Combat Veterans Use of FBCB2: Lessons for Training

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ABSTRACT

This paper provides the results of survey data from combat veterans on the use, training needs, and mission criticality of the Force XXI Battle Command Brigade and Below (FBCB2) digital system. The results were used to characterize FBCB2 use and to identify those procedures that are important for design of effective and efficient future training. Overall, combat veterans reported using fewer than half of the essential FBCB2 procedures in each phase of operation. Soldiers also indicated that about half of the FBCB2 procedures needed greater training emphasis and that 30% of the procedures were critical to mission success. Most importantly, the results suggested the joint contributions of training and experience on FBCB2 efficacy. FBCB2 procedures needed to be used in combat in order for efficacy to be indicated, but experience alone without formal training was not sufficient to produce the highest levels of FBCB2 efficacy. The findings also supported the idea that as people become more familiar and comfortable with digital systems, they feel better equipped to explore different functionality. In the case of FBCB2, it appeared that the more a Soldier knew about FBCB2 and the longer he employed the system, the more likely he was to learn and to use new procedures that can benefit operations.

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INTRODUCTION

In the Army's effort to transform 21st century warfighting capabilities, it continues to field digital command and control equipment throughout the force as components of the Army Battle Command System (ABCS). At the maneuver echelons below brigade, the principal digital system is the Force XXI Battle Command Brigade and Below (FBCB2). Harnessing information technology, the FBCB2 gives leaders and Soldiers networked tools for communicating, navigating, and controlling operations. In the follow-on generation of digital tools, the Future Combat Systems and Ground Soldier System promise to enhance the capability for combat units to dominate the battlefield. As the Army continues to advance its digitization efforts, tactical units need realistic training programs to enable Soldiers, leaders and teams to acquire and sustain digital skills proficiency.

This paper presents results from a research program investigating practical aspects of digital operator training. The paper identifies FBCB2 tasks and skills that contribute to accomplishing combat missions as well as tasks and skills that are perceived to need more training. It can help leaders and trainers in units and schools optimize their FBCB2 training programs. It also provides valuable knowledge for training developers and researchers charged with creating or improving digital programs of instruction. The findings complement results presented in companion reports from the same research program (Leibrecht, Goodwin, Wampler, & Dyer, 2007; Goodwin, Leibrecht, Wampler, Livingston, & Dyer, 2007).

Problem Definition

FBCB2 is the ABCS workhorse tool for maneuver units and combat platforms. It enables leaders to share information—accurate positions of friendly and enemy units, orders, overlays, reports, etc.—over a tactical digital network. The information comes not only from Soldiers on the battlefield, but from an array of human controlled and unattended sensors. In addition to helping leaders manage and distribute information, FBCB2 capabilities support situational awareness, decision-making and control of operational activities.

An exploratory investigation in this area was conducted by Barnett (2005). Barnett identified what digital skills were used most frequently by surveying personnel experienced with several digital command, control, and communication (C3) systems. In spite of the small sample size (N=11), he determined that Soldiers rarely used about half of the functions that could be performed on digital C3 systems. Participants with FBCB2 experience offered that training should focus on functions involving situational awareness, sending and receiving messages, navigation, and identifying friendly/enemy targets. The majority of participants said they did not have adequate training for employing the C3 systems in a combat environment.

Clearly more research is needed to identify the high-payoff digital skills. Leaders of FBCB2-equipped units need to know this set of skills in order to build and sustain high digital proficiency among their operators. The high-payoff skills should be those that contribute directly and substantively to accomplishing operational missions. For maximum credibility and value, the selection of critical operator skills should reflect the experience and lessons coming from today's primary combat theaters—Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF). Operator skills meeting these criteria—combat tested credibility and mission-relevant value—can be used to focus operator training so it optimizes efficiency and payoff. Armed with guidelines built on operational reality, unit and institutional trainers can provide a combat-based rationale for core phases of their FBCB2 training.

To expand the knowledge base on FBCB2 training needs, the intent was to determine high-priority operator tasks and skills emerging from the crucible of combat experience. The technical approach targeted the practical experience and lessons gained in the field. The specific research objectives were to:

- Characterize FBCB2 employment and use in current battlefield environments.

