
POSITION PAPER

National Association of EMS Educators



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on

**The Use of Internet-Based Distributed Learning
in EMS Education**

*Prepared for the NAEMSE Board of Directors
by members of the Distributed Learning Committee
September 2003*

*Approved by the Board of Directors
November 10, 2003*

Introduction

The NAEMSE (2003) whitepaper on the use of Internet-Based Distributed Learning (IBDL) in EMS Education points out that IBDL is rapidly expanding across the health professions as an accepted and valuable educational delivery system. NAEMSE believes that EMS providers should also be given every opportunity to benefit from IBDL. NAEMSE encourages the use of appropriately designed IBDL across the full spectrum of EMS education whenever it is advantageous for educating EMS personnel. We recognize that Distributed Learning (DL) can be achieved through many modes of delivery other than the Internet, and NAEMSE encourages the appropriate use of Distributed Learning in all its forms. This position paper focuses on IBDL because the Internet has clearly become a major technology used in the education of health care professionals and is likely to become the most highly utilized DL platform for teaching and learning in healthcare and EMS. The IBDL focus of this position statement is not intended to discount the utility and quality of other distributed learning methodologies, which have unique advantages of their own.

The National Highway Traffic Safety Administration's EMS Education Agenda for the Future (1999) serves as the educational needs assessment for advancing EMS practice. The Agenda includes the following recommendations:

- The National EMS Education Standards will encourage enhanced flexibility for the instructor, allowing multiple instructional methods while maintaining consistency of learning objectives.
- The standards will be designed to encourage creativity in delivery methods such as problem-based learning, computer aided instruction, distributed learning, computer-instruction, and others.

NAEMSE recognizes that IBDL gives EMS educators, educational institutions and EMS providers an excellent method to address these recommendations. As reported in our Whitepaper on IBDL in EMS Education, educators have reported on the successful use of IBDL to develop cognitive and affective skills, and with appropriate technology investment IBDL has been used successfully for psychomotor training. IBDL should be offered as an alternative and/or enhancement to classroom instruction, so that each modality is available when appropriate to give learners more options. IBDL is a more enduring form of information exchange with the potential to reach a wider audience than any single classroom lecture.

Advantageous Pairing

The nature of EMS lends itself well to IBDL. Consider the following situations common in EMS where IBDL would be of benefit:

- *Rural and military EMTs:* The availability of online classes can solve the geographic access problem to classroom based training opportunities in these environments.
- *Odd schedules:* EMTs can complete continuing education during times that fit into an unusual schedule. This reduces travel fatigue thereby making it a safer option.
- *EMS organization needs:* IBDL has many advantages to offer employers.
 - IBDL allows an EMS organization to train a large number of personnel in a short period of time, and saves on travel and overtime costs.
 - The reduced cost of IBDL delivery may make it possible for more EMS organizations to offer continuing education to employees and even volunteers. This can improve employee recruitment and retention.
 - Making classroom-based programs available to all employees can be time consuming for an instructor. EMS organizations can create their own IBDL classes and then use their own resources or partner with outside vendors, colleges or vo-tech schools to implement them.
- *Content control:* Medical training requires accuracy and consistency, which IBDL can provide to a larger number of learners. This could be a great asset to a medical director who oversees numerous EMTs. It could also be used by local, state, national, or federal organizations to disseminate information in a consistent manner.

Importance of Instructional Design

Instructional design is a process of developing instructional specifications in a systematic manner, in order to provide a framework for creating high-quality learning environments based on learner needs, anticipated outcomes and content requirements. Instructional design for online learning is often a team effort involving a professional instructional designer, Internet education technologists, content experts, and instructors. In many settings the EMS instructor will function in more than one of these roles. Careful planning of instructional design is crucial to harnessing the potential and power of quality IBDL. This planning helps the instructional designer (when available) and an instructor to understand the learners and their needs and to develop and implement a program that will provide the best learning strategy possible. NAEMSE recommends that IBDL should not be implemented without proper team support or personal expertise in the essential areas of IBDL instructional design.

