2 Navigator on duty

The primary task is watch-keeping work using ARPA, while using the engine telegraph and communicating with other sections of the vessel such as the engine room and deck. Follow the instructions of the captain in communicating with engine control and other sectors of the vessel, and advise captain on steering.

3 Able seaman on duty

Focus on steering of vessel, as well as watch-keeping.

4 Assistant navigator

Verify vessel position and associated reports on course, giving successive reports on course and distance to next turning point, assistance in steering timing, and external communications via VHF.

5 Increasing number of watch-keeping crews

Focus on watch-keeping tasks, and also quick and clear reporting to all bridge crews on current situation in a clear voice.

Instructions of the leader (captain), instructions of team members, and reports must be heard by all crew members on the bridge. To which crew each instruction is addressed must clearly be understood, and repetition of the message is required for all instructions and reports from the leader.

It is important that the leader in command of the vessel repeat the message and visually confirm all reports from team members. For example, identification of other vessels moving in the vicinity, verification of reports from the able seaman with the rudder indicator, and verification of engine speed during engine operation.

Caution is required on the following points by the leader (captain) and team members when considering this bridge team communication.

Leader (captain)

Verify vessel position and associated reports on course, giving successive reports on course and distance to next turning point, assistance in steering timing, and external communications via VHF.
Repeat content of report. Answering with a simple 'Understood' or 'OK' does not constitute verification when large amounts of information are current. In other words, in these situations, it becomes unclear what the answer referred to, and which task or report is 'OK'.

Team members

Report simply and clearly.
Care is required with instructions by the leader to other crew on duty, and with reports to the leader. Ensure that all questions on each instruction and report are resolved.

When taking over from the navigator on duty, even the captain is formally required to take command of the vessel. It is important the captain declares to all crew on the bridge that 'I am taking control' to clarify that he now has responsibility. In one case, an ocean-going shipping company notes the taking of command of the vessel in its bell book and daily navigation log.

Conversely, if this is not the norm and the captain repeatedly issues sudden instructions to the able seaman to change course, and communicates personally with the engine room without communicating these details to the crew on duty, the bridge crew will automatically assume that the captain takes command of the vessel when he comes up to the bridge, resulting in errors. .

* 4-3 Increase the Number of Crew on Duty When Passing Through Congested Waters and Narrow Channels with Limited Visibility

While a captain's view that, if possible, the navigator and able seaman should rest after cargo handling after entering port, and when leaving port immediately after cargo handling, is admirable, if we consider the priority requirement for safe operation of the vessel, it is important not to hesitate to increase the number of crew on duty at these times.

When the schedule for passing through navigation areas such as congested waters and narrow channels can be predicted, a plan to increase the number of crew on duty can be scheduled in advance, allowing for crew working hours etc. to be planned.

The passage plan in Table 10 shows the watch level, and who is to be added for watch-keeping.

Watch level	Personnel	Control of vessel
Watch level 1	Navigator on duty, Able seaman on duty — Total 2 persons	Navigator on duty
Watch level 2	Captain, Navigator on duty, Able seaman on duty — Total 3 persons	Captain
Watch level 3	Captain, Navigator on duty, Able seaman on duty, Increasing number of watch-keeping crews — Total 4 persons	Captain
Watch level 4	Captain, Navigator on duty, Assistant navigator, Able seaman on duty, Increasing number of watch-keeping crews — Total 5 persons	Captain

Table 10

* 4-4 Captain's Understanding of Crew Abilities and Issuing Thorough Instructions

+ Understanding Crew Individuality and Abilities +

Abilities of individual navigators and able seamen differ considerably. The captain should understand the following points.

(1) Knowledge and skill

It is important to understand the knowledge of traffic regulations and handling of navigational equipment, and the level of skill of each crew member on duty.

A wide variety of training, notably simulator training, of navigators is undertaken, however nothing is more effective than experience gained on-site. Understanding the efficacy of OJT (On the Job Training) as described in Chapter 6, and training crew, is an important part of the work of a captain.
As far as time allows, briefing and debriefing of all on duty when entering and leaving port, and passage through narrow channels is important not only in terms of actual operations, but also as an effective method of OJT (see Appendix (1) Singapore Straits Passage Plan BRM Briefing Materials (sample)).

(2) Individual differences (individuality)

Human beings exist in many different personality types, for example, those who are overconfident, those who are negligent, and those who are quiet and modest.
In bridge work, it is necessary to provide consistent BRM training that minimizes these individual differences including the provision of methodology for instructions and reports stated above.

(3) The limits of ability

The captain cannot handle an infinite amount of work. For example, it is impossible to check the position of the vessel on the chart, issue steering commands, and communicate on VHF while watch-keeping, all simultaneously, for even the most experienced captains. It is therefore important to have a plan for crew deployment that allows for sufficient time to carry out tasks.

+ Thorough instructions +

Standing orders and the night order log are very important in providing practical instructions on such matters as the CPA to be followed, the minimum visibility (in nautical miles) at which a report to the captain is required
The watch level is often handled only by the navigator and able seaman on duty. If the details of the captain's instructions are not fully understood, matters are at the discretion of the navigator on duty, giving rise to errors in communication between the captain and navigator on duty (see Appendix (2) Standing Orders and the Night Order Log (sample)).
Appendix (2) provides a sample of Standing Orders and a Night Order Log issued by the author while aboard the vessel.
The author has obliged the navigator to read aloud the Standing Orders each time before coming on duty.
The Night Order Log was not only read thoroughly and signed before coming on duty, but the navigator previously on duty explained verbally the main points to the current navigator.

As described previously, it is necessary to clearly accept authority to control the vessel. Even the captain must formally be handed over the control after accepting it from the navigator on duty.

In terms of BRM/BTM, the most important point is ensuring the atmosphere on the bridge. It is an important duty of the captain to ensure that the atmosphere is always one in which anyone with doubts is able to verify as necessary.

As explained in * 4-1, by clarifying the division of labor of crew on duty, wasteful duplication is avoided and efficient BRM/BTM can be practiced.

Chapter 5 Engine Room Resource Management (ERM)

+ From 'Maritime Human Resource Institute: Engine Room Resource Management' +

* 5-1 What is Engine Room Resource Management (ERM)?

Proposals for revision of the STCW Convention were adopted at the IMO Conference in Manila in June 2010. One of these proposals related to the revision of Requirements for ERM added to the engineers' abilities requirements list. This requires knowledge of abilities in the list and 'Maintaining Safe Engine Watches', knowledge of ERM in terms of understanding and skills, and their practical implementation.
To ensure the functions of ERM, it is important that all crew grasp the overall picture, understand the constituent elements, and increase their knowledge in practice. Furthermore, both ERM and BRM are shared knowledge, not something which can be implemented if understood by specific crew, and it is vital that all members of the team have a common awareness of this requirement.

ERM is a method of ensuring safe operation of the vessel through appropriate management of resources in the machinery space (resources: equipment and plant, crew, information) while using these resources effectively. The revised abilities requirements list regulates the following as important items when practicing ERM.