- Gather Soldiers' opinions regarding the functions and/or topics that FBCB2 training should emphasize.
- Determine which FBCB2 procedures and skills were perceived as critical based on the battlefield conditions and missions that Soldiers experienced.

METHOD

Survey Instrument

There are 84 discrete procedures listed in the Army's Technical Bulletin for the FBCB2 (U.S. Department of the Army, 2005). Related and similar procedures were grouped into ten functional areas (e.g. administrative tasks, maps, operator troubleshooting). Using information obtained from subject-matter experts, our team developed a list of FBCB2 procedures to be tested. The ten functional area groupings remained the same, but the number of procedures included in the final survey form was reduced to 54.

Part 1 of the survey instrument solicited background information on the user's FBCB2 training and experience. Questions asked about combat experience: location of combat tour; type of unit; the person's echelon, rank, and duty position during that combat tour; and the length of time they used FBCB2 in combat. Other questions addressed various aspects of FBCB2 training including the training they received as well as how they learned new procedures or refreshed their skill on previously learned procedures. Questions also requested participant opinions on the impact that FBCB2 training had on the accomplishment of combat missions.

Part 2 of the survey focused on how frequently the various FBCB2 procedures were used. Participants indicated the usage frequency for two distinct mission phases: (1) while planning and preparing for or recovering from operations and (2) during actual combat operations (e.g. raid, attack, defend, patrol). Survey questions in Part 3 asked participants to indicate whether each of the 54 procedures "needed greater training emphasis" and whether each was "critical to mission success." Part 4 was an open-ended option for participants to provide additional comments about any item on the survey.

Participants

All of the Soldiers who completed the survey served in OIF. Of the 641 surveys returned, there were 636 surveys with usable data. Soldiers were classified into unit types based on the self-reported type of unit in which the Soldier served while using FBCB2 in combat. The final sample had twice has many Soldiers from Light units than from Heavy units. Table 1 provides the number of participants by type of unit and rank.

Participants represented a cross-section of the typical duty positions that use FBCB2 in operational units during combat. The duty positions were collapsed into five categories. The most senior duty position was considered the primary position since the person should have served in more progressive duty positions, culminating with the most senior position.

Table 1. Distribution of Participants by Unit Type and Rank

Rank	Light Units	Heavy Units	Total
Specialist/Corporal	103 (24%)	64 (30%)	167 (26%)
Sergeant	101 (24%)	57 (27%)	158 (25%)
Staff Sergeant	94 (22%)	27 (13%	121 (19%)
Sergeant First Class	21 (5%)	18 (9%)	39 (6%)
Master Sergeant/ Sergeant Major	1 (0.2%)	3 (1%)	4 (0.6%)
Lieutenants	71 (17%)	33 (16%)	104 (16%)
Captain/Major	18 (4%)	5 (2%)	23 (4%)
No Report	15 (4%)	5 (2%)	20 (3%)
Total	424	212	636

Data Analysis

Four Soldier background variables served as factors to analyze reported use of FBCB2 procedures, perceptions of the need for greater training emphasis, and perceptions of mission criticality for FBCB2 procedures. More specifically, the independent variables were: (1) training received, (2) time using FBCB2 in combat, (3) unit type, and (4) duty position while using FBCB2. Unit type and duty position were assigned according to previously stated categories (e.g., staff officers and NCOs combined into one category).

The types of training Soldiers reported were collapsed and assigned to one of three categories: 40 or more hours of formal training, participation in a two- or three-day course or formal unit training, and no reported formal training. In general, few Soldiers had 40 or more hours of formal training (17%), while the

majority of the Soldiers had either a two- or three-day course or formal unit training (45%) or no training (38%). The length of time that Soldiers operated FBCB2 while in combat was categorized as either eight months or less time using FBCB2 or nine months or more. The majority (65%) of Soldiers reported using the FBCB2 for nine months or more in combat. This pattern of use was consistent across the Light units and the Heavy units.

