Abstract

**Purpose:** This research aims to analyze the current status of the Non-Commissioned Officer (NCO) Basic trainings at the Republic of Korea Army (ROKA) NCO Academy and to suggest improvement options for immediate field task performance.

**Method:** This study is to identify the capabilities of smart NCOs required in the era of the 4th industrial revolution. It also reviews previous research on ‘NCO Comprehensive Development Plan 2.0’ and ‘NCO Strategy 2030’ for the future of the military in connection with ‘Defense Reform 2.0’. Due to the COVID-19 pandemic, surveys are mainly conducted through online surveys and non-contact interviews with the NCO experts.

**Results:** This research would propose a training course development plan based on the internal efforts of the NCO Academy and a survey of 678 soldiers including junior and senior NCOs and company commanders. It is necessary to realistically adjust the goals of the courses to achieve the basic combat skills and capabilities as a junior NCO. The current NCO basic course period needs to reduce from 18 weeks to 12 weeks and also the junior NCO leader course period needs to extend from 20 weeks to 25 weeks depending on the each refined training goal.

**Conclusion:** The future of the army may depend on the smart NCO’s immediate field performance which is the core of the combat capabilities of tactical units. Therefore, the NCO basic training environments and programs of the ROKA NCO Academy should be substantially improved.

**Keywords** NCO (Non-Commissioned Officer), Field Leadership, 4th Industrial Revolution, NCO Comprehensive Development Plan 2.0, Immediate Field Task Performance

1. Introduction

The 4th Industrial Revolution is bringing about leaps and bounds not only in economy, culture, and education, but also in the defense realm. With the advent of the population cliff along with the reduction of troops in accordance with the defense reform 2.0, the need to foster smart warriors skilled in warrior platforms, drone-bots, manned and unmanned complex combat systems, and hyper-connected networks is increasingly being raised.

With the Republic of Korea (ROK) Defense Reform 2.0, various and rapidly changing aspects such as army-oriented military restructuring, reduction of troops, reduction of military service period, emergence of population cliffs, spread of a social atmosphere that values human rights appeared. This has a great influence on fostering smart Non-Commissioned Officer (NCO) for the future Army[1][2].

Recently, fostering irreplaceable smart combat NCO with Immediate Field Task Performance has become a major concern. In particular, Acquisition of good NCOs and substantial trainings...
is considered increasingly important. Republic of Korea Army (ROKA) NCO Academy has been doing its best to develop Immediate Field Task Performance[2]. Improvements have been made in various areas such as training goal, curriculum, period, and drill-instructor sergeant system, as well as increasingly emphasizing reflection from combat unit’s field training requirements.

This study is to examine the current status of NCO Basic course and junior NCO leadership course at ROKA NCO Academy and suggest ways to improve Immediate Field Task Performance based on the requirements of field units[1][3]. The survey is conducted mainly on online surveys and non-contact interviews with expert groups due to COVID-19.

2. Strengthening NCO Capabilities Suitable for the Future Battlefields

Changes in the 4th industrial revolution are rapidly taking place throughout the social system. In hyper-connected network environments such as artificial intelligence (AI), high-speed Internet, cloud computing, Internet of Things (IoT) and big data, autonomy and convergence are underway across all areas of society. Futurists predict that the advanced technology is currently being tested and partially applied in each field in its early stages, but as it enters the mid-term stage after 2030, it will be advanced and widely applied to human real life[1][4].

In the future battlefield, AI+ICBMS convergence technologies such as robots and AI of the 4th industrial revolution will be applied, and many combat mission prayer will be replaced by intelligent robot combatants from human combatants[2][5].

The modern war is applying the concept of precision strike using C4I, but the future war will be evolved into a five-dimensional war, including cyber warfare and space warfare, as high-tech advanced technologies such as satellites, precision-guided munition (PGM) drone-bots and warrior platforms are being used in the military areas[2][6].

