



Designing the Right Blend

Combining Online and Onsite Training for Optimal Results

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Training organizations today have more options for delivering instruction than ever before. With the expansion of broadband communication capabilities over the Internet, online e-learning training solutions are very appealing. How can training organizations best take advantage of this opportunity? What types of training solutions are most effective in a distributed online environment? Many organizations are now responding to the opportunity for online training by blending their technology solutions with traditional classroom training. These blended solutions allow existing organizations to move into hybrid learning environments that include a significant role for e-learning alongside traditional training and instruction.

A blended approach allows for greater variety in meeting learner needs. Portions of a course most suited for live treatment are handled in the classroom, while portions suited for online treatment are handled through web-based mechanisms. With this approach to training, online and onsite interventions complement each other. But a combination must be accomplished through careful consideration of how to meet learning objectives, take advantage of technology capabilities, and support e-learning technologies. Smith and Dunn (1991, p. 172) point out that the focus of mixing instructional technologies should be to meet training needs: "...[T]he key to the human uses of educational technology resides in the intelligent mix of activities, the use of the technologies to amplify the quantity and quality of information available...." With careful planning, a well-designed blended approach can provide a highly effective training solution to human performance issues.

The potential rewards of a successful blended approach are significant; however, the challenge of creating an effective blended training solution is also significant. For example, given the high costs generally associated with onsite training programs, one of the primary drivers behind blended approaches to training is often cost savings. Consideration must be given during the planning stages to the cost issues of the blended approach, including costs associated with the design, development, and delivery of instruction as well as the requisite student support. An instructional and development approach that considers these issues early in the design stages of the project is critical to the successful generation of a blended training solution. A well-conceived development and implementation plan can reduce the risks associated with blended training by ensuring that all stakeholder needs and concerns are properly addressed during the course design. This article documents a blended online and onsite approach that led to increased student learning and performance gains in a major military training course.

Selecting Appropriate Approaches

Instructional

As with all training development, the selection of an instructional approach for the combination of online and onsite training should be based on the nature of the required change in performance. The only substantial difference between a blended approach and traditional training with regard to the selection of an instructional approach is the broader array of usable instructional methods available in a hybrid online-onsite learning environment. The array of choices is limited only by the ability of the organization to support the various types of media. Moore and Kearsley point out that "...in most distance education programs and courses, a combination of media is used. No single medium is likely to address all the learning requirements across a full course or program, the needs of different learners, or the variations in learning environments that are likely to occur" (Moore & Kearsley, 1996, p. 98).

As with all instructional design and development efforts, the media selection for a blended approach should be based on the needs of the learning situation. "Blending traditional and distance learning systems in an arbitrary manner is not synonymous with maintaining instructional quality. Systematic design and technology selection must consider pedagogical attributes ... to be successful" (Schmidt & Olcott, 2000, p. 289).

The appropriate instructional approach for a blended online and onsite course should include attention to the details of student motivation, transfer of training into the workforce, and improvement of organizational effectiveness. Many modern instructional strategies, such as problem-based learning scenarios (Barrows, 1986), immersion of the student in simulations and role-playing (Price, 1991), self-directed learning strategies (Knowles, 1975), workplace learning strategies (Kazis & Goldberger, 1995), and situated learning strategies (Anderson, Reder, & Simon, 1996; Wilson 1993), are designed to attend to many of these details, providing more authentic motivators and improving the probability that what is learned will transfer into practice. Although some of these strategies may be unfamiliar, the use of a blended training approach may provide an opportunity to move from traditional training modalities to more contemporary training approaches. These and other related training strategies carry with them a wealth of research and experience data that can provide guidance and overall direction in a blended instructional development program.

Development

Finding the best development approach for a given blended training solution is a complex problem. The interplay between online and onsite components of a blended solu-

tion requires fine tuning of the design and development process. For example, a designer of a blended solution will need to determine which delivery systems the training organization can support. This will require interaction with a large number of organizational functions, including subject matter experts (SME), classroom and online instructors, classroom and online facilitators, schedule managers, media and web graphics producers, programmers, online technical support teams, writers, instructional designers, internal and external evaluators, onsite support staff, project managers, and decisionmaking administrators. The consultative role of the designer as a performance technologist is critical during a blended instructional development effort, given the wide range of course designs and the possible interaction of each design decision with both organizational culture and student performance outcomes.