Abilities requirements list

- **Disposition of resources**
- **Duties and order of priority**
- **Effective communication**
- **Clear indication of intention and leadership**
- **Situational awareness**
- **Apply the experience of team members, and understand the principles of ERM**

Resource management is summarized in Fig. 11.

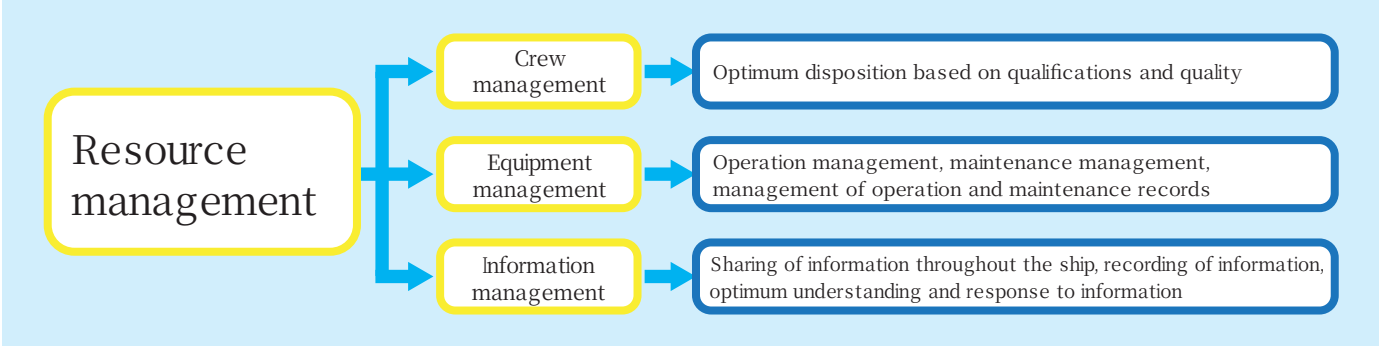


Fig. 11

The correlation diagram for ERM requirements based on the ability requirement list is shown in Fig. 12.

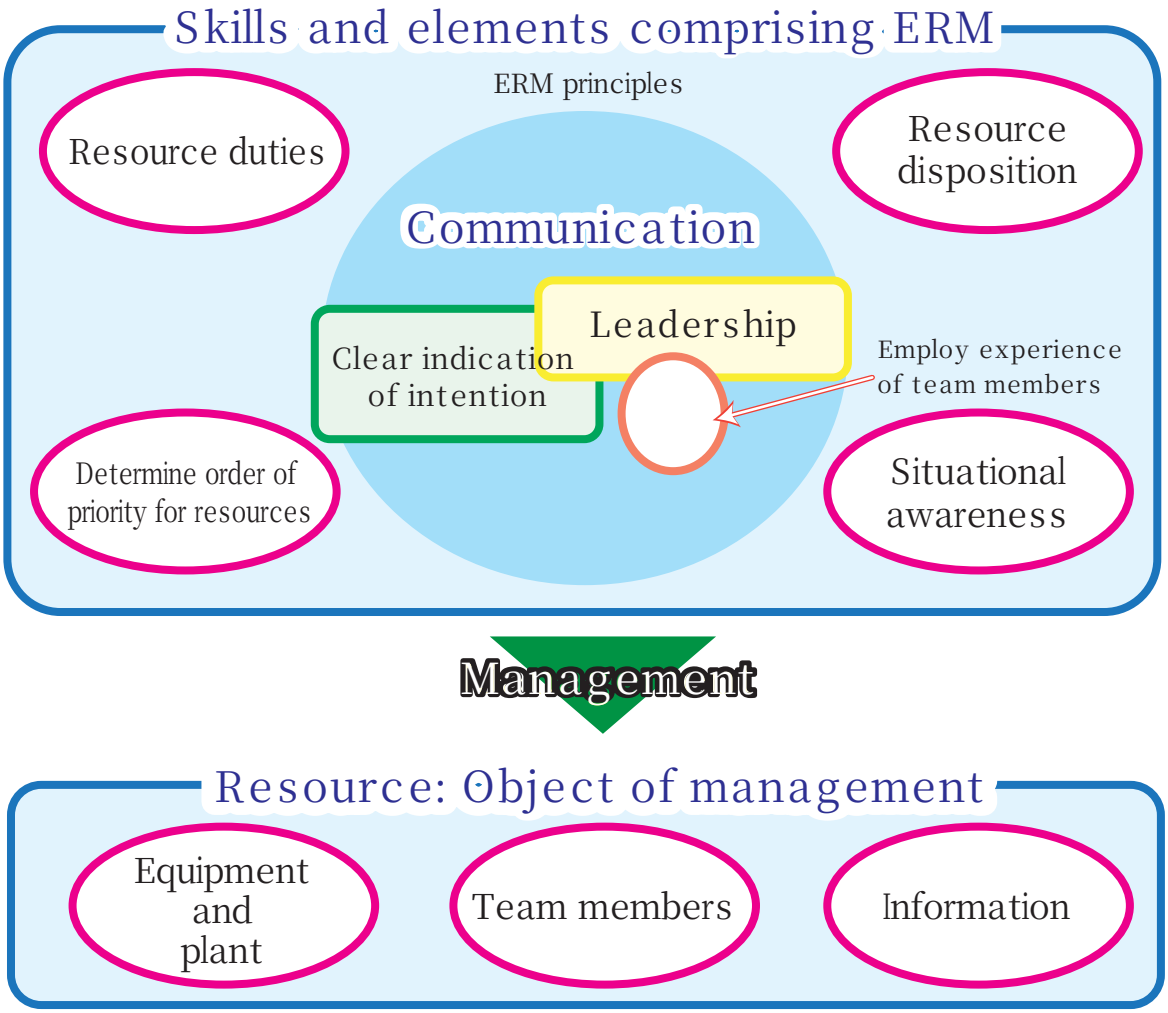


Fig. 12

This diagram shows that communication is the most important element in ERM, that leadership and clear indication of intention are abilities based on the foundation of communication. Applying the experience of team members is also an ability based on the foundation of communication, and shares points with leadership.

The three requirements (duty, disposition, determine order of priority) related to resources and situational awareness have no commonality with communications, and can be seen as independent requirements. The principles of ERM are these four as shown within the rectangle, and are elements shared within ERM. They are the disposition of crew necessary for maintenance of safe operation, and the principles related to abilities necessary for crew and scope of activities.

In particular, ERM principles for implementation are, as per the 'ERM Principles in the 2010 Revised STCW Convention', regulated in Part 3 (General Principles of Duty Maintenance) of the revised STCW code A-VIII/Section 2 (Duty System and Principles to be Observed).