ROK Army is developing plans to replace combatants with AI and machines by combining up-to-date advanced technologies to prepare to the lack of military manpower resources in advance. By developing warrior platforms and drone-bots first, ROKA is seeking ways to maximize combat effects while minimizing casualties. The plans include warrior platform, Army TIGER System 4.0, and establishment of drone and robot systems[7].

The Army is promoting the NCO comprehensive development 2.0 and the NCO Strategy 2030 to enhance the role and mission of irreplaceable smart combat NCO as the backbone for ROKA’s combat power in tactical units[5][8]. In the past, ROKA NCOs performed tasks focused on unit management as passive and auxiliary beings. On the other hand, current and future NCOs should be able to play a pivotal role as the subject of combat preparation and training to demonstrate actual combat power performance. Nevertheless, there seems to be some atmosphere in which they are not properly devoted to education and training. It is difficult for them to focus on practical education and training, which is their original task, as they still focus on unit management-oriented work[2][9].

The NCO Strategy 2030 aims to be the center of military combat power, and is proud of being right, competent, and dedicated. To this end, NCOs should be reborn as a combat warrior in individual and small unit combat technology, a leader in action, and a connector in the commander-enlisted soldiers, people-military, past-future. In order for the Army to foster NCO as the backbone of its tactical combat power and as top combatant in future battlefields, conditions and systems must be prepared to focus entirely on their education and training[10]. Moreover, NCOs should develop their job competencies through self-learning. In other words, they have to make hard efforts so that they can clearly recognize
what they have, what they need to know, and how to act in order to perform roles for each position.

Again, they are the backbone of the ground forces' combat power. They are a group that demonstrates field leadership and are the key to determining the success or failure of the construction of the first-class army beyond its limits[5][7][11]. A good warrior is a NCO with the right character, warrior temperament, and leadership. A competent warrior is a NCO with both military knowledge and expertise. A dedicated warrior is a NCO who strives to develop capabilities, exert influence, and complete his duties.

NCOs should have a vision of a combative and proud figure embodied in dedication to their country and initiative of combat. A smart NCO can be defined as a warrior who is well-versed in the advanced military technology of the 4th industrial revolution and is knowledgeable and dedicated[11][12].

They are small unit combat commanders, drill and training instructors, combat equipment management experts, unit managers to maintain combat readiness, and combat-oriented unit traditional successors. In order to transform the 4th Industrial Revolution and improve Immediate Field Task Performance, the educational paradigm of NCO should also be developed in the direction of strengthening their job capabilities. Competency consists of knowledge, skill, attitude, value, etc., and is strengthened through personal experience through education and training and their positions[2][13].

Among the Army's future high-tech platforms, the systems with the highest connection to NCO's combat missions are the warrior platform and drone-bot combat system. The warrior platform, a personal combat system, consists of wearable devices such as AI and hyper-connected functions to maximize combat power[3][14]. The drone-bot combat system is the core of the manned and unmanned combined combat system. By replacing human soldiers with drone bots, the Army can improve its combat capabilities in high-risk areas and minimize damage to combatants. Therefore, education should be urgently implemented so that these two combat systems can be effectively utilized.

In addition, the future NCO should develop into an LVCG-based education and training expert. The Army is affected by the proficiency of enlisted soldiers due to the shortened military service period. In addition, due to the increase in civil complaints due to field training noise, dust, and bad weather, practical training is being restricted[2][10][15]. In order to overcome these challenges, the Army is developing a combat simulation training system that applies the Synthetic Training Environment (STE) and is creating a KCTC-type science training center capable of realistic combat shooting and tactical movements. Therefore, NCO should have the ability as a tactical training expert along with the establishment of an LVCG-based scientific education and training system[3][16].

3. Improvement of Junior NCO’s Immediate Field Task Performance

3.1. Immediate field task performance for junior NCOs

ROK Army is striving to build a first-class Army that exceeds its limits by linking ‘Defense Reform 2.0’ with advanced technologies in the 4th Industrial Revolution[5][11]. There is a growing demand for expanding the role of NCO due to a decrease in the number of military soldiers, limitations in manpower structure, and shortening of military service period.

