COOPERATION, TECHNOLOGY, & PERFORMANCE
A CASE STUDY

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Abstract

Using computer-based training as a medium for facilitating a cooperative-based learning environment is a concept that has recently been receiving a lot of attention. A combination of cooperative learning principles, technology-driven tools, and performance-based assessment have proven to be a successful approach for teaching technical skills, while at the same time reinforcing teamwork skills.

The foundations of the Cooperation, Technology, and Performance (CTP) model are largely based on proven learning and assessment theories that have been combined to create performance-driven results. This session will introduce the CTP model and how it is used by the Veteran's Benefit Administration to achieve maximum return on investment. Application of the CTP model to other jobs and/or industries will also be discussed.

Authors' Biographies

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Overview of VBA Training Issues

The Veterans Benefits Administration (VBA), with approximately 11,000 employees located at 58 Regional offices, is part of the Department of Veterans Affairs. VBA is the organization primarily responsible for administering the Department's non-medical benefits programs that provide financial and other forms of assistance to veterans, their dependents, and survivors.

The Employee Development and Training Staff (EDTS 20T) of VBA supports regional offices and service and staff functions in providing education, training and performance support to VBA employees, and in planning and executing performance assessment and improvement initiatives.

One of the benefits provided to veterans is life insurance. The Insurance Service is sponsoring re-development of the Policy Service training class, for both new employee training and refresher training in the Veterans Insurance Phone Section (VIPS) and Policy Service Technician (PST) occupations.

The purpose of these positions is to maintain and take actions on veterans' life insurance policies, much as comparable positions within private insurance companies do. Often this is done at the request of the insured, such as changing a dividend option, requesting a loan, etc. One of the underlying tenets of VBA's mission is the notion of "duty to serve", which encourages all VBA personnel to keep in mind the best interests of the veterans they serve. With the assistance of EDTS, the Insurance Division, based in Philadelphia, is in the process of restructuring its training programs so that it may better serve veterans' insurance needs.

Background

In early 1997, the Director of VBA's Insurance Division queried his line-level supervisors about training needs. What tasks were the most problematic to both new and experienced technicians (PSTs/VIPS)?

The answer was "Lapse" and "Reinstatement". It seemed that the PSTs/VIPS had the most difficulty processing a life insurance policy that had lapsed due to non-payment. In addition, the later reinstatement of a lapsed policy proved to be an equally challenging task. These two tasks produced an inordinate number of system "rejects", because the policy had been processed incorrectly. As a result, the technicians spend a great deal of time and effort inefficiently working on these types of cases.

The Reinstatement task was selected as an initial "proof-of-concept" module. Falling approximately halfway into the current training curriculum, the Reinstatement module took about two weeks to train using a traditional, leader-led instructional medium.

Utilizing the CTP Model of Cooperation, Technology, and Performance, the revised Reinstatement Module consisted of a detailed task analysis, cooperatively-structured computer-based instruction, extensive product-based evaluations, and a comprehensive, statistically-sound courseware validation. The entire current VIPS/PST training program takes almost six months and is based upon an informal, loosely-structured curriculum. The CTP approach would be a dramatic departure from this more-traditional approach.

Figure 1: Cooperation, Technology, & Performance in practice

Target Audience

The PST and VIPS positions are a GS-4 through GS-7 position. A typical PST/VIPS has a high-school diploma, below-average to average writing skills, and a working knowledge of how to use a computer (mouse and keyboard inputs). Some technicians have completed college courses and may have an Associates degree. Very few have a Bachelor's degree.

The age range of the target audience spans a broad range, from high-school graduates to civil-service veterans. The gender mix is approximately 60% female and 40% male. Technicians come from all ethnic and socio-economic backgrounds. Thus, the training had to be presented in such a manner as to engage a very diverse audience.

Task Analysis

The first step in the training package "Apply the Reinstatement Process to a Lapsed Insurance Policy" was to perform a comprehensive task analysis. The task analysis detailed the task process flow; the knowledge, skills, and attitudes associated with the task; and the measurable results that can be observed to indicate that the task has been completed successfully.

