

Skill Qualification Test Feedback:
Timeliness Matters

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A field experiment was conducted in which the time period was varied between completion of the Skill Qualification Test and feedback of results. Data are presented which show the marked decline in soldiers' perceived utility of the feedback over time. In addition soldiers indicate a greater tendency to put off utilization of the feedback the longer the feedback is delayed.

Background and Purpose.

Between 15 July and 30 November 1980, the Army Training Board (ATB) locally scored the Skill Qualification Tests (SQT) taken by soldiers at Ft Bragg, NC. Normally, these tests would have been shipped to the central scoring facility at Ft Eustis, VA, and the results shipped back to Ft Bragg. The Local Scoring Evaluation (LSE) project was carried out to determine whether the advantages of local scoring are worth the additional costs and efforts such a system requires. This paper describes a portion of the research conducted by the Army Research Institute (ARI) in support of the LSE project.

A major objective of ARI's technical advisory service (TAS) to the Army Training Board during the Local Scoring Evaluation was to determine whether the speed of feedback of SQT results had any immediate effects on individual soldiers. The existing centralized scoring system had a goal of thirty days' turnaround time for SQT results. Although this seemed inordinately long, no evidence existed to indicate whether any particular number of days should be preferred. Given that immediate feedback was not possible, the question became whether there was any practical turnaround time that might make a difference to soldiers.

To answer this question, a field experiment was set up in conjunction with the LSE project. The basic idea was to vary the length of time between completion of the SQT and feedback of results, and to obtain the soldiers' reactions to the variation.

Design Plan

The design plan divided the 82d Airborne Division into three approximately similar groups and assigned each to one of three treatment conditions. The treatment variable was speed of SQT results feedback. Its three levels were Fast, Medium, and Slow. "Fast" meant that a soldier in the group received the results of his SQT within 1 to 15 days; "Medium" 16 to 30 days; "Slow" 31 to 45 days. The Slow condition was believed to simulate the current central system's normal operation.

Composition of the groups by unit was the following:

FAST

2d Bn (ABN), 508th IN
3d Bn (ABN), 325th IN
2d Bn (ABN), 505th IN
1st Bn (ABN), 319th FA
782 Maint Bn
82d Finance Co
1st Squadron, 17th Cav
82d Signal Bn
82d MP Co

MEDIUM

2d Bn (ABN), 504th IN
2d Bn (ABN), 325th IN
1st Bn (ABN), 505th IN
1st Bn (ABN), 320th FA
407th S&S Bn
82d AG Co
82d Aviation Bn
4th Bn, 68th Armor

SLOW

1st Bn (ABN), 504th IN
1st Bn (ABN), 325th IN
1st Bn (ABN), 508th IN
2d Bn (ABN), 321st FA
307th Med Bn
21st Chem
3d Bn (ABN), 4th AD Arty
313th MI Bn (CEWI)
307th Eng Bn

The formation of the groups was made with the following rules in mind: (a) Each group should be about the same size, (b) The MOS involved should be locally scored, (c) The MOS distribution across groups should be balanced, (d) For a brigade composed of three battalions, one battalion should be assigned to each group. The goal of the design plan was to define three comparable groups from which samples could be obtained and analyzed. In a later section the samples will be described.

Instruments

The form of the SQT results feedback was a computer printout called the Individual Soldier Report (ISR) which gave the soldier's SQT score, a detailed list of failed tasks, failed items within tasks, and references to paragraphs in Soldier's Manual. The ISRs were generated by ATB's local scoring facility at Ft Bragg.

The instrument used to obtain soldiers' reactions to the feedback of their SQT results was the ISR/SQT Feedback Evaluation Record. Questions on the Evaluation Record were aimed at determining the utility of the ISR, SQT score, certain SQT preparation variables, and some indications of what these SQT results meant to the soldier. Try-out of this instrument during its developmental phase showed that nearly all soldiers could complete it in less than twenty minutes.

Procedures

The procedures followed in this research were the following:

1. An ARI researcher personally delivered or observed the delivery of an ISR to a soldier.
2. The soldier was given sufficient time to examine his ISR and digest its contents.
3. An ARI researcher administered the ISR/SQT Feedback Evaluation Record to the soldier.