Recently, there has been a demand from field units for the improvement of Immediate Field Task Performance of junior NCO. Immediate Field Task Performance literally means responding promptly and immediately to each situation at tactical units[8][16]. Therefore, it can be defined
as the ability to perform the mission immediately according to the tactical unit’s environment and mission. Efforts to develop the capabilities of junior NCOs are being reviewed throughout the NCO basic course and junior NCO leader course under the ROKA NCO Academy. In particular, while actively reflecting the needs of field units, improvements have been made in various areas such as educational goals, curriculum, period, and drill-instructor system and they are being devised.

3.2. The goal, period, and subject Improvement of the NCO basic trainings

The NCO training system has continuously changed according to the needs of the times. The junior NCO leader course, which was conducted after completion of the NCO basic course, was also conducted as a 20-week convocation training at the Army NCO Academy within two years after being commissioned, but has been improved to proceed with the junior NCO leader course immediately following the NCO basic course.[1][7].

As a result of self-analysis of the curriculum of the ROKA NCO Academy, the focus has been on the number of training programs rather than the curriculum that develops the competencies required by field departments. In particular, the training period for junior NCOs is over-organized for 18 weeks, and the educational goal is also higher than the goal of the school education regulations, Army regulation 340, as it requires the ability to qualify as a squad leader[3][16].

The Army NCO basic course is 7 weeks longer than the 11 weeks of naval and air force training, resulting in relative disadvantages such as delay in commission appointment, extension of mandatory service period, and lower payment. The problem is that the training goals and curriculums of the NCO basic course and the junior NCO leader course of the NCO Academy are the very similar and the learning contents are somewhat overlapped. Therefore, it is necessary to realistically improve the training goals, training periods, and curriculums of the junior NCO trainings by raising the awareness of service and accepting the demands of the field.

NCO basic course and junior NCO leader course need to be distinguished. The NCO basic course should be conducted mainly on militarization programs as a junior NCO, and the junior NCO leader course needs to be improved focusing on having the capabilities as a squad leader[2][9][15].

Also, NCO basic course needs to be improved by shortening the training period to meet the training goals in order to resolve the relative discrimination compared to other military forces. On the other hand, the junior NCO leader course should extend the training period to 25 weeks to focus on developing the ability to perform positions in consideration of the squad or team leaders. Such improvement measures can be applied as shown in <Table 1>.

Table 1. Improvement of the NCO basic course and junior NCO leader course.

<table>
<thead>
<tr>
<th>Category</th>
<th>NCO basic course</th>
<th>Junior NCO leader course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal</td>
<td>Basic skills as a combatant and ability to carry out battles.</td>
<td>Elite combat squad leader, capable of performing his/her duties.</td>
</tr>
<tr>
<td>Periods</td>
<td>12 weeks (-6 weeks)</td>
<td>25 weeks (+6 weeks)</td>
</tr>
<tr>
<td>Upright personality and leadership</td>
<td>Military law, Roles and responsibilities of NCO, military etiquette, Personality development camp, Sexual violence prevention program</td>
<td>Mental consulting program, Overcoming combat stress, Military consulting.</td>
</tr>
<tr>
<td>Physical capacity</td>
<td>Basic physical fitness, Physical fitness test, Tactical march (10, 40km)</td>
<td>Physical fitness test, Combat physical fitness training, Mountain physical fitness training, Tactical march (20-40km)</td>
</tr>
</tbody>
</table>
Skills to operate weapons and equipment
- Drone-bot combat execution system
- Expansion: Organizer, communication and monitoring equipment, etc.

Personal weapon shooting, SAW (Squad Automatic Weapon), drone-bot combat performance system
*Communication and monitoring equipment

Combat skills
- Certification of qualification as the combat squad leader.
- Improvement: Personal weapon.
- Expansion: Mines, barbed wire, combat injuries, etc.