The Task Analysis consisted of three primary deliverables:

- The Task Process Flow Diagram
- The Task Table
- The Task Identification Sheet

The Task Process Flow Diagram

The Task Process Flow Diagrams are a graphic representation of the recommended process required to successfully complete the primary task. The process described in the Task Flow Diagrams for the Reinstatement task is not necessarily the only method that can be followed to achieve successful results. However, it is one proven method and its use will eventually become the standard in order to facilitate consistency in job performance.

Each sub-task in the Task Analysis Table corresponds to an item represented in the Task Flow Diagrams. The Task Flow Diagrams are in the form of a flow chart and act as the basis for any job aid development in the training effort. All measurable products/outcomes are reflected in the Task Flow Diagrams.

The Task Table

The Task Table consists of a formalized table that describes each of the sub-tasks required to complete the primary task (Reinstate a Lapsed Insurance Policy). These sub-tasks (and their dependent tasks) are further divided into their requisite knowledge, skills, and attitudes (KSAs). Taken as a whole, the KSAs show what is required to successfully complete the sub-tasks, which in turn demonstrate what is required to successfully complete the primary task.

The Task Analysis Documentation not only identifies what is a knowledge requirement, what is a skill requirement, and what is an attitude requirement; it also identifies which of these requirements are prerequisites, of which mastery must be assumed prior to attempting the current task. Prerequisite identification was critical since the Reinstatement module falls halfway through the PST/VIP training curriculum. Accurately identifying which KSAs were prerequisite provided the ability to perform a precise summative evaluation in the form of a statistical validation.

The Task Table was the foundation for all additional training development. It became the roadmap for future instructional design, mapping specific learning points to objectives and products.

Job Performance Measures

One of the most important factors regarding the eventual success of the Reinstatement Training program was the use of Job Performance Measures (JPMs). JPMs provide an assessment of the measurable outcomes of a successfully completed task – specifically mapped to products.

The Reinstatement training program contained ten testable products. The term "product" refers to a measurable successful result of the task performed correctly. For example, these are four of the ten testable products associated with the Reinstatement training program:

- Successfully complete a Mechanical Reinstatement
- Successfully complete a Manual Reinstatement for a policy with one loan

- Disapprove and forward additional requirements to the insured
- Disapprove and cancel the policy because the Term policy has expired

Notice that completing a task successfully doesn't always mean that the policy has been reinstated. By correctly utilizing the training job aid flow chart, generated from the Task process Flow Diagram, a policy may not be eligible for reinstatement because it has expired. But the PST/VIPS performed the task correctly if he/she disapproved and canceled the policy. That disapproval is a successful product.

JPMs are training versions of veterans' case files. Each case file has a different product result, based upon the criteria of the individual case. The cases are based upon actual case files, but have been sanitized to protect the privacy of the veterans. In some situations, the cases have also been slightly manipulated to address specific training requirements.

Interactive Media has automated the process for developing JPM cases via the use of graphically reproduced forms, correspondence, envelopes, computer screens, and other information normally used by PSTs and VIPs in the course of their duties. These graphic templates are utilized within a database application for electronic data input.

The Pre-Design Process

With input from Subject Matter Experts (SMEs), the products are examined to determine their criticality level with respect to the task. For example, the Reinstatement task analysis identified two products that were not tested because of the infrequency of their occurrence on the job. VBA decided their training dollars were better spent on the products that employees are most likely to encounter. The infrequent tasks were included in the task job aid, but training time was not allocated for them.

Once the testable products were identified, objectives were written to guide the training to achieve those results. The objectives were similar to the Task Identification Sheets, but were customized to the training environment. Some differences between the Reinstatement job environment and the Reinstatement training environment are:

- Because of the electronic nature of the JPM creation tool, veterans' signatures were typed in. Students were instructed to regard a typed name on a signature line as a veteran's signature.
- Reinstatements are extremely dependent upon the current date. But because the training environment does not allow students to process current cases, the students were instructed to process cases as if the current date listed in the case is the actual date.
- Because the training budget did not permit on-line testing in a computer-simulated simulated fashion, students were instructed to write in computer screen inputs on paper-based representations of insurance processing system document screens.

