

Can They Do It in the Real Event? Strengths and Challenges of Using Exercises and Simulations Learning and Assessment Programs.

Presenters

Captain Graham Edgley has over 40 years' experience in the maritime industry, including 25 years directly involved with marine pollution response.

Graham went to sea as a 17 year old in the Australian Merchant Marine as a Deck Cadet, and over a period of 20 years, sailed the world on tankers, general cargo, container, bulk and passenger vessels. He attained the position of Master in 1987.

Following his sea-going career, Graham undertook senior management roles with a Port Authority in Australia, which included the provision of emergency services, Marine pollution response capability and developing and delivering training programs. He was a long term member of Australia's National Marine pollution response team and national working committees. He undertook many Incident Controller roles with both State and National responses.

The past 3 years has seen Graham create a maritime business, Tactical Maritime Solutions. This business focuses on marine pollution response, both as a response group and as a deliverer of Marine Oil Spill Training, with a clientele in both government and industry.

Andy Smith has over 25 years experience in adult education and training and over 15 years experience in emergency management, with the past 5 spent working closely with marine pollution responders.

Andy established himself as a learning and development consultant providing professional services to the emergency management and volunteer emergency services industry. He provides facilitation and executive coaching and works with other associates to provide capacity building solutions for individuals and organisations based on identified needs.

In 2011, Andy combined his passion for facilitation, training and development into one boutique consultancy service - Kirkham-Smith Consultants. He is passionate about offering innovative learning and development solutions to the emergency services sector. Since 2012, Andy has been working with industry and vocational representatives as part of a suite of projects managed by the Australian Maritime Safety Authority. These projects have combined learning strategies with exercises and simulations that have formed an integral part of the National Plan Training framework. Andy and Graham met while developing and facilitating these projects and continue to work closely on capability development projects.

Abstract

Typically, an exercise is a controlled, objective-driven activity used for testing, practising or evaluating processes or capabilities. They are used extensively in the incident management sector as part of an overall assessment strategy for individuals and teams. Exercises and simulation scenario testing have been an integral part of the Australian Incident and Emergency Management Strategy for many years.

In this paper, the strengths and challenges of using exercises and simulations to confirm students' knowledge and skills in Australasian marine pollution response activities are

discussed. Several case studies have been included to provide an overview of the different exercise styles and contexts that can be used across the oil spill incident management team roles. Such roles include the most senior position, the Incident Controller, through to Oiled Wildlife Response. The challenges include the time required to develop an appropriate scenario that enables assessors to capture the critical aspects of evidence to confirm students' competency.

The authors will share their experience of choosing the appropriate exercise style, exercise narrative and evaluation techniques that depend on the role and environment being assessed. Examples will include simulated operational control centre environments that students have to establish using available resources, to longitudinal exercises where students are exposed to the scenario from the commencement of the training program, and it culminating in a major assessment activity towards the end of the training program. An Oiled Wildlife Exercise Program that included a syndicate exercise for agency and external personnel, a specific media and public information scenario for agency personnel, and a field exercise that involved live and "simulated" penguins will also be discussed.

Observations

There are two dominant exercise styles that have been integrated into the learning and assessment design across the Australian marine pollution response sector. The first is a simulated operational control centre environment that requires students to establish a functional oil spill control centre using the resources available onsite. Substantially, this includes networked computers and printers, whiteboards and general office stationary. Students are provided with maps, charts, copies of relevant plans and often a roster so that the focus remains on the performance of a role rather than the true functionality of the room itself.

The key strength identified utilising this approach on numerous occasions is that many students are exposed to an operational environment for the first time, and similarly, situational leadership. There are a number of perspectives of situational leadership within the marine pollution sector, however the consistent understanding is that students are required to 'step up' as leaders in a specific situation. For many, leadership is not a skill they are required to demonstrate in their substantive employment role, so it presents a number of challenges for some individuals as they form their own understanding of leadership and associated behaviours. Further, students are required to establish and maintain the control centre with a team comprised of fellow students. Course trainers and assessors provide incident updates, referred to as injects, and students are required to respond accordingly. The marine pollution response scenario is carefully scripted and injects developed which can be introduced to stimulate decision-making and situational leadership.

The students may be observed by a dedicated assessor who will note when and how effectively the student demonstrates the required skills and knowledge. This provides an opportunity to observe the human factors which contribute towards the success of the overall marine pollution response. The key human factors include - communication within the team; situational awareness; delegation; organising information and required outputs; and decision making. Further, assessors have an opportunity to assess information management and evaluation strategies, and time and stress management skills.