* 5-2 Three Requirements for ERM

(1) Resource disposition

(2) Duty

Resource disposition and duty are requirements related to human resources. It indicates that crew assigned duties in accordance with their occupations should be disposed appropriately and is the part corresponding to ‘ L ’ in the BRM SHELL model. In particular, within the context of preparing for entry and exit from port, it is necessary to develop an appropriate command structure and a system for effective operation of equipment. An optimum disposition of crew is required over and above the normal work on the voyage. While keeping in mind the need for the right man in the right place, positioning of experienced crew in the necessary locations according to the situation, and training of younger crew in these situations should be considered.

(3) Determining order of priority

Crew assigned to management of specific equipment are required to thoroughly read and understand the manual for the equipment, and obtain sufficient information on its operation and maintenance in order to develop operation and maintenance plans. They must also record detailed information on operation, maintenance, and consumption of spare parts to ensure that successors have the appropriate information.

* 5-3 Resources to Be Managed

The three resources to be managed (plant and equipment, crew, information) are shown in Fig. 12.

(1) Plant and equipment management

Plant and equipment is required to have the functions necessary for operation of the vessel and equipment must be disposed in a manner optimum for maintenance of safe operation of the vessel, and functions of the plant and equipment must be sufficiently manifested.

Management of plant and equipment involves management of operation of each item of equipment, maintenance management, and management of records of operation and maintenance. Temperature, pressure, and operational status are transmitted by each item of equipment, and such information must be received and viewed.
Crew on duty in the engine room are in charge of operation and maintenance of the equipment, and are therefore naturally required to circulate periodically around the engine room, however they must also be aware of slight changes in noise and vibration etc. emitted by the equipment as a sign of problems.

(2) Crew management

Crews are dispersed around the vessel to ensure safe its operation. In addition to having the appropriate abilities to carry out their duties, including relevant maintenance, they must also have the ability to manage and make good use of other crew. Each member of the crew is required to have a good understanding of the functions of the plant and equipment, verify that these functions are available, and understand the information from the plant and equipment and be able to use it.

(3) Information management

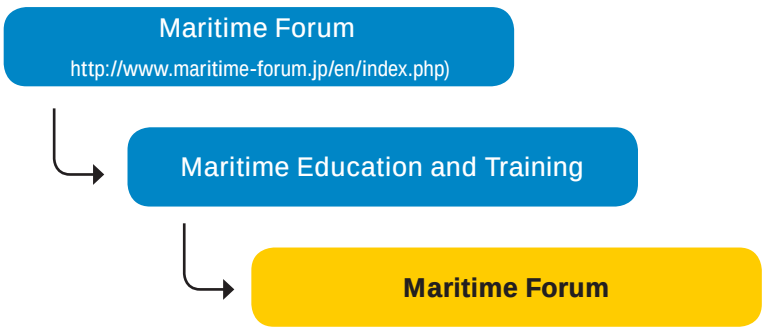
Information from spaces other than the machinery space, e.g. from the bridge, information from each item of plant and equipment in the machinery space (e.g. noise, vibration, temperature, pressure, alarms), and information from team members ensures good teamwork and therefore effective equipment operation and continuing high levels of team motivation.

In particular, although information from external sources tends to be insufficient, for the engine room team, understanding the external situation can be difficult: therefore information on the movement of the vessel permits prospective responses, and is useful in improving the reliability and speed of equipment operation. Exchange of information with the bridge is therefore a matter of the utmost importance.

Each member of the team must be aware of the fact that he/she is associated with operation of the vessel, and that it is important to share information held by the team and by the individual on any point that is a source of concern. The chief engineer, as the leader, and the first engineer, are responsible for creating this atmosphere in which information is shared.

* 5-4 ERM Examples

The ERM videos at the Maritime Human Resource Institute website introduces the main points of ERM. Videos are available on the homepage stated below:



http://www.maritime-forum.jp/en/index.php

1. Situation

Problems with No.2 generator in the engine room while on standby to enter port.

2. Description

- Started the No.2 generator. Commenced operation of two generators in parallel, and third engineer immediately commenced checks.
- The third engineer monitoring the No.2 generator on-site noticed that the increase in temperature was a little too rapid, but thought that it would settle down.
- After a period of operation, the No.2 generator's No.1 cylinder exhaust temperature alarm indicated 'High'. The No.3 generator was started in the engine control room and the No.2 generator was shut down.
- Reduction in speed of the main engine continued while switching over to the No.3 generator, and S/B Eng. preparations were completed, however the second engineer was busy with the generator problem and forgot to notify the bridge and chief engineer in the engine room. Upon receiving a request for confirmation from the bridge, he noticed his mistake and reported the trouble to the chief engineer. Simultaneously, the main engine exhaust temperature dropped, requiring closure of the exhaust gas economizer damper, however the second engineer forgot.
- The chief engineer shouted at the second engineer to reprimand him for the two mistakes.
- The first engineer in the engine control room, at his own decision, instructed the third engineer to replace the No.1 cylinder fuel valve which was the cause of the alarm from the No.2 generator.
- The third engineer at the generator anticipated that (1) S/B Eng. was approaching, and that the labor required in replacing the fuel valve would make a response to another emergency difficult, and (2) if the No.2 generator was unusable there would be no backup generator: therefore, if, for some reason, a problem occurred with the generator during operation, the vessel would have insufficient power. The third engineer made these two points to the first engineer.

- The chief engineer accepted the third engineer's suggestions and halted the replacement of fuel valve of the No.2 generator, and decided to undo the operation and hold it as the standby generator, issuing appropriate instructions to all members of the engine section.

3. The ERM point of view

A consideration of the above case from the ERM point of view reveals a number of interesting points.

- The third engineer was at the generator when it commenced operation. This is the standard position and enables immediate communication with the engine control room.

  Consider the division of labor and dispersal of crew to appropriate positions.

- The third engineer thought that the exhaust temperature was increasing too rapidly on the No.2 generator, though did not report this fact.

  On the basis of his intuition, he did not share the information sent from the equipment with other team members and his superiors. If he had, it would have resulted in cautious monitoring from the control room, and the situation being resolved before an alarm sounded. Doubts and thoughts must be conveyed to the leader.

- The second engineer noted the condition of the No.2 generator, and did not report completion of S/B Eng. preparations to the engine control room crew and to the bridge. And also, he forgot to close the damper.

  There may be a subsequent problem with operation of the vessel if there is no confirmation from the bridge. The order of priority was not determined for the tasks (duties) in hand.

- The chief engineer shouted at the second engineer.

  This had the effect of inhibiting communication with the second engineer and other members of the team. All needed was to instruct him to close the damper calmly.

  In terms of maintaining a system of good communication, shouting in an emotional tone should be avoided at all costs.

- The third engineer judged and suggested from the point of view of the person in charge on-site the first engineer's instruction to replace the fuel valve should not be carried out because of the small possibility of another problem.

  This corresponds to the ERM rule that doubts must be voiced out, and was good decision-making that he clearly expressed his intention.

  It was also the correct decision in terms of both verifying the situation, and determining the order of priority.

Chapter 6 Thorough BRM and ERM

* 6-1 Why have BRM and ERM Not Become Popular?