Once the objectives were complete, Instructional Designers worked with SMEs to gather actual veteran policy folders/cases that could meet the objectives' needs. Each case represents a distinct, measurable product. The Reinstatement project used seven different cases for each of the ten products, one for each of the following components:

- Pretest
- Practice
- Lesson Test
- Lesson Test Variant
- Post-test
- Post-test Variant
- General Purpose Variant

The cases were then sanitized for privacy and to specifically target training objectives (i.e., removing extraneous non-reinstatement issues from the case, especially those that have not been covered yet in the over-all curriculum). The cases were created electronically via the JPM creation tool.

The produced cases were reviewed by the SMEs and then tested for reliability. High-performing Policy Service Technicians were selected by their supervisors. These high-performers then processed the training cases. These test results were compared to the

expected results and any discrepancies were identified. The cases were revised when necessary.

The CTP Model

The Cooperation-Technology-Performance (CTP) Model was instrumental in the development of VBA Reinstatement training.

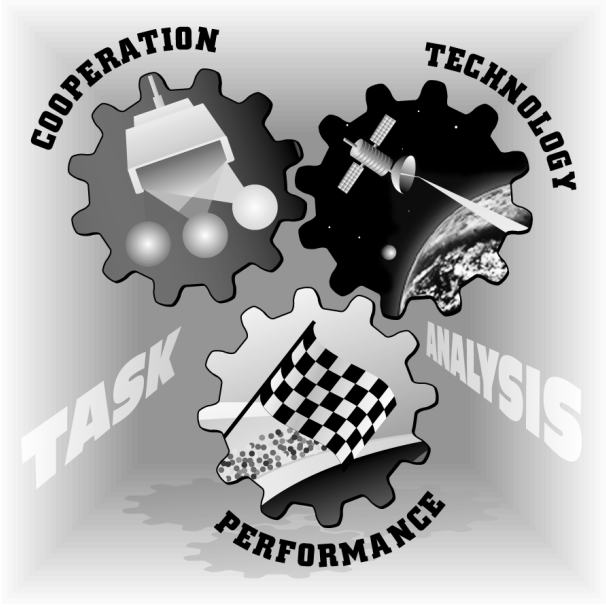

Figure 2: The CTP Model

Cooperative Learning Principles (C)

It was decided early in the development phase to utilize cooperative learning as an instructional strategy for reinstatement training. Cooperative learning is defined as instructionally using small groups so that trainees work together to maximize each other's performance. The individuals in each group work together to accomplish shared goals, and in doing so, benefit themselves as well as the other group members. The cooperative learning principles used in the reinstatement training program were based largely on the work of Doctors David and Roger Johnson at the University of Minnesota.

Principles of Cooperative Learning Environments

Research shows that cooperative learning results in higher achievement and greater long-term retention of the material being taught. In this training program, students worked in groups of two or three, each group sharing one computer. There are five primary elements that act as the fundamental core of cooperative learning.

While the computer based training led each group through the instructional information and practice cases, the students were responsible for their own, and each others', learning. This concept of cooperative learning is called "Positive Interdependence" and is the first element of cooperative learning.

The second element of cooperative learning is called "Individual and Group Accountability." The training is structured so that, while learning is done within the group, the testing of knowledge and skills is done individually. Also, during the learning portions, the computer randomly asked trainees to answer questions and defend/explain their rationale. Each group then developed one answer they all agreed upon and received the appropriate feedback and remediation. Students were required to take each lesson test individually, however, the group could not move on to the next lesson until all students in the group passed the test. If one or more members of the group failed the lesson test, they were sent back to their groups for remediation. In this way, the students were responsible for each group member's full understanding of each concept.

The third, fourth and fifth elements, "Promotive Interaction," "Interpersonal Skills," and "Group Processing" were all achieved through the use of specific assigned roles that rotated. Students were actively encouraged to discuss their ability to work together and provide suggestions for improvement.

Advantages of the Cooperative Learning Environment

The results of the cooperative learning were easy to see. Students were more engaged in the learning because of their responsibilities to their other group members. The training moved at a pace that was suited to each group, which eliminated the repetition required in a traditional classroom setting where the fastest students must wait for the slower students to catch up. In fact, the students who where the most experienced, or who learned most quickly, took on the teaching role within their group to

assist other students in understanding the concepts.