Development of a blended solution usually involves the coordination of more concurrent tasks than the design of training using only one medium. This includes managing classroom and online instructional development processes that may follow different development timelines and may need to be developed simultaneously. If developed simultaneously, the large number of concurrent tasks can increase potential risks to the schedules and budgets. However, these risks can be mitigated through the use of instructional design and development methods known to work in the organizational context, and known to work for the type of training to be developed. For example, if team-based learning strategies are appropriate, then one or more design approaches should be selected that are appropriate for designing an effective team-based training program for both online and onsite contexts.

Case Study Background

To demonstrate the importance of selecting appropriate instructional and development approaches, a case highlighting the blend of online and onsite strategies in a military training course is described in the remaining sections of this article. Efforts by the military to use alternative training solutions began 60 years ago with correspondence-based distance education (Kean, 1948; Sims, 1957; MacKenzie & Christensen, 1961; Brittain, 1972; Barry & Runyan, 1995). By the end of World War II, nearly 17% of all military personnel were enrolled in correspondence courses and related programs. That enrollment climbed to 25% by 1948 (Kean, 1948). As interactive training technologies became available, military programs quickly began integrating these technologies into training programs. Today nearly every kind of delivery technology is used to carry instruction for military training and education programs, including computer-based programs, audio- and video-conferencing, satellite, web-based online training, and equipment-integrated performance support systems (Bramble & Martin, 1995; *Distance Learning*, 1997; Garner & Kyrnerd, 2000). The cur-

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rent emphasis on blended training solutions is thus consistent with lengthy experience using both distance learning and classroom training solutions in the armed forces.

Human Performance Issues

The case study concerns a course for the US Defense Acquisition workforce. Personnel in this workforce are responsible for all phases of purchasing military equipment and materials, including weapon systems, new military technologies, and standard supplies. These purchases often involve large and complex acquisitions and the management of a substantial amount of product development risk. To prepare US Defense Acquisition workforce members for service, the US Department of Defense (DoD) maintains a systems acquisition career-certification program. This program includes a series of professional training courses conducted at multiple military continuing education colleges. The overall acquisition certification programs are administered by the Defense Acquisition University (DAU) at Ft. Belvoir, Virginia, which manages the course content at all of the military colleges that teach acquisition courses.

The Defense Acquisition workforce is composed of workers in a diverse group of disciplines including contracts management, logistics, systems engineering, program management, computer systems management, testing and evaluation, financial management, contractor management, scientific research, contractor technologies, and military field personnel (system users). Because of a long-term recognition of the need for acquisition personnel to work as members of interdisciplinary teams, a key course is the Intermediate Systems Acquisition (ISAC) course, which focuses on preparing students to work as team members.

ISAC is provided to students within the DoD who seek intermediate (Level II) certification in one or more DoD acquisition workforce career fields and has historically been taught as a three-week, on-campus seminar at multiple defense colleges. The goal of the course is to prepare students to work effectively with government personnel from other acquisition areas and also with defense contractors, as members of integrated product teams (IPT).

This has always been a challenging course to teach, as the students enter the course with expertise in their own disciplines, but unfamiliar with the practices and core para-

digms of the other disciplines. To prepare to work successfully as a member of a Defense Acquisition IPT, students must gain familiarity with all the disciplines involved in the acquisition process and learn how to represent their own area of expertise as a productive IPT member. For students to gain this familiarity with each discipline, faculty representing the disciplines rotate during the course so that each discipline area is adequately addressed in each class.

Converting ISAC to Blended Training

The ISAC course management team at the DAU's Defense Systems Management College (DSMC) at Ft. Belvoir determined that the ISAC needed a new training solution. Some of the concerns leading to the course redesign included the need to decrease the overall costs and the need to reduce the faculty rotations required to address the large number of learning objectives from diverse disciplines. A significant portion of the costs came from travel requirements, as both students and instructors were often flown in and housed on site during the course. Finally, DSMC wanted to update the instructional approach used with the course from a traditional lecture-test approach to a more modern and engaging strategy, taking advantage of emerging web-based multimedia capabilities for training.

ISAC course management contracted Command Technologies, Inc. of Warrenton, Virginia, as the new course developer and built an internal team of supporting DSMC SMEs to work collaboratively with the developer to implement a new blended training approach for the ISAC course. The course redesign project needed to take into account the complexities and inter-relationships of a wide variety of disciplines involved in supporting the defense systems acquisition process, providing students with an overview of the primary business practices and methods of each discipline, and effectively preparing them for their responsibilities in the acquisitions workforce.

