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Field Action Report

Preceding analysis of cumulated data: Trainers' impact value on pilot candidates

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ABSTRACT

In our institution, we started several programs three years ago to create and follow pilot trainers' impact value and to find evidence to qualify all aspects of the training. Although the follow-up length of the study was determined to be five years, the COVID-19 pandemic circumstances forced us to analyze cumulated data for the past three years. The aim of the study was to test the hypothesis that the impact value of the trainer has a greater effect on students than the other parameters. What we foundwas not what we had expected.Meanwhile, we suggest that CBT is not the way to handle rational pilot training. EBT should be considered better and should be applied well in the training. We collected quite a lot of data to provide solid evidence.

INTRODUCTION

Theoretical parts of pilot training at all levels have considerable issues to be overviewed.Following the competency-based training (CBT) training syllabuses, we have been experiencing a sort of "fallback" for some time. It is obvious that CBT had to be replaced by scenario-based training (SBT) supported with evidence-based training (EBT) programs long time ago (Kearns S. K., 2016), but it was not.

Experience and tradition are accepted to be the center of aviation. Authorities, aviators, and many others see and talk about what they experience especially about the "training episodes" of aviation (V. Vrahimi, 2019). On the other hand, all fail to collect useable data on this subject so that the scientists may develop some significant resolutions and apply them in training programs.

If it were intended to collect these data in such away that meaningful information could pile up, it certainly would mean a long-term, organized, and detailed follow-up study.

Our institution had all the necessary basic parameters to handle such a study. Those basics were a big number of homogenous trainees (age, worthiness,[1] etc.), old-school and fresh trainers, plenty of time, IT, personnel to focus on the project, and a program to follow.

To start with, we divided the main study into parts:

- The test protocol results to compare the compatibility with collected data and resolved evidence.[2]
- A distinctive, heavy, challenging training of instructors,Trainer Development Seminar (EGS), for a wide new understanding and handling of both classroom and flight instructions.

[1] Our institution demands a considerably highpilot candidate worthiness test result. The test is named the PRAXIS Test Protocol. For the test to be audited, refer to http://praxis.aero/index.php/test-protokolu-ve-kabul-sartlari.

[2] Many would confuse the terms "data" and "evidence." Evidence is not the data collected but the analyzed and filtered meaning of the data for a particular point or focus.

- To follow whether trainers could apply the new techniques and methods in which they were expressly trained.
- To try to find out whether new applications could improve the quality of the training by creating evidence.

This is a preceding report of a three-year-long survey and includes only one leg of the total study: "The impact value of the trainers."

What Is the Impact Value?

Universally, it is a well-known fact that training and education basically depend upon the –trainer relation. The importance, load, duration,and other factors of the topics are all subordinate factors. Shortly, the survivability and success[3] of any training purely rely on the effect of the trainer on the subject trainee (Chall, 2002)(Connell, 2009), (Miller, Ruiz, & Sharp, 1997), (Wofford, Ellinger, & Watkins, 2013), (Jangsiriwattana, 2019). Now, the question is, what personal qualities should a trainer have to increase this positive effect?Many could be discussed, but we built an algorithm to calculate and identify a trainer's impact value. The impact value, then, is a figure to represent a trainer's possible effectiveness on trainees.

The algorithm has basic parameters such as age, experience, degree, licenses, etc. Having EGS and having renewed it are other parameters. Published papers or books, exhibitions, conferences, keynote lectures, and their recurrences are also important parameters. Some periodic activities like performances, concerts, museums, and exercise programs are also considered.

The algorithm itself has a little complex structure. For example, age creates a value. If the trainer is between 30 and 45, then he gets the highest value, but if the same trainer fails to keep a disciplined exercise program, then he loses more value than a trainer over 45 would.

Finally, each trainer had a figure (which could change over time and with any addition) to start with. In fact, this was a credit given to each trainer.

What we expected was to motivate trainers and make them increase the initial values they had. They could also lose value.

Further, we decided to submit this paper as a preceding analysis mostly because the two years of pandemic conditions heavily affected the whole training program. By the end of the following two years, when 5 years will be completed, a complete article of the study will again be submitted.

METHOD

We developed a feedback algorithm.After each performance of a trainer, the involved trainee was to fill out a simple form just before the examination of the performance,[4] from which the trainee should pass according to the manuals of the training program. Along with the program, each trainee was to face around 150 of these examinations.

The feedback form was a simple sheet with seemingly ordinary questions by which the trainee could suppose that he was evaluating his trainer. Yet, the sheet had a very complex background and a sort of AI work. Since a trainee filled out many of the forms for several trainers, the background software followed the pattern for each trainer. The form was filled out just before the examination, and without properly filling it out, the examination did not start. Some trainees often found this sequence annoying and hurried to start the examination by randomly and quickly checking the answer boxes. Some tried to show their anger or contentedness. They checked wrong answers although they do not think so. The algorithm catches such cases and eliminates them. There were also critical "not to miss" questions with only true-false choices, which mostly led to results. Most questions were antagonistic, and trainees failed to shape their thoughts and reflect the impact of the trainer. By way of the form, we could also observe whether the trainers applied what had been determined in the EGSs.[5]

[3] By whichever parameter it is tested or predicted.

