Navy Personnel Research and Development Center
San Diego, CA 92152-7250 TR-95-7 August 1995

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Delivery of Division Officer Navy Leadership Training by Videoteletraining:
Initial Concept Test and Evaluation

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATE COVERED
	August 1995	Interim

4. TITLE AND SUBTITLE
Delivery of Division Officer Navy Leadership Training by Videoteletraining: Initial Concept Test and Evaluation

5. FUNDING NUMBERS
Program Element: 0603707N
Project: 01772.ET112

6. AUTHOR(S)
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53335 Ryne Road,
San Diego, CA 92152-7250

8. PERFORMING ORGANIZATION REPORT NUMBER
NPRDC-TR-95-7

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Chief of Naval Personnel (PERS-OOH)
Navy Annex
Washington, DC 20350

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES
Functional Area: Training Research
Product Line: Schoolhouse Training
Effort: Distributed Training Technology

12a. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution is unlimited.

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

The feasibility of using videoteletraining (VTT) to deliver Navy leadership (NAVLEAD) training was tested in the Division Officer basic leadership course. Three treatment groups were compared: (1) traditional classrooms; (2) VTT local classrooms with students and an instructor, and (3) VTT remote classrooms where students were connected to the local classroom by a two-way audio and video VTT system. Student responses on questionnaires tended to favor traditional instruction slightly, but differences were small. Subject matter expert ratings of various dimensions of the course were higher for traditional instruction than VTT. Lower student and observer ratings for VTT were on items pertaining to interaction and participation issues. Somewhat less interaction was recorded on a participation tally in VTT classes than in traditional classes. However, a test of knowledge gained in the course revealed no differences among traditional, local or remote students. This first trial run of NAVLEAD on VTT showed it was possible to deliver the course with some reduction in interaction and participation. The use of VTT for similar relatively short, high throughput courses has led to cost savings associated with travel and instructors. This is the first of two reports, the second evaluated Chief and Leading Petty Officer leadership courses.

14. SUBJECT TERMS
Military training, distance education, video teletraining, instructional television, teletraining, leadership training, NAVLEAD.

15. NUMBER OF PAGES
68

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNLIMITED

Foreword

This report describes research conducted as part of the Navy Personnel Research and Development Center's Distributed Training Technology (DTT) project. The DTT project is part of our Classroom and Afloat Training research program and falls under the Education and Training project (L1772) of the Navy's Manpower, Personnel, and Training Advanced Development Program Element (0603707N). The work was performed under the sponsorship of the Bureau of Naval Personnel. The research is evaluating technologies, training strategies, procedures, and management methods to extend videoteletraining (VTT) beyond traditional, lecture-based courses.

The research investigated the feasibility of using videoteletraining to deliver Navy leadership training. The findings have direct implications for the design of future distance education systems in the Navy and elsewhere.

The recommendations in this report are intended for use by the Chief of Naval Education and Training and Bureau of Naval Personnel in developing policy for the application of VTT in the Navy.

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Acknowledgments

The research was conducted within the Chief of Naval Education and Training's Electronic Schoolhouse Network (CESN) classrooms in Dam Neck, VA; Norfolk, VA; and Newport, RI; and in the Navy Leadership (NAVLEAD) training classrooms in Little Creek, VA. The authors appreciate the assistance provided by the personnel in these commands that supported the research, the students who participated, and the NAVLEAD subject matter experts who observed courses and provided evaluation data. The authors are particularly indebted to Ms. Jean Ellis, CESN Project Manager; LT Russell Colbert, CESN VTT Officer; NAVLEAD instructors LT Joseph Mizerak, LT Craig Chapman, and LT Kristin Iaquinto; and observers LCDR Kathy O'Keefe, LCDR Cheryl Goodman, and ETCS Gail Brown. We also thank Betty Whitehill and Dr. George Seymour for assistance with data analyses.

Summary

Problem and Background

A requirement exists to train Navy personnel who are geographically remote from training resources. Videoteletraining (VTT) enables an instructor to teach multiple classes at different geographic locations. VTT has been shown to be an efficient and cost beneficial way to deliver training, and is now in operational use within the Navy's CNET Electronic Schoolhouse Network. VTT has generally been used for the delivery of lecture-based instruction. Navy leadership training (NAVLEAD) involves high levels of interpersonal interaction and represents a departure from the instructor-centered courses usually given by VTT. Given the continuing strong demand for NAVLEAD training, significant travel or instructor costs could be avoided if such training could be delivered via VTT rather than in traditional classrooms.

Objective

The objective of the research was to test the feasibility of using videoteletraining to deliver NAVLEAD training for the Division Officer's Basic Leadership course.

Approach

Four Division Officer NAVLEAD classes were conducted with a total of 105 students. Three treatment groups were compared: (1) traditional live instruction, (2) VTT local, and (3) VTT remote. Two classes were given in the traditional manner with students and instructors in a conventional classroom. Two other classes were given by VTT. A total of 36 students were in VTT local classrooms with an instructor, and another 22 students were in remote VTT classrooms connected to the local classroom by a two-way audio and video videoteletraining system.

The treatment groups were compared in terms of five outcome measures reflecting student evaluations of VTT, student evaluations on instructional topics, daily observer evaluations on several dimensions of the training, class participation, and student knowledge gained.

Results and Conclusions

Student responses on questionnaires tended to favor traditional instruction slightly, but differences were small. The few differences between groups on the VTT questionnaire related to audiovisual factors and a tendency for remote students to express the opinion that VTT reduced their opportunities to interact with the instructor and other students. Although a third of the students preferred traditional instruction, nearly nine out of ten were willing to take another VTT course. On the questionnaire covering instructional issues, the largest differences between groups in favor of traditional instruction were primarily on topics related to seeing and hearing students, teams, and instructors or on topics related to interaction and participation.

Subject matter expert ratings of perceived effectiveness of different aspects of the course were significantly higher for traditional instruction than VTT. Though improvement occurred throughout the week, VTT courses did not reach parity with traditional courses.

A class participation tally indicated a higher level of student initiated questions and comments in traditional than in VTT classes. Some variability was observed in that one traditional class interacted at twice the level of the other, which was in turn more similar to the level in VTT local classes. VTT remote classes interacted at about two thirds the level of VTT local classes.

A test on course content showed virtually identical levels of knowledge among traditional, VTT local, and VTT remote students.

The present evaluation showed that it was possible to deliver NAVLEAD by VTT, given some reduction in participation and interaction. The classes studied were a first attempt at delivering this instruction by VTT. If the course were delivered by VTT on a regular basis, it is possible that instructors would further develop techniques to foster interaction. VTT delivery of the course would yield cost savings associated with travel and instructors. The generality of these findings will be examined in a subsequent report on the feasibility of using VTT for Leading Petty Officer (LPO) and Chief Petty Officer (CPO) NAVLEAD courses. That evaluation includes an additional measure of student performance on a simulated activity that could not be collected in the present evaluation.

Recommendations

1. In making its decision to use VTT for NAVLEAD, the Chief of Naval Education and Training should consider both this evaluation and that subsequently conducted for Chief and Leading Petty Officer courses.

2. If the decision is made to conduct NAVLEAD instruction with VTT, the Chief of Naval Education and Training should test and refine ways to foster higher levels of instructor-student and student-student interaction.

Contents

List of Tables

List of Figures

Introduction

Problem and Background

A requirement exists to train Navy personnel who are geographically remote from training resources. An increasingly efficient approach to meeting this requirement is needed as the Navy downsizes and training resources become constrained. Previous research and development work has demonstrated that videoteletraining (VTT) can be an efficient method to deliver training electronically to remote Navy personnel (Rupinski & Stoloff, 1990; Rupinski, 1991; Simpson, Pugh, & Parchman, 1990, 1991, 1992; Stoloff, 1991). The Chief of Naval Education and Training (CNET) now has VTT in operational use in the CNET Electronic Schoolhouse Network (CESN). To date, most VTT has been limited to the delivery of lecture-based training. Present VTT technology reduces the quality of the audio and video as compared to live instruction; e.g., it reduces the visibility of personnel at different classroom locations and also reduces the ability of instructors and students to interact as in a traditional classroom. These constraints make it difficult to conduct training which is not instructor centered and which involves high levels of student participation such as Navy leadership training (NAVLEAD). Given the continuing strong demand for NAVLEAD training, significant costs could be avoided if such training could be delivered via VTT rather than in traditional classrooms. Moreover, success with NAVLEAD would open the possibility of using VTT to conduct training in total quality leadership, core values, and other subjects involving highly-interactive training.

Objective

The objective of the Distributed Training Technology (DTT) project is to evaluate technologies, training strategies, procedures, and management methods to extend VTT beyond traditional lecture-based courses. This report describes research conducted to test the feasibility of delivering NAVLEAD training via VTT.

Research Issues

NAVLEAD training poses unique challenges to VTT because it differs from traditional lecture-based instruction in several ways. Among other things, there is a serious attempt to impart attitudes and values in this training as well as factual knowledge and skills. The training involves a combination of lecture, discussion, experiential learning, and team-building activities which occur in a highly-interactive learning environment that requires students to make decisions, take positions, defend themselves before their peers, work as team members, and take responsibility for their own learning. The intensity of NAVLEAD training is abetted by having a team of instructors conduct training, making a determined effort to draw out students to facilitate instructor-student and student-student interaction, and arranging the classroom so that instructors are able to stroll among tables in physical proximity to students. NAVLEAD instructors are called "facilitators," in formal acknowledgment that they are not the sole or even primary source of knowledge but are present to facilitate a learning process in which the students themselves share knowledge and experiences and learn from one another. Facilitators are trained to interpret nonverbal cues such as body language and facial expressions and use them to assess student understanding and attitudes. NAVLEAD training stresses team building. Students are organized in small groups and work together as a unit throughout the course. The team is assigned group problem-solving tasks and

members work together in establishing roles and group hierarchy, defining and solving problems, and reporting back to the class. Successful teams are cohesive and group members work effectively together, frequently taking on a group identity that is competitive with respect to other groups.

Given the foregoing, some key test and evaluation issues in delivering NAVLEAD by VTT are the following:

- Will VTT permit the highly interactive instructional environment of the live classroom, or will it be compromised by lack of physical proximity of instructor and students?
- Can experiential learning activities such as case studies, exercises, and simulations be conducted successfully using VTT?
- Will VTT affect student performance or knowledge acquisition?
- Will VTT affect student attitudes toward the learning experience?

The research described in this report focused on these issues.

Method

The method of the study is described below in terms of the research plan, data collection instruments, and the preparation of the course for VTT.

Research Plan

The research plan, described below, consists of research objectives, research design and independent variable, dependent variables, data collection methods and instruments, subjects, and data collection.

Research Objectives

The objective of this research effort was to test the feasibility of using VTT to deliver NAVLEAD training for the Division Officer's Basic Leadership course. Feasibility was defined in terms of several general criteria, including student perceptions of VTT and training quality, student knowledge gained, facilitator/observer perceptions of training quality, student performance, and class participation. The baseline for comparison was traditional live instruction. The use of VTT technology would not be expected to improve training in terms of the general criteria; parity with traditional instruction would validate the use of VTT. The research objective was addressed by determining the effects upon dependent variables of student participation in traditional live instruction versus VTT instruction.

Research Design and Independent Variable

A single independent variable (type of instruction) with three states was used. This variable consisted of three treatment groups: (1) traditional classrooms; (2) VTT local classrooms with students and an instructor, and (3) VTT remote classrooms where students were connected to the local classroom by a two-way audio and video VTT system.

Dependent Variables

Dependent variables fell into six general classes: (1) student perceptions of VTT quality, (2) student perceptions of training quality, (3) student knowledge gained, (4) facilitator/observer perceptions of training quality, (5) student performance, and (6) class participation. Each of these variables was defined in terms of several related measures which were gathered with the six data collection instruments described below.

Subjects

Subjects were active duty Navy officers in a variety of career designators and ranks ranging from O-1 to O-4; mean rank was O-2.2. The traditional course was always given at Little Creek, VA. The research plan called for 20 students at each of three sites during VTT classes, but this was not possible to accomplish in practice. During VTT classes, the local classroom (originating site with the instructor) was located at Dam Neck, VA. A remote classroom was located at Charleston, SC during the first VTT class, and at both Charleston and Newport, RI during the second VTT class. Fewer students attended than had been planned. Table 1 gives the number of students and mean rank by location and class type for the four NAVLEAD classes included in the research study.

Table 1

Class Types, Locations, Number of Students, and Average Student Military Rank by Class Number

Class Number	Class Type	Location	Number of Students	Average Mil Rank
1	VTT (local)	Dam Neck	23	O-2.5
	VTT (remote)	Charleston	8	O-2.0
		Overall	**31**	**O-2.4**
2	Traditional	Little Creek	27	O-1.8
3	VTT (local)	Dam Neck	13	O-2.3
	VTT (remote)	Charleston	5	O-2.4
	VTT (remote)	Newport	9	O-2.0
		Overall	**27**	**O-2.2**
4	Traditional	Little Creek	20	O-2.1
All	VTT (local)		36	O-2.4
All	VTT (remote)		22	O-2.1
All	Traditional		47	O-1.9
All	**Total**		**105**	**O-2.2**

Data Collection Instruments

Six different data collection instruments were used. These instruments were designated Q.1 through Q.6. The purpose and content of each instrument are described below. Table 2 indicates who was required to complete each instrument, when it was completed, and the approximate time required for completion. Instructions for administering these instruments are given in Appendix A. Because Q.1 asked questions pertaining to VTT issues, it was administered only to students in VTT classes and no comparable data were obtained from traditional classes. All other instruments were administered in both traditional and VTT classes and provided dependent measures that enabled comparisons among the three treatment groups.

Table 2

Data Collection Overview

Instrument	Course Type		Completed by	When Completed	Est. Time Required
	Traditional	VTT			
Q.1	No	Yes	VTT Students	Day 5	5 min.
Q.2	Yes	Yes	All Students	Day 5	10 min.
Q.3	Yes	Yes	All Students	Days 1 & 5	25 min.
Q.4	Yes	Yes	Facil/Observ	Daily	10 min./day
Q.5	Yes	Yes	Facil/Observ	Days 3 & 5	5 min.
Q.6	Yes	Yes	Facil/Observ	Daily	2 hrs/day

VTT Student Questionnaire (Q.1): Student perceptions of VTT quality were assessed at the conclusion of the course with Q.1 (Appendix B). It consists of ratings of video, audio, VTT procedures, local vs. remote team participation; and multiple-choice items regarding student preferences.

NAVLEAD Student Questionnaire (Q.2): Student perceptions of training quality were assessed at the conclusion of the course with Q.2 (Appendix C). This questionnaire employs items concerned with ratings of facilitators, personnel visibility and audibility, written materials, learning activities, training aids, interaction/participation, overall evaluation; and open-ended questions about student likes, dislikes, and suggestions.