Treatment of injured persons, certification of qualification as a combat squad leader.
*Mines/barbed wire

Battle command leadership
- Expansion: Small unit combat, KCTC training.
- New: local provocation counter operations

Small unit combat, KCTC combat training, and operations to local provocation

Others
- Safety culture, introductory education (5 subjects including integrity subjects, etc.)
- Expansion: Field practice, commander’s time.
- New: Teaching method, evaluation introduction education

Unit management, introductory subjects (5 subjects including integrity), military life guidance, etc.

In the squad battle course, only the basic tasks required as combatants are mastered in the training course, and in connection with small unit combats, Korea Combat Training Center (KCTC) combat training, and local provocation in the junior NCO leader course. Delete the 20-kilometer tactical march during the NCO basic course and cultivate individual marching skills mainly for 10km and 40km[8][10]. In the junior NCO leader course, the individual evaluation of marching ability will be drastically deviated from the individual evaluation of marching ability to strengthen marching leadership such as squad command, tactical situation measures, and guidance before, during, and after marching through 20km and 40km tactical marches. KCTC combat training in the junior NCO leader course reflected for the first time in year 2021 guarantees conditions for pre-coordination and teamwork with field units by realistically reflecting training preparations and maintenance time such as war games and topographic reconnaissance.

If the training goals of the NCO basic course are adjusted and the training period is shortened, the junior NCO leader course can be expanded from the current 20 weeks to 25 weeks[5][12][14]. When the training period is adjusted from the current 18 weeks to 12 weeks, it is necessary to reinforce the ability to perform the position of the squad leader in the junior NCO leader course. Adjusting the curriculum according to the shorter training period is as shown in <Table 2>.

Table 2. Improvement plan of NCO basic course subjects.

<table>
<thead>
<tr>
<th>Category</th>
<th>Current</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Squad battle</td>
<td>Combat skills + Squad leadership / 90H</td>
<td>Transfer the squad leadership task from NCO basic course to junior NCO leader course / 40H</td>
</tr>
<tr>
<td>March and physical training.</td>
<td>March (10, 20, 40km) x 2 times + Squad leader leadership skills / 74H</td>
<td>Development of basic skills /40H * Use their daily physical training time</td>
</tr>
<tr>
<td>Personal weapons</td>
<td>Shooting ability + guidance / control ability / 44H</td>
<td>Reinforcement of control and guidance skills in junior course / 36H</td>
</tr>
<tr>
<td>Commander’s time</td>
<td>22% / 164H of the total curriculum * Preparation for the completion ceremony, pre-learning, etc.</td>
<td>* Reduced to 10% of the total curriculum / 52H * Focusing on the key points</td>
</tr>
</tbody>
</table>

Reinforcing measures to improve Immediate Field Task Performance in the NCO’s basic trainings is an essential task of the Army to enhance the unit’s tactical combat capability, not an option[3][16].
A shortcut to accommodating the demands of field units and developing junior NCO’s Immediate Field Task Performance requires a process of being aware of themselves like what ability they should have. Currently, due to the COVID-19, the existing field on-job-training program is not in progress. If the junior NCO leader course is increased instead of shortening the training process, it is necessary to actively consider extending field on-job-training program from the current one week to two to four weeks. Junior NCOs are trained for one week when they first commissioned, and using this period, they can save time and their efforts. To this end, the ‘ROKA NCO Academy combat development department’ should be reinforced first, and the study of the combat doctrine of small units should be added. Based on this, education and training should be developed, and the requirements of field units should be reflected in the necessary requirements[3][13][15]. Of course, efforts should also be made to actively collect opinions from field units.

3.3. Ensuring the conditions conducive to NCO trainings

Now, the Academy has 18 NCO basic courses a year, and that is currently heavy to operate with the current number of people. In the current system, the burden on drill instructors (DI) is increasing day by day as they are in charge of both military discipline and training. Each DI is in charge of 20 to 30 people, which leads to excessive burden and poor professionalism. In particular, there is a lack of meeting time and research and development (R&D) time for training improvement, resulting in differences in training contents between instructors. There is a phenomenon in which excellent NCOs avoid applying for training instructors due to the heavy workload of the training.