RESULTS

Throughout this paper, statistical significance was based on the five-percent level of alpha error. Post-hoc differences in means were determined by pair-wise comparisons of 95% confidence intervals. Where appropriate, group means and standard errors of the means are given in the text. In addition, the group means for the critical analyses (i.e., FBCB2 procedure use, need for greater training emphasis, and mission criticality) are given at the end of the paper in Table 4.

In addition to the numerical data, the survey included three open-ended write-in questions. Questions allowed participants to provide specific examples of how lack of training adversely impacted unit operations, how FBCB2 had a positive impact on operations, and to provide any additional comments. Responses to these questions are integrated throughout the results section to provide specific examples from FBCB2 users and to accentuate the interpretations of the results.

When and What FBCB2 Procedures Were Used

On the survey, Soldiers indicated how often they used each procedure both in the planning, preparation, and recovery (PPR) phases and in the combat operations phase. Comparing rates of overall use of FBCB2 procedures across groups of Soldiers in each phase is important to provide a picture of the degree to which users employ FBCB2 capabilities. The percentage of total procedures used across Soldiers was compared within Soldier background variables (i.e., training received, unit type, time using FBCB2 in combat, and duty position).

On average, Soldiers reported only using about half of the FBCB2 procedures (M = 48%, SE_m = 12%) and did not differ[1] on percentage of FBCB2 procedures used in PPR phases (M = 47%, SE_m = 12%) and combat operations (M = 49%, SE_m = 13%). However, the level of use varied as an interaction between the type of FBCB2 training and the time using FBCB2 in combat[2] in PPR phases, while no such interaction was found with the combat operations phase. Figure 1 presents the nature of the significant interaction. It can be seen that for Soldiers with nine months or more using the FBCB2, the amount of training had very little effect on the number of procedures used. On the other hand, Soldiers with eight or fewer months using the FBCB2 were more likely to use FBCB2 procedures if they had 40 or more hours of training (M = 60%, SE_m = 6%) than if Soldiers had 2-3 days or unit training (M = 42%, SE_m = 3%) or if Soldiers had no training (M = 35%, SE_m = 4%). Soldiers with 2-3 days or unit training were also more likely to use FBCB2 procedures than Soldiers with no training.

In comparing the categories of training on the percentages of procedures used, a difference among training categories was found for PPR phases[3] but not for the combat operations phase. Soldiers with 40 or more hours of training (M = 54%, SE_m = 3%) reported using more FBCB2 procedures than did Soldiers with 2-3 day or unit training (M = 47%, SE_m = 2%) and Soldiers with no training (M = 44%, SE_m = 1%). Likewise, the patterns of use between the Light units and the Heavy units indicated that Soldiers in Heavy units used more of the sampled FBCB2 procedures than did the Soldiers in Light unit for both the PPR phases (Heavy: M = 53%, SE_m = 2%; Light: M = 45%, SE_m = 1%) and the combat operations phase (Heavy: M = 54%, SE_m = 3%; Light: M = 47%, SE_m = 2%) .

One contributing factor to the difference between Heavy and Light units can be based on participant written responses who served with Light units. According to multiple respondents, only selected members of Light units typically used the FBCB2 system. As a consequence, the Light units had relatively few other FBCB2 users who could assist when questions arose or problems were encountered. Users commented that when they encountered problems with the FBCB2 they frequently had to wait for assistance from the few FBCB2 users with more training and experience. Soldiers in Light units could use the procedures for which they were trained, but had fewer opportunities to learn or gain experience with other procedures. The end result would be fewer FBCB2 procedures used than in Heavy units.