NAVLEAD Quiz (Q.3): Student knowledge of course content was assessed twice with a quiz (Q.3, as given in Appendix D). This quiz was administered as a pretest to students before the course and again as a posttest at the end of the course. The items in this quiz cover knowledge of course content, which was assessed with 25 items given in a four-alternative multiple-choice format.

Facilitator/Observer Questionnaire (Q.4): Facilitator or observer perceptions of training quality were assessed on a daily basis with Q.4 (Appendix E). It consists of ratings on various dimensions of the course from the perspective of the facilitator or subject matter expert

(SME) (e.g., effectiveness of presentations and exercises, success in meeting learning objectives, difficulty of conducting instruction, student interaction, student participation, degree of control, presentation quality, cohesiveness; space is provided for comments).

Performance Activities (Q.5): Q.5 (Appendix F) reflects student performance and consists of facilitator/observer ratings on several different dimensions of student performance in completing classroom performance activities for lesson 3.5 (DIVO/CPO relationships) and 5.4 (assessing the division).

Class Participation Tally (Q.6): Class participation was assessed with Q.6 (Appendix G) by having an observer record a frequency tally of the number of student-initiated questions and comments from each student team. Remarks had to be directed at facilitators or students, had to relate to course content, and had to be intended for the class to hear. These interaction tallies were recorded daily during two one-hour intervals (0900-1000 and 1300-1400) for all classes.

Data Collection

All data collection instruments were administered by NAVLEAD facilitators or other designated personnel according to procedures in a set of data collection instructions (Appendix A). Data were collected from facilitators, observers, and students during four iterations of the Division Officer's NAVLEAD course (2 traditional and 2 VTT). The ideal data collection sequence would have been traditional-VTT-VTT-traditional or VTT-traditional-traditional-VTT, with an equal and brief time gap separating each course iteration. Real-world scheduling and quota constraints led to the following actual sequence of classes by type and date:

1. VTT (28 Sept - 2 Oct 1992)
2. Traditional (19-23 Oct 1992)
3. VTT (26-30 Oct 1992)
4. Traditional (11-15 Jan 1993)

To assure comparability of traditional and VTT data, it would have been desirable to use the same facilitators and observers throughout the four course iterations. This was possible in the case of the facilitators, but not for observers.

Preparation for VTT

Instruction delivered by VTT typically requires several adaptations of the training materials and classroom configuration, as well as instructor preparation for using the medium. The methods specific to the NAVLEAD course are given below. A general guide for converting courses to VTT is given in Simpson (1993).

Training Course Selection

The research was conducted with the Division Officer Basic Leadership Course, as described in the course Instructor and Student guides (HGL Associates, 1992a, 1992b). The course was a revised version of one previously taught and its introduction occurred concurrently with the research study.

NAVLEAD training combines lecture, discussion, experiential learning, and team-building activities which are team-taught in a classroom whose physical layout permits facilitators to stroll among tables in physical proximity to students. The intense, highly-interactive learning environment encourages students to share knowledge and experiences, to learn from one another, and stresses team-building. Facilitators rely on their perception and interpretation of student nonverbal cues to guide the learning activities. During lectures and discussion, facilitators use overhead transparencies, videotapes, posters, and various handouts. The student guide contains case studies, exercises, and simulations. No formal testing is included in the course.

The course differs from previous courses we have studied because of its high level of interactivity (facilitator-student, student-student), use of experiential learning activities, use of nonverbal information, and stress on team building.

Classroom Design Adaptations

Students in traditional NAVLEAD classrooms sit with their teammates around tables, typically with six students per table, as illustrated in Figure 1a. This arrangement enables students to communicate easily with teammates and allows facilitators to stroll around the room in close proximity to tables and students. The VTT classrooms used in the research were arranged as illustrated in Figure 1b. Students were still assigned to teams, though team members had to rotate to face one another during group work. In addition, this arrangement did not permit facilitators the same intimacy with students in local or remote classrooms.

The VTT classrooms were equipped with a fully interactive two-way video and audio VTT system. The local classroom was equipped with a remotely-controlled instructor camera, a student camera, an electronic presentation device, and a video easel camera. One classroom camera was aimed to show a view of the instructor and another student camera was aimed to display a view of the students. The camera operator/technician selected cameras or other video input devices as well as controlling other aspects of audio and video through a control panel and/or infrared remote controls. Visual aids were presented on a TV monitor. The video easel camera was used to display material that might more commonly be displayed using an overhead projector. Transparency material was also presented in computer-based electronic form with a General Parametrics Corporation *VideoShow* electronic slide presentation device.

Students in the local classroom observed facilitators and students in that classroom directly but could see students in the remote classroom only on a TV monitor. Students in remote classrooms observed NAVLEAD facilitators or students in the local classroom on a TV monitor, depending upon which camera was selected.

Training Adaptations

Training was adapted for VTT through a working collaboration between representatives of the CESN and the NAVLEAD school at Little Creek. No modifications were made to the content of lectures or course written materials. VTT and traditional class length were identical. However, the VTT classes differed in some ways from traditional classes:

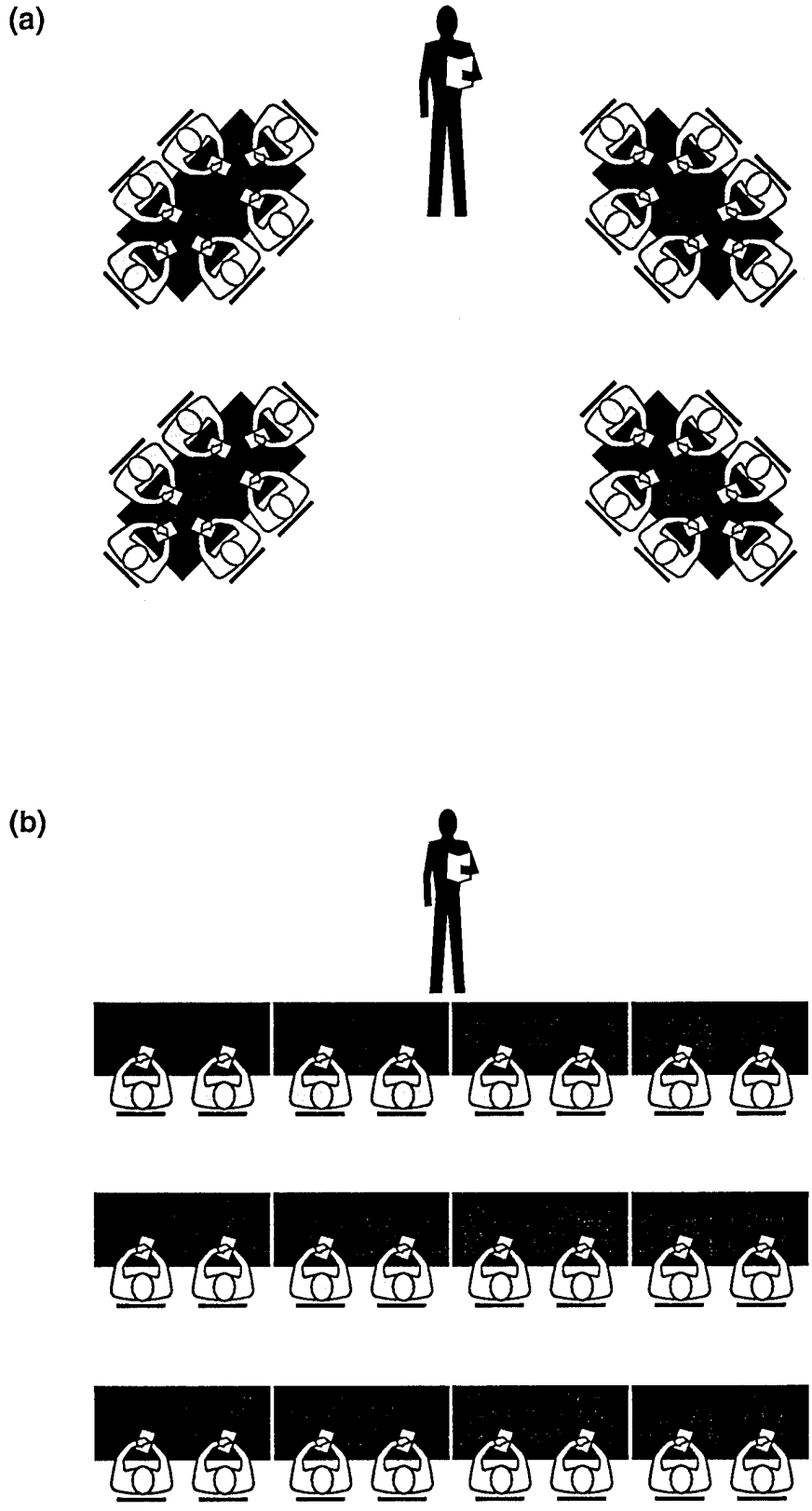

Figure 1. Student table layout in NAVLEAD classrooms: (a) tradiitonal class, (b) VTT class.

- Visuals or transparencies were presented on TV monitors by using the video easel camera or by the electronic slide presentation device instead of on conventional projection screens or whiteboards.
- All posters were converted to hardcopy form and provided to students instead of posting them on walls.
- Students were briefed on the network and encouraged to become medium conscious, e.g., by pressing a button on the microphone before speaking so that they could be heard by students at other sites.
- Facilitators limited their range of body motion to remain on camera and their rate of motion to prevent image jerkiness associated with the rate of video transmission.
- Facilitators made special efforts to maintain participation by students at remote sites, for example, by soliciting comments and directing questions at individuals.
- Facilitators used the video easel camera vs whiteboard or flip chart for compiling classroom comments.

Instructor Training

Four different instructors (facilitators) delivered training during the research study. Instructors team-taught the classes. Instructors were familiarized with the audio and video equipment and practiced equipment operation and class procedures. The total training period per instructor was approximately two days, most of it devoted to practice teaching. None of the instructors were given or had previously received training in camera presence, articulation, graphics production, or other skills of TV professionals.

Results

Traditional, VTT local, and VTT remote treatment conditions are compared below for each of the data collection instruments, Q.1 through Q.6.

VTT Student Questionnaire (Q.1)

Student attitudes were measured with a post-course questionnaire (Appendix B) which contained a series of statements to be rated, multiple-choice questions, and open-ended questions. Questionnaires were only completed by the 58 students participating in the VTT class convenings (i.e., classes number 1 and 3 as shown in Table 1). The results are presented in terms of comparisons between students in the local (originating) classroom and those in the remote classrooms.

Student Ratings

The statements rated by students (items 1-17 in Appendix B) were grouped in three categories (video, audio, VTT procedures). Statements were rated on a 5-point scale with a midpoint of 3. A 1 indicated "Unsatisfactory" and a 5 indicated "Outstanding." Mean ratings on each item were computed for all local and all remote classrooms across course convenings. Results are shown in Figure 2. Group averages on each of the items are above the midpoint on the rating scale; most

students gave positive ratings to the dimension being measured. Differences between local and remote classrooms were small and in most cases do not show interesting patterns and suggest that, in the main, students in both local and remote classrooms were positively disposed toward several different aspects of the VTT learning environment, a result that generally parallels previous VTT research (see Simpson et al., 1990, 1991, 1992).

One-way analyses of variance (ANOVA) were conducted to determine the statistical significance of rating differences between local and remote classrooms. Statistically significant differences were obtained for question 2 ($F(1,57) = 4.87$, $p < .05$), question 3 ($F(1,57) = 16.24$, $p < .01$, and question 7 ($F(1,57) = 10.47$, $p < .01$). Responses to these questions indicate that remote students had more problems with audiovisual factors than students in the local classroom.

Multiple-Choice Questions

Student perceptions of their opportunities to interact and their preference for a method of instruction were assessed with multiple-choice questions (items 18-22 in Appendix B). Items 18-20 had three choices and items 21 and 22 had two. Percentages of response to each choice were calculated for local and remote classrooms, and Chi Square tests were used to compare response distributions by classroom.

Figure 3a shows student responses to question 18, which asked "How did the VTT method of instruction affect your opportunities to interact with the instructor?" A Chi Square test showed that the distributions differed significantly ($\chi^2(2) = 10.11$, $p < .01$). The majority of students in both classrooms felt that VTT had no effect on opportunities to ask questions. However, compared to local students, remote students were less likely to respond that there was no effect and were more likely to respond that VTT provided fewer opportunities.

Figure 3b shows student responses to question 19, which asked "How did the VTT method of instruction affect your opportunities to interact with other students?" A Chi Square test showed that the distributions differed significantly ($\chi^2(2) = 10.24$, $p < .01$). The pattern of responses, local versus remote, shows that remote students were less favorably disposed toward VTT than local students in terms of ability to interact with other students.

Figure 4a shows student responses to question 20, which asked "Which method of instruction would you have preferred for this course?" A Chi Square test showed no significant difference in the response distributions although the response rates appear to differ between local and remote classrooms; perhaps the most important difference is that remote students were about half as likely as local to prefer VTT instruction.

Question 21 asked "Which of the following would you prefer: (a) Enrolling in a VTT course near your home port or (b) Enrolling in a traditional (live) course farther (TAD) from your home port." The majority of students in both classrooms preferred taking a VTT course nearby to a traditional course requiring travel (Figure 4b).