[4] We call this "performance" because it may be lessons in a particular subject, OJTs, modules of flights, or simulations.

[5] Trainers are literarily redesigned and formatted in these EGSs. Even their preparation for the classes and/or flights are formatted. They are not allowed to use lecturing tables. They have very limited time to project presentations on a wide screen. Trainees are not allowed to take notes etc.

The algorithm, eventually, was not interested in whether the trainee liked or disliked the trainer but the value he produced.
Although the running of the algorithm and content of the feedback form have little to do with this paper's subject, probably the most important part of the algorithm is that the trainee exactly knows the trainer's "rank." This rank is the same figure as the impact value. This is important, for when a trainer's figure is high, trainees' expectations grow high, and the trainer does not want to upset them; when the figure is low, then the trainer pushes harder.
A trainer's initial impact value (IV) cannot be lower than 82 out of 100. Over time, as the forms generate value adds and they keep their renewals, the value may grow or fall.

DATA

In 2018, we initiated the program, and for one year, we tested on 20 subjects. Having modified ambiguous parts of the algorithm and completed the EGSs, in 2019, we started up the program, and by the end of 2021, in three years, only for classroom, simulation, and flight sessions, we collected quite a mass of data from a total of 111 pilot candidate trainees and 22 trainers.
Classroom: 12 trainers/39 lessons/4030 feeds
Simulator: 3 trainers/mean 11 sorties/290 feeds
Flight: 13 trainers/3 basic steps/508 feeds

Of the 111 trainees:

- 93% were aged between 18 and 21,
- 7% were aged over 22, and
- 31% had completed PPL and night/IR ratings with a mean of 63 hours of PIC and ATPL lessons with examinations during the study.

Of the 22 trainers:

- The median age was 38 (24-71);
- 5 started the program with an IV of 88, 8 with 93.5, 5 with 96, and 4 with 98;[6]
- 4 were both classroom and flight trainers;
- 1 was both a classroom and a simulator trainer;
- 2 were classroom, simulator, and flight trainers;
- 8 were engaged in more than one lesson in classroom sessions;
- none quit the program until the time of this publication; and
- only 2 joined 1.5 years after the program started.

DISCUSSION AND RESULTS

Figure 1 presents theIV of the 22 trainers cumulatively for the 3-year-long period.
Figure 2 shows the cumulative success rates of the 111 trainees in three areas for the 3-year-long period and purely reflects downward trendsin every area.
It seems obvious in the figure that most of the trainers grew their IV during 2019–2020. The ones who could not were those who had very limited training time with trainees, and all of themwho were aged over 45 had started with high IV.
At this point, we need to emphasize the effects of the COVID-19 pandemic conditions on our trainings. While most simulator and flight trainings went on in their appointed courses, classroom sessions were either postponed or handled online. We were not able to figure out the precise effect of this circumstance on IV, but to make an educated guess, it was negative.
As a result, most young trainers who also practiced flight instruction went on gaining IV. Yet, a total fallback is observed during 2020 and 2021. Looking at Figure 1, it would be an easy resolution that the trainers who started the program grew their IV fast and satisfactorily, while others were slow or even lost IV. Here, we saw that the ones who grew higher IV were both classroom and simulator trainers. On the other hand, the success rates of simulator trainers reveal a certain fall within the years of the study. At this point, we believed that we were about to reach the "evidence" and conducted secondary studies to back up, for the same situation was obvious for flight trainings.

[6] We ignored average value, for we intended to see personal results.

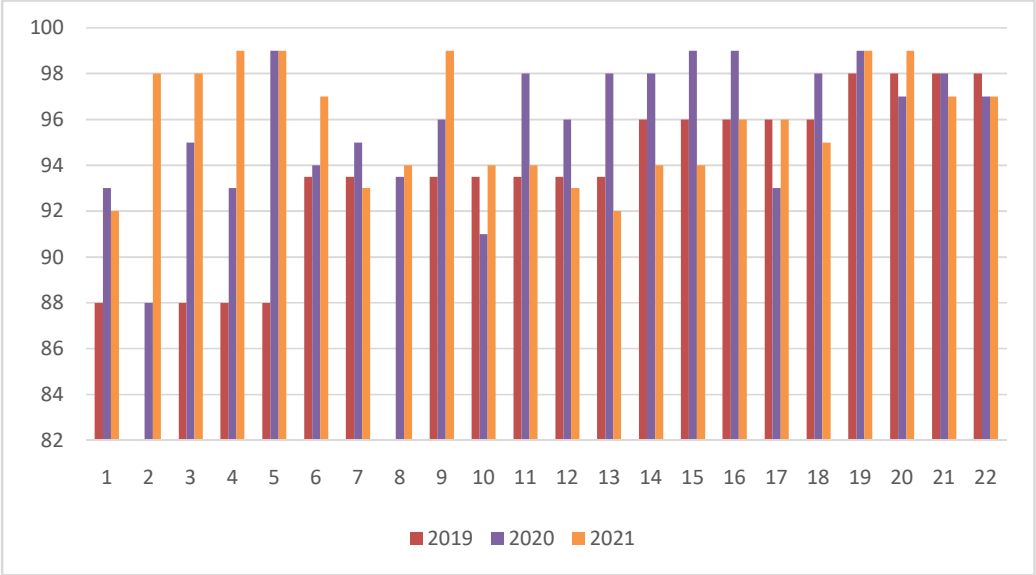

Figure 1. IV Changes of 22 Trainers in 3 Years

Note: 2 and 8 are the trainers who joined the system later on.

