White Paper
Pros and Cons of Course Delivery Methods

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This white paper highlights the various issues of course delivery methodologies in an academic environment.

Existing Methods

Printed textbooks, study guides and ancillary notes are the traditional method to deliver classroom training material. This method has been used to great success since the days of Plato, but it still has its limitations. Textbooks are expensive, difficult to keep current and cumbersome. The nature of printed material, being of long lead time publishing, doesn't lend itself to the quickly changing environment of aviation and especially avionics. Often the students don't arrive on the first day of class with a complete set of material, thus hampering the progress of those students.

Many industries have embraced the use of digital mediums to great success. The corporate necessity of just-in-time specialized training has spawned an entire industry dedicated to adult learning in the workplace.

Interactive Websites

Dedicated websites for each class or module could be created that contain all the material necessary for the entire class. The website would be controlled by the instructor and tailored to the individual instructor's preference. Dedicated links could point to the latest news or regulatory material, thus keeping the student fully up to date on the latest information. These website portals would also contain the student's records and entry points for online exercises and testing. Many online programs already exist to provide these services, such as Blackboard and WebCT, although their use is not widespread at the moment.

Digital Textbooks

The technology of a paperless society is not just an emerging fad any more; it's here and here to stay. Contemporary students are fully immersed in a digital society and expect course material in an electronic format. The Internet is an essential part of everyday life and students are "wired" into the world along with their fellow classmates. The advantages of digital textbooks are abundant. The electronic format allows the use of videos, search engines, bookmarking, electronic collaboration, web links, animations and interactivity—far more capability than a static paper-bound book.

Many colleges and universities now require laptops for all their students and the entire campus is set-up for wireless Internet access. Technician training schools provide an

excellent avenue into what they'll experience in their career. Computer savvy is no longer a nice-to-have skill, it's required; and avionics training schools are an excellent training ground to hone those skills.

From the viewpoint of course developers, digital textbooks offer a more efficient method to deliver up to date material. The printing and distribution process for traditional textbooks takes an inordinate amount of time. The use of digital mediums greatly reduces the lead time and therefore the student is supplied with a more up to date and inexpensive textbook. From the student's viewpoint, compared to the traditional high-cost of textbooks, the inexpensive cost of digital textbooks more than offset the requirement to purchase a laptop computer. Even the college bookstore would embrace digital textbooks—a stack of CDs take up far less shelf space then multiple stacks of bound textbooks. Additionally, using a single CD for the class, instead of multiple books, greatly eases the bookstore's need to track down all the required course material from different vendors.

Online Exercises
Using the capabilities of the online environment, instructors could assign interactive lessons and exercises for self-study. The website for each course would have all of the self-study exercises linked for easy access. Supporting material for each exercise would also be available. Traditionally published course material (paper bound) has an inordinately long lead time in an industry that is changing weekly. The online exercises are easily updated either by either a central development team or an individual course instructor.

Homework has always been an arduous task, although necessary to fully absorb course material. Online assignments gain favor among students because of their inherent edutainment value, ability for self-paced study and convenience. With all the exercises listed and available at the beginning of the course, the more ambitious students could complete modules in advance of their assignment. Thus giving the students the option of remote learning if travel plans take them away from the classroom.

Training the Trainers
Every new training module created will require specific teaching techniques to realize its full potential. No matter how complete the course material is, if special considerations are required for its delivery, a program needs to be implemented that "trains the trainer." For each training module there will need to be train-the-trainer material created to assist the instructor in the proper delivery of the subject. This material would be of various lengths and breadths necessary to cover the course material to the level deemed necessary in the AET standards.

Classroom Presentations
In addition to the digital course material supplied to the students, the instructor also needs sufficient presentation material to cover the various modules. This too can be created by Sun Flight and be an integral part of the complete training package. The primary form of the classroom presentations would consist of a comprehensive PowerPoint presentation,

which would include pictures, graphs, descriptions, movies and animations of the specific equipment. These presentations would include material gathered from industry, manufacturers and the media to form a complete picture of the system. These PowerPoint presentations could be posted on the dedicated Sun Flight Learning Management site, and updated as needed. The instructor would download the presentation on the eve of the classroom module, thus ensuring that the presentation contains up to the minute material necessary in the constantly evolving world of avionics. The full presentation could also be posted on the class website for student review. Thus giving the students the option of remote learning if travel plans take them away from the classroom.

Secure Testing

Comprehensive testing has always been the cornerstone of learning, especially trade certifications. Various methods of proctoring an exam have been used to great success, but with the advent of secure online testing, the options available to an educator have opened up tremendously. Most government agencies, including the FAA, have fully embraced computer-based testing methods. Many companies, such as LaserGrade, have provided secure testing services to a multitude of government and trade organizations. NCATT is already using this service to administer AET certification tests.

In the classroom though, secure computer-based testing can also be used for course exams and quizzes. Online testing eliminates the printing of paper exams and greatly speeds the grading process. Changes to the questions from course instructors can be made at the last minute and are always up to date with the course material. Specific exam questions can be pulled from a large pool of questions and the answers randomized from session to session to reduce cheating. In addition, the logging capability of online testing can give the instructor critical trending information, thus ensuring timely feedback of course material coverage. For example, if the instructor notices that particular questions are missed on a consistent basis, the course material can be updated to cover that material in more depth.

From the student's viewpoint, they would have access to their records because of the logging capability of online testing. Many schools already have secure testing centers on campus available to students all hours of the day and night, thus increasing the convenience. Secure online testing is also critical for those distance learning courses given to students on travel or at remote locations.