Question 22 asked "Which of the following would you prefer: (a) Enrolling in a VTT course at a time convenient to your time schedule or (b) Enrolling in a traditional (live) course at time inconvenient

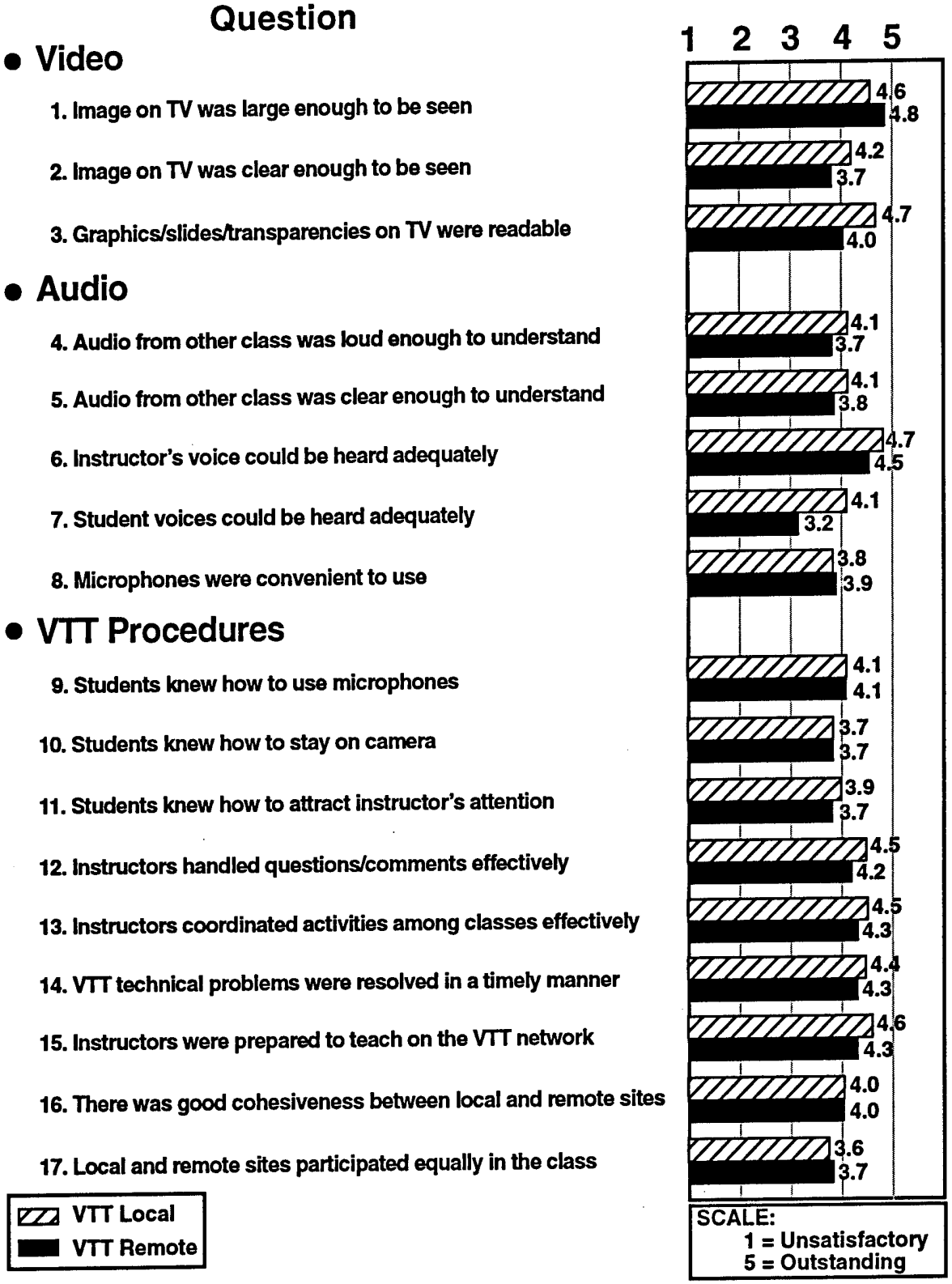

Figure 2. VTT Student Questionnaire (Q.1) responses.

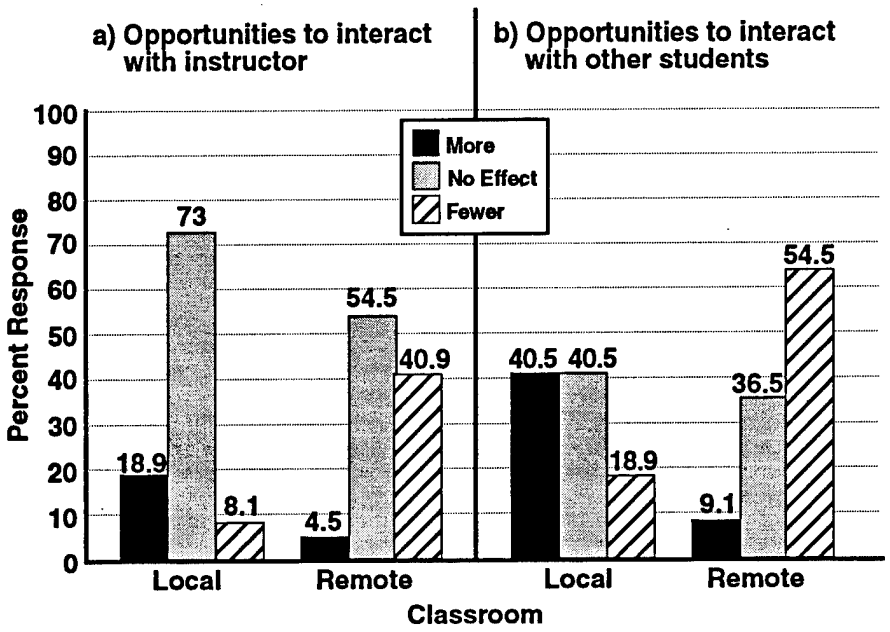

Figure 3. VTT Student Questionnaire (Q.1) responses to items 18 and 19 on how VTT affected opportunities to interact with the instructor or other students.

to your time schedule." Over nine tenths of the students in either classroom preferred attending a VTT course at a convenient time to a traditional course at an inconvenient time (Figure 4c).

Comments

Student comments were solicited with question 23 ("If you had a choice, would you take another VTT course?"), to which the student answered yes or no and then explained the chosen response by writing in comments. Figures 5a and 5b show the responses to this two-part question in terms of type or response for local and remote classrooms.

Figure 5a shows responses to the first part of the question. The majority of students in both local and remote classrooms answered "yes" to the question, indicating that they would take another VTT course. There was little difference between local and remote students.

The comments made in the second part of question 23 were exhaustively listed and categorized as positive or negative, as shown in Figure 5b. A total of 63 comments was made by 50 students (9 students did not comment). The comments are distributed about evenly between positive and negative in either local or remote classrooms. This ambivalence may suggest less enthusiasm in the willingness to participate in future VTT courses than was shown in the first part of the question (i.e., although roughly 9 out of 10 students expressed willingness to participate, 5 out of 10 of those who commented had negative comments on the prospect).

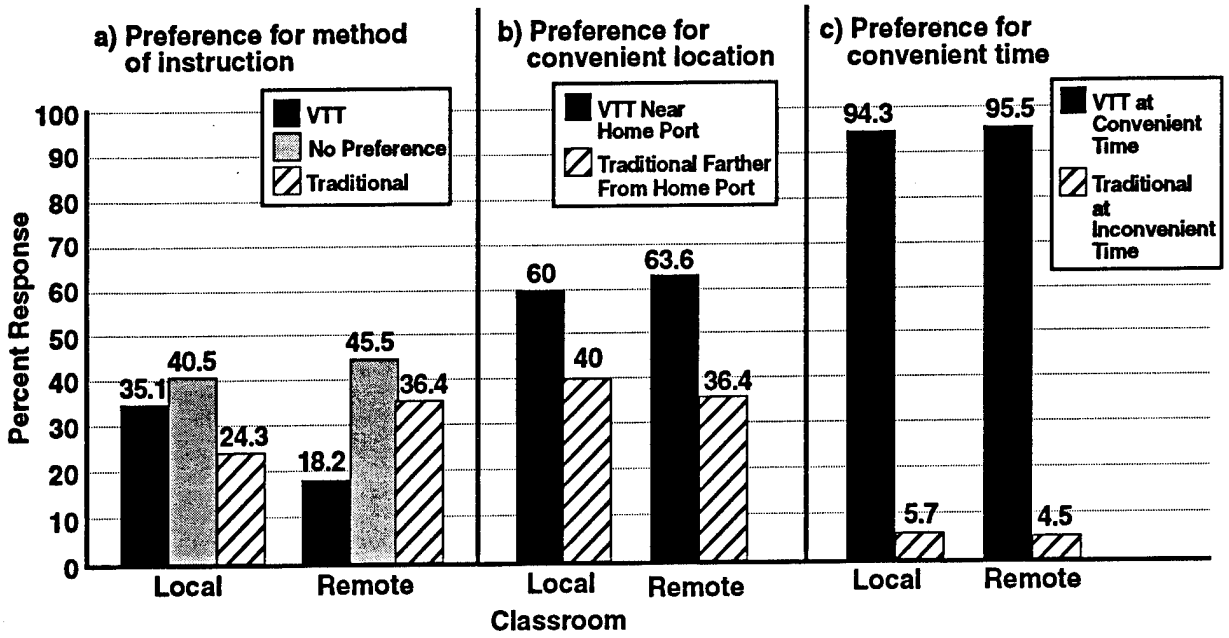

Figure 4. Student preferences for method of instruction, location, and time on items 20, 21, and 22 of VTT Student Questionnaire (Q.1)

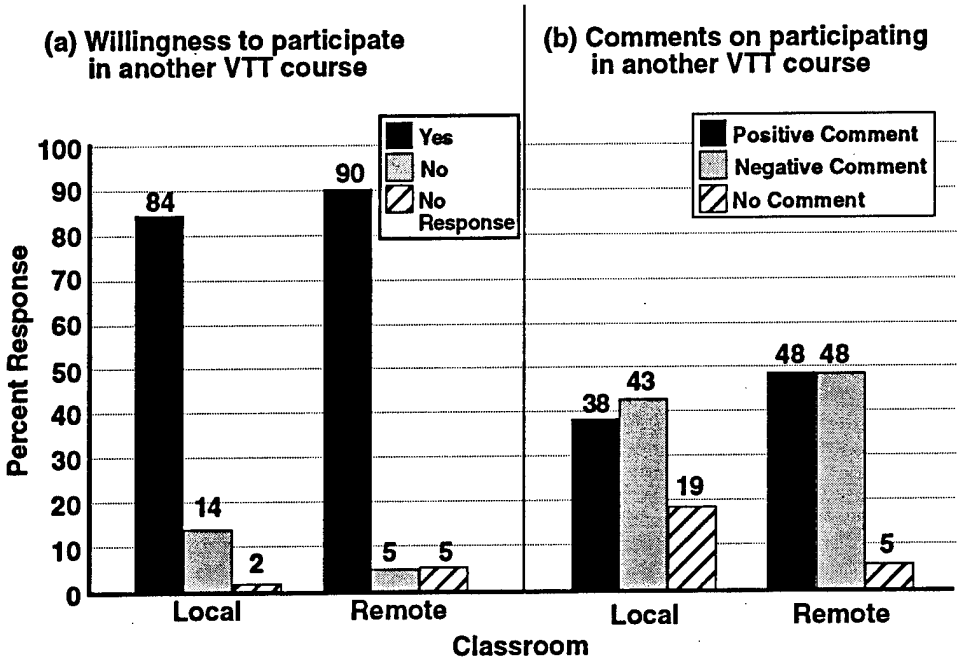

Figure 5. VTT student responses and comments to item 23 (Q.1) concerning willingness to participate in another VTT course.

NAVLEAD Student Questionnaire (Q.2)

Student attitudes were measured with a post-course questionnaire (Appendix C) which contained 27 statements to be rated and three open-ended questions. Questionnaires were completed by all 105 students participating in both traditional and VTT classes (i.e., classes number 1 through 4 as shown in Table 1). There is some similarity between the VTT Student Questionnaire (Q.1) and the NAVLEAD Student Questionnaire (Q.2). Q.1 is the more limited instrument, as it focuses on questions that could only be answered by students participating in VTT classes and the only statistical comparisons it permits are between VTT local and VTT remote. Q.2 has broader coverage, can be administered to students regardless of whether VTT is involved, and permits comparisons between VTT and traditional classes. The analyses described below compared NAVLEAD as delivered in three different forms: (1) traditional, (2) VTT local, (3) VTT remote.

Student Ratings

The statements rated by students (items 1-27 in Appendix C) were grouped in six categories (instructor performance, students/team, learning activities, training aids, interaction/participation, and overall course rating). As with Q.1, statements were rated on a 5-point scale with 3 as a midpoint, 1 indicating "Unsatisfactory, and 5 indicating "Outstanding." Mean ratings were computed for traditional, VTT local, and VTT remote. Results are shown in Figure 6. Group averages on each of the items were above the midpoint on the rating scale; most students gave positive ratings to the dimension being measured. Comparison of the ratings indicates that highest ratings were given for traditional, slightly lower for VTT local, and lowest for VTT remote; mean ratings over items 1-27 in these three groups are traditional (4.6), VTT local (4.5), and VTT remote (4.2). While this is the overall trend, rating differences vary by item from negligible (e.g., items 4, 14, 15) to half a rating point or more (e.g., items 7, 8, 10, 12, 23).).

Analyses of variance (ANOVA) were conducted to determine the statistical significance of rating differences among traditional, VTT local, and VTT remote classrooms. The results for the main effect tests are shown in the ANOVA T-L-R columns of Table 3. In addition, Tukey HSD tests were conducted to determine whether any of the pairwise combinations of the three groups exceeded a difference threshold at the .05 level of significance. Pairwise combinations are differences among traditional (T), VTT local (L), and VTT remote (R), i.e., T-L, T-R, L-R. If a main effect is significant, the HSD tests allow an examination of the pairwise difference combinations that contribute to that main effect. The result of these tests are shown by asterisks next to the mean differences given in the last three HSD columns of Table 3.

Significant main effects are absent within all blocks of items relating to learning activities (items 14-17), training aids (18-20), and overall (25-27). These findings suggest that regardless of what type of classroom the student was in, the attitude expressed was about the same toward case studies, exercises, simulations, written materials, training aids, instructor competence, and how well the course had prepared the student for the job.

Significant effects are present for items relating to instructors, students/teams, and interaction/ participation.

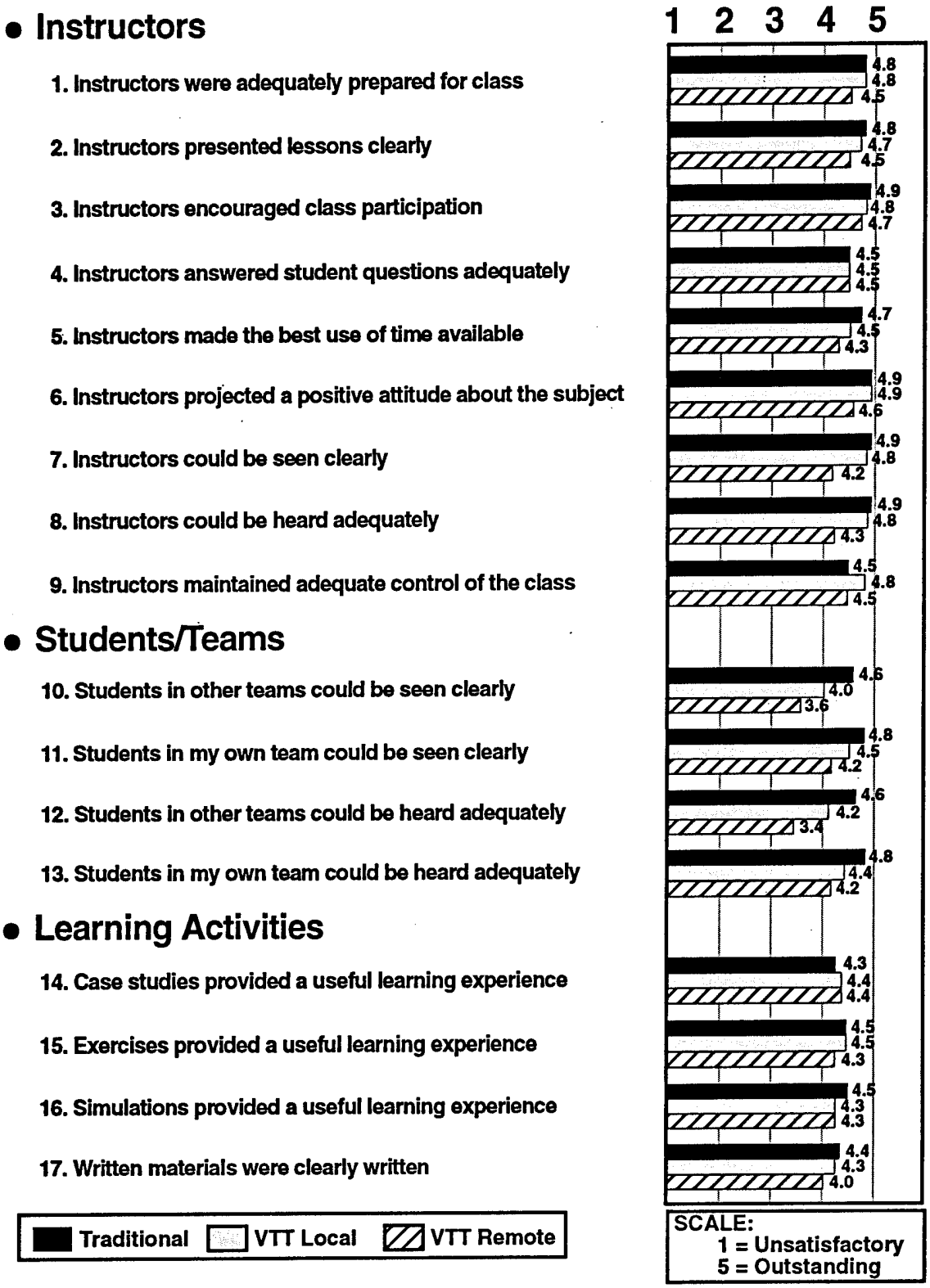

Figure 6. NAVLEAD Student Questionnaire (Q.2) responses.