Therefore, the role of the instructor in the NCO basic course should be divided into training instructor and tactics instructor as shown in <Table 3>.

Table 3. Improvement of drill instructor’s role.

<table>
<thead>
<tr>
<th>Category</th>
<th>Current</th>
<th>Improvement</th>
</tr>
</thead>
</table>
| **Organization** | - Five DI per company  
- Training for 30 persons per DI | - Three DI per company (The remaining two will become tactical instructors)  
- Training for 40-50 persons per DI  
- Organize 25 to 30 additional tactical instructors (support 18 companies) |
| **Management** | - Both discipline and training  
- All subjects (17 subjects) in charge | - DI: discipline and basic training  
- Tactics instructor: combat skills. |

In addition, the shortening of the training period means that the DI’s training preparation period increases. If drill instructors use this extended period efficiently, they can fully strengthen their instructor capabilities. Gathering appropriate feedback from field tactical units, acquiring a variety of teaching skills, and studying doctrine can provide good training for junior NCO.

4. Enabling Feedback for Better NCO Trainings

In order to teach and produce competent junior NCO with Immediate Field Task Performance, above all, the requirements of military departments of colleges, Reserve Non-commissioned Officer’s Training Corps (RNTC), and field units must be interconnected. Due to COVID-19, the demands of field units has been not properly reflected in ROKA NCO Academy’s training pro-
gram, and Efforts at the ROKA NCO Academy to collect feedback from field units were also insufficient. As a result, over the past two years, there have been only 26 field unit requirements and only 6 field unit visits[6][16].

Perhaps for this reason, according to the 2020 field survey conducted by the ROKA NCO Academy, there were severe gaps between training institutions and field units for junior NCOs. Junior NCOs complained that their units are in charge of just simple tasks, not training and field leadership. In particular, they emphasized that only about 30% of what they learned in training can be used in the field, asked to reinforce basic subject practical training, small unit management, and SAW(Squad Automatic Weapon) skills. Additionally, junior NCOs often struggle with commanding soldiers of a similar age due to their lack of career and experience.

To reflect the demands of the field tactical units, a survey was conducted in order to improve the Immediate Field Task Performance of junior NCOs. As shown in <Table 4>, a total of 763 junior NCOs, first sergeant, and company commander of the three front line corps were surveyed for two weeks from September 13, 2021 (Mon) to September 24 (Fri). As a result, it reveals the result of the survey on key subjects for improving the Immediate Field Task Performance and subjects need to be added to NCO basic trainings.

Table 4. Key subjects for improving the immediate field task performance.

<table>
<thead>
<tr>
<th>Current</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>① Small unit combat (276)</td>
<td>① Crew-served weapon (32)</td>
</tr>
<tr>
<td>② Personal Weapons (268)</td>
<td>② Leadership (29)</td>
</tr>
<tr>
<td>③ Physical training (255)</td>
<td>③ Special Qualification training(SQT) (28)</td>
</tr>
<tr>
<td>④ Map reading (237)</td>
<td>④ Small unit combat skills (20)</td>
</tr>
<tr>
<td>⑤ First aid (216)</td>
<td>⑤ Preparations for KCTC (20)</td>
</tr>
<tr>
<td>⑥ Military personality education (216)</td>
<td>⑥ Administrative work (17)</td>
</tr>
<tr>
<td>⑦ Military knowledge, Military law (207)</td>
<td>⑦ How to consult (12)</td>
</tr>
</tbody>
</table>

Currently, due to the full schedule for NCO basic trainings, data surveys and research activities on the Immediate Field Task Performance of junior NCOs have not been properly conducted. Compared to the Officer Basic Course (OBC), the NCO basic trainings absolutely lacks training time and practical opportunities, especially leadership and personality areas. Therefore, an in-depth analysis process is needed as to whether the tasks taught in the NCO basic training course or junior NCO leadership course are properly educated[1][12][16].