An identified weakness of this approach in the context of a learning and assessment environment is largely to do with what has been referred to as “exercise artificiality.” Students are briefed on the length of time that they will be performing the lead and support roles, and due to time constraints are not exposed to additional human factors such as fatigue, and the control centre being challenged from a number of directions at the same time. This should not be interpreted as a reason to stop, rather, highlight an opportunity for improvement. At the time of preparing this paper, the learning and assessment network are deconstructing the exercise style and approach to include opportunities to observe situational stress and fatigue. This must be done in a safe manner that does not compromise the fundamental educational objectives.

The opportunity for students and the organisations that would deploy the students as oil spill responders is to provide them with coaching and mentoring opportunities alongside experienced marine pollution response personnel. As discussed in the concluding section of this paper, a new model to develop high performing teams has been incorporated into the next generation of learning and development programs. Further, there has been an increase in the number of field and operational exercises in recent years which have provided additional simulated environments for students to maintain currency of the skills and knowledge required for key roles.

The second dominant exercise style is generally considered to be a longitudinal syndicate of progressive exercises that exposes students to an oil spill scenario from the commencement of the training program. This culminates in a major assessment activity towards the end of the training program using a new scenario, or building upon the same one. This style has generally been used in the functional management roles such as Incident Control, Operations, and Planning. There is a slight variation with the approach used for the Logistics role whereby students are introduced to the scenario on the first day and this carries forward for the whole week. The key change is that the scenario increases in complexity and demand on the fourth day of the course, which tests the robustness of the systems put in place by the team and the functionality of the room design.

There are a number of strengths in either approach - one longitudinal scenario for the whole week, or one for part of the developmental pathway, followed by a separate exercise for assessment purposes. Both include allowing students to explore specific elements and responsibilities of the role before being placed in a simulated command position. Such elements include:

- Take command *of the operations, planning or logistics team*
- Establish command facilities *for the functional management team*
- Establish a command structure *for operations, planning or logistics functions*
- Establish procedures to permit command to be exercised
- Contribute to the development of the Incident Action Plan
- Manage *operations or planning, or logistics*
- Conclude *operations, or planning, or logistics*
- Review *operations, or planning, or logistics.*

The assessment of the performance elements are summarised as the Critical Aspects of Evidence. This is a series of statements that summarise the unit of competency and provides a guide to the interpretation and assessment of the unit of competency. They

include the aspects which need to be emphasised in assessment, relationships to other units, and the required evidence of competency.

The longitudinal exercises provide the establishment of a simulated environment using available resources, and it is very similar to the marine pollution response control centre approach described earlier in this paper. In most cases, the approach is a hybrid syndicate progressive exercise style combined with an operational environment style. The assessment focuses on the human factors of communication, situational leadership, delegation, time management, information management and decision making. Students are provided with time to become a functioning team, while the trainers and assessors observe the synergy among the team. It is not unusual for teams to be recreated mid- program to stimulate team dynamics of forming into a cohesive and task oriented group; brainstorming solutions to problems presented as part of the scenario to become a high functioning team.

Another strength identified with this approach is that students are coached and mentored by trainers as well as experienced students during the scenario activities. There is a greater degree of flexibility for trainers to change the scenario activities which can trigger decision making and behavioural responses within the group. This also provides an opportunity to observe how students deal with fatigue, conflict, gaps in intelligence and information. At the time of preparing this paper, there are several projects in progress identifying additional methods which measure the overall standard of performance, such as the implementation of work against agreed Standard Operating Procedures.

The key weakness of the syndicate progressive longitudinal exercise style lays within the training and assessment team being able to monitor each group's performance against the required tasks. Each group needs to primarily focus on what is expected of them without becoming operationally response focussed, which many are prone to do. In some cases, the tasks and required outcomes are less about reacting and mobilising the first strike to a marine pollution response. Rather they are predominantly about systems and processes that would be used in an operational control centre as the base for overall incident control. The approach requires a high ratio of trainers/observers to students; therefore a cohesive understanding of what is expected at each stage by exercise control is required in order to keep the scenario on track and relevant to the learning content.

There are a number of opportunities that are currently being incorporated into this exercise style including embedding a coach in each syndicate group. They would act as an assessor and provide feedback to the exercise control about the performance of individuals and the group as a whole. This is not without challenge in that it requires at least 5 trainers and assessors to be available for the entire programme, some of which are 4.5-5 days in length. This would allow for a trainer/assessor student ratio of 1:6.

An Oiled Wildlife Exercise Program was conducted in 2013 and 2014 that included a syndicate exercise for agency and external personnel; a specific media and public information scenario for agency personnel; and a field exercise that involved live and "simulated" penguins. The rationale for conducting the exercise was to increase understanding of the organisation's internal oil spill contingency plan, and the incident management arrangements that may be enacted during an oiled wildlife response that impacts upon Little Penguins.

