THE WILDERNESS INSTRUCTOR

Lessons Learned on a Wilderness Medicine “Teaching Weekend”

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Introduction

This article describes a “teaching weekend” in which a group of senior students who had recently completed a 6-week wilderness medicine course¹ provided teaching to junior students. Its aim is to provide ideas to those who teach wilderness medicine, with an emphasis on peer teaching, “jigsaw teaching,” running a night navigation exercise as safely and effectively as possible, and “mastery quizzes.”

Background

The wilderness medicine course (a Student Selected Component [SSC]), run for 10 penultimate year medical students at Newcastle University, was the first of its type in the United Kingdom. Its main aims include equipping students to manage a casualty on the United Kingdom hills.

The teaching weekend is a component of the course that takes place after the body of the course. It is included to help the students develop teaching skills, revise skills and knowledge from the course, and to enthuse their peers about medicine in the wilderness in a fun, adventurous, and challenging way. The weekend is organized and delivered by students, though the second author was present for most of the weekend to provide support if necessary.

Teaching Content and Methods

A variety of teaching methods were used over the weekend to enhance students’ learning, to ensure enthusiasm and concentration stayed high, and to maximize the teaching experience and skill development

for the teachers. Educational objectives were set out before the weekend for both students and “teachers” (see [Table 1](#)). Some of the activities are described in more detail below:

Day 1 Saturday was devoted to teaching in 4 small groups of 3 to 4 students. To teach the components of the primary survey, the “Jigsaw” teaching technique was used.² This is an example of a group of special teaching methods called *cooperative learning* that are believed to improve a student’s achievement, self-esteem, and attitude. Initially, the students were split equally for detailed teaching on a “subtopic” part of the primary survey, with one group covering airway, the second group breathing, the third circulation, and the last covering disability and exposure/environment. To maximize engagement, the students were told that, after this session, they would be reassembled into other groups in which they would be the only one who had received training on “their” part of the primary survey.

The students in each group numbered themselves and, following their teaching, rearranged themselves so that each new group contained one student on each of the “subtopics.” These are known as the “jigsaw groups.”

These groups were then presented with scenarios in which, for example, the student who had been in the “airway” group was expected to demonstrate airway assessment and management (with correction from a facilitator if needed).

In one scenario the casualty was unconscious after trauma and, therefore, airway assessment included appreciation of the fact that coma could be complicated by airway obstruction, that basic airway positioning maneuvers should be used initially, and that the jaw-thrust maneuver was least likely to move the cervical spine. The scenarios were planned so that abnormalities were found in all parts of the primary survey; the scenarios included an unconscious casualty, a casualty with a pneumothorax, and a casualty with a femoral

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Table 1. Educational Objectives of Students and “Teachers”*Student Objectives*

- Assess and treat a simulated casualty in the wilderness using the primary survey structure
- Plan the management of a casualty after initial assessment and show importance of re-assessment
- Practice communicating details of incident to the emergency services using ETHANE report
- Demonstrate the use of some navigation skills (e.g. 6 figure grid reference, taking a bearing, orientating the map and contours)
- Understand the importance of good teamwork in the wilderness (and other places too!)

Teacher Objectives

- Describe the key parts of a lesson plan and plan a lesson for a small group session
- Apply the “set-dialogue-closure” method and the 4-stage skill teaching technique to the small group sessions and scenarios
- Recognize the importance of feedback and demonstrate use of constructive feedback in group sessions and scenarios and for fellow teachers.
- Revise skills and knowledge learned over the SSC

ETHANE, Exact location, Type of incident, Hazards, Access and egress routes, Number of casualties and nature of injuries (if multiple casualties give triage classifications), Emergency services needed (and on scene already).

fracture. The first set of scenarios was kept relatively straightforward so that students could focus on practicing a structured approach. Scenarios were repeated so that students managed a part of the primary survey/resuscitation that was different than the one on which they were initially taught (eg, the students in the airway group could not perform airway assessment) (Figure 1).

A number of actions were taken to make the night navigation exercise as effective and safe as possible. Before the exercise, students were asked to rate their competence at navigation, and groups were selected that combined different levels of competence. A “mastery quiz”³ was also run beforehand, during which a short series of questions about navigation were asked (limited to essential material). The students were asked 5 questions about grid references, distance, contours and bearings, and then they were scored. After this, the correct answers and explanations were provided. All participants understood key concepts by the end of this session. Had the scores been lower than the ones obtained, the difficulty of the navigation exercise would have been reduced.

Instead of a traditional circuit night navigation (which has drawbacks of staggered starts, one group of students being guided by the lights of another group, and a longer

overall duration), a rogaining format was used. Rogaining is the sport of cross-country navigation⁴ involving both route-planning and navigation between checkpoints (which are allocated different scores depending on the distance from the start point, as well as the difficulty of finding them). This adds a competitive element to the exercise but also stretches the most competent navigators; more checkpoints were put out than could be travelled to in the time available. The teams were given the grid references to each point with the allocated score beforehand, along with a time limit of 1 hour 30 minutes and a warning of point reductions if a team was caught split up or running (gentle jogging was allowed) or if a team returned late. It was up to each team to decide on a route to maximize their score and ensure a safe and timely return to base. “Marshalls” were posted to cover 2 to 4 checkpoints each and to assist any teams that were in difficulty.