Selecting an Instructional Strategy

The selection of an instructional strategy for the new ISAC course included consideration of the nature of the required change in performance. Given the requirement from the ISAC management team to design a blended approach, the design team assessed the attributes of blended training that would allow the use of an instructional strategy that inte-

grated a significant online component and a significant onsite face-to-face component. DAU wanted to use a blended approach to promote cooperative, team-based activities and emphasize the need for students to learn how to interact as members of an integrated product team. Additionally, the design team considered the need of the students to gain some awareness of the core paradigms and methods of the diverse occupational roles involved in the military systems acquisition process. Finally, the ISAC course management team suggested that their experience with distance learning gave them concerns about the motivational and retention aspects of a lengthy online component of the course. These concerns have been echoed in many reports in the distance learning literature (Thompson, 1998; Moore & Kearsley, 1996). To address these issues, the challenge to the design team was to develop an innovative and a highly engaging approach to the instruction.

The selected instructional strategy was strongly influenced by the theories of situated learning and problem-based learning. Each of these instructional theories recommends that learning complex intellectual tasks performed in a social context can best be accomplished in a learning environment that provides similar conditions. For example, situated learning theory suggests that learning must be grounded in a realistic context for transfer to take place (Anderson, Reder, & Simon 1996; Wilson 1993). Problem-based learning theory suggests that practical learning occurs when learners collaborate in solving realistic problems (Barrows, 1986). The instructional strategy developed for the ISAC course included combining these ideas with the practical recommendations of the college to provide a motivating and relevant online learning experience for the students.

The instructional strategy for the ISAC course was designed to address the motivational and practical concerns and enhance the transfer of training into practice. This included the immersion of the student in two role-playing scenarios through 35 web-based multimedia problemsolving lessons, followed by a weeklong, on-campus group activity. The scenario was a simulated multiyear defense system acquisition to develop and procure an unmanned aircraft with a remote human pilot; the aircraft would have reconnaissance and weapons capabilities.

This instructional strategy provided the students with a large portion of the required content knowledge through the first scenario delivered via web-based exercises. To accomplish this, the web-based portion of the course consisted of multiple story segments in which the student, in the role of an action officer, is required to read reports, interact with story-based team members, attend seminars, participate in realistic IPT meetings, and conduct simple analysis to help an integrated product team solve a series of problems that emerge during the acquisition of the system. In addition to providing instructional content, the story segments were

designed to help increase motivation by providing an ongoing dramatic appeal to the student, with realistic plot twists and problems in each lesson.

After completing the web-based portion of the course, and passing six in-progress mastery exams, the students were to attend an onsite campus for a weeklong series of one- to three-hour group activities based on a second scenario, a continuation of the story. In the group activities, student teams would receive assignments to solve new problems from the evolving acquisition story begun during the online portion of the course. The group activities would serve as a practical reinforcement of the web-based problem activities, helping the student internalize what was learned through the web-based lessons, in the context of realistic military acquisition problems. The 139 learning objectives were spread over both

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the online and onsite portions of the course, according to their appropriateness for particular story segments and the delivery medium (online or onsite group activity). Many of the objectives were addressed, to varying degree, in both the online and onsite portions of the course.

Selecting a Design and Development Approach

The design and development approach for the ISAC course needed to facilitate the coordination of inputs from a large number of stakeholders and manage many concurrent tasks. It also needed to address the learning objectives from 11 different subject areas.

Course development began with a rather typical approach in which design teams consisted of an instructional designer and one or two SMEs. Once an initial prototype of a typical online lesson was developed and a process established, three