Another benefit of cooperative learning included higher-level reasoning. The computer based training was structured so that blocks of instruction built on each other. As students progressed through the material, they gained the skills and confidence needed to move on to increasingly difficult tasks. Many of the comments written in the student's evaluation of the training indicated that the most beneficial portion of the training was the cooperative learning groups. As students began to understand the material, they began to see the whole picture instead of just seeing random elements that make up the picture.

We also saw greater transfer of learning from the group to the individual. An excellent example was the testing process. Each group performed practice exercises together, but were tested individually. Initial anecdotal evidence shows that students were also better able to reinstate policies correctly once they returned to their regular job. VBA is currently planning a study to examine and verify this (Level III of Kirkpatrick's Levels of Evaluation).

There was a noted increase in positive attitudes toward the subject being studied. This was especially noted among experienced technicians who participated with the new trainees. Experienced technicians know that Reinstatement is a difficult and confusing process, and they approach the more difficult of these cases with hesitation. Many of these students commented that they truly understood the process and felt that they were now capable of tackling any such case assigned to them.

The instructor noted a marked difference in her role in the cooperative classroom vs. the traditional, lecture-based classroom. She enjoyed that fact that students were engaged most of the time, and her responsibilities were similar to a facilitator, rather than as a stand-up instructor. She observed groups interacting, ensured they were on task, and provided guidance as needed. Besides facilitating and grading tests, most of her remaining time was spent answering and dealing with the more complex problems. In this way, she felt that her expertise provided the most benefit, while other students continued working and learning within their groups.

Along with the more measurable benefits of cooperative learning, such as higher performance, there are a number of intangible, but very important gains. For example, cooperative learning builds positive team attributes. This is very important to Insurance employees as they move toward case management approaches to their work. Teams are becoming more evident in the Veterans Benefits Administration as they strive to keep up with dwindling resources and increased workload. Cooperative learning builds an appreciation for diversity, interpersonal and communication skills, and a team atmosphere for solving problems. It builds cohesiveness, decision-making skills, critical thinking skills, and conflict management skills. All of these skills are very necessary in the workplace, and, in the case of this training, were a value-added benefit at no additional cost. While the students were acquiring the skills necessary to perform the task of reinstating a lapsed insurance policy, they also were learning all of these interpersonal and team skills.

The initial evaluation of the program, through both student evaluation sheets and through pre-test vs. post-test scores, show that this type of learning does work. Overall, the cooperative learning structure was well-received by the students. Many commented that they were more exhausted by the end of the course than they were in the traditional classroom. We think that was due to their increased level of attention, enthusiasm and involvement in the learning process. As will be addressed later in this discussion, the testing scores showed a significant increase in learning.

Technology-Based Learning (T)

Technology-based learning, in the form of computer-based training played an important role in the delivery of this course. The self-paced nature of the course allowed each group to proceed through their training at a comfortable speed, allowing the slower students to learn without holding back the faster students.

The courseware is deployed in a networked (LAN) environment and is designed for small groups of 2 or 3 trainees seated around one computer. Limited by low-end systems (no audio or video capabilities), we relied heavily on detailed graphics with frequent interaction.

During practice exercises and application, trainees were randomly selected to answer embedded questions about actual cases. They were then prompted to discuss their responses with their teammates and generate a group answer. The computer provided specific feedback to the group.

EPSS / Electronic Job Aids

Another part of the "T" involved the incorporation of an electronic performance support system (EPSS). On-line job aids such as diagrams, flowchart process models, simulated computer screens, etc., were used to simplify decision-making processes required for each job and were readily available through the user interface. These electronic job aids were also available in a printed format in the Trainee Guide.

Cruisin' Storyboarding/Authoring Tool

Interactive Media developed a proprietary storyboarding and authoring tool combination called "Cruisin'" to streamline the design and development process for not only the Reinstatement project, but for a large number of other VBA training projects. This tool was created for an Instructional Designer to design effective instructional content using pre-defined templates. The tool also allows for the creation of new interactive screens as the instructional content dictates. Throughout the Reinstatement Training and Performance Support System, many different interactive and cooperative screen types were designed for effective instructional delivery.

