

Modeling of Armored Equipment Training Support System Function and Process Based on IDEF

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Abstract. In order to lucubrate in armored equipment training support, the IDEF0 function modeling method is used to construct the function model of armored equipment training support system based on the analysis of the main operation contents of armored equipment training support. The IDEF3 process modeling method is applied in constructing the model of armored equipment training support process flow PFN and the model of object state transition OSTN through the analysis of armored equipment training support process. The operating mechanism of the armored equipment training support system is defined, which does well in optimizing training support resource deployment and improving training support benefit.

Introduction

Armored equipment training support is the general designation of the supportability measures and corresponding activities for exerting the tactics technique performance of the armored equipment and accomplishing military training mission, which is the base and precondition of improving training quality and keeping training safety [1]. The fundamental purpose of armored equipment training support is to supply resource, technology, information and service for armored equipment training by means of establishing armored equipment training support system to insure the achievement of the training mission.

On basis of analyzing the main operation contents of armored equipment training support, the paper applies IDEF series modeling methods to establishing the function model and the process model of armored equipment training support system to describe the function activities and the operating course of the system.

IDEF series modeling methods

IDEF0 function modeling

IDEF0 is mainly applied in establishing the function model to describe the function activities and relationship of the system, the basic content of which is the modeling method of SADT, System Analysis and Design Technology [2]. It is a kind of constructing model method of disassembling from above to below, which expresses the functions of the system as well as their limit, connection, relative information and objects precisely by means of graphics and structure mode. IDEF0 is made up of a series of figures, whose elements are mainly “box” and “arrow”.

IDEF3 process modeling

IDEF3 realizes process description mostly by two basic organization structure, scene and object, respectively corresponding two description modes, PFN (Process Flow Network) and OSTN(Object State Transition Network). Hereinto, PFN is the view that takes process as the centre, which emphasizes the appearance and the sequence of the process, while OSTN is the view that takes object

as the centre, which emphasizes the objects concerned with the process and the estate transition of the objects.

Armored equipment training support system function modeling

Main operation contents of armored equipment training support

The main operation contents of armored equipment training support consist of equipment support, material support, ground support, technique support, teaching support, information resource management, and organization management, as Fig. 1 shows.

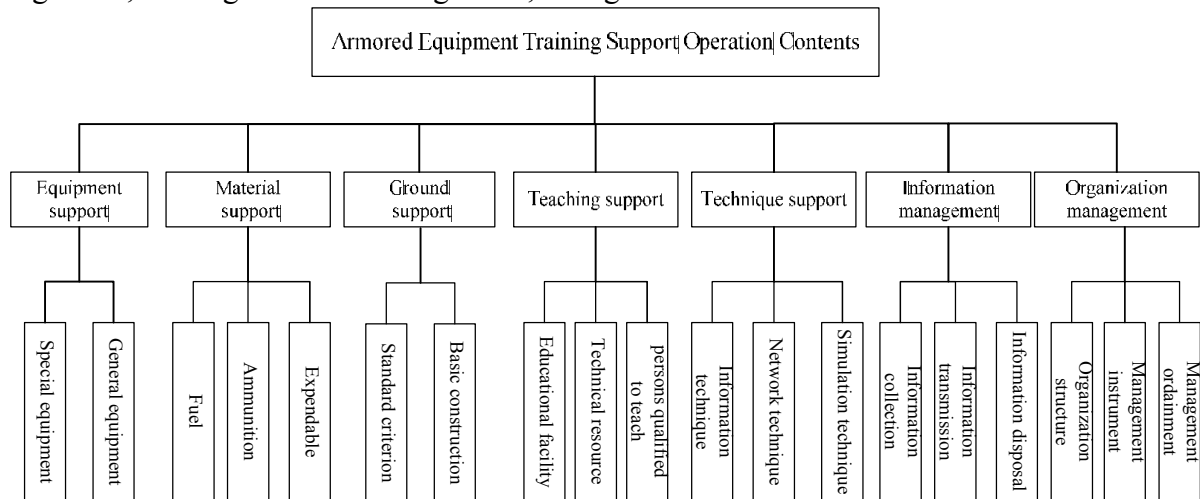


Fig. 1 main operation contents of armored equipment training support

Armored equipment training support system function analysis and modeling

According to IDEF0 and the analysis of the armored equipment training support operation contents, the armored equipment training support system A-0 model is constructed, including the input, the control restriction condition, the mechanism structure, and the output, as Fig. 2 shows.

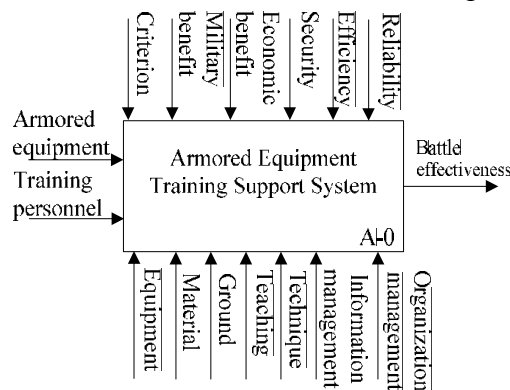


Fig. 2 Armored equipment training support system function A-0 model

On basis of Fig. 2, the armored equipment training support system, which is the basic platform to complete the training support mission, is the organic integer made up of all kinds of resource required to accomplish equipment training as well as the organization activities under definite restriction conditions, including theoretic teaching subsystem, simulation training subsystem, equipment training subsystem, integrative examination subsystem, and information management subsystem. Decomposed the A-0 model, the armored equipment training support system A0 model is constructed, as Fig. 3 shows.