Despite 20 years having elapsed since the introduction of BRM, neither BRM nor ERM have become popular. Possible causes are given below.

Possible causes

1) **If technical skills are at a high level, it is assumed that 'safety is guaranteed'.**
2) **Management is not seen as a skill, and the traditional idea of separate deck and engineering sections remains strongly entrenched.**
3) **Crew training is primarily on OJT, leaving responsibility to the site.**

A revolution in awareness is required in light of this way of thinking, the way of thinking of safety, the question of what is management, and reconsideration of OJT, as described in Chapter 2.

The captain, chief engineer, and the company are required to develop 'an atmosphere in which subordinates (i.e. team members) are able to speak up on matters of safety in operation'. This is the foundation of effective use of BRM and ERM.

In comparison with the shipping industry, CRM (Crew Resource Management) appears to be running smoothly in the airline industry. When we compare the two, it appears the difference lies in the level of technology. In an aircraft, the difference in level of skill between the captain and the co-pilot is appears to be greater than between a ship's captain and chief officer, or between a chief engineer and engineer.

For example, if the captain of an aircraft were incapacitated in flight, the co-pilot should be capable of landing.

On the other hand, can a third officer operate his vessel safely to its destination? There is a major difference between ships and aircrafts in terms of the methodology of crew training, including up-skilling.

* 6-2 Improving Skill Levels

(source: Japan Captains' Association DVD - Individual Competence That Support BRM - How to Improve the Skill Level of Inexperienced Navigators)
The nine technical elements necessary for navigation with watch-keeping crew are listed below.

1. Skills associated with watch-keeping
2. Skills associated with measuring vessel position
3. Skills associated with handling navigation instruments (e.g. radar)
4. Skills associated with exchanging information by communication
5. Legislative compliance skills
6. Vessel piloting skills
7. Management skills to identify the work necessary in response to a situation, and assign and execute an order of priority
8. Skills associated with verifying charts etc. before going on duty
9. Skills for emergency response to equipment problems

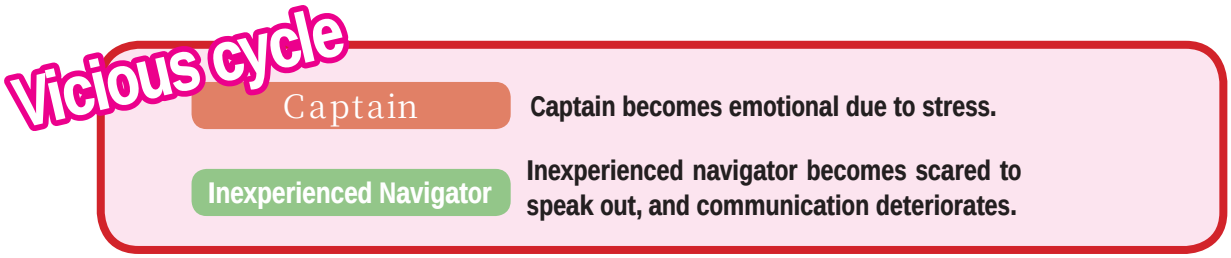
When the captain takes control of the vessel and is assisted by the navigator, able seamen, and watch-keeping crew in navigating in congested waters and narrow channels, or when entering and leaving port S/B, ❶ Skills associated with watch-keeping, ❹ skills associated with exchanging information by communication, and ❼ Management skills to identify the work necessary in response to a situation, and assign and execute an order of priority become apparent when evaluated in terms of whether or not they are used effectively for BRM.

Execution of BRM will be inhibited unless skill levels for other than ❶ , ❹ , and ❼ are able to satisfy the levels of the bridge team members (including the team leader). As a result the ability of the entire bridge team will deteriorate, leading to errors.

In particular, **'threats'** are sources of errors. With BRM and ERM, if threats are considered as elements which increase the possibility of errors, the following can be noted.

- A large volume of work (i.e. not enough personnel available to do the work)
- Time pressure (when the leader is in a rush and this is picked up by team members, it will leave everybody unsettled)
- Pressure from superior (in particular, regularly shouting at subordinates, scaring them into silence, and inhibiting operation of BRM and ERM)
- Fatigue and stress (attention is distracted when fatigued, and external stress is a cause of deterioration in abilities)

In other words, unless BRM and ERM can operate properly, not only will errors occur, but stress will develop between the leader and team members, giving rise to a vicious cycle.



* 6-3 Training of Inexperienced Navigators and Engineers with Low Skill Levels

To prevent errors, inexperienced navigators and engineers with low skill levels must individually and objectively evaluate and understand the skills with which they are deficient, and endeavor to reach the level of an experienced captain/navigator or chief engineer/engineer as soon as possible.

OJT and training on shore are methods used in training inexperienced navigators and engineers with low skill levels. However, the awareness and motivation of the trainee is important.

If we consider the level to which skills can be raised with OJT and shore training, Student Oriented in Fig. 13 below provides guidelines.

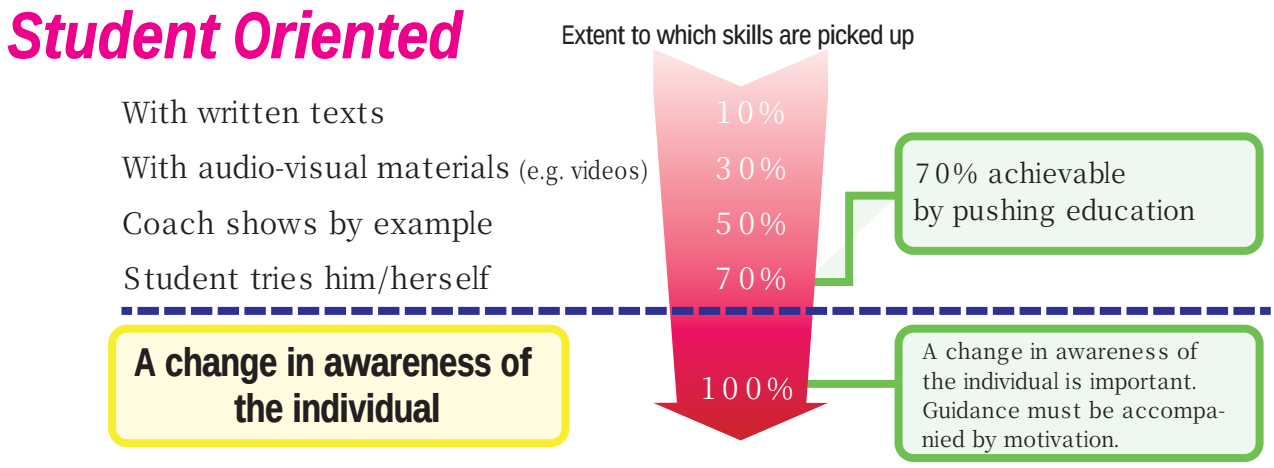


Fig. 13

Approximately 10% of skills are considered to be learned in classroom lessons using written texts. These skills consist primarily of fundamental theory and knowledge.

