for **Baker Hughes**; then all delegates consolidated their statements into one sheet, which they compared with the company's actual policy.

Day Four began with a card trick to illustrate risk and reward, followed by a discussion of everyday risks and hazards. Then, to accelerate learning, the delegates embarked on "hazard photo" expeditions, first on the hotel grounds and then in the city center. In the hotel grounds, the delegates took digital photos of potential health and safety hazards or environmental impacts, which they printed and labeled, posted on the wall, and discussed.

Following an exercise in which teams listed potential hazards and environmental aspects associated with specific tasks that might occur in a typical facility (i.e., pressure testing, using a washbay, working at a computer), the delegates traveled to the town center to search for examples of various hazards categorized in the Baker Hughes HSE management system. Examples included a hazard that might result in vehicle collision; a "slip, trip or fall at same height," and release of materials into the air.

Upon returning to the learning center, the delegates used printed forms based on the actual company RIA form to note each hazard category, example and consequence. The group then discussed a risk/impact assessment scoring system in which frequency and consequence are assigned scores from 1-5, depending on the potential outcome. These scores were multiplied to yield an overall risk score. The group used three large continuums posted on the wall to assign frequency, consequence and overall risk scores to the hazards they had identified in the town center.

The remainder of the exercise used the moveable arrows on the continuums to illustrate how decreasing frequency and consequence could reduce overall risk and to help delegates learn that the best way to reduce risk was to put measures in place to reduce the likelihood of an incident from occurring. At the end of the exercise, the facilitators introduced the Baker Hughes risk/impact assessment form for delegates to use to begin recording hazards/aspects, consequences and scores.

Days Five and Six were devoted largely to operational controls and control measures. Using labels and a masking tape floor grid with five columns of declining height, the team debated the relative effectiveness of various control measures. They watched a video of an employee conducting a typical task – disassembling a tool and pressure-washing it – and then used the Baker Hughes

risk/impact assessment form to complete an RIA based on this task.

A list of 53 operational controls in the Baker Hughes HSE Management System was distributed to the delegates, who were asked to highlight those that applied at their facility.

A guest engineer used toy rockets to demonstrate how a little bit of air left in a tool after pressure testing could lead to a very serious incident. The rocket with water in it simply fell over when propelled; the rocket with air shot into the sky, and the rocket with an air/water mixture also shot into the sky, but not as far as the one with nothing but air.

DRIVING WHILE . . .

An ex-police driving instructor shared stories of road incidents and their causes. To replicate being under the influence of alcohol while driving, delegates attempted to walk along a straight line marked on the floor while wearing training glasses that distorted their vision to give the illusion of being very intoxicated.

Similarly, to stress the dangers of driving while using a cell phone, delegates were asked to drive a remote control car around a marked course, which all managed with few problems. On the second lap, each delegate was given a cell phone, to which a facilitator placed a call and engaged the delegate in conversation. As expected, this distraction caused the driving standards to significantly decline. After the exercise, every delegate committed never to use their cell phone while driving. The driving activities concluded with a **BP** driver training film.

A safe facility layout and operations exercise involved determining the safest placement for miniature racks, pressure test cells, chemical storage and other facilities, along with Lego people and vehicles, on a large, cardboard facility template. The delegates were encouraged to take into account vehicle maneuverability, vehicle/pedestrian interface, physical work flow, emergency arrangements and other issues.

For a personal protective equipment (PPE) exercise, delegates chose a task card at random, selected the appropriate PPE from an assortment provided, then dressed a team member in the PPE to show they knew how to don it correctly.

The final day was devoted to a time management session, re-playing exercises where there were weaknesses, and a final team presentation based on a continuous homework assessment. The delegates also completed an actual risk/impact assessment based on a task and took a written exam, which was part multiple-choice and part long answer.

Table 3: Roles and Responsibility

Learning Outcome	Verification Method
Recite at least 75% of the responsibilities of an HSE specialist	Closed book exam
Create an individual development plan of your skill gaps	Homework
Know how your role supports the organization's activities	• End of course interview • Closed book exam
Identify and communicate the HS&E responsibilities for other roles in the organization	• Closed book exam • Submit presentation as part of competency assessment

Table 4: Meeting Skills

Learning Outcome	Verification Method
Organize and plan an effective meeting	Submit evidence as part of competency assessment
Write a good meeting agenda	
Produce comprehensive meeting minutes	Assessment during training – each delegate takes it in turns to record events of the day. Notes are submitted for assessment and distributed to class as back up
Control the meeting to ensure it stays on topic	Interview with delegate's manager
Deliver a 15 minute presentation	• Pre-work – prepare 5 minute presentation on your area • Homework – refine presentation and re-present next day • Observation – verified by trainer during in-country visit

In the months following the AL event, delegates were asked to complete three competency-based assessments. Additionally, the event facilitators visited the delegates' work sites to assess their work on the job, and their district managers re-evaluated their competence as HSE specialists. In every case, the specialists' after-AL knowledge retention and application and internal performance evaluation were dramatically improved over what they had been prior to the Accelerated Learning event.

Following the success of this event, several other courses have been redesigned to build on its success. The OEPD program for graduate engineers includes a one-day overview of HSE. These new recruits feed back that they are pleasantly surprised when arriving in the classroom to find their desks pushed back and a day of activity-based learning ahead of them. It also sends a positive message to these new employees about the company's commitment to HSE. The facilitators are sourced from the HSE team, and the AL method makes the team more accessible.

Almost all of the company's HSE specialists have now been trained to use the AL methods, and many use AL to help engage employees in safety meetings. For example, in Gabon, one indoor wall has been allocated for "Safety Promises." Each employee was given a marker pen to write or draw their personal safety promise on the wall. The wall has not been painted over, and the messages remain as a reminder to employees and a note to visitors that each person at the facility is committed to the safety of everyone there.

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