Armored equipment training support system process modeling

Analysis of armored equipment training support process

Armored equipment training support process is a series of technique and management activities adopted by time course as well as the scheduling and logical relationship among these activities, whose purpose is to exert the tactics and technical performance of the armored equipment and accomplish the training mission. The basis of armored equipment training support system process modeling is analysis of the armored equipment training support process to define the contents and interrelation of the technique and management activities as follows:

- (1) prophase construction of teaching condition, simulation system, and training ground;
- (2) theoretic knowledge study for the receiving training personnel;
- (3) simulation training;
- (4) drawing equipment training plan;
- (5) preparation of equipment, material, and so on for training;
- (6) equipment training;
- (7) training examination;
- (8) analysis of the results of the examination;
- (9) estimation of training outcome and feedback

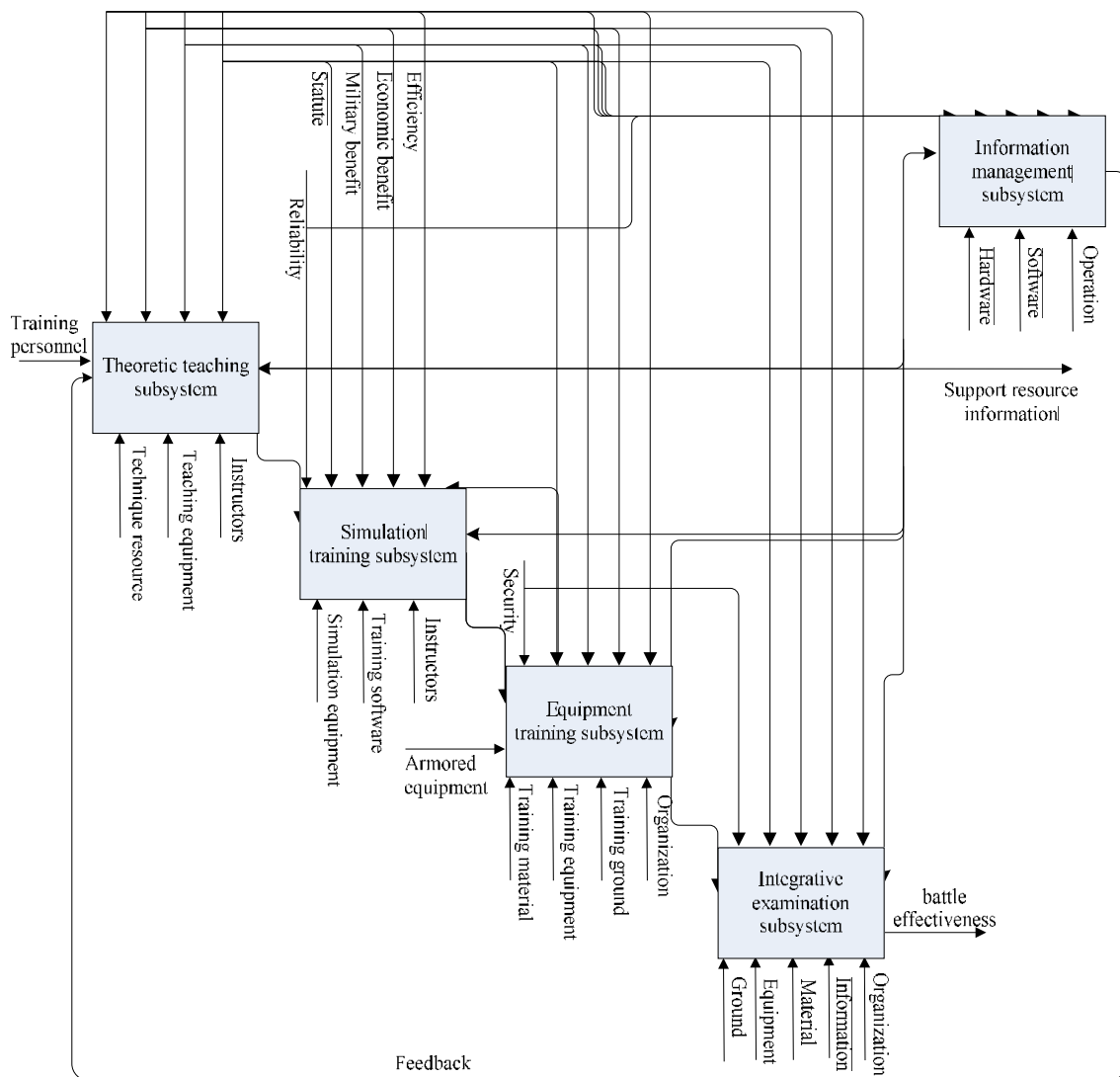


Fig. 3 Armored equipment training support system function A0 model

Armored equipment training support process modeling

Armored equipment training support process modeling is to describe the activities as well as their logic relationship and the resource in the support process so as to manage, control, and optimize the training support process effectively [3]. According to 3.1 section, armored equipment training support process PFN model is constructed as Fig. 4 shows.