[1] $t(534) = 1.63$, $SE_{diff} = .01$

[2] $F(2, 557) = 4.87$, $MS_e = .09$

[3] $F(2, 561) = 3.25$, $MS_e = .09$

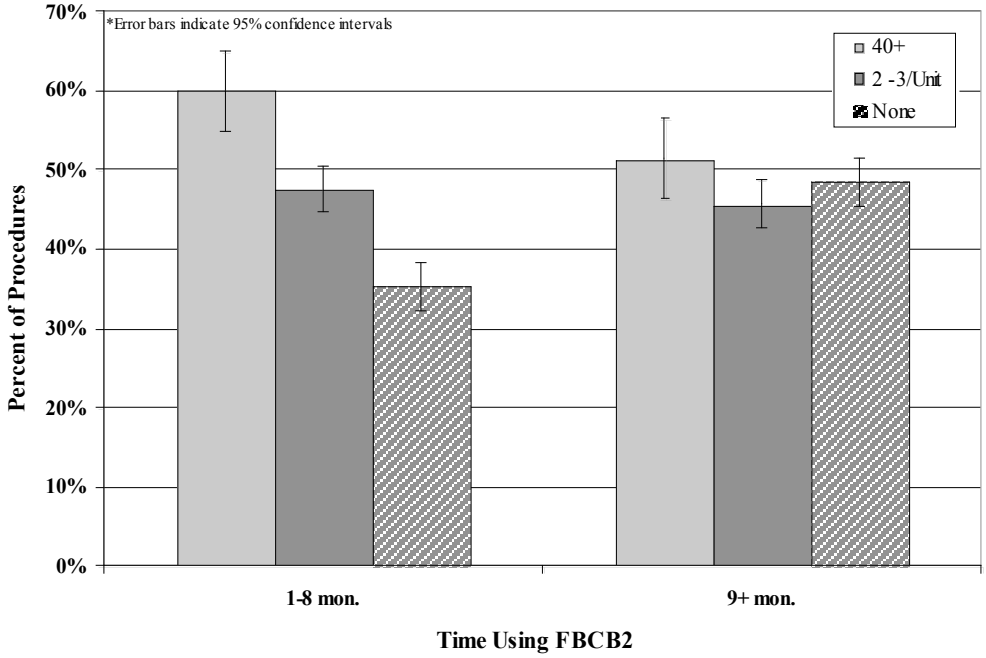

Figure 1. Percentage of Procedures Used by Soldiers In Planning, Preparation, and Recovery Phases as an Interaction Between the Time Using FBCB2 and the Training Received

Differences were also found in the patterns of use across the various duty positions. Comparisons were made across company/platoon commanders and leaders, section/squadron leaders, vehicle commanders, primary operators, and staff officers and NCO's (Staff). There was no difference in the percentage of procedures used across duty positions the in combat operations phase[4]. There were, however, differences in across duty PPR phases[5]. Primary operators reported using more FBCB2 procedures (M = 55%, SE_m = 3%) than did both company/platoon leaders (M = 43%, SE_m = 2%) and section/squad leaders (M = 41%, SE_m = 2%). There was also a difference between vehicle commanders (M = 51%, SE_m = 4%) and section/squad leaders, but Staff (M = 48%, SE_m = 5%) did not differ from any other duty position.

The Need for Greater Training Emphasis on FBCB2 Procedures

In the survey, Soldiers were also asked to rate whether or not each of the 54 FBCB2 procedures needed greater training emphasis (dichotomous scale). On average, Soldiers indicated that 47% (SE_m = 1%) of the FBCB2 procedures needed greater training emphasis. As with the analyses of FBCB2 procedure use, there was a clear indication that levels of training significantly influenced perceptions of need for greater training emphasis. Once again, there were group differences for training received[6]. Soldiers who received 40 or more hours of training indicated fewer procedures needed greater training emphasis (M = 39%, SE_m = 3%) than did Soldiers with 2-3 day or unit training (M = 47%, SE_m = 2%) and Soldiers with no training (M = 52%, SE_m = 2%). Soldiers in Heavy units were numerically less likely to endorse procedures as needing greater training emphasis (M = 44%, SE_m = 2%) than were Soldiers in Light units (M = 49%, SE_m = 2%), but this difference failed to reach statistical significance.