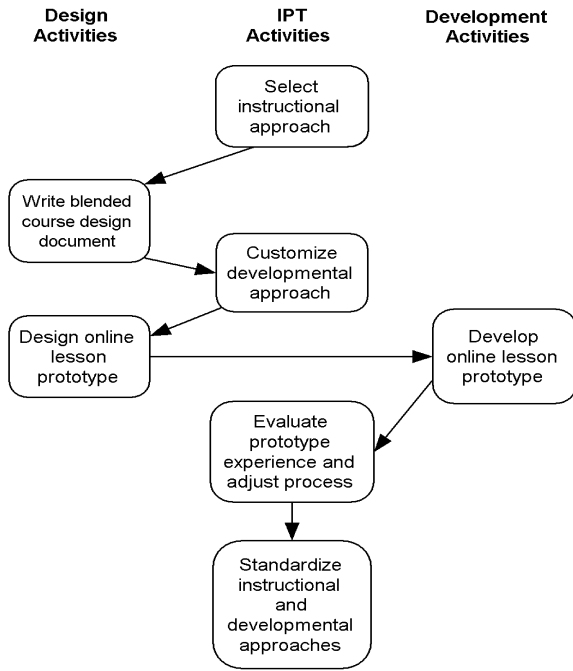


Figure 1. Preliminary Activities.

design teams were eventually established and were active for most of the project. However, as content analysis progressed, the design teams began to learn more about the military acquisition fields and the use of IPTs as a crucial tool of systems engineering. Teams soon recognized that an interesting opportunity had emerged. They determined that the conditions of the project, including the large number of concurrent design and development tasks and the large numbers of consulting SMEs, warranted consideration of a systems engineering-style IPT approach. Therefore, the design teams formed a number of instructional design-integrated product teams (ID-IPT) to guide activities of the project. These teams generally consisted of several SMEs from different disciplines of military systems acquisition, as well as a media production representative, a project management representative, and one or more instructional designers.

The initial course design activities involved extensive interaction between the prototype design team, a course-level ID-IPT, and the media production crew. This included the development of the overall storyline for the entire course, as well as the design and development of a proof-of-concept prototype lesson. After reviewing the results of the prototype, the project design process was improved and adjusted to include input from SMEs, media producers, and designers earlier in the design process, as depicted in Figure 1. This course-level ID-IPT was active throughout the development process, generating high-level concepts for lessons and guiding lesson-level ID-IPT groups.

The design process for the online lessons was an implementation of a rapid prototyping approach to instructional design in which a lesson-level ID-IPT was formed to coordi-

nate the design, development, and evaluation process for each of the 35 online lessons. A typical lesson-level ID-IPT included an instructional designer, one or more SMEs, a graphics or media developer, and a review SME with final decision authority. External SMEs provided consultative support to the ID-IPT as needed. During a typical ID-IPT meeting, the instructional designer and design SMEs would present a conceptual design for a lesson and provide a demonstration. The course-level ID-IPT team members would provide input and corrections or help brainstorm to improve areas of the design. The design team from the lesson-level ID-IPT would then make the needed enhancements and corrections, and the lead SME from the course-level ID-IPT would review the revised design. This iterative process continued as prescribed by the design process for each online lesson. Once a lesson design was determined to be acceptable to the lead SME from the course-level ID-IPT, it was sent for outside review by College SMEs and College Board-level expert reviews. For