Use of videos, PCs, and the Internet as audio-visual materials is considered to raise the skill level to approximately 30%.

Subsequent practice and OJT in which the coach demonstrates is considered to increase the skill level to 50%. Further use of simulators and OJT to provide the student with experience is considered to increase the skill level to 70%. In summary, pushing the student is effective to a certain degree, however the 100% skill level is only achieved on-site.

Increasing the remaining 30% skill level is fundamentally a matter of changing the awareness of the individual. Education at this stage is primarily focused on OJT, and coaching is required to raise the motivation of the student.

* 6-4 Meaning and Objectives of OJT - What Is ' Cultivation ' in the Context of Training

+ from the P&P network website +

http://www.h2.dion.ne.jp/~ppnet/

The following introduces an interesting item on OJT found on the Internet.

Basic concepts

OJT is about building the team for tomorrow. Lack of OJT will come back to bite you and your team.

(1) OJT (On-the-Job Training) is training during and via work.

OJT is not simply a matter of being thrown into the workplace, and being left to understand and learn alone. It is designed to consciously incorporate the following training and guidance activity through the assistance of managers and those more experienced.

1. Preparation for growth to become a member of the organization.
2. An attitude incorporating the necessary knowledge and skills in one's work.
3. How to best convey to one's subordinates and those less experienced the value and sense of achievement of work.

To a manager, training and guiding subordinates is about building tomorrow's organization. To forget this is sunset management.

- It is to 'strengthen today's fighting abilities for tomorrow'
- It is to 'cultivate one's successors'
- It is to 'build the personnel of tomorrow'
- It is to 'work with one's eyes on the next step'

The strength of the organization must be more than the sum of the strengths of each individual. The backbone of management binding and focusing this strength in a single direction is the fruit of having cultivated one's subordinates. There is no leadership without cultivating and binding one's subordinates as the organization for tomorrow.

For managers to achieve the objectives of the team and section they are entrusted with, the effective distribution of the resources of people, things, money, information, knowhow, and time, is work of major importance.

OJT and guidance of subordinates is simply the improvement of human resources day-by-day. Improvement of the

most important of the available resources, i.e. the human resource, is not work that can be hastened, or from which immediate results can be expected. On the other hand, it is a core task affecting the very future of the organization, and therefore requires reappraisal of its value.

(2) OJT itself is not the purpose

OJT itself is not an objective. The objective of OJT differs from the point of view of the manager, the person engaged in OJT, the company, and the team.

1. The awareness of problems by the manager must naturally increase the strength of the team members. The power of the team can be increased through efficient integration and use of the total of resources of all members. The maintenance and improvement of such a team depends on the manager and individual team members developing the abilities (knowledge, experience, skills) to fulfill their roles within the division of labor, to improve themselves further, and to develop this as the total of members (i.e. teamwork). The total strength of the team is the source and the pivot of its ability to achieve objectives. The objective of OJT is here for the organization, the system, and the managers.

2. The motivation of personnel receiving OJT is to be recognized as member of the team which naturally entails them adopting the problem awareness of the team, however this does not always match the growth objectives of the individual.

As shown in Fig. 14, adjustment of what the organization should do with what the individual wants to do, and individual growth, cannot be forced on the individual. These matters are not to be forced on the individual, but must be at the will of the individual, and continued voluntarily.

The individual thus comes to understand that that growth is necessary for oneself, or must not forget that it is left to the manager. From the point of view of the organization, 'we want you to do it' does not result in a long-term desire in the individual.

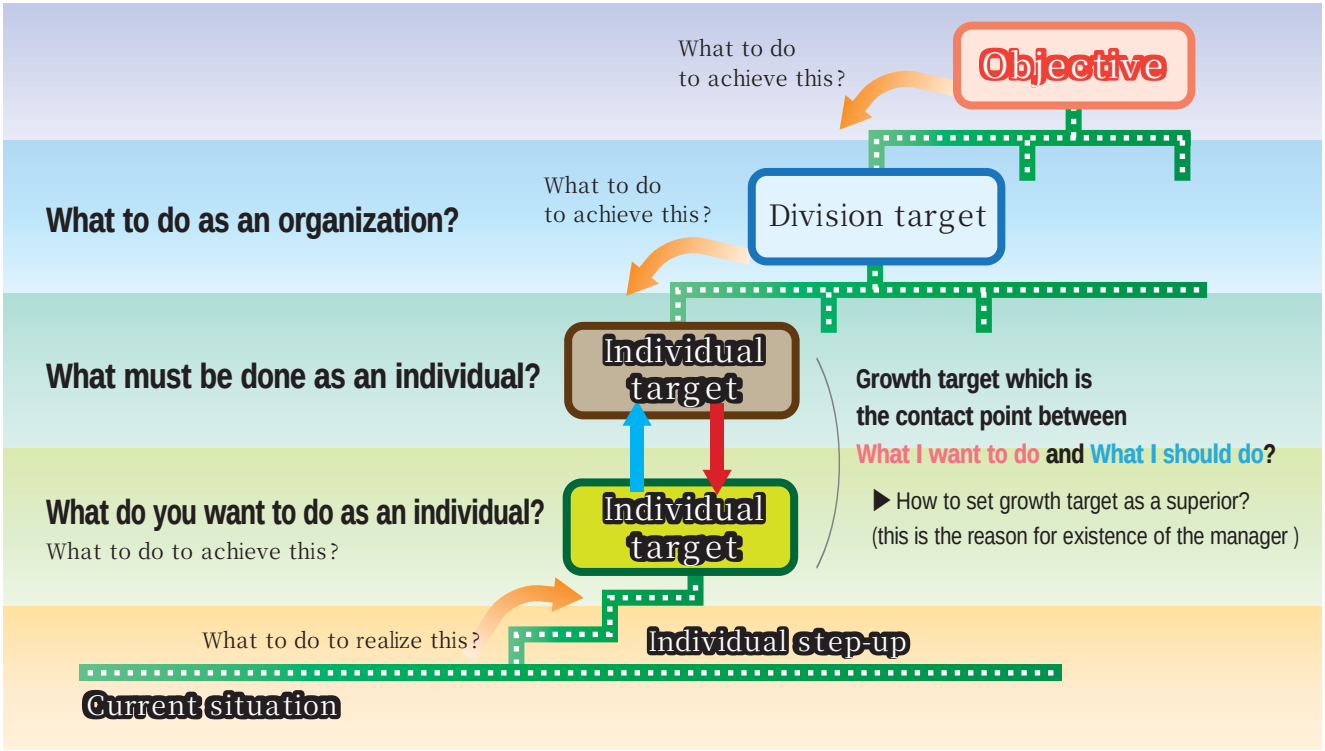


Fig. 14

3 To the company, if the 'mind' of the enterprise and the employment culture 'identity' is acquired, a continuing effect should be expected. In other words, the DNA of the organization is inherited for cultivation of the next generation.