This data collection was accomplished under real-time operational condition and was dependent on each unit's SQT scheduling choices. Thus it was sometimes necessary because of manpower and time constraints to decide which units to sample. High density MOS were preferred over low density

MOS, large units over small ones, and combat MOS over non-combat MOS. Adherence to these priorities resulted in a fairly large total sample with sufficient numbers of soldiers at the treatment levels to permit statistical analysis.

Sample Description

During the duration of the LSE at Ft Bragg 3166 SQTs were scored and their corresponding ISRs produced. A total of 576 soldiers completed the ISR/SQT Feedback Evaluation Record and 558 of these were usable in this analysis. As might be expected from the procedural priorities, the combat MOS* provided more than their share of the sample. In the analyzed sample 513 of 558 or 91.9% were combat MOS, whereas 2232 of the 3166 SQTs scored or 70.5% were in combat MOS.

At this point a variety of reasons compelled the reduction of the sample to be analyzed to just the combat MOS. Table 1 shows one of the realities of coordinating a real-time experiment under operational conditions: No non-combat MOS soldiers were obtained under the "Slow" feedback condition.

Table 1. Number of soldiers at each treatment level

	Fast (1-15 days)	Medium (16-30 days)	Slow (31-45 days)	N
Combat MOS	255	111	147	513
Non-combat MOS	28	17	0	45
Total	283	128	147	558

Tables 2 and 3 show the percentage distributions of the combat and non-combat MOS on two background variables which might interact with reactions to SQT results feedback, time in service and time left to serve. The dissimilarities between combat and non-combat MOS soldiers appear to further justify removing the few non-combat MOS soldiers from the analysis.

Table 2. Time in service (months) percentage distribution

	12 or less	13-24	25-36	37-48	More than 48
Combat MOS (N=513)	4.1	50.5	19.1	13.3	13.1
Non-combat MOS (N=45)	0.0	46.7	26.7	0.0	26.7

 *Combat MOS were CMF 11, 12, 13, 17 or 19; non-combat MOS were any others.

Table 3. Time left to serve (months) percentage distribution

	12 or less	13-24	25-36	37-48	More than 48
Combat MOS (N=513)	25.7	39.8	28.5	3.7	2.3
Non-combat MOS (N=45)	28.9	57.8	8.9	0.0	4.4

Thus a fairly large (N=513) and fairly homogeneous (all combat MOS) sample was constructed for determining whether increasing the speed of feedback of SQT results makes any difference to soldiers.

Results

Of primary concern to ATB was whether increasing the speed of SQT results feedback mattered or had any effect on soldiers.

A question on the ISR/SQT Feedback Evaluation Record addressed this directly, i.e., "How useful to you is this ISR to the improvement of your military skills?" Responses were obtained on a five point scale: 5=very useful, 4=useful, 3=slightly useful, 2=not very useful, and 1=in no way useful. The means of the combat MOS soldiers for the three treatment levels are shown in Table 4.

Table 4. Ratings of ISR usefulness by soldiers with combat MOS

<u>Speed of SQT Feedback</u>	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	
Fast (1 to 15 days)	4.27	.89	253	
Medium (16 to 30 days)	3.25	1.49	111	F=60.24
Slow (31 to 45 days)	$\frac{2.62}{3.57}$	$\frac{1.34}{1.38}$	$\frac{146}{510}$	p < .001

Table 4 indicates quite clearly that soldiers had a more favorable view of the feedback of SQT results the earlier it came. Another variable which might have affected a soldier's immediate reactions to feedback was whether it was positive or negative, did he pass or fail. Tables 5 and 6 which separate passers and failers show the same pattern as before with a slight decrease in overall mean usefulness rating by the failers.

Table 5. Mean ratings of ISR usefulness by soldiers with combat MOS who passed SQT (SQT score of 60 or more)

<u>Speed of SQT Feedback</u>	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	
Fast (0-15 days)	4.28	0.87	240	
Medium (16-30 days)	3.22	1.50	92	F=91.87
Slow (31 to 45 days)	$\frac{2.62}{3.59}$	$\frac{1.36}{1.38}$	$\frac{134}{466}$	p < .001

Table 6. Mean ratings of ISR usefulness by soldiers with combat MOS who failed SQT (SQT score of less than 60)

<u>Speed of SQT Feedback</u>	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	
Fast (1-15 days)	4.15	1.17	13	
Medium (16-30 days)	3.42	1.39	19	F=4.22
Slow (31-45 days)	<u>2.67</u> 3.43	<u>1.03</u> 1.36	<u>12</u> 44	p < .05