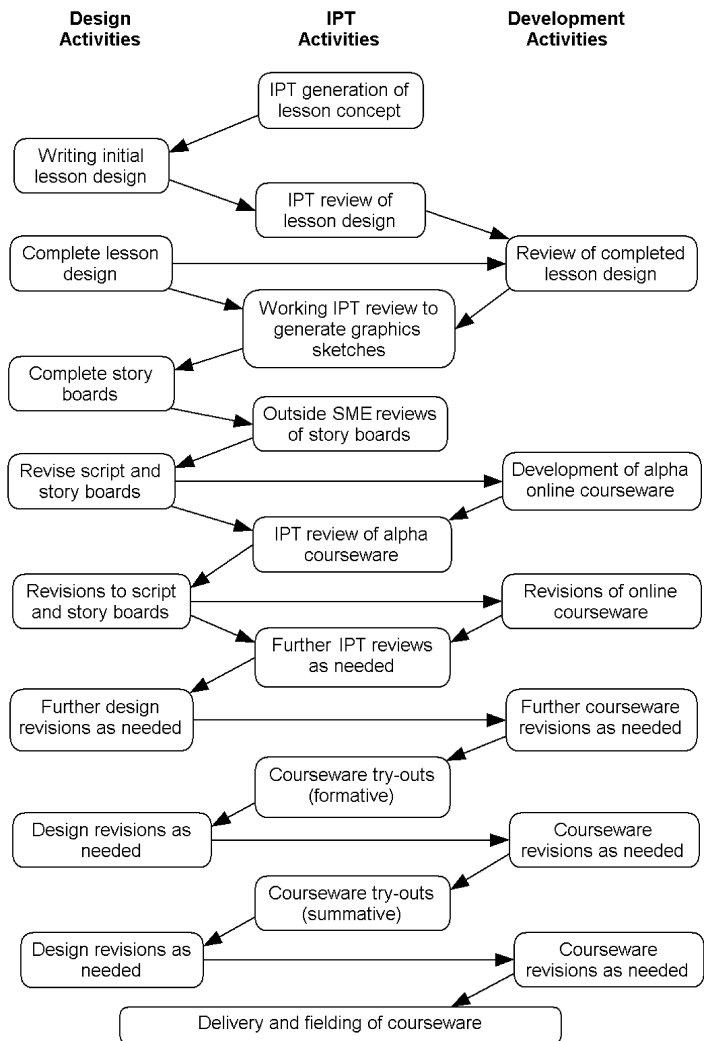


Figure 2. Customized Rapid-Prototyping Design and Development Approach for Story-Based Online Lessons.

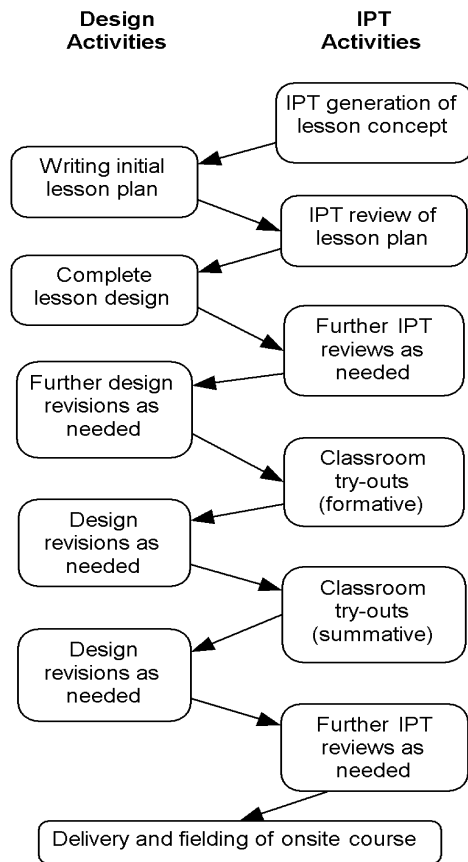


Figure 3. Customized Rapid-Prototyping Design and Development Approach for Story-Based Onsite Lessons.

most online lessons, lesson-level ID-IPT reviews were adequate to create a stable lesson design and produce an online product that was ready for outside evaluation.

Once the design of an online lesson was stable, storyboards had been created, and an alpha version of the courseware had been produced, formative evaluations were conducted. The evaluations for the online lessons were an extension of the ID-IPT process and included trial use of each produced lesson by a group of ISAC course instructors. The ID-IPT teams then reviewed the results of the evaluations and made appropriate corrections to the production version of each online lesson.

The design and development approach used for the online portion of the course became very workable during the project and was standardized for most of the design and development. A simplified depiction of this ID-IPT-centered, rapid-prototyping design and development approach for the creation of the online portion of blended instruction is shown in Figure 2.

The onsite classroom component of the course was designed using a simplified version of the customized rapid-prototype ID-IPT design and development process used for the online lessons. The onsite design did not

require the involvement of media production, so the ID-IPT process was shortened. The ID-IPT process for the onsite portion of the course included presentation of a prototype conceptual design to an ID-IPT consisting of designers, SMEs, and course instructors; an iterative review process; and an evaluation process that included faculty and student tryouts of the lessons, as depicted in Figure 3.

Results of ISAC Course Development

An analysis of the case reveals a number of important issues that emerged relative to the implementation of a blended training solution. These results include findings from the experience of the design and development of the new ISAC course, as well as evaluation of the effectiveness of the course in helping students meet the learning objectives.

The Design and Development Experience. The use of an ID-IPT approach along with the rapid prototyping design strategy turned out to be well suited for designing the story segments. According to Tim Howes of Command Technologies, who represented the media production team on many of the lesson-level ID-IPTs:

The ID-IPT provided an environment where we could see how all of the pieces of the puzzle fit together. By meeting ‘face to face,’ the team members could appreciate each other’s established goals and constraints, as well as those of the group task. This allowed each of us to perform our individual roles more efficiently as we understood how our tasks related to the overall project.