Classifying IBDL Methods

With all the technical and training aspects of IBDL completed, instructors can create several learning environments based on interactivity:

Non-Interactive

Non-interactive learning activities are those that do not require any type of feedback or interaction between learner and instructor. Lecture notes, audio recordings, or audio-visual recordings of classroom lectures are examples. These are the simplest

type of IBDL. Although they are a convenient mode, they lack the most basic interaction. An example of non-interactive learning is watching a training video. Non-interactive learning does not require class participation, discussion, or testing to verifying comprehension. This type of educational activity is used extensively for individual learning but has a minimal role for credit-granting activities associated with initial training, continuing education, or refresher training.

Interactive

This type of lesson, in its simplest form, comprises a written monograph followed by a post-test. This method is the same as journal (print)-based continuing education offerings, however it is delivered via the Internet. Some may be embellished interactive programs with slide shows or streaming video, which offer improvements over on-line print based programs for some learners. At the high-end, this form of lesson would include audio, video, visual enhancements, plus multiple forms of interactive self-evaluations, like quizzes, interactive branching logic clinical case reviews and other learning activities.

Facilitated-Interactive

The instructor, acting as a facilitator, encourages or requires interaction among multiple students. For most academic-based EMS instruction, the organizational requirements will mandate that IBDL be offered in a traditional cohort approach with a defined start and end date for the course. However, students may complete the requirements for the course at any time that is convenient during the entire course offering period. Instructors typically have deadline dates for certain assignments, which limits the flexibility of students but helps prevent students from submitting all work at the last minute – something that is not in the best interest of the student or the instructor. There are numerous methods of this type of instruction. For example, students who are separated by time and place can participate in asynchronous discussion using a discussion board, where a “thread” is a topic and each “response” under that thread is a participant contributing to that conversation. Over time (hours to weeks) more and more responses are posted, making the conversation more in-depth. The same result can be achieved through individual or group email. Combining facilitated interactions with multimedia and interactive self-assessment also creates a rich facilitated-interactive learning environment.

Appropriate Use of IBDL in EMS Learning Activities

EMS education falls into one of the following categories: initial training, continuing education, and refresher training. Cognitive, affective, and psychomotor skills may be addressed in any of these programs. IBDL, with varying levels of interactivity, can be more or less appropriate for these education programs and skills. NAEMSE currently recommends the following:

Initial training

Recommendation: IBDL can be used for cognitive and affective skills. Non-Interactive methods should be limited to homework, voluntary self-study activities and reference materials. Interactive programs are suitable for homework, voluntary self-study or review, missed class makeup, and skill lab preparation. Facilitated interaction is appropriate for teaching cognitive and affective skills, for skill lab preparation and as a replacement for classroom-based didactic methods, particularly when to do so would give learners exposure to content or an expert that would otherwise be unavailable. IBDL should not be used at this time as a replacement for the skills lab or as a method to certify psychomotor skill during initial EMS education. However, when access to a skill lab is extremely difficult because of geographic concerns, IBDL methods should be considered for facilitated interactive practice sessions prior to certification. Typically the cost of the technology needed for IBDL psychomotor skill education will limit its use to essential military or wilderness settings.

New students require a high level of interaction with faculty and peers. Skilled IBDL instructors can use IBDL effectively in conjunction with regular classroom meetings, moving some classroom activities to an IBDL format. Less-experienced instructors should consider a “web-enhanced” program, which is a typical classroom program enhanced with a web site for homework assignments, reviews, test administration, live chat and discussion. A web-enhanced program allows instructors to become familiar with this type of learning before using it in place of classroom instruction.

Refresher Training

Recommendation: IBDL can be used for cognitive and affective skills. Non-Interactive methods should be limited to homework, voluntary self-study activities and reference materials. Interactive and facilitated- interactive programs are suitable for homework, voluntary self-study, refreshing cognitive and affective skills, skill lab preparation and as a replacement for classroom-based didactic material. IBDL should not be used at this time as a replacement for the skills lab or as a method to certify psychomotor skill refresher training. However, when access to a skill lab is extremely difficult because of geographic concerns, IBDL methods should be considered for facilitated interactive practice sessions prior to re-certification.