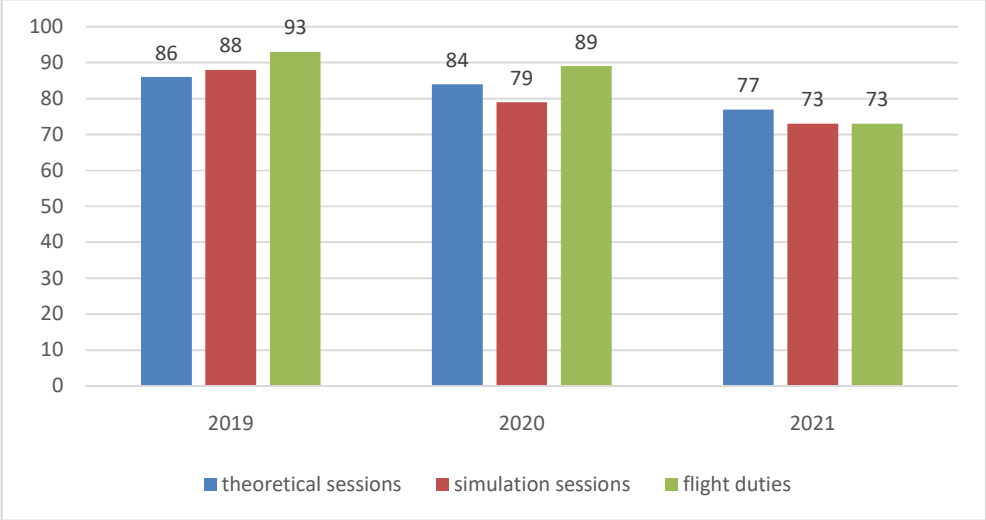

Figure 2. % success of trainees

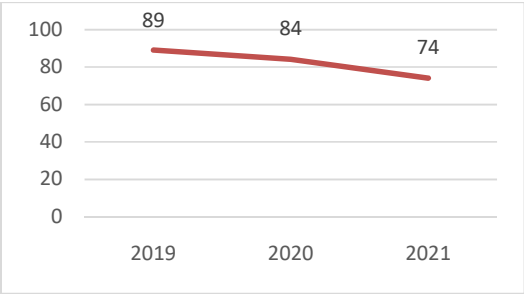

Figure 3. Total Trend (%)

The aim of the study was to test the hypothesis that the impact value of the trainer has a greater effect on students than the other parameters. Further, we aimed to show that CBT is not the way to handle rational pilot training. EBT should be considered better and should be applied well in the training, which seems not only difficult but also expensive if not programmed carefully.

We learned that evidence is the processed data, and this processing needs some particular attention.

To produce useful evidence, we carefully followed the secondary leg of this study, the effect of pre-flight simulator training on actual flights, to cross-check with the results of this study.

The simulator data that were taken into account in this paper are very crude and simply imply the result of each session as “fail” or “pass,” whereas the particular study will present every aspect of the training in detail, and we will be able to reach productive evidence with which we will customize the training. Simulator data are far too important to organize the whole training, partly because simulator training is held together with the theoretical classroom training and seemingly works much better (Prather, 2018).

CBT, whichthe authorities obligate us to perform, demands all theoretical sessions be held and examinations be passed prior to the flight training. Consequently, this method fails to produce better training,which has long been known (William J. Rothwell, 1990). We clearly saw that CBT hurts the performance of the highly trained and motivated trainers’ capabilities.

Huang and Jacobs both suggest that the trainees who received S-OJT (structured on-the-job training) generated higher learning motivation and learning performance compared with those who received the classroom training. Moreover, the trainees with lower initial learning motivation were motivated more and generated higher learning performance after receiving S-OJT (Huang, 2016), (Jacobs, 2005).

Having a concrete CBT, we have little to do with the compulsory program. First, classroom lessons are to be taken, then flight training starts. By inserting pre-flight simulator sessions into the program, we managed to achieve evidence and pointed out that no matter how much the trainers improved their IV, what they taught in the lessons hardly helpedthe learning of the trainees. Compulsory CBT suppressed the IV of the trainers.

Another important aspect of the matter reveals that the organization of S-OJT is both expensive and hard to follow and requires extra training of trainers, which means “time.”

Finally, this study will be repeated for two reasons: to receive data free from the effects of COVID-19 situations and to cross-check with full details of flight simulatortrainings. We will produce a flow scan as Jacobs suggests to realize better S-OJT (Jacobs, 2005).

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