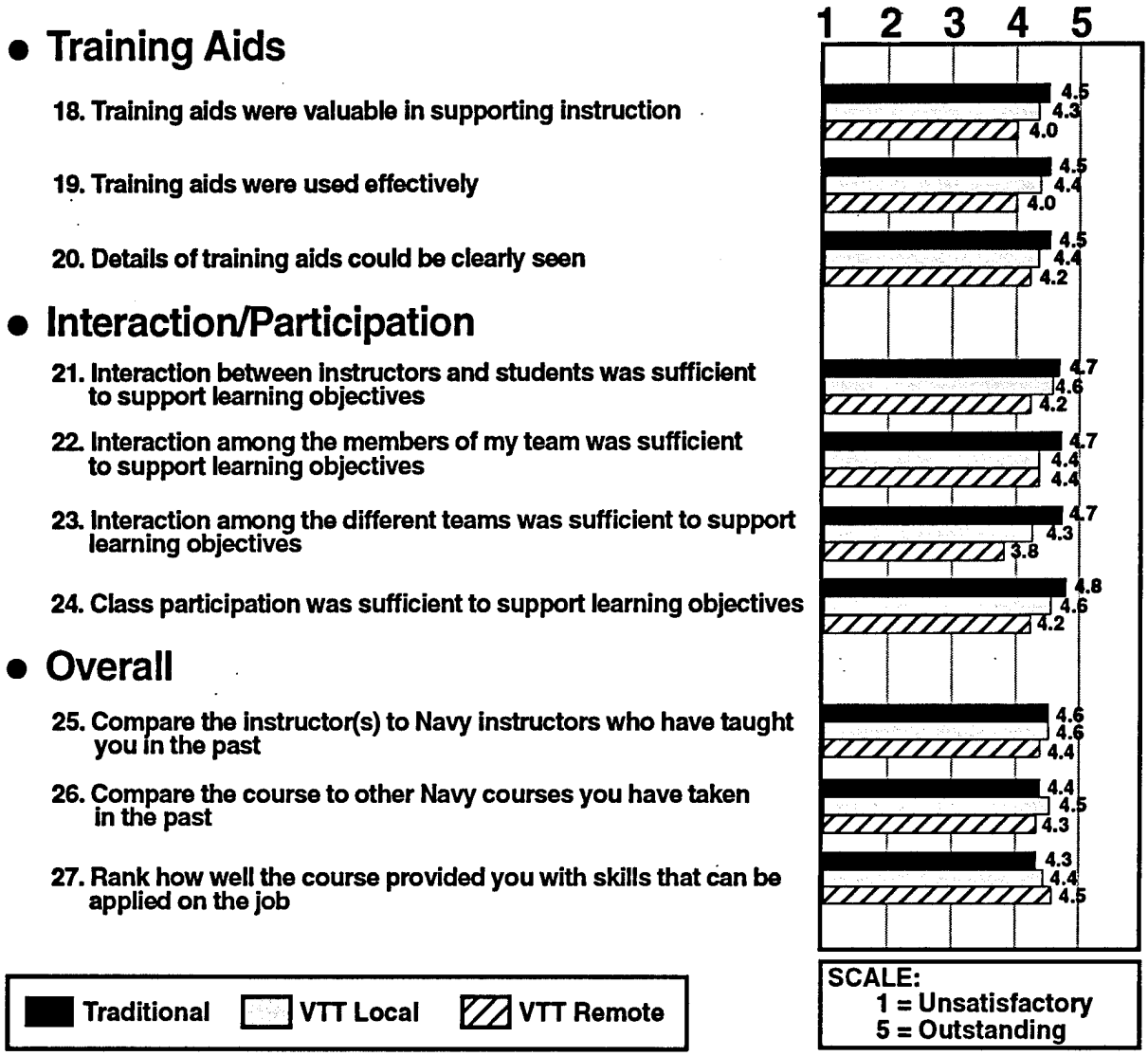

Figure 6. (Continued).

Instructors. Significant main effects were found for items 1, 2, 6, 7, and 8. HSD multiple comparison tests in these cases indicate that differences between traditional and VTT local (i.e., T-L) scores were not significant but that differences between traditional and VTT remote (T-R) were significant. VTT local and VTT remote (L-R) were also significantly different in all but one case (question 2). In these instances the ratings given by students in VTT remote classrooms regarding instructor preparation, projection of a positive attitude, visibility, and audibility were significantly lower than by students in traditional or VTT local classrooms.

Students/teams. Significant main effects were found for all items (10 through 13). HSD comparisons indicate significant differences in all three group comparisons, with the largest differences being found for items 10 and 12. Students in VTT classrooms (local or remote) could

Table 3

Statistical Comparisons for NAVLEAD Student Questionnaire (Q.2)

Question	ANOVA T-L-R DF	ANOVA T-L-R F	Mean Differences and Tukey HSD Comparisons T-L	T-R	L-R
INSTRUCTORS					
1. Instructors were adequately prepared for class	2,102	5.42**	0.0	0.4*	0.4*
2. Instructors presented lessons clearly	2,102	4.26*	0.1	0.4*	0.2
3. Instructors encouraged class participation	2,102	2.10	0.1	0.2	0.1
4. Instructors answered student questions adequately	2,101	0.01	0.0	0.0	0.0
5. Instructors made the best use of time available	2,102	2.72	0.2	0.4	0.2
6. Instructors projected a positive attitude about the subject	2,102	5.44**	0.1	0.3*	0.3*
7. Instructors could be seen clearly	2,102	22.01**	0.1	0.7*	0.7*
8. Instructors could be heard adequately	2,102	11.63**	0.1	0.6*	0.5*
9. Instructors maintained adequate control of the class	2,102	2.00	-0.2	0.1	0.3
STUDENTS/TEAMS					
10. Students in other teams could be seen clearly	2,101	13.86**	0.6*	1.1*	0.5
11. Students in my own team could be seen clearly	2,100	8.11**	0.3	0.6*	0.3
12. Students in other teams could be heard adequately	2,101	17.15**	0.4*	1.2*	0.8*
13. Students in my own team could be heard adequately	2,101	6.55**	0.3*	0.6*	0.2
LEARNING ACTIVITIES					
14. Case studies provided a useful learning experience	2,101	0.06	0.0	0.0	0.0
15. Exercises provided a useful learning experience	2,101	0.56	0.0	0.2	0.1
16. Simulations provided a useful learning experience	2,101	0.84	0.2	0.2	0.0
17. Written materials were clearly written	2,101	1.74	0.1	0.4	0.3
TRAINING AIDS					
18. Training aids were valuable in supporting instruction	2,102	2.59	0.1	0.4	0.3
19. Training aids were used effectively	2,102	2.72	0.0	0.5	0.4
20. Details of training aids could be clearly seen	2,102	1.66	0.1	0.3	0.2
INTERACTION/PARTICIPATION					
21. Interaction between instructors and students was sufficient to support learning objectives	2,102	5.64**	0.1	0.5*	0.3
22. Interaction among the members of my team was sufficient to support learning objectives	2,102	4.07*	0.3	0.4	0.1
23. Interaction among the different teams was sufficient to support learning objectives	2,102	12.08**	0.4*	0.9*	0.5*
24. Class participation was sufficient to support learning objectives	2,102	9.61**	0.2	0.6*	0.4*
OVERALL					
25. Compare the instructor(s) to Navy instructors who have taught you in the past	2,102	1.23	0.1	0.2	0.2
26. Compare the course to other Navy courses you have taken in the past	2,102	0.80	0.0	0.2	0.2
27. Rank how well the course provided you with skills that can be applied on the job	2,101	0.79	-0.1	-0.2	-0.1

Note. Scale is 1-5 for mean differences: T-L = Traditional-Local; T-R = Traditional-Remote; L-R = Local-Remote
*p < .05 **p < .01 (Tukey HSD comparisons were judged significant at p < .05).

not see or hear members of other teams as well as students in traditional classrooms. Interestingly, a somewhat similar, but less pronounced, pattern of responses was found for questions 11 and 13 (relating to the student's own team), indicating that students in VTT classrooms could not hear members of their own team as well as students in traditional classrooms. The remote students also reported a relative difficulty in seeing their own team members. The possible source of these findings is the different furniture and seating arrangement in VTT classrooms (see Figure 1), in which VTT students did not face one another.

Interaction/participation. Significant main effects were found for items 21, 22, 23, and 24. HSD multiple comparison tests in most of these cases indicated that differences between traditional and VTT local scores were smaller than differences between traditional and VTT remote or between VTT local and VTT remote classrooms. The pattern of these differences indicates that ratings given by students in VTT remote classrooms regarding student interaction and participation were lower than by students in traditional or VTT local classrooms.

Open-Ended Questions

Questions 28, 29, and 30 on Q.2 asked, respectively, what students liked most about the course, liked least, and for any suggestions to improve the course. A total of 105 students completed the questionnaire (47 traditional, 36 VTT local, 22 VTT remote). Responses to all three questions were exhaustively listed and clustered into 6 broad categories, and non responses were placed in a "no comment" category.

Figure 7 summarizes the results for question 28. A total of 113 comments was made by 96 students for an overall response rate of 91% and with all groups responding at this level. The level of responses by category differ among groups but do not appear to be systematic. The four most common types of comments related to interaction, instructional strategies, subject matter, and instructors, all of which reflect the course rather than the delivery medium; one way to encapsulate this pattern is to observe that what students liked most about the course was some aspect of the course itself.

Figure 8 summarizes the results for question 29. A total of 105 comments was made by 70 students for a response rate of 67%. The response rate was lowest for traditional (57%), higher for VTT local (69%), and highest for VTT remote (82%), indicating an increasing tendency across these groups for students to identify things they did not like about the course. The levels of responses by category differ among groups but do not appear to be systematic. Instructional strategies were cited by nearly a quarter of students in the traditional group and by much smaller percentages in VTT groups; the cause of this unexpected result is unclear. Fairly high percentages of students in all groups made comments relating to course subject matter. VTT and equipment-related comments were made by nearly half of students in the VTT remote group, a far higher percentage than in other groups. The thing VTT remote students were most likely to dislike related to the delivery medium, a factor that mattered far less to students in the other two groups.

Figure 9 summarizes the results for question 30. A total of 115 comments was made by 55 students for a response rate of 52%. The response rate was lowest for traditional (40%), higher for VTT local (53%), and highest for VTT remote (77%), repeating the pattern found with Figure 8 and indicating an increasing tendency across these groups for students to make suggestions for

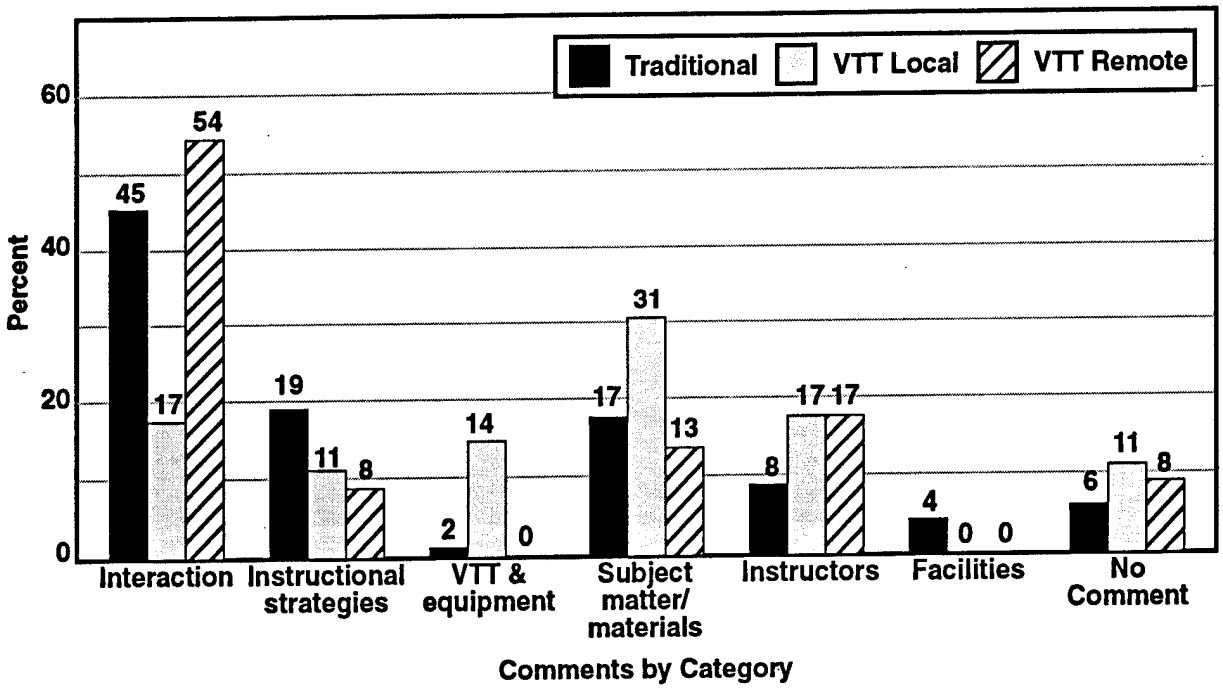

Figure 7. Student responses to item 28 on NAVLEAD Student Questionnaire (Q.2) ("What did you like the most about this course?").