In addition, it is necessary to conduct regular research by reinforcing the formation of a combat development office in ROKA NCO Academy, to develop research on the field leadership by Chungyongdae Research Institute or the leadership department in Korea Army Academy at Yeongcheon (KAAY). As a result of the research, it was found that it was necessary to provide field demands to training instructors (DI) and tactics instructors and to actively utilize the results.

5. Conclusions

As the COVID-19 pandemic prolongs, individual and unit training of combat units is not being conducted properly. With the advent of the era of population cliff, the available manpower for the military is becoming increasingly scarce, and the social atmosphere that values human life is increasing day by day. Nevertheless, according to Defense Reform 2.0, the army-oriented reform of the military structure and reduction of troops is proceeding as planned. NCO are high-tech warriors in future ground battles that operate warrior platforms, drone-bots, and un-
manned systems in combat, and are key talents to perform small unit combat and field leadership. Therefore, the evolutionary development of NCO combat capabilities is a demand of the times for the future of the army.

In recent years, the demand of field tactical units for improvement of Immediate Field Task Performance is increasing and ROKA NCO Academy is also actively addressing the needs of field tactical units to foster innovation in Junior NCO training courses (NCO Basic Course and Junior NCO Leader Course).

In this study, a training course improvement plan was presented based on the efforts of the ROK Army NCO Academy and a survey of 678 people (including junior NCOs, first sergeants, and company commanders). First, the training goal was realistically adjusted to the level of basic military knowledge and combat performance for junior NCOs. Second, the current NCO basic course period will be shortened from 18 weeks to 12 weeks and the junior NCO leader course will be extended from 20 weeks to 25 weeks according to the adjustment of the training goals. Third, depending on the training goal, some subjects in each curriculum are deleted or the training time is shortened. Fourth, the current instructor system is divided into drill instructors and tactical instructors. Finally, the junior NCO trainings should be bolstered supports and strengthened the warrior platform, drone-bot system and MILES (Multiple Integrated Laser Engagement System) equipment as quickly as possible. From a long-term perspective, the training departments need to seamlessly improve and innovate in the three cycles of training, maintenance and training preparation.

The future of the ROK Army depends on the smart NCO’s capabilities, which is the core of combat power at tactical units. In particular, the improvement of the Immediate Field Task Performance of junior NCOs is a key competency who shares their joys and sorrows with privates. Therefore, the junior NCO training environments of the ROKA NCO Academy should be substantially improved. In addition, it is necessary to improve the awareness and working conditions of the field tactical units of junior NCOs so that they can work with pride as representatives of the Republic of Korea Army.

6. References

6.1. Journal articles


6.2. Books


6.3. Additional references


7. Appendix

7.1. Authors contribution

<table>
<thead>
<tr>
<th>Initial name</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Author</td>
<td>Set of concepts ☑</td>
</tr>
<tr>
<td></td>
<td>Design ☑</td>
</tr>
<tr>
<td></td>
<td>Getting results ☑</td>
</tr>
<tr>
<td></td>
<td>Analysis ☑</td>
</tr>
<tr>
<td>Corresponding Author*</td>
<td>Make a significant contribution to collection ☑</td>
</tr>
<tr>
<td></td>
<td>Final approval of the paper ☑</td>
</tr>
<tr>
<td></td>
<td>Corresponding ☑</td>
</tr>
<tr>
<td></td>
<td>Play a decisive role in modification ☑</td>
</tr>
<tr>
<td></td>
<td>Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑</td>
</tr>
<tr>
<td>Co-Author</td>
<td>Participants in Drafting and Revising Papers ☑</td>
</tr>
<tr>
<td></td>
<td>Someone who can explain all aspects of the paper ☑</td>
</tr>
</tbody>
</table>