Day 2 Sunday was purely scenario-based and students were given more responsibility and independence. They were split into groups of 4 and were given grid references for a series of checkpoints. At each checkpoint there was a clinical scenario with simulated casualties that the group was required to assess and manage. Each group was responsible for their own route between the checkpoints (but were given hints on areas to avoid and useful paths, along with an emergency plan) and were required to combine their clinical and navigational skills practiced the day before with effective teamwork to deal with the simulated “emergency” at hand. These scenarios allowed each team member to develop and practice their primary survey and resuscitation skills. It gave them the opportunity to work together as a team over a longer period of time, making decisions about casualty management, routes between checkpoints, and highlighted areas of improvement.

Outcomes

The course participants did not undergo summative assessment; there are no quantitative data to report relating

Figure 1. “Jigsaw” teaching technique.

to knowledge. During the course of the weekend, however, it was obvious that the performance of the student “learners” in dealing with a simulated casualty improved considerably, as it was necessary to increase the complexity and difficulty of the scenarios to keep them challenged.

The students became quicker and more thorough at carrying out a primary survey, better at recognizing the implications of their findings, and faster at providing the correct treatment. Less prompting was needed as the weekend progressed. To maintain a challenging environment for students, the scenarios evolved so that individual casualties had more problems, environmental conditions became harsher (in simulation) and involved more than one casualty. The final scenario, undertaken by all the students at once, was of a helicopter crash in a wooded area with multiple casualties. This introduced the need for command and control, triage and communication, as well as “hands-on” clinical care.

A feedback form for the student “learners” comprised 5 statements to which to respond (from “strongly agree” to “strongly disagree”) and a space for comments. All 9 returned forms reported that student “learners” “strongly agreed” or “agreed” that the course was “relevant to the Wilderness Medical Society,” gave an “opportunity to acquire new skills and practice,” “helped understanding of key concepts of wilderness,” and gave an opportunity to “focus on areas not previously covered.”

Comments were very positive concerning the jigsaw teaching technique, the night navigation exercise, and the variety of “hands-on” sessions and scenarios. “I enjoyed learning new skills and the opportunity to practice them in scenarios. The hands-on nature and applicability of the skills appealed to me.” “Learning then teaching kept us listening carefully and was very empowering.”

The student “teachers” also developed during the weekend, managing to juggle the purely educational activities of lesson-planning and scenario-setting with the logistical tasks involved in organizing the weekend. They were able to effectively use a number of different teaching methods, including jigsaw teaching and teaching of practical procedures using the “4 stage technique” (demonstration at normal speed with no commentary, slower demonstration accompanied by instructor commentary, demonstration accompanied by learner commentary/instructions, learner demonstration/practice) used on ATLS courses.

Feedback from the student “teachers” was also generally positive. Answers were reported as “strongly agree” or “agree” for the questions: “objectives for learners and teachers were met,” “developed new teaching skills,”

“revised knowledge and skills from the wilderness medicine course,” “prepared me for teaching of small groups,” and “provided practice at providing constructive feedback.”

Feedback from this group suggested that the jigsaw teaching technique appealed to the majority of the student “teachers,” as it was “an effective way of conveying information to allow the students to acquire ‘deep learning’ of the skills being taught.”

The jigsaw teaching method improved communication and teamwork within the groups of 4. This was observed by all the student “teachers” as groups became more competent at managing their simulated casualty and scenarios and, therefore, became more challenging. The sharing of roles helped bring the groups of 4 closer, as they did not all know each other prior to the weekend, and this helped forge friendships (which benefits the entire team).

Although there was no summative assessment to help identify which objectives were met or not met during the weekend, observations by both authors and other student “teachers” during the final helicopter scenario were a great way to “formatively/collectively” assess the students (for some of the objectives).

The students organized themselves to have one leader as they recognized that efficient teamwork can come from clear leadership. Each group assessed one casualty, gave the immediate care required, and reported to the team leader who was constantly in contact with the simulated emergency services. Primary surveys, reassessments, and ETHANE reports were used repeatedly during this exercise in order for the group to triage casualties, medically manage, and evacuate. Monitors were present to help or prompt the students, but students managed primarily on their own and dealt well with the scenario.

The objectives of the students who were instructing were mainly educational; lesson planning, “set-dialogue-closure,” and the 4-stage skills teaching technique⁵ were read about and discussed at meetings prior to the weekend. The weekend allowed the student “teachers” to put their lesson plans into action by teaching small groups for a set period of time. Above all, the weekend was a great way to revise the skills and knowledge learned over the SSC.

Conclusions

If at all possible, give those you have taught a chance to teach others. Our experience is in keeping with previous findings that teaching provided by peers is an effective way for those doing the teaching to learn.^{6,7} Active participation, including jigsaw learning and the use of simulations, rather than formal lectures, is well-received

by the learners: “For the things we have to learn before we can do them, we learn by doing them” (Aristotle). With suitable preparation, night navigation exercises can be safe and enjoyable. The rogaining approach works well and challenges every level of navigator.

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