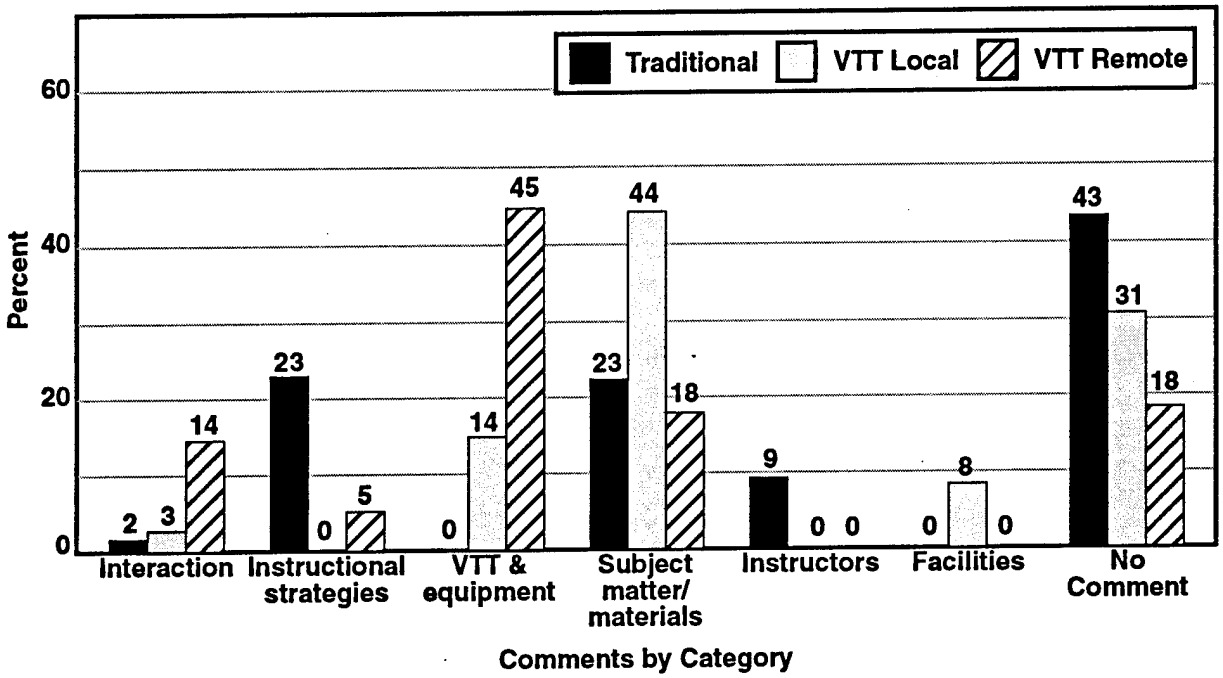

Figure 8. Student responses to item 29 on NAVLEAD Student Questionnaire (Q.2) ("What did you like the least about this course?").

improving the course. The level of responses by category differ among groups systematically only for the VTT and equipment category, where VTT remote students were the most likely to offer suggestions.

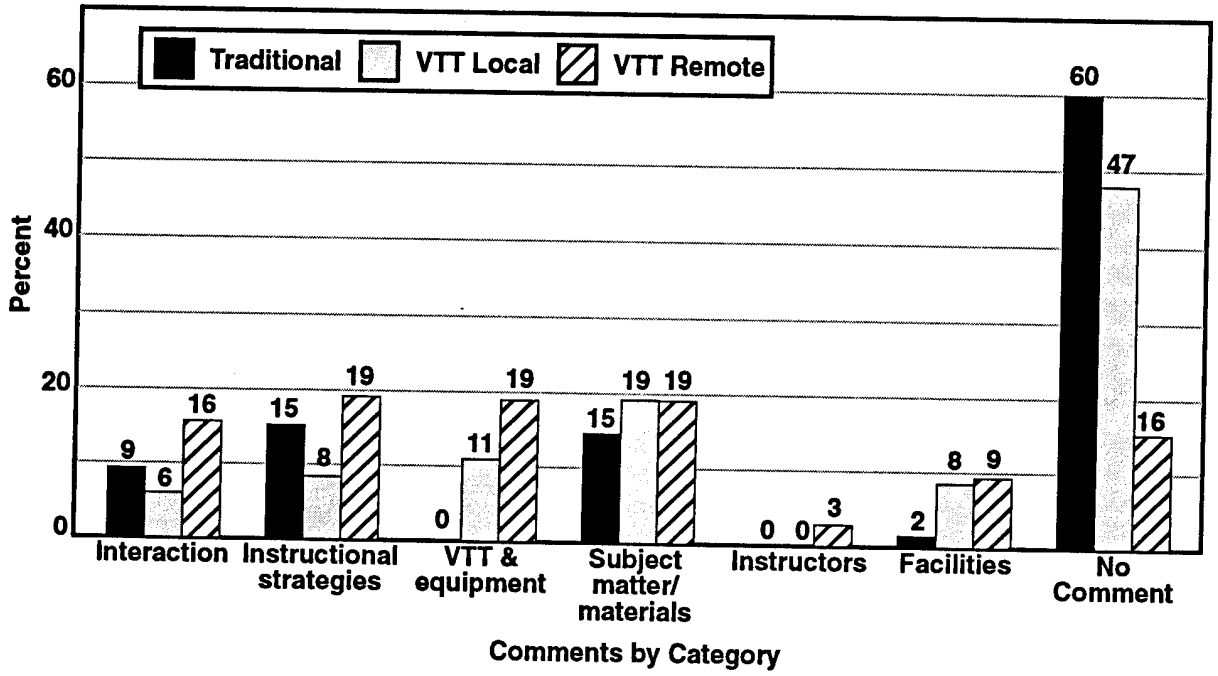

Figure 9. Student responses to item 30 on NAVLEAD Student Questionnaire (Q.2) ("Discuss any suggestions you have for improving the course.").

NAVLEAD Quiz (Q.3)

The NAVLEAD Quiz (Appendix D) consists of 25 four-alternative multiple-choice items covering course content. The quiz was administered at the beginning of the course as a pretest and at the end of the course as a posttest. Pretest, posttest, and difference (posttest-pretest) percent correct scores for Traditional, VTT local, and VTT remote groups are shown in Table 4. Pretest, posttest, and difference scores are very close, regardless of group, and differences among groups are not statistically significant .

Table 4

Student Scores on NAVLEAD Quiz (Q.3)

Class Type	No. Students	Pretest	Posttest	Difference
Traditional	47	51.25 (9.72)	62.67 (9.91)	11.42
VTT Local	36	52.33 (10.10)	63.56 (12.63)	11.22
VTT Remote	22	52.18 (11.55)	64.18 (12.44)	11.00

Note. Standard deviations for percent correct scores are in parentheses.

Facilitator/Observer Questionnaire (Q.4)

Subject-matter expert perceptions of training quality were measured by having facilitators, observers, and instructors rate 14 different dimensions of the course on a daily basis (Q.4 in Appendix E). The ratings were made on a five point scale with a midpoint of 3 and with 1 indicating "Unsatisfactory" and 5 indicating "Outstanding." Fourteen observers completed Q.4 during the four course convenings. Only one observer was present at a VTT remote site, limiting available data and precluding analyses involving raters and three-group comparisons among traditional, VTT local, and VTT remote groups (the between-subjects variable) for questions 1, 2, 3, 4, 6, 7, 8, and 10. For these questions, two-group comparisons were made between traditional and VTT (combining local and remote). No group comparisons were possible for question 13 since it applied only to VTT classes. Three-group between-subjects comparisons were possible for questions 5, 9, 11, 12, and 14 because these questions were structured in two parts; part "a" relating to VTT local and part "b" to VTT remote. Thus, VTT course observers, regardless of location, were able to rate dimensions of both local and remote classes, providing data enabling statistical comparisons. Since Q.4 was completed on a daily basis, it also provided a set of within-subjects repeated measures that could be used to compare progress on different quality dimensions during the week.

The data were analyzed to determine how observer perceptions of course quality dimensions varied as a function of traditional vs VTT and day of week. Analyses also investigated possible interactions between the traditional-VTT between-subjects variable and the repeated measures over days within-subjects variable. Results are shown in graphic form in Figures 10a-n, which plot the ratings for each item by day of week and group (the group conditions shown refer to the site of the students, not that of the observer/rater). The majority of ratings on items are above the midpoint on the rating scale; most observers gave positive ratings to the dimension being measured.

A few trends are apparent throughout the items in Figure 10:

- Highest ratings are for traditional
- Higher ratings are usually given for VTT local than VTT remote
- Ratings tend to improve during the week for VTT classes but do not usually reach parity with traditional classes
- Ratings for traditional classes show little or no improvement during the week

These figures can be further interpreted by considering the results of statistical analyses that were performed on the data. Analyses of variance were conducted to determine the statistical significance of rating differences for the between- and within-subjects variables. The between-subjects variable was group, which had either two levels (traditional or VTT) or three levels (traditional, VTT local, or VTT remote). The within-subjects variable was day of week. The analysis for question 13 involved only the within-subjects day of week variable for VTT classes. Results of these analyses are given in Table 5. The first column gives the question and the second lists the between-subjects treatment group variable (traditional, VTT combined, VTT remote, or

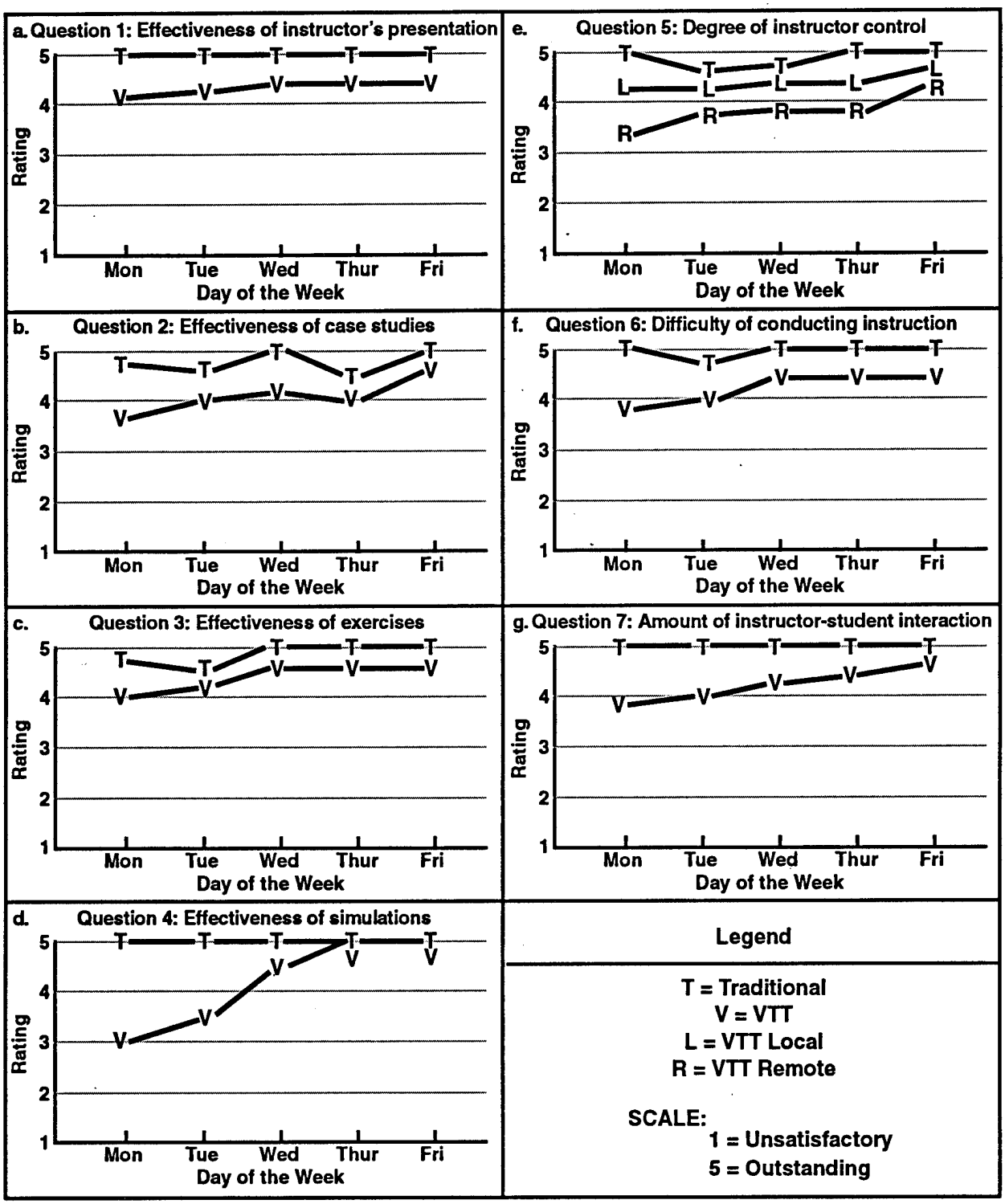

Figure 10. Evaluator ratings of course quality dimensions on Facilitator/Observer Questionnaire (Q.4) by group and day of week for items 1-14.