The lesson-level ID-IPT’s goal for writing a lesson was to incorporate the instructional content into an interesting, captivating, and motivating story. The story had to be represented visually, as well as through interesting dialogue. The purpose of using the story was to help the students become immersed in the plot; relate the instructional content to a realistic situation; and eventually retain, transfer, and apply the new knowledge and skills on the job. The development of the lessons turned into a type of weaving, starting first with reviews of story elements, then reviews of candidate learning objectives to be covered during that segment of the story, then finally another revision of the story to better meet the needs of the learning objectives with adjustments to the timing of learning objective coverage made as needed. The story development relied on finding a dramatic tension that was appropriate for the learning objectives and fit the military work culture. Figure 4 depicts a typical story element in a lesson.

The development of the individual episodes of the story, or lessons, tended to follow one of several plots, depending on the ideas generated in the ID-IPT sessions, the content of the topic, and the sophistication of materials from the existing ISAC course. Some typical plots included problems with the



Figure 4. Example Online Lesson Screen (Audio Plus Textual Quotes).

contractor's performance, problems with government support for the acquisition program, or simply the need to produce important programmatic documentation and reports. These plots were the main themes of both the online and onsite lessons. The interactive online presentations included graphic depictions, character animation, audio speech, text quotes, student activities, and assessments with feedback. Figure 5 depicts a screen with interactive elements.

Many plots were semidramatic and intriguing. One included a failed test of new military hardware under development, followed by the student's involvement in a problemsolving session to determine the cause of the system failure. All online lessons were designed for optimal learning and usability and included extensive audio dialogue to depict the story with visual reinforcements of the audio including quotes (see Figure 4), test items, and interactive activities (see Figure 5).

Most of the story plots included additional readings (see Figure 6) and participation in simulated meetings (see Figure 7).



Figure 5. Example Online Practice Activity Screen (Audio Plus Text Instructions).

According to Nolan Welle, an instructional designer with Command Technologies, creating the story plots involved some challenges:

We often had to learn more content up front than we ended up using in the final lesson. This involved calling on experts in functional acquisition areas to gather enough information to create credible stories. We had to be careful not to get too caught up in the story and overshadow the instructional content. The story acted as a medium for delivering the content; its primary purpose was as an instructional tool.



Figure 6. Sample Reading.

The ID-IPT process was a highly efficient mechanism for dealing with the complexities of developing story-based instruction with a large number of learning objectives in a blended training environment. The ID-IPT environment was well suited for rapidly evaluating multiple story possibilities for realism, learning potential, and production potential. According to David Cole, project manager and instructional designer for Command Technologies:

Given the extensive efforts involved for design, development, evaluation, and review of lessons, the coordination of concurrent activities was invaluable to the project's success. As is often the case, the availability of time, resources, and personnel was limited. The ID-IPT process proved not only to be a supportive means to achieve instructional effectiveness, but it also helped us complete the project in an efficient manner.

The Evaluated Effectiveness of the Blend. The ISAC summative evaluation included 27 students and 7 ISAC instructors. Each of the students took the 35 online lessons during the 2 weeks prior to meeting for the onsite week of classroom exercises. Seven of the 27 students took the online portion of the course on site at Ft. Belvoir, under monitored and supported conditions; the remainder took the CBT remotely with telephone and email support.



Figure 7. IPT Meeting (Audio Only).

Evaluators observed that the students taking the online portion of the course varied greatly in their approach, with some students working through the lessons slowly, reviewing where needed, and being deliberate and cautious before exams. These students took an average of one hour to complete a lesson. Other students read through the lessons quickly and usually conducted little review. These students took an average of 40 minutes to work through an online lesson. Another general observation was that the students enjoyed taking the online lessons, indicating a high level of motivation. The story-based lessons were not “drudgery” CBT that the students had expected.

Evaluators also observed that the students taking the onsite portion of the course worked together as teams, as directed. The group processes at work during the classroom portion of the course were very mature. The groups seemed to learn quickly how to work together, some making normalizing adjustments to their group processes during the week. Students in the classroom also regularly referred to the online portion of the course and to characters from the story, indicating that those characters served as memory jogs to help them keep the proper mindsets for discussing issues related to various military acquisition specialty areas.