(3) Meaning of 'cultivation' of the next-generation – What, who, is OJT for? + The departure point in consideration of OJT – Component elements +

● Component elements

When considering 'cultivation' through work, the component elements are shown in Fig. 15.

For what? ▶	Purpose	What is on-the-job training for? What does it mean, and who is it for?
Who? ▶	Subject	Superiors, one's seniors. While not directly so, cultivation engages the entire workplace.
When, where? ▶	Opportunity	Providing work themes in the process of carrying out the work.
For whom? ▶	Object	Consider new entrants, juniors, successors separately.
What? ▶	Target and details	Acquire the knowledge, skills, and mind to carry out the task.
How? ▶	Method	Through daily work, set individual guidance/new themes and opportunities for tasks.
How far? ▶	Level	Expectation level: What kind of situation? Cultivation level.

Fig. 15

● OJT component elements (purpose, target, method) – OJT itself is not the purpose

Simply considering the component elements of OJT, and drawing up a plan, achieves nothing. It must be considered in terms of the starting point of who OJT is for. The final target is the development of the independence of the person receiving the OJT (see Fig. 16).

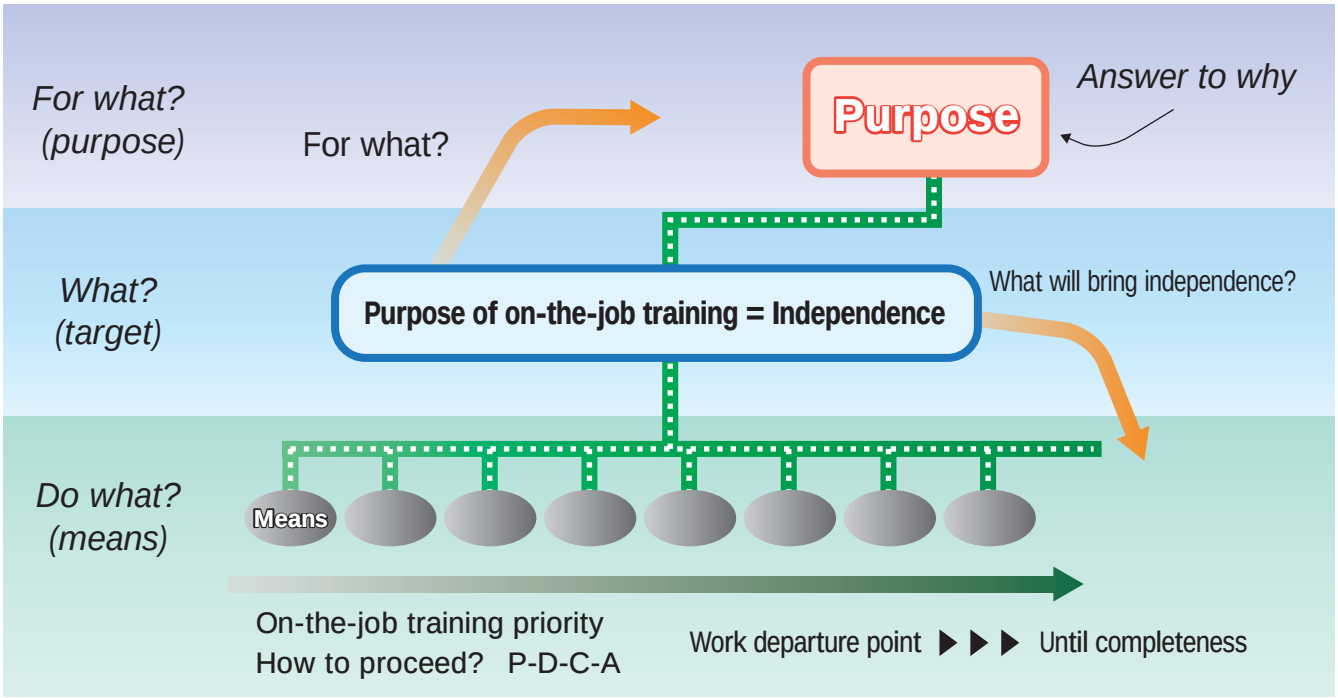


Fig. 16

(4) The meaning of 'cultivation' through work – Raising the strength as a team.

Different meanings for the OJT leader, the OJT partner, the company, the organization, and the team, however the problem awareness of the team leader raises the strength of the whole team.

- The power of the team can be increased through efficient integration and use of the total of resources of all members. The maintenance and improvement of such a team depends on each individual team member developing the abilities (knowledge, experience, skills) to fulfill their roles, to improve themselves further, and to develop this as the total of members (i.e. teamwork). This team (synthesis) strength is the needed source of the strength to achieve targets. The purpose of OJT must be considered in these terms.
- The motivation of personnel receiving OJT is to be recognized as a member of the team which naturally entails them adopting the problem awareness of the team, however this does not always match the growth objectives of the individual.
- To the company, if the 'mind' of the enterprise and the employment culture 'identity' is acquired, a continuing effect should be able to be expected.

(5) Cultivation expectation value (standard) – Cultivating subordinates (juniors)

What is the level of expectation when we consider 'independence ', the target of OJT?

❶ Competent Subordinates at work

We are aiming at 'competent subordinates (juniors) at work'. The word 'competent' implies 'having confidence and perspective to effect changes through one's own efforts'.

This ability and confidence are manifested in a 'sense of capability' and a 'sense of effectiveness'. In responding to a 'sense of capability' and a 'sense of effectiveness', it is essential that the object of these efforts is one's own autonomy (ability to make one's own decisions). In other words, it is possible to see matters in terms of the confidence that 'one should be more effective if one's thoughts are realized'.

❷ Abilities required

In any given situation, abilities are 'competence' in response to understanding of the expected role and its execution, and individual 'abilities' such as the ability to speak English. Irrespective of the subjective 'sense of capability' to be acquired, lacking an understanding of one's situation, and the corresponding competence, will serve only to inhibit other members (membership deficiency).

❸ Awareness of role expectations

In carrying out tasks within the organization, one must be aware of the expected role in carrying out tasks under the prevailing conditions. The importance placed on the competence in carrying out these tasks is the need to have an awareness of what one 'should do'. The sole requirement is to accept subjectively the requirements under the circumstances, and the intentions to achieve the objective, consider how to execute one's own tasks, and to have the required overall competency associated with results as output.

❹ ‘Sense of effectiveness’ and ‘sense of capability’

The following processes are considered important in cultivating a ‘sense of effectiveness’ and a ‘sense of capability’ (Argyris).

- Determine the target yourself.
- Find out what to do to achieve the target, and take up the challenge.
- Based on what you consider of value, determine yourself what should be done.
- Have a sense that your abilities are insufficient to achieve the task, and the need to extend yourself.
- Have the results achieved acknowledged by persons you take seriously.

(6) Cultivation processes as cooperative work – Effects of self-monitoring of ‘cultivation’ behavior

OJT must be considered for each thought of both teams, that is, the team that teaches and the other team that is taught; and the following points must be considered for cultivation processes as cooperative work.