In addition to the clear influence of training, there were indications that Soldiers' experience with the FBCB2 influenced perceptions of need for greater training emphasis. Soldiers with eight months or less time using FBCB2 in the field indicated that more FBCB2 procedures (M = 51%, SE_m = 2%) needed greater training emphasis than did Soldiers with nine months or more time using FBCB2 (M = 45%, SE_m = 2%)[7]. Also, the percentage of Soldiers who identified FBCB2 procedures as needing greater training emphasis varied

[4] $F(4, 540) = 1.65$, $MS_e = .09$
[5] $F(4, 581) = 5.34$, $MS_e = .09$
[6] $F(2, 600) = 5.10$, $MS_e = .12$
[7] $t(626) = 2.14$, $SE_d = .03$

as a function of duty position[8]. Section/squad leaders (M = 52%, SE_m = 2%) and primary operators (M = 49%, SE_m = 3%) did not differ in the percentages of need for greater training, but the means for these two duty positions were greater than company/platoon leaders (M = 40%, SE_m = 3%), vehicle commanders (M = 42%, SE_m = 5%), and Staff (M = 44%, SE_m = 5%), which did not differ.

FBCB2 Procedures Critical to Mission Success

When Soldiers were asked to indicate whether each of the 54 FBCB2 procedures needed greater training emphasis, they were also asked to indicate whether each procedure was critical to mission success (dichotomous scale). Overall, Soldiers indicated that 30% (SE_m = .01) of the procedures were critical to mission success. As with FBCB2 procedure use and perceptions of need for training emphasis, there was a clear indication that level of training and type of unit substantially influenced perceptions of FBCB2 procedure mission criticality. In addition, there was some indication that Soldiers' experience also influenced perceptions of mission criticality.

There was a difference in mean percentages of procedures identified as critical to mission success as a function of the FBCB2 training received[9]. Soldiers who received 40 or more hours of training indicated more procedures were critical to mission success (M = 39%, SE_m = 3%) than did Soldiers with 2-3 day or unit training (M = 29%, SE_m = 2%) or Soldiers with no training (M = 26%, SE_m = 2%). There was no difference between Soldiers with 2-3 day or unit training and Soldiers with no training. Likewise, Soldiers in Heavy units rated significantly more FBCB2 procedures as being critical to mission success (M = 37%, SE_m = 2%) than did Soldiers in Light units (M = 26%, SE_m = 1%)[10].

There was also some indication that Soldiers' experience influenced perceptions of mission criticality. Soldiers with nine months or more time perceived more procedures (M = 31%, SE_m = 1%) as mission critical than did Soldiers with eight months or less time (M = 25%, SE_m = 2%)[11]. Also, Vehicle commanders indicated that more procedures (M = 37%, SE_m = 4%) were critical to mission success than did company/platoon leaders (M = 29%, SE_m = 2%), section/squad leaders (M = 28%, SE_m = 2%), primary operators (M = 29%, SE_m = 2%), and Staff (M = 31%, SE_m = 4%).

Comparing Training and Experience

The results of the previous analyses indicated that both formal training *and* experience independently influenced FBCB2 efficacy. A total of 229 (36%) of the Soldiers who completed the survey reported having *no* training on FBCB2 prior to use in the field. With such a large number of Soldiers using FBCB2 with no training, the questions needed to be addressed: Does experience using the FBCB2 remediate the lack of formal training for these Soldiers?

In order to answer the this question, responses on reported use of FBCB2 procedures, on perceptions of need for greater for training emphasis, and on perceptions of mission criticality for Soldiers with no training and substantial time using FBCB2 in combat were compared to responses for Soldiers with 40 or more hours of formal training but less time using FBCB2 in combat. If, in fact, experience alone accounts for FBCB2 efficacy, there should be an advantage for the group with more time using FBCB2 on reported FBCB2 use, on perceptions of the need for greater training emphasis, and on perceptions of mission criticality. The average percentage of procedures marked on these responses for the two comparison groups are given in Table 2.

The percentage of procedures marked across all responses was greater for Soldiers with more training and less experience than for Soldiers with no training and more experience, but there were no statistical differences between the groups of Soldiers for any of the responses[12]. The lack of statistical differences between the two groups of Soldiers was likely due to the fact that there were only 27 Soldiers with 40 or more hours of training and eight months or less time using FBCB2 in combat. With so few data points, the variance was too high to allow for stable statistical comparisons with the other group of Soldiers. Thus, even though it appeared that formal training provided an advantage over operational experience for FBCB2 efficacy, the strongest claim that can be made at this point is that more time using FBCB2 in combat did *not* provide additional efficacy beyond that gained through training (and some combat use).