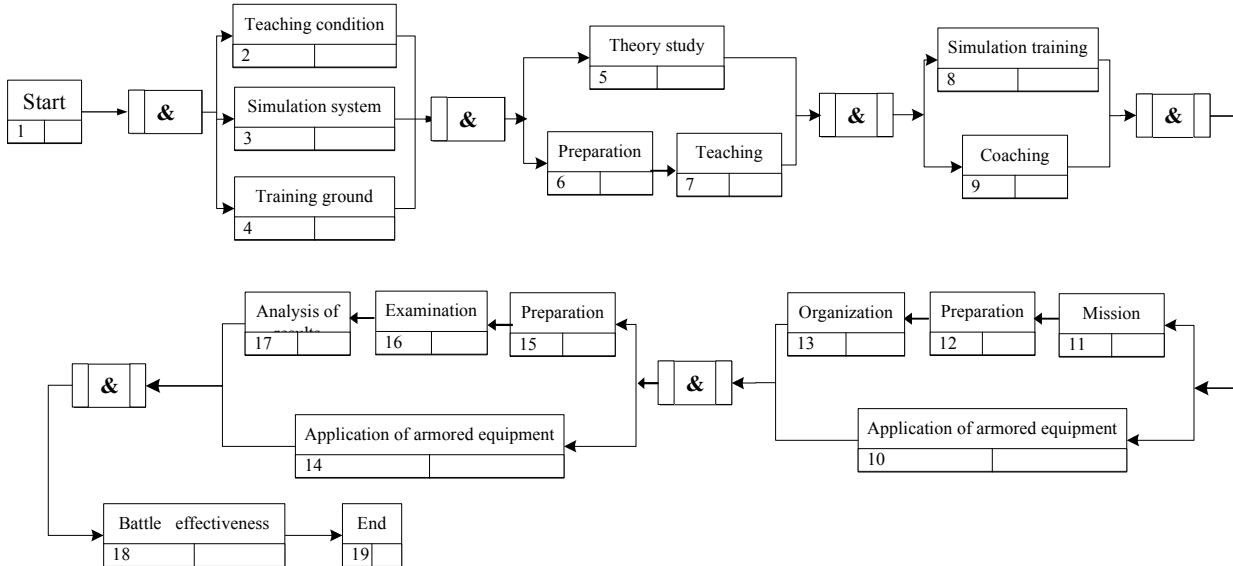


Fig. 4 Armored equipment training support PFN model

Taking the training receiver as research object, the armored equipment training support OSTN model is established to describe the state and state transition for the training receiver in armored equipment training support process, as Fig. 5 shows.

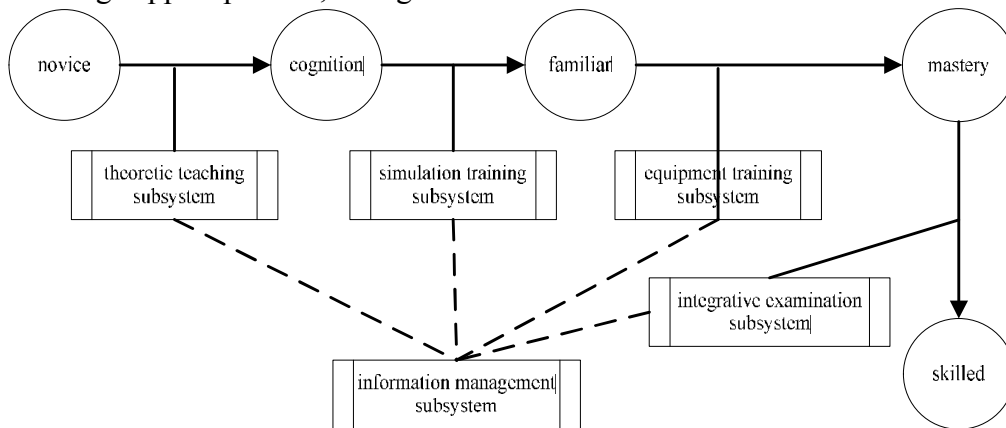


Fig. 5 Armored equipment training support OSTN model

Conclusions

Equipment training support is the basis and precondition of achieving training mission, improving training quality, accelerating the creation of battle effectiveness. In this paper, armored equipment training support system is divided into theoretic teaching subsystem, simulation training subsystem, equipment training subsystem, integrative examination subsystem, and information management subsystem. In application of IDEF0 function modeling and IDEF3 process modeling methods, the armored equipment training support system function model A0, process models PFN and OSTN are constructed so that the training support system operation mechanism is defined, which establishes the base of further researching in armored equipment training support, optimizing the resource deployed, and improving support benefits.

References

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