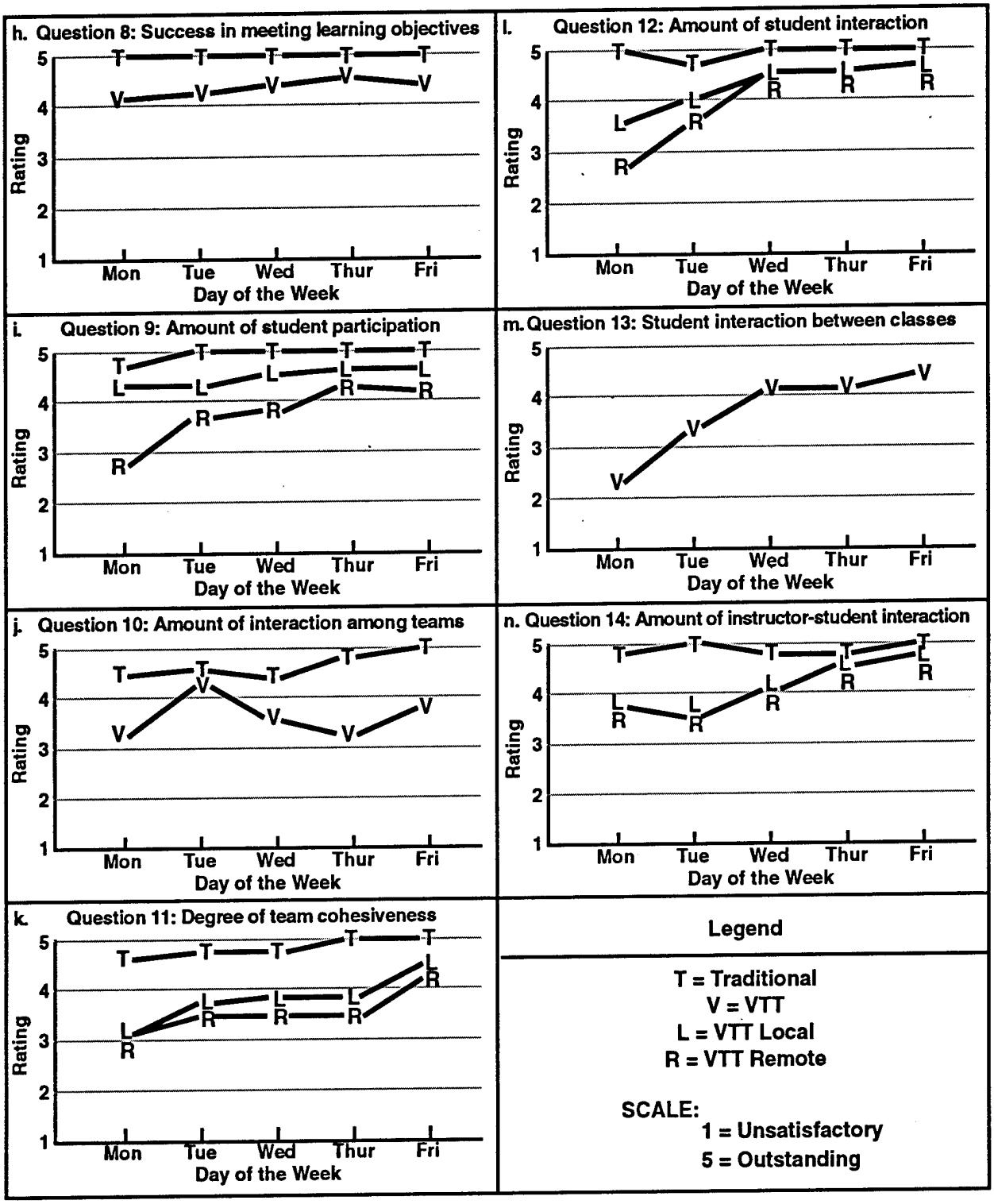

Figure 10. (Continued).

VTT local). The remaining columns give the degrees of freedom and F ratio ANOVA results for the treatment group variable, day of week, and their interaction.

Table 5

Analysis Results for NAVLEAD Facilitator/Observer Questionnaire (Q.4).

Question	Between Groups Comparison	ANOVA					
		Between Groups		Day of Week		Interaction	
		DF	F	DF	F	DF	F
1 Effectiveness of instructor's presentations	T vs VTT	1,12	5.64*	4,48	0.00	4,48	0.00
2. Effectiveness of case studies	T vs VTT	1,10	5.49*	4,40	3.61*	4,40	0.00
3. Effectiveness of exercies	T vs VTT	1,6	2.20	4,24	3.53*	4,24	0.00
4. Effectiveness of simulations	T vs VTT	1,4	1.33	4,4	3.14	4,4	1.57
5. Degree of instructor control	T vs L vs R	2,19	3.89*	4,76	4.31**	8,76	1.27
6. Difficulty of conducting instruction	T vs VTT	1,10	4.55	4,40	4.36**	4,40	1.99
7. Amount of instructor-student interaction	T vs VTT	1,11	9.26**	4,44	2.11	4,44	1.32
8. Success in meeting learning objectives	T vs VTT	1,12	4.73*	4,48	3.02*	4,48	1.68
9. Amount of student participation	T vs L vs R	2,19	11.29**	4,76	9.53**	8,76	2.66*
10. Amount of interaction among teams	T vs VTT	1,7	8.28*	4,28	2.64	4,28	2.02
11. Degree of team cohesiveness	T vs L vs R	2,13	7.25**	4,52	8.66**	8,52	0.00
12. Amount of student-student interaction	T vs L vs R	2,17	4.26*	4,68	15.58**	8,68	1.95
13. Student interaction between classes	N/A - Days	N/A	N/A	4,32	6.69**	N/A	N/A
14. Quality of student presentations	T vs L vs R	2,12	10.45**	4,48	6.55**	8,48	0.00

*p < .05
**p < .01

Traditional vs VTT

Significant effects were found for all items except 3, 4, and 6 (few observers responded to items 3 and 4). With these exceptions, observers gave higher ratings for traditional than VTT, regardless of dimension. The effects were strongest for dimensions directly bearing upon student participation (e.g., 7, 9, 10, 11, 14), and weaker on dimensions more abstractly defined or relying primarily upon the instructor.

Day of Week

Significant day of week effects were found for 10 of the 14 items. The effect for item 1 (effectiveness of the instructor's presentation) was not significant; ratings on this dimension did not change much during the week, although higher ratings were always given in traditional than VTT classes. The effect for item 4 (effectiveness of simulations) was not significant (few observers rated this item). The effect on item 7 (amount of instructor-student interaction) was not statistically

significant, although Figure 10g shows some growth for VTT during the week. Again, effects were strongest on items directly bearing upon student participation (e.g., 9, 11, 12, 13, 14) and on item 5 (degree of instructor control). These results suggest an improvement in training participants' ability to interact with one another on different levels during a week of training.

Interactions

A significant interaction indicates that the difference between the treatment groups changed in some manner over the days of the week. A significant interaction was found only for item 9. Figure 10i indicates that this rating on the amount of student participation was more likely to improve for the VTT remote group than for the other two groups. Items 4 and 12 also suggest some differential improvement for VTT groups over the week, but no significant interaction was obtained for these items.

Performance Activities (Q.5)

The performance activities upon which Q.5 is based were not conducted in any of the four courses observed, although they were called for in the instructor's guide. Consequently, it was not possible to obtain this form of objective performance data for the course.

Class Participation Tally (Q.6)

Class participation was assessed by having an observer record on Q.6 (Appendix G) the number of student-initiated questions and comments given by each student team. These were recorded daily during two one-hour intervals (0900-1000 and 1300-1400). Six observers completed Q.6, with an observer present in each of two traditional, VTT local, and VTT remote classrooms. The data enable three-group between-subjects comparisons, and since the Q.6 tally was completed on a daily basis, it also provides a set of daily within-subjects repeated measures to compare progress during the week.

The number of interactions for the two daily hours of recording were averaged for each team and analyzed to determine how level of interaction varied as a function of group and day of week. Thus, the numbers discussed below reflect the average number of interactions from a student team in a one-hour period. Results are shown in graphic form in Figures 11 and 12. Several trends are apparent in the figures, the most noticeable being that the overall level of interaction for traditional is about twice that for VTT. However this trend is mitigated by some variability shown between the two traditional classes. Over days, the level of interaction for VTT appears to rise slightly more during the week than for traditional.

An analysis of variance indicated that the between-subjects treatment group variable (traditional, VTT local, or VTT remote) was significant ($F(2,16) = 7.33$, $p < .01$). This reflects a greater level of interaction for the traditional group than in the VTT groups. An overall increase in the level of interaction over the week was indicated by the day of week main effect, which was approximately at the level of significance ($F(4,64) = 2.46$, $p = .054$). The statistical interaction between treatment group and day of week was significant ($F(8,64) = 2.49$, $p < .05$). This indicates that the level of the treatment groups differed over the week, i.e. the inconsistent level on Tuesday for the traditional condition and the increasing level for the VTT conditions.

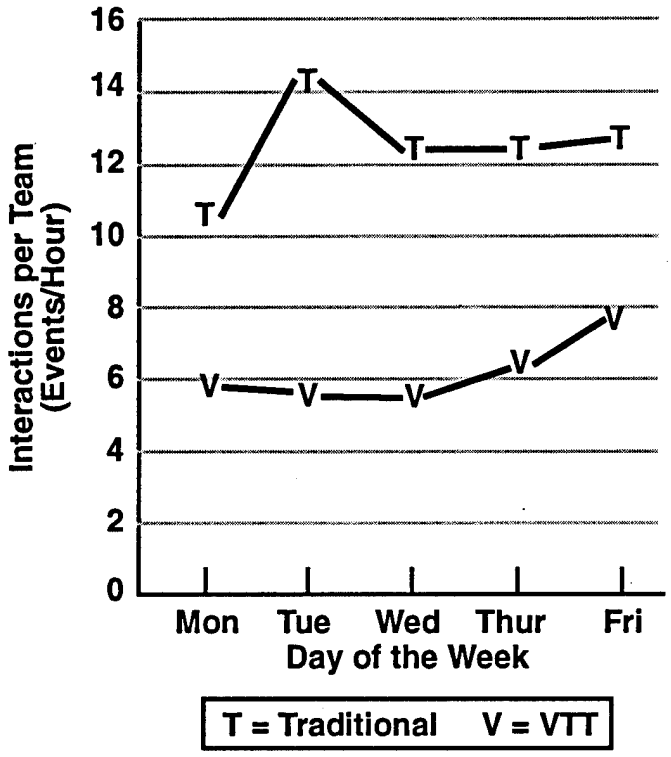

Figure 11. Level of student interaction as indicated by Class Participation Tally (Q.6) by group and day of week.

Figure 12 shows the level of interaction (per hour per team) averaged over the week. The bars with dotted lines show the average of the two classes per treatment condition, and the solid bars within these show the levels for the two individual classes in a treatment condition. The average of the two traditional classes was almost twice that for the VTT classes, with the VTT local class showing slightly more interaction than the VTT remote class. However, there was substantial variability between the two traditional classes, with one showing twice the level of the other. With a data set this small, it is not possible to attribute this variability to differences among the observers, classes, or instructors.

Readers should be aware that this analysis may be handicapped by the fact that the number of students and teams contributing to the interaction tallies were not equivalent among the traditional and VTT treatment groups. The analysis above reported interactions from teams and the average number of teams varied by treatment group: 4 (traditional) and 5.5 (VTT combined). The average number of students also varied by treatment group: 23.5 (traditional) and 29.0 (VTT combined). One might expect amount of interaction to decrease (a) with more students or teams since more people must share the time available for interaction, or (b) as a consequence of some inhibition due to use of the VTT technology. However, the differences in level of student interaction indicated in Figure 11 and 12 are greater than might be expected from the number of students alone. Practically, it may not matter whether the reduction in student interaction is caused by VTT or class size since VTT classes generally have more students than traditional classes.

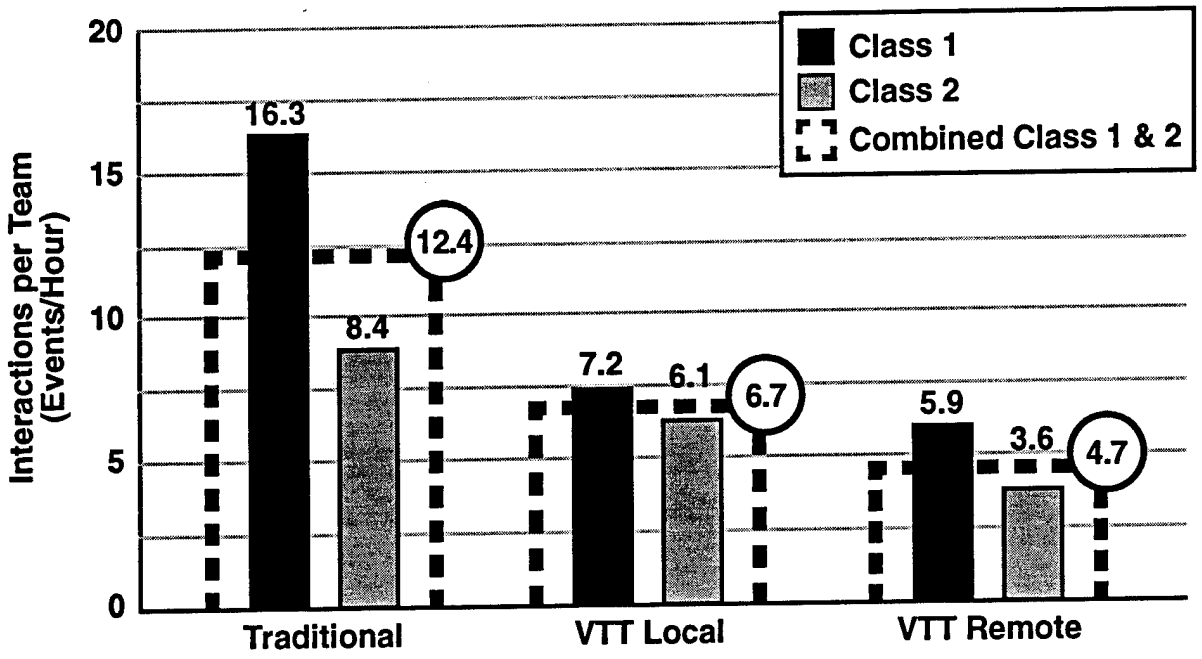

Figure 12. Student interaction on Class Participation Tally (Q.6) for each individual class within a treatment group.

Discussion and Conclusions

The primary objective of the research was to test the feasibility of using VTT to deliver Navy leadership training. Was feasibility demonstrated? In purely technical terms, the answer is yes. The classes were conducted successfully, students received training and graduated, and there was no significant outcry about the way their training was being received.

Student responses on questionnaires tended to favor traditional instruction slightly, but differences were small (Q.1 and Q.2). Students did, however, express the opinion that VTT reduced their opportunities to interact with both the instructor and other students. However, no significant differences were found with the NAVLEAD quiz (Q.3) on knowledge of course content. Subject matter expert ratings of various dimensions of the training (on Q.4) present a slightly different picture. On virtually every dimension, significantly higher ratings were given to traditional instruction than VTT and, though improvement occurred throughout the week, VTT classes did not reach parity with traditional classes. The class participation tally (Q.6) indicated that the level of interaction in VTT classes was lower than in traditional classes. Thus, interactivity was reduced in VTT classes as shown by the expressed perceptions of students and subject matter experts and by an objective count of interactions, but course knowledge was not affected.

In several respects, the use of VTT forced trainers to make compromises in terms of factors that the Navy leadership community has valued: instructor-student and student-student interaction

were reduced, the intensity of the learning environment and ability of instructors to perceive remote students' nonverbal cues were lessened by the limited view offered through the VTT system, and some experiential learning experiences were made more difficult to conduct with VTT. The data from subject matter expert ratings and that pertaining to participation suggest that VTT led to some reduction in the interactivity of the NAVLEAD learning environment as compared to that in traditional classrooms in Little Creek or Coronado.

Do these findings and judgments mean that VTT should not be used for NAVLEAD instruction? On the one hand, the data reported here suggest some reduction in interactivity and perceived quality. On the other hand, it is not clear that the course has been compromised, and several other considerations may play in the decision. Ultimately, weighing these factors and the decision to teach NAVLEAD is left to those who have direct oversight of the course, who pay for it, and who use its graduates.