❶ Relationship between teaching and taught, the cultivators and the cultivated

In a wider sense, this raises the level of one’s own team strength, while in a narrower sense, ‘teaching’ and ‘cultivating’ should be seen as ‘taught’ and ‘cultivated’ from one’s own position.
In other words, OJT is cooperative work between the teaching and the taught. This is not always in one direction, and even though the OJT leader may unilaterally set the cultivation target, subordinates (juniors) must have self-awareness and independently conceive it.

‘How to cultivate’ is what the cultivating party’s consideration of the team, the organization, the company, and the work is being incorporated into actual work, and alignment in the processes accomplished.
As a result, it becomes processes aligning values and ways of thinking such as ‘to the team’, ‘eventually the state of the organization and achieving work for teamwork’, and ‘growth of each member’.

❷ Cooperative work

As shown in Fig. 17, in the OJT process implementing the division of labor (cooperative work) to confirm the purpose of ‘cultivation’, and clarify the target of ‘being cultivated’, team targets are shared, and the division of labor implemented: This can be considered as teamwork for mutual understanding of intentions.

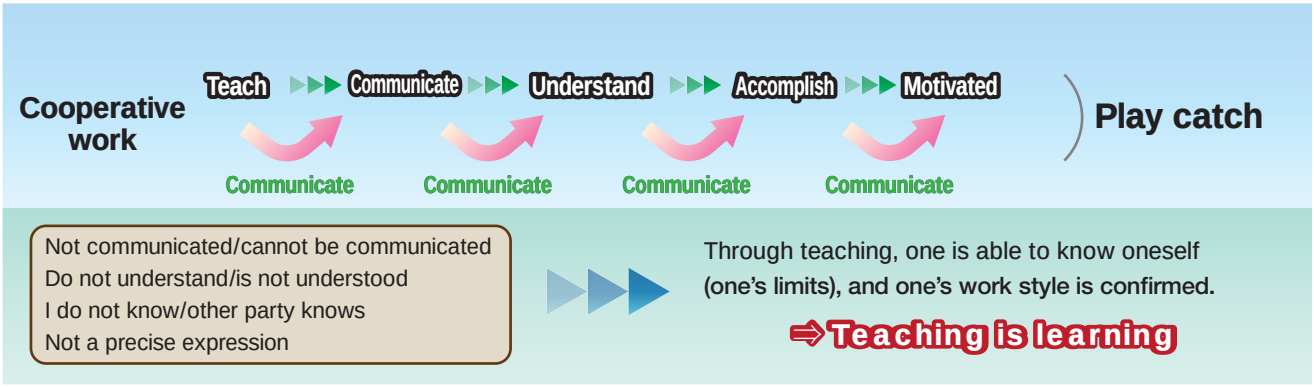


Fig. 17

❸ Effects of self-monitoring

'Teaching' is an act of monitoring of one's own view of work and work style.

Effects of 'cultivating' target achievement process – OJT must be considered as tasks.

(7) Effects of 'cultivating' target achievement process

+ Think of OJT as tasks +

Effects of 'cultivating' target achievement process must also be considered.

❶ Cultivation of subordinates (juniors) = Set as task

For example, think of yourself as one who has been given the task of 'cultivating subordinates (juniors)'.

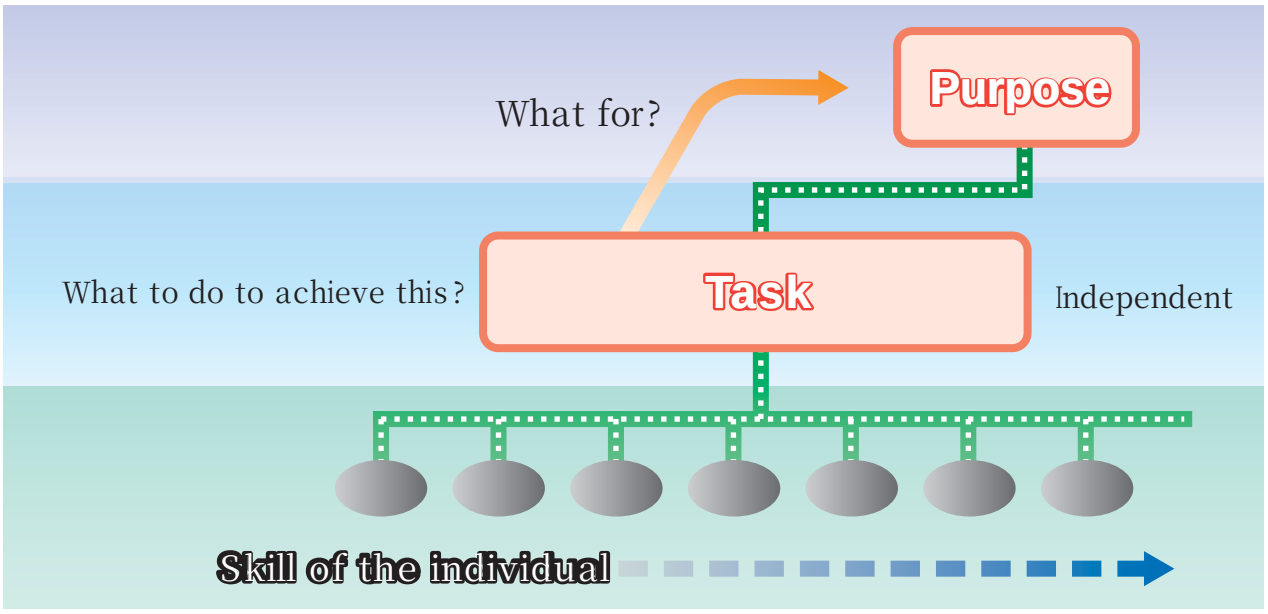


Fig. 18

❷ Firstly, clarify what must be achieved to clear the task

What can be done? What is the sign? What to do to achieve the task as it becomes an increasingly practical

target? - These questions specifies practical methods. In order to clarify this meaning, it is important to determine what is to be communicated and how.

❸ This is training for a team leader

What are you aiming at? What do you want to achieve? These must be shared with members in order to ensure that methods for achievement are unified.

❹ One is cultivated through achievement of such tasks

What is the task? One is taught through considering what must be done to achieve it, and is cultivated.

❺ Cultivation of subordinates (juniors) = See it as a project

For example, think it is as a 'subordinate (junior)' cultivation project and you are leader of it; so as to share the same target and proceed one by one (see Fig. 19).