Case Development Tool

Since the primary testing and teaching tool we use for VBA projects are cases, Interactive Media developed a system for reproducing the thousands of pages required for this training.

First, bitmap graphic files were created of each VA Form. Other bitmap graphic files were created as blank VA stationary to simulate letters or correspondence. Once a bitmap graphic was created, it was set up as a form in a Paradox database of its own. Each field on a form requiring data entry was developed in the database. Once all forms were created, another database was created. We refer to this as the Case Development Tool.

The Case Development tool allows developers to generate new cases by choosing an applicable form and assigning it a case number and an order number. You can compile hundreds of forms for one case using this tool. This tool has proven an invaluable resource in producing cases and serving as a configuration management tool to house them for easy access.

Other Production Tools

Other Courseware production tools included:

Graphics: (2-D, 3-D, and vector): Adobe Photoshop Version 4.0, CorelDraw 6.0
Animation: 3D Studio Max, Animator Studio
Flowcharts: Visio 3.0
Documentation: Microsoft Word 6.0

Minimum System Requirements (LAN, Network File Server)

Approximately 150 MB of network space was required for the Reinstatement course. Once the course was installed on the network file server, it was individually installed from the network file server to each trainee workstation. All trainee data files and Computer Managed Instruction (CMI) files were stored on the network file server.

Minimum System Requirements (Trainee Workstations)

The user platforms were relatively low-end, and had to optimize the availability of existing training equipment. The minimum specifications were:

486/33 MHz processor
16 MB RAM
250-270 MB Hard Drive (50 MB free)
256-color VGA monitor (640 x 480)
Windows 95

Software Requirements (Trainee Workstation)

Software used in the development and implementation of this courseware, including commercial off-the-shelf (COTS) products, custom products, LAN products, and database products, include the following:

Courseware Workstation files
IconAuthor Present 7.0
Initialization files for each module

Autodesk Animator 1.1
Paradox Runtime 7.0
Microsoft 16-bit ODBC driver for Paradox

CMI files:
Customized Paradox Files
Paradox Runtime 7.0

Performance Assessment Methods (P)

As has been previously discussed, student performance was assessed via product-based tests. Simulated real-world cases were distributed and the students were instructed to process them as if they were actually on the job (allowing some minor accommodations for the training environment). But within this product-based testing environment, a traditional ISD assessment strategy was employed.

A pretest gauged the students' knowledge of the subject prior to taking Reinstatement training. During the course validation, if a student could pass the pretest, he/she was excused from the training.

Three of the five Reinstatement lessons contained extensive practice on the specific types of reinstatement cases being taught in those lessons (Lesson 1 was an introductory lesson and only tested to the knowledge level; Lesson 4 was an introductory lesson for Manual Reinstatement and contained no testable objectives). This practice was a combination of off-line, cooperative case-solving exercises and on-line, computer-based feedback and remediation.

From the computer, students were directed off-line to their Trainee Guides to examine a particular reinstatement case. While staying in their assigned cooperative learning roles, they were to solve the case and indicate some requested information in two tables. The first table asked the students to check off from a list of criteria the specific criteria that applied to their case (i.e., the policy has money pending, the policy has expired, the application has the required signatures, etc.). Then, the second table asked them to check off from a list of actions the action(s) required by the indicated criteria (i.e., perform a mechanical reinstatement, disapprove and cancel the policy, request additional requirements from the insured). All of the criteria and actions corresponded to steps in the job-aid flowchart, hich served as the structural spine of the training.

The students then returned to the computer and input the results from the two tables into an electronic checklist. The computer evaluated their responses and provided the appropriate feedback. The rationale behind the results was explained.

This type of criteria and action referenced practice exactly mirrored the format of the tests with three exceptions. First, the tests did not require the students to indicate the case's criteria. However, forcing the students to examine each case's criteria in the practice reinforced that behavior. If the students could correctly identify the criteria for each case, then they would be able to determine the proper course of action. Second, the tests were performed off-line without any computer involvement. This more-closely simulated the job environment. And, third, the tests were taken individually, rather than as a group. Again, this simulated how they would be working cases on the job.