The key strengths of the exercise programme were largely due to the mix of exercise styles that were used. The program commenced with a syndicate exercise whereby internal and external representatives engaged with the draft oil spill contingency plan and discussed key strategies and tasks that would be undertaken as a result. The exercise was well supported by all business areas and the Board of Directors, and observers were drawn from other emergency management agencies in the area. The exercise was evaluated using a number of approaches. Firstly, all exercise participants were surveyed before and after the exercise scenario. This allowed the Exercise Control team to measure a shift in thinking and understanding of the local oil spill contingency arrangements.

An unexpected strength of this first approach was the degree of flexibility that emerged which allowed for additional exercises and simulations to be conducted between syndicate exercise and the field exercise. A functional area required some support to better understand and test their understanding of their role in the oil spill contingency plan. A short, half day exercise was conducted that allowed this group to identify the key roles and responsibilities that would be required in an actual response, and formalise responsibilities based on each individual's substantive workplace roles. The success of this approach was noted in the significant increase in performance and understanding between the syndicate exercise and the field exercise. The Exercise Control team were required to create additional injects in order to provide additional challenges for the functional area.

An identified weakness of this approach was the time required to develop the exercise and support documentation, and the human resources required to undertake the exercise. The scenario was conducted over 1.5 days, with some work undertaken in the early evening to provide participants with an opportunity to prepare, catch and triage live birds. The costs associated with accommodation and meals were also identified as a challenge, however this should not be interpreted as a weakness. It provided an opportunity to measure the true costs of an Oiled Wildlife Response beyond the immediate shoreline and wildlife activities. It needs to be recognised that the costs associated with conducting an exercise of this magnitude and scale has the potential to overshadow the value and learning that takes place.

The opportunities that have arisen as a result of this exercise are largely aligned to creating an exercise and simulation culture within the organisation. Partnerships between individuals and agencies have been created and strengthened, and offers of mutual support have been identified. The participants in the syndicate and field exercise programme have expressed a desire to be involved in future exercise scenarios and this has been supported corporately by the Board and Senior Management Team. In 2015, it is planned to undertake further simulations in Oiled Seal Response, and wildlife affected by Bushfire Responses.

Summary

The use of exercises and simulations in Oil Spill Learning and Assessment Programs is one strategy to implement the '70 20 10' learning and development model for a high-performing workforce. This model includes a blend of Structured Learning sessions, Social Learning and Simulated Workplace Learning. It is acknowledged that most adult learning methods include such a blend of approaches – what is different is the ratio of each approach.

The Structured Learning (10% of learning time) approach includes trainer led sessions about underpinning knowledge and concepts relevant to the incident management role and the broader incident management team. This approach is complimented by Social Learning and Simulated Workplace Learning methods. Exercise and simulations support the approach through the delivery of underpinning knowledge by way of formal briefings, task explanations, and general discussion of key concepts and principles related to the area of work.

The Social Learning (20% of course time) approach includes small group (syndicate) tasks with students mentoring each other, coaching provided by trainers, and networking outside of the formal course program. This approach is closely linked to the Structured Learning sessions. Exercises and simulations are appropriate for this approach by providing a collaborative learning environment whereby students discuss issues and challenges relating to an exercise scenario, and provide their considered and collective responses to the broader group. This encourages a small group approach to research, analysis, reading, writing, and presentation of information to larger groups. Utilising small groups is an effective approach to Social Learning as it creates a comfortable environment for learners to support each other in all areas of coursework, not just the designated small group tasks. It has been observed that students provide learning support to each other on research tasks and understanding the responsibilities and duties of various incident management roles involved in a marine pollution response.

The Simulated Workplace Learning (70% of course time) approach includes opportunities to practice and demonstrate the required skills in a cross functional team environment. This approach is closely linked to the Social Learning approach and includes informal networking outside of timetabled sessions. It has been observed that students provide support to each other during the high pressure environment, and identify the individual strengths within the group. The supportive environment extends outside of the formal learning environment, and has led to the sharing of knowledge and experience among the diverse learner group. The Simulated Workplace Learning provides all students and trainers with an opportunity to work on a common platform irrespective of experience, and to support each other as lesser experienced learners gain confidence through understanding.

In conclusion, the value of exercises and simulations in learning and development programs cannot be underestimated. Similarly the time and resources required to develop suitable scenarios and triggers equally cannot be undervalued or dismissed. An effective exercise or simulation must be well planned and researched, and must be developed in parallel to the material being delivered in formal training sessions and assessment tasks that are required to be completed. It has been noted by the authors of this White Paper that a successful field exercise takes between 12-18 months to prepare – from development of the concept to the conduct of the actual scenario. Any less, and the exercise can operate, however it may not produce the integral behaviours that need to be observed and measured to ensure real and effective learning has occurred.

Philosophically, exercises and simulations are an effective way of living Aristotle's dictum: you cannot teach a person anything, you can only help them to discover it within themselves.

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