The gradient of feedback utility shown in these results is useful to people who must design the data processing and distribution system. For people concerned with training, however, there is the question of what action will take place as a consequence of providing timely and useful feedback. Some questions were asked on the Evaluation Record in order to obtain a notion of what the soldiers would do. Results of two questions are shown on Table 7. One question asks the soldier when he expects to study on his own the items he missed; the other asks when he believes his unit should provide training on what was missed. The a priori best answer, i.e., a five on a five point scale, is "in the next few days." The expectation might be that failers would have lower means than passers for both questions, and they did. What is interesting, however, is that both groups look to their unit to move more quickly on taking remedial action than they intend themselves.

Table 7. Mean response of combat MOS soldiers.
(5=in the next few days, 4=next month, 3=In the next six months
2=just before the next SQT, and 1=don't know)

<u>Question</u>	<u>Passers</u>		<u>Failers</u>	
	<u>Mean</u>	<u>N</u>	<u>Mean</u>	<u>N</u>
When do you expect to do some training/studying, on your own on the task items you missed?	2.8	466	2.5	45
When do you believe your unit should provide some training on the tasks most soldiers failed?	3.1	466	2.8	45

These questions were also analyzed in terms of the speed of feedback variable. Shown in Table 8 are the percentages of soldiers responding "Don't Know" to the two questions. There are two important points to be made in regard to these results. One is that these are rather substantial percentages. Perhaps this is a true picture as far as the soldier's own need or opportunity to self-train. The other point is that the percentage of Don't Knows increases as the time since SQT increases. It could be suggested here that the longer the delay between testing and feedback of results, the more depressed is the motivation to review or take any remedial actions.

Table 8. Percentages of soldiers with combat MOS responding "Don't Know"

Question	<u>Speed of Feedback</u>		
	<u>1-15 days</u>	<u>16-30 days</u>	<u>31-45 days</u>
When do you expect to do some training/studying, on your own, on the task items you missed?	25.9%	27.0%	32.0%
When do you believe your unit should provide some training on the tasks most soldiers failed?	14.1%	18.0%	18.4%
	<u>N=255</u>	<u>N=111</u>	<u>N=147</u>

Discussion

In learning psychology, feedback is viewed as a secondary reinforcer and as such has its greatest effect when it is immediate. With soldiers and their SQT performance it is currently not possible to provide immediate feedback. It is, however, possible to significantly increase the speed of feedback from a matter of several weeks to a few days. In this research it was found that even though the speed of feedback falls far short of being immediate, speed still matters. The perceived utility of the feedback (the ISR) is a function of time, remaining high during the 1-15 day period and then dropping steadily to a point where its mean rating is less than "slightly useful" somewhere between 31 and 45 days after SQT completion. This pattern was the same for both failers, where the feedback had a negative message, and passers where the feedback was relatively positive.

A high value placed on the utility of feedback does not, of course, mean that the information supplied is taken to heart and remedial studying or training is pursued forthwith. Results of this research indicate, however, that soldiers who received their ISRs more quickly intend to do some studying or training sooner than those whose ISRs were less timely. Speed of feedback was also associated with the desire to have sooner unit training on items missed on the SQT. It might be hypothesized that the speed with which SQT results were fed back to soldiers had a pacing effect, i.e., rapid feedback suggested that rapid corrective action was expected whereas slow feedback suggested there was no urgency about correcting mistakes.

The increase over time of "Don't Know" responses to the questions of when studying or training will or should be done could have several causes. What seems most likely is that interest or motivation had waned with the passage of time. SQT was a hot topic for a week or two and then became another event to be forgotten. It could also be that for many soldiers there became objectively less reason to be concerned about their ability to perform the SQT tasks. Whatever the reason, it appeared that the longer the feedback of results was delayed, the less likely soldiers would be to constructively use information contained in the feedback.

Conclusion

SQT feedback in the form of the ISR has a rather short shelf life, perhaps two weeks. The data presented show a noticeable decline of the perceived utility of the ISR over time. There are also indications that the longer the delay in getting the feedback to the soldier, the weaker is his intention to act on it. The results further show that the soldier expects more initiative from his unit than from himself when it comes to training on SQT tasks which were failed.