Some of the other factors that may need to be weighed in a decision to teach NAVLEAD on VTT are as follows. First, the differences between traditional and VTT NAVLEAD classes mainly reflect subjective perceptions of reduced quality. Additionally, these differences are still generally above the mid point of the rating scales. Second, the data reported here are preliminary and reflect a first attempt to deliver NAVLEAD instruction via VTT. Two additional NAVLEAD courses have since been delivered with VTT (Leading Petty Officer and Chief Petty Officer courses). Research on those courses included an evaluation of student performance during a simulated classroom activity that will be reported subsequently (Wetzel, Simpson, & Seymour, 1995). Third, the delivery of the course on VTT would likely undergo some improvement as instructors become more experienced with VTT and develop new techniques to foster interaction. In addition to the potential of developing new instructional strategies and instructor behaviors to encourage greater student participation, new technologies that show better views of individuals between sites could also be employed. Fourth, practical reasons to consider VTT for these courses grow out of the need to reduce costs and address shortages of instructors due to a drawdown. Use of the CNET Electronic Schoolhouse Network (CESN) VTT system can favorably impact the cost of training by reducing the costs associated with travel, per diem, and instructors. Use of the system is particularly cost-beneficial for courses with a high throughput that are short in duration (a week or less).

Recommendations

1. In making its decision to use VTT for NAVLEAD, the Chief of Naval Education and Training should consider both this evaluation and that subsequently conducted for LPO and CPO courses.

2. If the decision is made to conduct NAVLEAD instruction with VTT, the Chief of Naval Education and Training should test and refine ways to foster higher levels of instructor-student and student-student interaction.

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Appendix A

Data Collection Instructions

Data Collection Instructions

Overview

The site coordinator is responsible for administering three data collection instruments:

1. VTT Student Questionnaire (Q.1)
2. NAVLEAD Student Questionnaire (Q.2)
3. NAVLEAD Quiz (Q.3)

The site coordinator must also assure that facilitators and SME observers complete three data collection instruments:

1. Facilitator/Observer Questionnaire (Q.4)
2. Performance Activities (Q.5)
3. Class Participation Tally (Q.6)

The purpose, content, completion requirements, and time required for each of these instruments are described below.

Facilitators and observers should review each instrument to become familiar with instructions and content. Facilitators and observers should keep a personal log of "significant" events observed during training. The log should record the type of event, time, and comments for discussion during the course critique following the course.

Data Collection Instruments

VTT Student Questionnaire (Q.1)

Purpose: Assess student perceptions of VTT quality.

Content: Ratings of video, audio, VTT procedures, local vs. remote team participation; and multiple-choice items regarding student preferences.

Completed by: Students (VTT only)

When completed: At conclusion of training

Time required: 5 min.

NAVLEAD Student Questionnaire (Q.2)

Purpose: Assess student perceptions of training quality.

Content: Ratings of facilitator, personnel visibility & audibility, written materials, learning activities, training aids, interaction/participation, overall evaluation; and open-ended questions about student likes, dislikes, and suggestions.

Completed by: Students (both traditional and VTT)

When completed: At conclusion of training

Time required: 10 min.

NAVLEAD Quiz (Q.3)

Purpose: Assess student knowledge of course content pre/post course.

Content: Consists of 28-item four-choice multiple choice test covering course content.

Completed by: Students

When completed: Before course (pre), after course (post).

Time required: 25 min., 25 min.

Facilitator/Observer Questionnaire (Q.4)

Purpose: Assess facilitator/observer perceptions of training quality.

Content: Ratings on various dimensions of the course from facilitator/SME perspective (e.g., effectiveness of presentations and exercises, success in meeting learning objectives, difficulty of conducting instruction, student interaction, student participation, degree of control, presentation quality, cohesiveness; space is provided for comments.

Completed by: ALL facilitators and SME observers (both traditional and VTT)

When completed: Daily

Time required: 10 min./day

Performance Activities (Q.5)

Purpose: Assess student performance.

Content: Facilitator/SME ratings on several different dimensions of student performance in completing classroom performance activities for lesson 3.5 (DIVO/CPO relationships) and 5.4 (assessing the division).

Completed by: ALL facilitators and SME observers (both traditional and VTT)

When completed: Immediately following performance activity (day 3 and day 5)

Time required: 5 min., 10 min.

Class Participation Tally (Q.6)

Purpose: Assess class participation.

Content: Frequency tally of student-initiated questions and comments by team across time. Remarks must be directed at facilitators or students, relate to course content, and intended for class to hear.

Completed by: ONE SME observer (both traditional and VTT)

When completed: During class

Time required: 2 hrs/day (concurrent with class)

Daily Data Collection Schedule

---------- Monday ----------

0700-0725 (before class starts): Administer Q.3 to all students. Allow students 25 minutes to complete and then collect.

0900-1000 & 1300-1400: Complete Q.6.

1500-1600 (after class): Complete Q.4 for day 1.

---------- Tuesday ----------

0900-1000 & 1300-1400: Complete Q.6.

1500-1600 (after class): Complete Q.4 for day 2.

---------- Wednesday ----------

0900-1000 & 1300-1400: Complete Q.6.

Complete Q.5 for lesson 3.5 during or immediately after the DIVO/CPO relationships lesson.

1500-1600 (after class): Complete Q.4 for day 3.

---------- Thursday ----------

0900-1000 & 1300-1400: Complete Q.6.

1500-1600 (after class): Complete Q.4 for day 4.

---------- Friday ----------

0900-1000 & 1300-1400: Complete Q.6.

Complete Q.5 for lesson 5.4 during or immediately after the "assessing the division" lesson.

1500-1600 (after class): Complete Q.4 for day 5.

1500-1600 (after class): Administer Q.3 to all students. Allow students 25 minutes to complete and then collect.

1500-1600 (after class): Administer Q.2 to all students. There is no fixed time limit but they should take about 10 minutes.

Appendix B

VTT Student Questionnaire (Q.1)

VTT STUDENT QUESTIONNAIRE (Q.1)

---

1. Name_____ _____ _____ _____
Last First MI Rank

2. Today's date_____/___/____ 3. Location [ ] Charleston
[ ] Damneck
[ ] Newport

For each of the following statements (1 through 17), check the appropriate box corresponding to a scale of 1 (unsatisfactory) through 5 (outstanding), with 3 being average.

	Unsatisfactory-->Outstanding
VIDEO	
1. Image on TV was large enough to be seen	[1] [2] [3] [4] [5]
2. Image on TV was clear enough to be seen	[1] [2] [3] [4] [5]
3. Graphics/slides/transparencies on TV were readable	[1] [2] [3] [4] [5]
AUDIO	
4. Audio from other class was loud enough to understand	[1] [2] [3] [4] [5]
5. Audio from other class was clear enough to understand	[1] [2] [3] [4] [5]
6. Instructor's voice could be heard adequately	[1] [2] [3] [4] [5]
7. Student voices could be heard adequately	[1] [2] [3] [4] [5]
8. Microphones were convenient to use	[1] [2] [3] [4] [5]
VTT PROCEDURES	
9. Students knew how to use microphones	[1] [2] [3] [4] [5]
10. Students knew how to stay on camera	[1] [2] [3] [4] [5]
11. Students knew how to attract instructor's attention	[1] [2] [3] [4] [5]
12. Instructors handled questions/comments effectively	[1] [2] [3] [4] [5]
13. Instructors coordinated activities among classes effectively	[1] [2] [3] [4] [5]
14. VTT technical problems were resolved in a timely manner	[1] [2] [3] [4] [5]
15. Instructors were prepared to teach on the VTT network	[1] [2] [3] [4] [5]

Unsatisfactory-->Outstanding

INTERACTION/PARTICIPATION

16. There was good cohesiveness between local and remote sites [1] [2] [3] [4] [5]

17. Local and remote sites participated equally in the class [1] [2] [3] [4] [5]

STUDENT PREFERENCES

18. How did the VTT method of instruction affect your opportunities to interact with the instructor?
    [] more opportunities
    [] no effect on opportunities
    [] fewer opportunities

19. How did the VTT method of instruction affect your opportunities to interact with other students?
    [] more opportunities
    [] no effect on opportunities
    [] fewer opportunities

20. Which method of instruction would you have preferred for this course?
    [] VTT
    [] Traditional (live) instruction
    [] No preference between VTT and traditional instruction

21. Which of the following would you prefer? (check one)
    [] Enrolling in a VTT course near your home port?
    [] Enrolling in a traditional (live) course farther (TAD) from your home port?

22. Which of the following would you prefer? (check one)
    [] Enrolling in a VTT course at a time convenient to your time schedule?
    [] Enrolling in a traditional (live) course at a time inconvenient to your time schedule?

23. If you had a choice, would you take another VTT course?
    [] Yes
    [] No

Please explain:_____

_____

_____

Appendix C

NAVLEAD Student Questionnaire (Q.2)

NAVLEAD STUDENT QUESTIONNAIRE (Q.2)

---

1. Name_____ _____ _____ _____
Last First MI Rank

2. Today's date_____/___/____ 3. Location [ ] Charleston
[ ] Damneck
[ ] Newport
[ ] Little Creek

For each of the following statements (1 through 27), check the appropriate box corresponding to a scale of 1 (unsatisfactory) through 5 (outstanding), with 3 being average.

	Unsatisfactory-->Outstanding
INSTRUCTORS	
1. Instructors were adequately prepared for class	[1] [2] [3] [4] [5]
2. Instructors presented lessons clearly	[1] [2] [3] [4] [5]
3. Instructors encouraged class participation	[1] [2] [3] [4] [5]
4. Instructors answered student questions adequately	[1] [2] [3] [4] [5]
5. Instructors made the best use of time available	[1] [2] [3] [4] [5]
6. Instructors projected a positive attitude about the subject	[1] [2] [3] [4] [5]
7. Instructors could be seen clearly	[1] [2] [3] [4] [5]
8. Instructors could be heard adequately	[1] [2] [3] [4] [5]
9. Instructors maintained adequate control of the class	[1] [2] [3] [4] [5]
STUDENTS/TEAMS	
10. Students in other teams could be seen clearly	[1] [2] [3] [4] [5]
11. Students in my own team could be seen clearly	[1] [2] [3] [4] [5]
12. Students in other teams could be heard adequately	[1] [2] [3] [4] [5]
13. Students in my own team could be heard adequately	[1] [2] [3] [4] [5]
LEARNING ACTIVITIES	
14. Case studies provided a useful learning experience	[1] [2] [3] [4] [5]
15. Exercises provided a useful learning experience	[1] [2] [3] [4] [5]
16. Simulations provided a useful learning experience	[1] [2] [3] [4] [5]
17. Written materials were clearly written	[1] [2] [3] [4] [5]

Unsatisfactory-->Outstanding

TRAINING AIDS

18. Training aids were valuable in supporting instruction [1] [2] [3] [4] [5]

19. Training aids were used effectively [1] [2] [3] [4] [5]

20. Details of training aids could be clearly seen [1] [2] [3] [4] [5]

INTERACTION/PARTICIPATION

21. Interaction between instructors and students was sufficient to support learning objectives [1] [2] [3] [4] [5]

22. Interaction among the members of my team was sufficient to support learning objectives [1] [2] [3] [4] [5]

23. Interaction among the different teams was sufficient to support learning objectives [1] [2] [3] [4] [5]

24. Class participation was sufficient to support learning objectives [1] [2] [3] [4] [5]

OVERALL

25. Compare the instructor(s) to Navy instructors who have taught you in the past [1] [2] [3] [4] [5]

26. Compare the course to other Navy courses you have taken in the past [1] [2] [3] [4] [5]

27. Rank how well the course provided you with skills that can be applied on the job. [1] [2] [3] [4] [5]

Please answer the following questions by writing in your comments on the blank lines.

28. What did you like the most about this course?_____

_____

_____

29. What did you like the least about this course?_____

_____

_____

30. Discuss any suggestions you have for improving the course_____

_____

_____

Appendix D

NAVLEAD Quiz (Q.3)

ANSWER SHEET FOR NAVLEAD QUIZ (Q.3)

---

1. Name_____ _____ _____ _____
Last First MI Rank

2. Today's date_____/___/____ 3. Location [ ] Charleston
[ ] Damneck
[ ] Newport
[ ] Little Creek

Note: This quiz is being used to collect research data and the results will not be recorded in your personal records.

Please answer the questions by circling the letter of the single answer that is MOST CORRECT on this answer sheet.

---

1. a b c d	15. a b c d
2. a b c d	16. a b c d
3. a b c d	17. a b c d
4. a b c d	18. a b c d
5. a b c d	19. a b c d
6. a b c d	20. a b c d
7. a b c d	21. a b c d
8. a b c d	22. a b c d
9. a b c d	23. a b c d
10. a b c d	24. a b c d
11. a b c d	25. a b c d
12. a b c d	26. a b c d
13. a b c d	27. a b c d
14. a b c d	28. a b c d

NAVLEAD QUIZ (Q.3)

DIRECTIONS

Do not turn this page until the instructor tells you to start.

Mark the questions on the answer sheet. Do not write in this booklet.

1. The Naval officer plays many different roles. Which of the following statements is NOT true about these roles?

a. Officers act as role models

b. Roles remain the same throughout an officer's career

c. Roles are influenced by Navy "culture"

d. Roles are influenced by command expectations

2. Eliminating discrimination and sexual harassment from the workplace is an example of which of the following leadership principles:

a. Knowing the job

b. Knowing and taking care of subordinates

c. Directing and developing subordinates

d. Promoting relationships vital to mission accomplishment

3. Giving unambiguous taskings is an example of which of the following leadership principles:

a. Projecting a clear vision

b. Knowing the job

c. Directing and developing subordinates

d. Building successful teams

4. Which of the following statements is most correct?

a. A leader usually has a single leadership style

b. A leader can change his/her leadership style at will

c. A leader is seldom conscious of the leadership style s/he is using

d. A leader will often have and use a backup leadership style

5. The Coercive leadership style is most suited to situations where:

a. Subordinates are unskilled

b. The task is routine

c. Subordinates are highly motivated

d. Specific procedures must be followed exactly

6. The Authoritarian leadership style is most suited to situations where:

a. There is a crisis or emergency

b. Subordinates cannot have all the information necessary for decision making

c. Performance measures and objectives are clear

d. Performance goals and standards are clear to everyone

7. The Coaching leadership style is often used by leaders to:
    a. Develop subordinates
    b. Arrive at decisions by consensus
    c. Put people before task accomplishment
    d. Provide a role model to subordinates

8. The leader who relies on the Affiliative leadership style is unlikely to:
    a. Give task-oriented feedback
    b. Show concern for personal popularity
    c. Listen to subordinates
    d. Avoid conflicts

9. The Navy's concept of Total Quality Leadership focuses on:
    a. End products
    b. Customers
    c. Methods
    d. Inspections

10. An effective goal statement should:
    a. Specify the necessary action to be taken
    b. Provide a list of tasks and a schedule
    c. Apply an action plan
    d. Have at least an 80% chance for success

11. The first expectation of an action planner is to:
    a. Develop an action plan
    b. Compile a list of tasks
    c. Set goals
    d. Prepare a schedule for completion

12. Feedback to subordinates is most effective when it:
    a. Corrects an offensive behavior
    b. Is comprehensive
    c. Is evaluative
    d. Establishes rapport