The students took a survey at the end of each classroom lesson during the summative evaluation. The first question was, “Did the exercise provide a learning experience that you believe would be useful in your acquisition career?” The students thought that all of the exercises were useful, with the average being more than halfway toward “very useful.” The second question was, “Rate your overall level of satisfaction with this exercise.” The students were satisfied with the exercises, with the average being halfway between “acceptable” and “very satisfied.”

Additional lesson survey questions asked the students what part of the lesson was most effective and what they would

change in the classroom exercises. The majority of the comments were positive, although there were some comments indicating that minor adjustments were needed to some of the exercises. In general, the comments suggested that the discussions among team members at the tables and the instructor-led classroom-level discussions were critical in helping the students solidify the knowledge gained during the online portion of the course and place that knowledge in a practical context.

The results of the summative evaluation of the ISAC course indicated that there was an unusually high level of satisfaction with both the online portion and the onsite classroom portion of the course. The responses were generally serious

Student Evaluation Comments

The following are a few student comments from summative evaluation surveys:

- Really liked the combination of CBT training and in-class training.
- The use of one storyline ... throughout the whole course... able to see a project from beginning to end.
- The discussion made the class.
- I really like the mix of CBT and in-residence.
- The ability to work on a team that acted much as an IPT might [was particularly helpful]. Interaction was wonderful.
- Interacting with the other students and the instructors helped me to improve my knowledge by gaining from their many perspectives, experiences, and service cultures.
- Bottom line—fun and interesting.
- This is the best CBT yet.
- A great course! This is the first time in 20 years of service that a course actually met (and in this case exceeded) my expectation.

The following are a few student responses to a test question about IPT usage in acquisition, covering the primary learning objective for the course.

- ... I will also ensure that members of any IPT in my directorate take their responsibilities seriously and realize how important being on the team is as a whole. I do know that I will discuss the role of an IPT member with my coworkers in order for them to benefit from what I have learned this past week.
- ... Since I have only been working for DoD for 10 months... this in-depth overview will definitely enhance my work as an acquisition professional. ...
- I have learned the value and necessity of having the right folks on an IPT. In the future, I plan to do everything possible to bring together the right people for the IPTs I lead, and to ensure those chosen bring knowledge, desire and ‘outside-of-the-box’ thinking to the table ... Based on what I’ve learned/experienced here, I plan to ask for an organization’s best and knowledgeable, energetic, etc., person, knowing the result will be better for all in the long run.
- ... I believe I will become much more aggressive in demanding that IPT teams that I interact with do their jobs better.



Figure 8. Typical Classroom Sessions.

and well-thought-out synthesis; most students seemed to feel strongly that they had learned something that they could take away with them to the job.

The evaluators observed that there was a great deal of flowthrough from the online portion of the course to the onsite classroom. The online CBT seemed to have succeeded in preparing students for deep-level discussions in the classroom. Instructors, including visiting instructors, also commented that they were surprised at the depth of discussion of relevant acquisition issues by students. Figure 8 illustrates typical group discussions in the classroom.

Blended Learning Issues and Observations. After the completion of the summative evaluation, DSMC field tested the classroom portion a second time to train the faculty who would be teaching the onsite classroom seminars at the various military colleges. As of this writing, DSMC had fielded the course successfully to more than 3,000 students.

Based on their experience, the course directors identified numerous learning issues and outcomes that they believed were important to the successful design and development of the course. The following is a list of issues and observations of the DSMC course directors.

- The use of online learning in the workplace presents several challenges. The use of multimedia lessons with sound created a problem for some students. Other students have difficulty completing lessons at work due to distractions and time limitations. Some students prefer to complete the online portion of the course at home, but those students often have a lower bandwidth Internet connection, which makes multimedia intensive lessons more difficult to complete.
- Students are motivated by the deadline requiring them to complete the online portion of the course before they may attend the onsite classroom seminar. The blended design has an advantage in creating motivation to complete the online portion.
- In spite of the deadline motivation, about half of the students appear to postpone completing the online lessons, creating a time crunch because of the online completion deadline. Therefore, facilitating the continual progress of students on the online portions of the course is important.