IBDL provides alternative settings for providers to pursue refresher training. IBDL offers considerable cost reduction and scheduling benefits for organizations and EMS providers. Offering a variety of information sources and activities allows participants to individualize their learning experience, while extensive use of discussion boards ensures participation. Overall, IBDL is a more convenient way for participants to complete this critical time-intensive course.

Continuing Education

Recommendation: Extensive use of interactive or facilitated-interactive IBDL is recommended and should be made available as an alternative for classroom-based

CE learning requirements. Since a fundamental objective of CE is that learning take place, the use of non-interactive IBDL is not recommended since it does not provide any feedback that learning has occurred. Using IBDL for CE involving psychomotor skills presents the same challenges for its use as noted for Initial or Refresher training and is not recommended at this time. Supporting convenient, cost-effective, and enjoyable continuing education will lead to a greater participation in continuing education, perhaps beyond the minimum requirements. Although instructor monologues in print, or multimedia formats with post-test suffice for this type of learning, NAEMSE encourages increasing the amount of interaction with content or instructors whenever possible.

Improving accessibility to quality EMS continuing education is an achievable benefit of IBDL. As technology advances the level of interactivity in IBDL will also increase. Gaming methods and branching logic mechanisms that offer highly interactive educational programs previously limited to compact disk programs will be available online. Interaction can also be generated through moderated discussion boards. An online case review or morbidity and mortality meeting with synchronous or asynchronous interaction would work extremely well in EMS. The asynchronous environment and flexible schedule allows organizations to arrange for presentations by national or international experts on a broad array of topics of interest to pre-hospital care providers. Live web conferences from any location with the technical capacity can be presented synchronously to audiences or individuals. The recorded presentations can be offered later for those unable to attend the live session. Follow-up facilitated discussion boards and knowledge assessment can increase interactivity and provide a basis for awarding continuing education credit.

Online Teaching and Refreshing Psychomotor Skills

NAEMSE recognizes the benefits of face-to-face teaching for psychomotor skill mastery, and currently does not recommend using IBDL for initial psychomotor training under most circumstances because the technology is very expensive, it is not widely available, and EMS educators have little experience with its use. These technologies currently are very useful for refreshing little-used skills after they have already been learned, particularly for EMS providers practicing in rural or remote locations. NAEMSE encourages innovation, experimentation and research with these and all training methods, and will reconsider its recommendations based on these outcomes.

Conclusion

NAEMSE believes that Internet-Based Distributed Learning has been shown to be an effective teaching method for EMS providers and other health care professionals when used in an appropriately designed instructional system. Internet-Based Distributed Learning allows for creative combinations of text, animation, video, hypertext linking, drill and self-tests with immediate feedback, group learning via discussion boards, chat rooms, email and audio-video conferencing. Properly designed IBDL offers adults more

control over their learning while providing a vehicle for instructional strategies tailored to their individual learning needs and styles. The capacity of IBDL to improve access to new information delivered by leading experts compels us to offer this learning method whenever EMS providers can benefit and organizational resources can be found to support it. NAEMSE also recognizes the enduring benefits and, in some cases, the necessity of classroom based education. Excellence in classroom-based learning will always be a benchmark in education and IBDL should not be seen as a threat to that standard. NAEMSE will be a champion for helping EMS educators use IBDL to enhance classroom learning activities. NAEMSE is committed to developing instructor training and technology resources for IBDL. NAEMSE will work to expand the appropriate utilization of IBDL for EMS education through research on its efficacy, effectiveness and efficiency in our field. We invite all EMS organizations and educators to join us in this effort.

References

National Association of EMS Educators, *Position Paper on the Use of Internet Based Distance Learning in EMS Education.*, Pittsburgh, PA, 2003

National Highway Transportation Safety Administration, USDOT *EMS Agenda for the Future.* Washington, DC, 1999.