[8] $F(4, 623) = 3.61$, $MS_e = .12$
[9] $F(2, 600) = 7.59$, $MS_e = .08$
[10] $t(631) = 4.35$, $SE_d = .02$
[11] $t(626) = 3.03$, SEd = .02
[12] Greatest $t = 1.70$

Table 2. Average Percentage of Procedures marked for FBCB2 Use in PPR phase and in Combat Operations phase(Combat), for "Need for Greater Training Emphasis" (TE), and for "Critical to Mission Success" (MC)

	Use - PPR	Use - Combat	TE	MC
No Training / 9+ months use	49%	49%	51%	29%
40+ Hour Training / 1-8 months use	60%	54%	47%	34%

Core and Mission-critical FBCB2 Procedures

To clarify and describe which FBCB2 procedures were most frequently used, perceived as needing greater training emphasis, and perceived as critical to mission success, all 54 survey procedures were rank-ordered according to the overall percentage of Soldiers who reported using each procedure. The procedures were then separately ordered according to overall rank and to the rank within each of the four Soldier background variables (i.e., unit type, duty position, type of FBCB2 training, and overall time using FBCB2 in combat). Comparisons of the FBCB2 procedures identified at the top of the rank orders were made to determine which procedures were most used, needed greater training emphasis, and were critical to mission success.

The FBCB2 procedures that were most frequently used and were also perceived as mission critical by the more experienced and highly-trained groups of Soldiers were identified. About 40% of the procedures in the survey were perceived by this group of Soldiers as being used frequently and as being mission critical. These procedures are listed in Table 3 in the general categories in which they fit. The procedures are not listed in any particular priority.

In addition, there was a general group of procedures typically used by all Soldiers across the multiple Soldier background variables considered. All Soldiers reported using the basic requirements to operate the FBCB2 which included start-up and shutdown of the system, the different map procedures to navigate and obtain SA, reading messages, sending a free-text message, and establishing communications with others. Across all Soldier background variables, the FBCB2 procedures most frequently identified as mission critical fit into two major categories: basic map procedures and selected message formats (free text, situation, and position report).

Table 3. FBCB2 Procedures Most Frequently Used and Perceived as Mission Critical by Soldiers with the Most Training and in Heavy Units

FBCB2 Procedures	
Administrative	**Map-related**
• Auto-center	• Create a route (use steer-to function)
• Calibrate touch screen	• Find unit/platform on map
• Configure satellite interface	• Define location on map
Messages / Reports	• Center location on map
• Read messages	• Check unit status
• Create message folders	
• Create/send fee text	**Troubleshooting**
• Create/send position report	• Loss of time/location
• Create/send situation report	• Unable to send/receive messages
• Create/send SPOT report	• Loss of satellite signals
	• Display not functioning
Orders / Overlays	• Computer lock-up or failure to boot
• Save/display orders	**Other**
• Create overlay	• Start-up/shutdown computer
• Save overlay	• Start-up/shutdown SINCGARS

DISCUSSION

One point that should influence how the results are interpreted involves the "needs more training emphasis" items. It appeared that Soldiers' responses were focused on "I need more training" rather than on "this procedure needs to be better trained." There was a direct relationship between reported use of procedures, level of FBCB2 training, and perceptions of needing greater training emphasis for procedures. None of the procedures identified as being most frequently used was perceived as needing more training emphasis. Thus, it could be interpreted that the data from the "needs greater training emphasis" responses reflect the familiarity of the procedure and not necessarily perceptions that training should be emphasized for *all* Soldiers within a unit.

Overall, training and FBCB2 experience jointly influenced Soldiers' FBCB2 efficacy (i.e., use and knowledge of procedures). Soldiers who had 40 or more hours of formal training tended to use a greater number of FBCB2 procedures and also more frequently used selected procedures as compared to Soldiers who received other training (i.e., 2 – 3 day training or unit training) or no training. Soldiers with 40 or more hours of formal training also deemed a larger number of procedures as being critical to mission success and a smaller number of procedures as needing greater training emphasis. Likewise, Soldiers with nine months or more time using FBCB2 in combat used more FBCB2 procedures, deemed more FBCB2 procedures as mission critical, and deemed fewer procedures as needing greater training emphasis than did Soldiers with eight months or less time using FBCB2 in combat.