- The effectiveness of a well-designed blended course may raise expectations for all courses at the offering colleges (or training organizations).
- The cost savings for the blended approach are highly distributed and difficult to quantify, and are somewhat offset by the investment in developing and maintaining the course. The college must still staff the onsite portion of the course and provide remote support to students taking the online portion of the course. However, savings in overall military travel costs and per diem costs are significant, with 5,000–10,000 fewer student travel weeks per year.
- The use of the ID-IPT design and development meetings was critical to the success of the project. In the words of the DSMC course director, “Bringing in the graphic media artist to sit in on our ID-IPT meetings was a major factor in the success of our project.” Many important design decisions were made more quickly because each stakeholder could provide their view of the issues during ID-IPT meetings, and the team could then consider viewpoints of multiple disciplines, leading to compromises that were workable and agreeable to everyone.

Meeting All Development Objectives. The indications from initial implementation of the course are that the development objectives are being met by the course. While cost savings were accomplished, they were somewhat offset by expenses associated with increased development and support of the blended course. However, in the opinion of the course directors, the investment in the development was worthwhile because of the increased satisfaction with the course and the improved results. This improvement in results was documented by an independent third-party comparison study conducted by the Jack Phillips Center for Research of the Franklin Covey Company. The study showed that the new ISAC course design resulted in equal, and in many instances better, results than the previous classroom-only design. This finding was based on a Level 1-2 survey administered both to 356 students from the previous classroom-only course and to 313 students from the new ISAC course. Additionally, the course instructors receive ongoing feedback from students and former students that suggests that they are able to transfer the skills and knowledge gained from the course to the workplace. The blended ISAC course appears to have succeeded in preparing stu-

dents to work in an integrated product team environment during complex weapon system acquisitions.

Reflections and Conclusions

The ISAC case may be more of an illustration that success is possible in a blended solution than a precise roadmap for others to follow. However, the results speak for themselves. The ISAC course development experience provided a rich illustration of the implementation of a blended training solution. Initially, the blending was viewed as necessary to accomplish organizational goals. The solution provided evidence that the mixture of factors necessary for the blending to produce positive effects is diverse, including a transfer-oriented instructional strategy (problem-based situated learning), a highly integrated design and development team approach (a customized ID-IPT process), and competent management of all of the diverse technical and support issues required to render an effective course design.

Both the instructional and the design and development approaches selected for this course appear to have been highly successful with both faculty and students. The results demonstrate that a highly situated, story-based approach is an effective instructional vehicle. Additionally, according to student comments, the high production values of the online portion of the course work together with the story-based instructional strategy to produce unusually effective prerequisite preparation for the classroom portion of the course. The continuity of the story-based instructional strategy throughout the online and onsite portions of the course seemed to have provided a structural basis for the learning experience. Student comments indicated that students learned the basics of intermediate-level system acquisition in the online portion of the course, which made the onsite training more memorable. The goal of having the online CBT provide some modeling for the eventual onsite classroom interactions appears to have been achieved.

Numerous issues rose during the ISAC case that suggest that the development of effective blended instruction is a complex process requiring extensive interactions among a team of instructional product designers and developers. While the results of the case suggest that the course is accomplishing both the learning and organizational objectives set forth by the military colleges, the evidence presented in the case also suggests that the full organizational and cost impact of a blended approach is difficult to precisely measure.

In human performance terms, the bottom line for the case is the ultimate organizational performance change that results from the course. All indications are that the desired change has occurred in students to some degree. Students have indicated that they are able to learn what they need to recognize the importance of the IPT process, and they appear to be able to acquire the knowledge and skills from the

blended course to participate successfully in IPT groups. The blend appears to have succeeded within the framework of the story-based instructional approach.

In summary, the development of a blended training program involves diverse training functions. The developmental approach must accommodate this diversity of players and support all necessary concurrent tasks to produce a successful training product. The selection of an instructional approach for a blended training solution is similar to, but also somewhat different from, selecting an instructional approach for regular training. The designer must still attend to the traditional instructional effectiveness issues when designing a blended approach but has a broader array of possible instructional solutions. The designer also must take into consideration possible mechanisms for creating continuity and synergy between the blended environments. The use of a single problem-based instructional approach with a single story thread across both the online and onsite portions of the ISAC course was a useful mechanism for creating that continuity.

The continuity of the story-based instructional strategy throughout the online and onsite portions of the course seemed to have provided a structural basis for the learning experience.

In the ISAC case, the use of blended training provided a large organization with an opportunity to both improve the overall cost-effectiveness of training and add innovative and effective instructional methods. The organization was able to take advantage of the opportunities of a blended environment to create improved learning outcomes. All indications are that the training solution will lead to improvements in organizational performance. 🏰

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