At the conclusion of each lesson, a Lesson Test was administered. Students needed to pass the lesson tests with a GO status prior to advancing to the next lesson. If a student did not pass the lesson test, remediation within his/her cooperative group was attempted. If he/she was still unable to pass the lesson test, then the Training Coordinator intervened.

At the conclusion of all five lessons a Posttest was administered. This posttest was comprehensive to all the material taught in the reinstatement course and was the determining factor regarding success or failure.

Ten cases were selected for the pretest/posttest (and were also covered in the collective lesson tests). An eighty percent (80%) performance was determined to be a passing score. Thus, students must solve eight of ten cases correctly to pass. When a student failed a particular case, a test variant was administered after remediation. Each lesson test and the posttest had a specific variant. In addition, another set of test cases, called the "general" variants, was created to provide another level of unique testing. If necessary, the pretest could also be used as a variant.

The grading method for each case was fairly strict. If the student made any one "substantive" error, or an error that would cause the case to not be processed (or reject), the case was scored incorrect. This strict performance requirement satisfied VBA

mandate to provide better service to veterans. Up to two "non-substantive" errors, or errors that did not directly affect the status of the veteran's policy, were permitted per case. These "non-substantive" errors were such things as an incomplete notation on the application or failure to remove a diary record from the database. Basically, "non-substantive" errors were errors that would be internal to the processing and would be transparent to the veteran. VBA Insurance Division's internal quality assurance standards (SQC) were used as the basis for determining "substantive" vs. "non-substantive" errors.

Field Validation

Courseware validity was a vital component to Reinstatement training. Did the course teach what it was intended to teach? Could the students meet the objectives?
Thirteen new students training for Veteran's Insurance Phone technician (VIPs) positions and eight existing VIPs and Policy Service Technicians (PSTs) received the Module Pretest, which consisted of a caseload of ten reinstatement case folders addressing different specific outcomes, along with administrative instructions. Two participants of the twenty-one passed the pretest and were removed from the validation sample. One other participant was later removed from the sample due to absences.

The remaining eighteen personnel participated in the interactive courseware training lessons and then completed the module posttest. Participant results were then placed in random order and charted using sequential testing procedures, a statistical measurement instrument, which verifies training validation with a small population sample. In addition to performance data, participant evaluative opinion data were collected.

Module Tests And Lesson Level Posttest Results

"Pass" indicates that the student achieved acceptable performance within two attempts.

	Pass	Fail
Module Pretest	0	18
Lesson One	18	0
Lesson Two	18	0
Lesson Three	17	1
Lesson Four**	N/A	N/A
Lesson Five	18	0
Module Posttest	18	0

**Lesson 4, an overview lesson for Manual Reinstatement, contained no testable objectives.

Validation Observations

Comments on the cooperative learning structure were overwhelmingly positive. Concomitantly, the participants appeared genuinely inspired by the opportunities for interactivity during practice exercises and case study activities.

Comments on the use of computer-based training as an appropriate medium for training of this type of material were also positive. Overall comments on the perceived training effectiveness were generally positive.

Students repeatedly commented on the value and effectiveness of the systematic approach to the reinstatement process and asked if they could keep their Job Aid Flowchart for reference when they returned to their jobs. Similar comments were made about the DC Screen Job Aid. Furthermore, the participants who were currently employed as PST/VIPs unanimously agreed that this training would be beneficial for all current PST/VIPs and were eager to have their colleagues participate.

There were several incidents in which participants obviously performed hastily on a test. When this was the situation, and the Training Coordinator was able to recognize from observation of previous performance that the trainee was capable of much better performance, the Training Coordinator returned the test to the student without feedback and instructed him or her to recheck the work. In the majority of these cases, the participants were able to identify their errors, self-correct their work, and successfully complete the test.

Implications of the Data

Although the participants currently employed as PST/VIPs performed better on the

pretest than the students did, there was no marked difference between either group's performance on the lesson tests or post-test. This is very clear evidence of the training's effectiveness, providing a level of understanding for brand new students equal to that of participants with actual job experience.