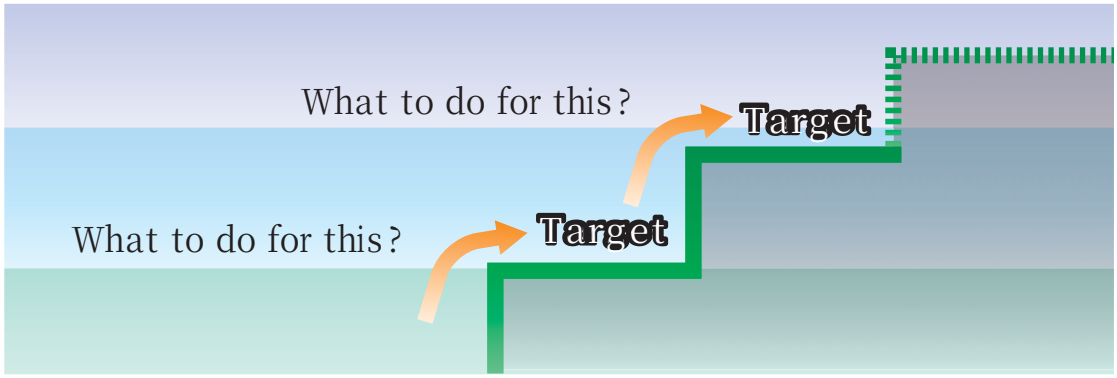


Fig. 19

❻ The target must be shared by the leader and subordinates (juniors)

This requires targets, meanings, and directions that are worth for sharing. Persuasiveness, self-confidence, and belief (OJT leader's belief supports the belief of subordinates (juniors)) are also required.

❼ This is clarification of the 'control' in 'control function' and 'maintenance function' - the two roles of the leader

❽ In this case, unless the leader ensures that the subordinates understand the abilities required, and their expected roles, they cannot be shared

Once sharing is achieved, and the ring for the first mutual catch game is prepared.

❾ Team requirements are sharing of targets, division of labor, and communication

Subordinates (juniors) and OJT leaders can be seen as forming a team for the shared task of 'cultivation'. Subordinates (juniors) must also be considered as important members for achievement of shared targets.

傭　Subordinates (juniors) cultivation = Plan as an implementation plan

- The OJT process as PDCA -

Planning for achieving the target of cultivation of subordinates (juniors) and the execution flow is shown below in Fig. 20.

This is not simply a project, but daily task management and guidance of subordinates (juniors). PDCA (Plan → Do → Check → Act) is also self-monitoring of work.

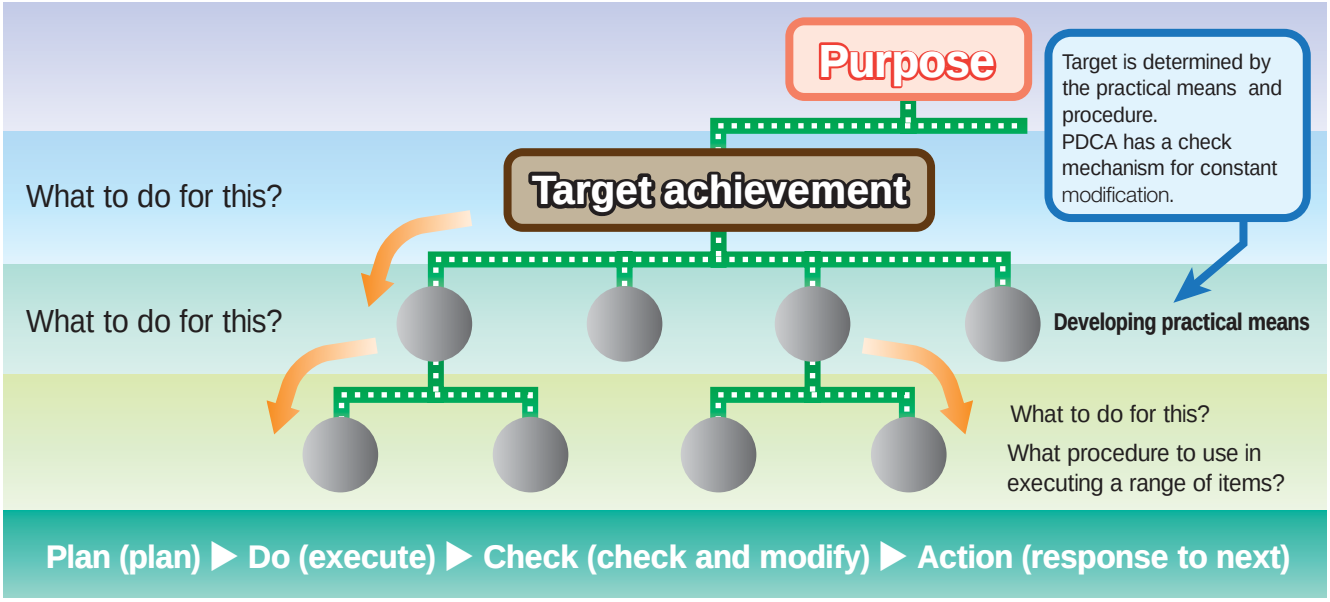


Fig. 20

傔　Cultivation of subordinates (juniors) = skill

+ Cultivation of subordinates has the following two aspects:

two aspects

- **Leadership and process management skills in order to achieve the target**
- **Business skills for cultivation required in the process of cultivation of subordinates (juniors)**

The former can be seen as team building and accomplishment planning for realizing themes, the latter as communication skills (inter-personal skills).

+ Skills in guidance of subordinates (juniors) can be summarized as follows.

+ Basic guidance skills (guidance of subordinates, cultivation points)

1. **Methods of offering praise and caution**
2. **Methods of practical guidance**
3. **Methods of cultivating motivation**
4. **Methods of cultivating role awareness**
5. **Methods of cultivating target achievement**

+ Guidance communication skills

Demanded functions/sympathetic functions/transmitted functions

+ Guidance methods

Individual guidance/situational guidance

* 6-5 Requirements for Leaders

When considering OJT, requirements and points of caution for captains, experienced navigators, chief engineers, experienced engineers, and company 'leaders' are as follows.

1. Remember your days as an inexperienced navigator or engineer.
2. Conduct briefings before entering and leaving port, and passage through narrow channels.
3. Conduct debriefings after entering and leaving port, and passage through narrow channels.
4. Eliminate variation in teaching content between individual instructors to ensure commonality between teaching materials and texts.
5. Understand that OJT is the most effective method of instruction, and ensure that the company prepares teaching materials and texts for trainees and instructors.
6. Ensure that tests and reports are presented to verify degree of achievement.

When the number of coastal vessels and port visits is large and schedules become tight, there may not be sufficient time available to conduct briefings and debriefings before entering and leaving port, and passage through narrow channels.
However, inexperienced navigators and engineers recently boarding the vessel must receive briefings at least once immediately after coming aboard.

With the same content and in the same scenario, variations in the methods of teaching of instructors result in differing interpretations by those receiving instruction. For example, a problem arises if one captain avoids to starboard, and another to port, inexperienced navigators and engineers will always tend to take the easy route.

It is important that the company prepares materials and texts mindful of Safety First and compliance with rules and regulations to ensure common guidance for all.

Appendix (3) ‘Navigator Education – Navigation Questions and Answers’ provides an example of tests the author has always given young navigators during voyages. When looking at reports and the circumstances of normal independent navigation duties etc., the author was able to understand the technical level of young navigators.