Consistent with the comparisons of training received and of time using FBCB2, the results showed that Soldiers who served in Heavy units used more FBCB2 procedures, deemed more FBCB2 procedures as mission critical, and deemed fewer procedures as needing greater training emphasis than did Soldiers who served in Light units. Although there was little systematic influence of duty position on responses, one examination of the data is worth noting. Squad/section leaders and Soldiers tended to report using more FBCB2 procedures and also identified more FBCB2 procedures as mission critical.

Table 4. Summary of Percent of Procedures for Each Response across Soldier Background Variables (Standard Errors of the Mean are given in parentheses)

Group	Use During PPR	Use During Combat Operations	Need Greater Training Emphasis	Mission Critical
Unit				
Heavy	53% (2%)	54% (3%)	44% (2%)	37% (2%)
Light	45% (1%)	47% (2%)	49% (2%)	26% (1%)
Training Received				
40 Plus	54% (3%)	52% (3%)	39% (3%)	39% (3%)
2-3 days/unit	47% (2%)	50% (2%)	47% (2%)	29% (2%)
None	44% (2%)	47% (2%)	52% (2%)	26% (2%)
Time used in combat				
9 + months	48% (2%)	50% (2%)	45% (3%)	32% (1%)
8 months	45% (2%)	48% (3%)	51% (4%)	25% (2%)
Duty Position				
Co/Plt Leader	43% (2%)	45% (2%)	40% (3%)	29% (2%)
Sec/Sqd Leader	41% (2%)	48% (2%)	52% (2%)	28% (2%)
Vehicle Cdr	51% (4%)	53% (5%)	42% (5%)	37% (4%)
Primary Operator	54% (3%)	54% (3%)	49% (3%)	29% (2%)
Staff	48% (5%)	51% (5%)	44% (5%)	31% (4%)

Most importantly, the results suggested the joint contributions of training and experience to FBCB2 efficacy. On the one hand, procedures needed to be used in combat in order for efficacy to be indicated on survey responses. On the other hand, experience alone without formal training was not sufficient to produce the highest levels of FBCB2 efficacy. In fact, it appeared that training was the prerequisite for the highest levels of efficacy.

Most would agree that the more familiar a person becomes with a system or device, the more comfortable that person becomes in using or employing it. Likewise, as people become more familiar and comfortable with something, they feel better equipped to explore it or to try different functionality (Finke, Ward, & Smith, 1992; Bink & Marsh, 2000). In the case of FBCB2, as more procedures are acquired, a Soldier could typically explore ways to employ these procedures that would possibly improve operational capability or accomplish a mission in a more efficient manner. This cycle of learning a procedure, employing it to accomplish missions, exploring new or different procedures that could also be useful, and increasing familiarization with procedures through increased usage contributes to increasing the Soldier's comfort base. This expanding spiral continues to grow such that the more a Soldier knows about the system and the longer he has to employ the system; the more likely he is to explore and to learn new procedures that can help him do his job better. The opposite effect also may occur. A Soldier who has not received formal training might be hesitant to explore new system capabilities and learn to use new procedures. Thus, the cycle of familiarity and comfort is ended.

RECOMMENDATIONS

If the Army's intent is to have Soldier's operate and employ the FBCB2 in planning and preparing for, execution of, and recovering from combat operations, then a greater emphasis needs to be placed on getting Soldiers in all units well-trained on the most useful FBCB2 procedures (see table 2). A goal should be for all FBCB2 operators to complete the 40-hour formal training program, or at least, they should complete some formal training on the basic procedures of operating and troubleshooting FBCB2. If a condensed training program must be conducted, the findings in this paper identify a set of frequently-used, mission-critical FBCB2 procedures that should be considered for inclusion in such a program. Without formal training, Soldiers did not use the system to its fullest extent and did not realize how the system could assist in accomplishing missions.

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