Because of the extensive analysis conducted prior to course design and development, it was possible to separate pre-requisite information from new, reinstatement information. As a result, for the purposes of reinstatement validation, incorrect pre-requisite information was not counted towards a case failure. The amount of pre-requisite information missed by many of the students points to potential need for additional training in these areas. Accepting the concept that perfection is not a realistic or cost-effective goal, a standard of 80% was established for reinstatement validation (8 out of 10 cases). In order to pass a case, a student must not have had more than two non-substantive errors and zero substantive errors.

Although a 100% pretest failure rate was anticipated for initial students, only two of the eight personnel currently on the job passed the pretest. Even accounting for the fact that the eight PST/VIPs selected to take the pretest were chosen because it was thought they might not pass, this result clearly indicates that specialized training is needed for the reinstatement task.

The data demonstrate that this cooperatively-structured, computer-based training is effective in building task proficiency at both the lesson and the module levels, and that this effectiveness will transfer from the validation sample to the general trainee population.

The data also indicate that the program design is efficient. It allows for some students to progress relatively quickly through the program with one testing, while others may require a second level of training, feedback, and testing.

The cooperative-learning methodology was accepted, effectively used, and very positively received by the trainees. Several participants expressed that the interactive component of the training was the most informative feature (e.g., they were able to express ideas and learn from others' experiences - particularly when a student was paired with a current PST/VIP) and enjoyable.

The use of computer-based training was identified as an appropriate medium for training of VBA task-related information in future training programs.

Students who failed a Lesson Test or the Module Posttest received feedback and remedial instruction from the Training Coordinator and from their peers who successfully passed the test. Students were also encouraged to review sections of the computer-based training that reinforced the information missed on the test.

If the student failed the Module Posttest, he or she independently retook a different variant of the test. A student who failed a test was allowed only one opportunity to retake a test variant. If the student failed again, he or she was allowed to move on to the next lesson. However, it was incumbent upon the student and his or her teammates to ensure all of the information in subsequent lessons was understood within the context of the training program and the task itself.

In one case, a student was given the opportunity to take a third variant of a specific case type. However, the final result as it pertains to this validation was a failure (#19, Lesson 3). In another case, a student achieved a passing score for the Lesson 5 test, but still didn't possess a high-level of confidence in the task. She was remediated with a cooperative learning group and allowed to take the test variant, with much-improved results.

Implications of the Validation Data

In combination, these results suggest that the trainees' performance improved immediately after the presentation and application of new information through the media of cooperatively-structured, computer-based training and practice exercises. The statistical evidence demonstrates that each participant's performance improved at the conclusion of the training program.

These data demonstrate that the training was effective at both the lesson and module levels, as shown by student performance data on valid and reliable performance tests.

Sequential Validation

Although results provide a clear indication that the training program did teach participants to correctly apply the reinstatement

process to a lapsed insurance policy, an additional testing method, referred to as sequential testing, was applied. The statistical method was performed to provide additional assurance that the level of effectiveness experienced with the validation sample would be predictive of performance in the general trainee population when the module is fielded.

Sequential validation requires the use of a plotting chart that differs depending on the level of criticality which was determined prior to the design and development of the training program.

For the validation of the *Apply the Reinstatement Process to a Lapsed Insurance Policy* training program, an 80% criticality level was selected prior to testing (although the results indicate that the course could have validated to an even higher level of criticality).

The first step in assessing the sequential validity of any training program is to arrange the validation participants (for data collection purposes only) in a random order. The participants were manually selected from an original listing of the group in a random order to accomplish this effort.

Using the 80% criticality level and a sample this size, no more than two participants can fail a testable objective; or the first 9 participants must sequentially pass the Module Posttest in order to provide support to the validity of the training program.

Conclusion

As is evidenced by the validation results, the Reinstatement training courseware has proven to be an effective instructional program. The Cooperation-Technology-Performance Model successfully combined cooperative learning, computer-based training, and product-oriented assessment into a comprehensive training package that ultimately will allow the Veterans Benefits Administration the ability to better serve United States' veterans.

VBA and Interactive Media Corporation are in the process of applying the CTP Model to additional courseware for the Insurance Division, as well as to a very large, multi-year effort in support of VBA's Compensation and Pension Division.