13. Active listening is best described as a way to:

a. Provide emotional support

b. Grasp meaning and feeling

c. Understand thought processes

d. Give non-threatening advice

14. Power is best described as the ability to:

a. Reward or punish another

b. Influence another

c. Exercise authority over another

d. Command the respect of another

15. Before his Navy career, LT Jones was a star football player. His subordinates respect and emulate him. This is an example of:

a. Legitimate power

b. Reward power

c. Expert power

d. Identification power

16. LTJG Smith was an ET before receiving his commission. The ETs who work for him sometimes come to him for technical advice. This is an example of:

a. Expert power

b. Legitimate power

c. Reward power

d. Identification power

17. Which of the following is NOT a technique to empower others?

a. Paraphrasing someone's idea

b. Giving credit to someone for an idea

c. Expressing your concerns about someone's idea

d. Rejecting someone's idea

18. You attempt to support your actions by using logical arguments that appeal to others' needs and interests. This is an example of what influence strategy?

a. Assertive persuasion

b. Political coalition building

c. Group participation

d. Common vision

19. A commanding officer typically expects a prospective division officer to be:

a. Competent in the DO's job

b. A skilled leader

c. Dependent on the chief

d. Committed to learn

20. A department head typically expects a division officer to:

a. Propose solutions to problems

b. Teach the chief

c. Avoid risks

d. Maintain an outstanding division from the first day he/she reports

21. The chief expects the division officer to:

a. Have the solutions to problems

b. Allow the chief to lead the division

c. Prevent mistakes

d. Take personal responsibility

22. The Navy Values and Tradition Project completed in 1987 identified the following core values:

a. Integrity, tradition, professionalism

b. Honesty, honor, responsibility

c. Concern for people, patriotism, courage

d. Competence, teamwork, loyalty

23. Which of the following guidelines does NOT relate to the leadership principle of knowing and taking care of subordinates?

a. Take time to learn about subordinates

b. Be sensitive to the effects of cultural and educational differences among subordinates

c. Maintain good personal relations with subordinates

d. Ensure that subordinates' basic needs are met

24. The "legal requirement or duty an individual has been assigned to fulfill" is the formal definition of:

a. Authority

b. Responsibility

c. Accountability

d. Delegation

25. The preferred method of counseling to help individuals explore alternatives and take initiative in solving a problem is:

a. Personal counseling

b. Non-directive counseling

c. Directive counseling

d. Active counseling

26. You are faced with a situation in which you must choose between strict adherence to regulations or getting a job done. This situation exemplifies:

a. Competing obligations

b. Competing values

c. Ethical dilemma

d. Professional crisis

27. Sexual harassment is a form of sex discrimination that involves unwelcome advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature when:

a. Submission to or rejection of such conduct is made either explicitly or implicitly a term or condition of a female's job, pay, or career

b. Submission to or rejection of such conduct by a person is used as a basis for personal decisions affecting a person

c. Such conduct interferes with an individual's right to privacy

d. Such conduct interferes with an individual's performance or creates an intimidating, hostile, or offensive environment

28. As teams evolve, they typically go through stages. During one of these stages, members establish and maintain team ground rules and boundaries. This stage is:

a. Forming

b. Storming

c. Norming

d. Performing

Appendix E

Facilitator/Observer Questionnaire (Q.4)

NAVLEAD FACILITATOR/OBSERVER QUESTIONNAIRE (Q.4)

1. Name_____ _____ ___ 2. Rank_____
Last First MI

3. Your command_____ 4. Your role: [ ] Facilitator
[ ] Observer
[ ] Other_____

5. Location (check one): [ ] Charleston
[ ] Damneck
[ ] Newport
[ ] Little Creek

DIRECTIONS

1. Complete one of the attached rating forms for EACH DAY, Monday through Friday.

2. Rate each of the course dimensions by putting a checkmark in the box that is most appropriate. The scale is 1 (unsatisfactory) through 5 (outstanding), with 3 being average.

3. Leave items that do not apply blank.

4. If you are rating a VTT class, the "local" classroom is the site where the instructor is located. "Remote" classrooms are the other sites.

5. If you are rating a traditional (non VTT) class, ignore statements relating to "remote" classrooms and make ratings for "local" classrooms only.

Check day: [ ] Monday [ ] Tuesday [ ] Wednesday [ ] Thursday [ ] Friday

---

	Unsatisfactory-->Outstanding
1. Effectiveness of instructor's presentations	[1] [2] [3] [4] [5]
2. Effectiveness of case studies	[1] [2] [3] [4] [5]
3. Effectiveness of exercises	[1] [2] [3] [4] [5]
4. Effectiveness of simulations	[1] [2] [3] [4] [5]
5. Degree of instructor control	
a. Local classroom	[1] [2] [3] [4] [5]
b. Remote classrooms	[1] [2] [3] [4] [5]
6. Difficulty of conducting instruction	[1] [2] [3] [4] [5]
7. Amount of instructor-student interaction	[1] [2] [3] [4] [5]
8. Success in meeting learning objectives	[1] [2] [3] [4] [5]
9. Amount of student participation	
a. Local classroom	[1] [2] [3] [4] [5]
b. Remote classrooms	[1] [2] [3] [4] [5]
10. Amount of interaction among teams	[1] [2] [3] [4] [5]
11. Degree of team cohesiveness	
a. Local classroom	[1] [2] [3] [4] [5]
b. Remote classrooms	[1] [2] [3] [4] [5]
12. Amount of student-student interaction	
a. Local classroom	[1] [2] [3] [4] [5]
b. Remote classrooms	[1] [2] [3] [4] [5]
13. Amount of student-student interaction (between local and remote classes)	[1] [2] [3] [4] [5]
14. Quality of student presentations	
a. Local classroom	[1] [2] [3] [4] [5]
b. Remote classrooms	[1] [2] [3] [4] [5]

Comments:_____

_____

_____

_____

_____

_____

_____

Appendix F

Performance Activities (Q.5)

LESSON 3.5 PRESENTATION CRITIQUE (Q.5)

1. Name_____ _____ ___ 2. Rank_____
Last First MI

3. Your command_____ 4. Your role: [ ] Facilitator
[ ] Observer
[ ] Other_____

5. Your location: [ ] Charleston
[ ] Damneck
[ ] Newport
[ ] Little Creek

DIRECTIONS

1. Complete the attached rating forms on day 3 for the student presentations made during lesson 3.5 (DIVO/CPO relationships)

2. Rate each presentation as it is made on one of the attached scoring sheets

3. Rate ONLY the first five presentations

4. For each statement (1 through 9), check the appropriate box corresponding to a scale of 1 (unsatisfactory) through 5 (outstanding), with 3 being average.

LESSON 3.5 PRESENTATION CRITIQUE

Presentation number: [1] [2] [3] [4] [5]

Originates from:
[ ] Charleston
[ ] Damneck
[ ] Newport
[ ] Little Creek

	Unsatisfactory-->Outstanding
1. Strategy is specific	[1] [2] [3] [4] [5]
2. Strategy is realistic	[1] [2] [3] [4] [5]
3. Each need identified by class is addressed	[1] [2] [3] [4] [5]
4. Power bases and influence behaviors will be effective	[1] [2] [3] [4] [5]
5. Influence strategies will work up the chain of command	[1] [2] [3] [4] [5]
6. Influence strategies will work down the chain of command	[1] [2] [3] [4] [5]
7. Presentation was delivered within allotted time	[1] [2] [3] [4] [5]
8. Presentation was confident and professional	[1] [2] [3] [4] [5]
9. Speaker responded appropriately to questions	[1] [2] [3] [4] [5]

LESSON 5.4 PRESENTATION CRITIQUE (Q.5)

1. Name_____ _____ ___ 2. Rank_____
Last First MI

3. Your command_____ 4. Your role: [ ] Facilitator
[ ] Observer
[ ] Other_____

5. Your location: [ ] Charleston
[ ] Damneck
[ ] Newport
[ ] Little Creek

DIRECTIONS

1. Complete the attached rating forms on day 5 for the student presentations made during lesson 5.4 (assessing the division)

2. Rate each presentation as it is made on one of the attached scoring sheets

3. Rate ONLY the first five presentations

4. For each statement (1 through 15), check the appropriate box corresponding to a scale of 1 (unsatisfactory) through 5 (outstanding), with 3 being average.

LESSON 5.4 PRESENTATION CRITIQUE

Presentation number: [1] [2] [3] [4] [5]

Originates from:
[ ] Charleston
[ ] Damneck
[ ] Newport
[ ] Little Creek

Unsatisfactory-->Outstanding

FIRST SET OF QUESTIONS (New DO)

1. Questions assess relationships among individuals in division [1] [2] [3] [4] [5]

2. Questions assess relationships among petty officers and subordinates [1] [2] [3] [4] [5]

3. Questions assess relationships among chief and petty officers [1] [2] [3] [4] [5]

4. Questions assess relationship among division officer and chief [1] [2] [3] [4] [5]

5. Questions assess division performance as a unit [1] [2] [3] [4] [5]

6. Questions identify division strengths as a unit [1] [2] [3] [4] [5]

7. Questions identify division weaknesses as a unit [1] [2] [3] [4] [5]

8. Questions assess division cohesiveness as a unit [1] [2] [3] [4] [5]

9. Questions provide information needed for team building [1] [2] [3] [4] [5]

Unsatisfactory-->Outstanding

SECOND SET OF QUESTIONS (2-3 wks later)

10. Questions assess relationships among individuals in division [1] [2] [3] [4] [5]

11. Questions assess relationships among petty officers and subordinates [1] [2] [3] [4] [5]

12. Questions assess relationships among chief and petty officers [1] [2] [3] [4] [5]

13. Questions assess relationship among division officer and chief [1] [2] [3] [4] [5]

14. Questions assess division performance as a unit [1] [2] [3] [4] [5]

15. Questions assess division cohesiveness as a unit [1] [2] [3] [4] [5]

Appendix G

Class Participation Tally (Q.6)

CLASS PARTICIPATION TALLY SHEET (Q.6)

1. Name_____ _____ ___ 2. Rank_____
Last First MI

3. Your command_____ 4. Your role: [ ] Facilitator
[ ] Observer
[ ] Other_____

5. Location (check one): [ ] Charleston
[ ] Damneck
[ ] Newport
[ ] Little Creek

DIRECTIONS

1. Complete a separate block of the attached tally sheet for each day, Monday through Friday.

2. Log data for 30-minute intervals during the time periods 0900-1000 and 1300-1400.

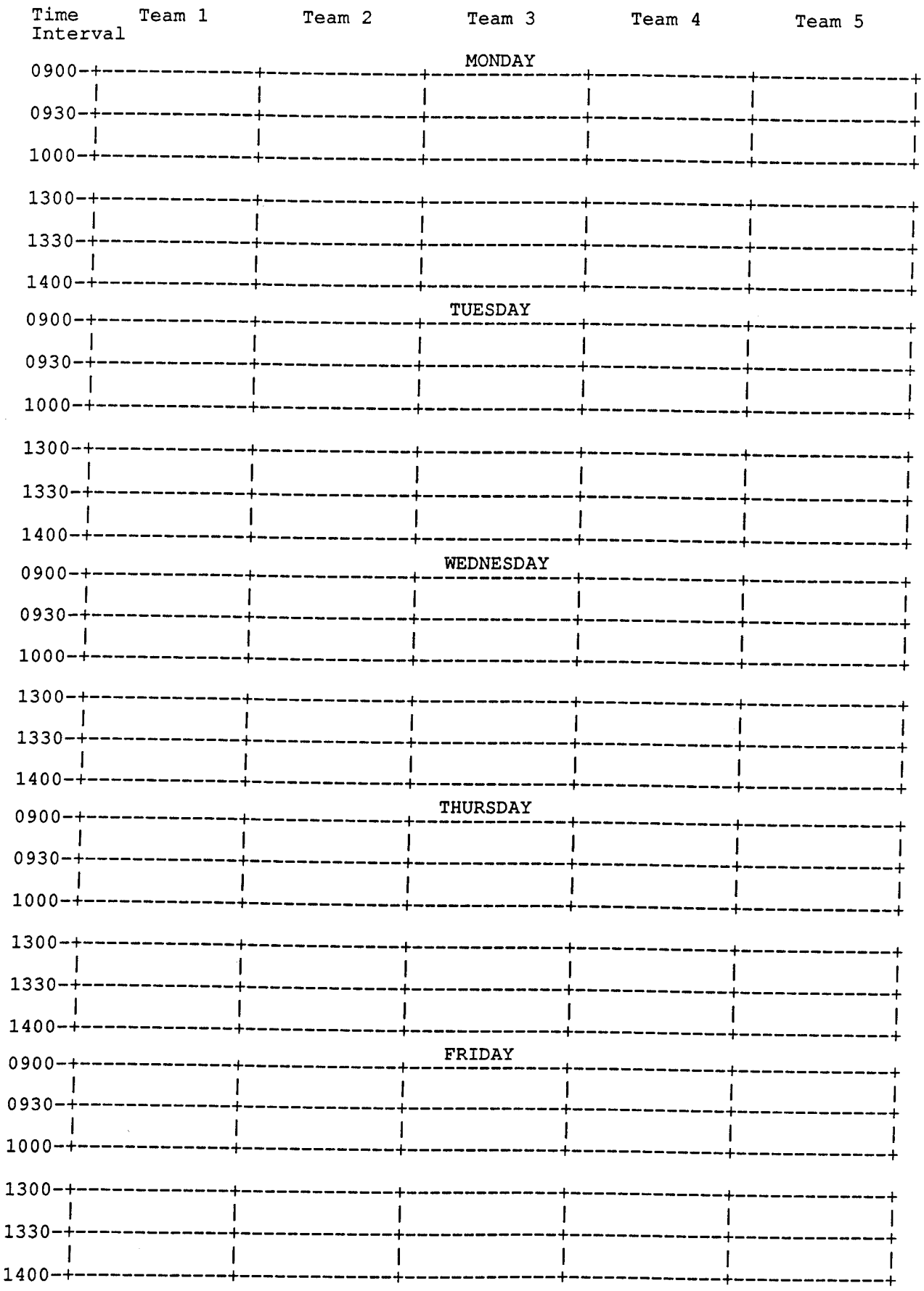
3. Make a / for each student question or comment in the appropriate cell. To rate a / the remark must:

a. be directed at instructors or students,

b. relate to course content, and

c. be intended for the class to hear

4. If you are observing a VTT class, log data ONLY for the tables in the classroom you are observing directly. (For example, if you are at Charleston, log data for Charleston but not for Damneck or Newport.)


Time Interval
Team 1
Team 2
Team 3
Team 4
Team 5
MONDAY
0900
0930
1000
1300
1330
1400
TUESDAY
0900
0930
1000
1300
1330
1400
WEDNESDAY
0900
0930
1000
1300
1330
1400
THURSDAY
0900
0930
1000
1300
1330
1400
FRIDAY
0900
0930
1000
1300
1330
1400

Distribution List

Distribution:
Chief of Naval Education and Training (Code 00Q)
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