Proposed methods of teaching maritime education in Mexico

Jose Gpe Mondragon

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PROPOSED
METHODS OF TEACHING FOR MARITIME EDUCATION IN
MEXICO

by

Jose Gps. Mondragon M.
MEXICO

A paper submitted to the faculty of the World Maritime University in partial satisfaction of the requirements of the Maritime Education and Training (Engineer) course.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the UNIVERSITY.

Signature:

Date: 26.11.88

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Acknowledgments:

I wish to express my appreciation to several people whose effort helped me in the development of this thesis.

First, thanks to my wife and my children (Elma A. Abdala de Mondragon, Jose Hector, Elma Laura, and Ishrab-Ra) who encouraged me during these last two years of study in particular in the development of my thesis.

Second, the personnel involved in the maritime education and training system in Mexico whose effort and interest made possible the participation of Mexican students in the W.M.E.

Third, my course professor, C.E. Mathieu for his interest in and dedication to the Maritime Education and Training (Engineering) course.

Finally, my thanks to Alison Howe, Senior Lecturer in English for her interest and dedication during the English course.
The purpose of this thesis is to investigate teaching methods in order to consider whether or not they could be applied to maritime education in Mexico.

The second chapter gives general information about the present system of maritime education in Mexico (prerequisites, requisites for entrance, the training process and certification of officers).

The third chapter gives a general idea of the main factors which affect the training process.

The fourth chapter gives a general idea of the management of the course and characteristics of the participants, (young students or adults: students and groups).

The fifth chapter gives us a general idea of the communication applied to the training process.

The sixth chapter gives us information about guidance for officers who are going to work as professors in maritime education academies in Mexico.

Chapters VII, VIII, IX, X, XI, XII and XIII present various teaching methods. It is hoped that professors can select some methods in order to plan their lectures or classes.
Chapter XIV gives us a general review of evaluation methods.

Chapter XVI presents recommendations and conclusions.
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BIBLIOGRAPHY
I have been working as professor in maritime education in Mexico since 1972, and I have been observing its development step by step. I can say that the maritime education began its evolution very strongly since 1972. Before that Mexican maritime education offered a bad panorama due to the fact that it did not have a clearly defined organization.

There are three nautical academies in Mexico, namely the Nautical Academy of Tampico, the Nautical Academy of Veracruz and the Nautical Academy of Mazatlan. But before 1972 each nautical academy had its own syllabus and organization. Therefore, the maritime education was growing without direction.

So in 1972 certain parties interested in the development of maritime education in Mexico agreed to establish a FIDEICOMISO. The parties which established a FIDEICOMISO were the Mexican Maritime Administration, several Mexican shipping companies, and the Mexican Maritime Education System. This was the beginning of the organization and management of maritime education in Mexico.

It was not until 1972 that the FIDEICOMISO suggested the standardization of the syllabus in the three maritime aca-
In order to get the best results in our maritime education, it is necessary to take into consideration three important points, namely: experience, technical knowledge and teaching methods. These points are essential for officers who are employed as professors in our nautical academies.

I am concentrating on the purpose of teaching methods because they are important for every one of the professors in our nautical academies. With this research we can achieve the best effectiveness and development of each subject. As a result we can raise the academic level.

We can adapt our own resources in each maritime academy in order to give training to the future officers who are going to be employed as professors in our maritime education.

I recommend the implementation of short courses about teaching and evaluation methods taking into consideration this study.

The proper training and development of professors is
very important. The aim of this thesis is to provide basic knowledge about (modern) teaching and evaluation methods.
2.1 Introduction:

On February 29, 1988 we had a lecture about maritime education system by Professor Zade. He gave us a general idea of the requisites, prerequisites, training process, certification of officers, syllabus and examinations of a maritime education system. In accordance with the professor Zade, I would like to start with the following.

There are three nautical academies in Mexico for the training of officers; they are

- the Maritime Academy in Tampico,
- the Maritime Academy in Mazatlan, and
- the Maritime Academy in Veracruz.

For the education and training of ratings and port operators:

- the Training Center for ratings and port operators in Lazaro Cardenas, and
- the Training Center for ratings in Tuxpan Ver.

The FIDEICOMISO is responsible for the training process
of the following officers and ratings:

- officers in the deck department
- officers in the engine room department
- ratings in the deck department
- ratings in the engine room department
- ratings in the catering department
- refresher and updating courses for engineer and deck crews, and port operators.

2.2 Entrance prerequisites for maritime (engineer or nautical) education and training

The following are the basic prerequisites for entrance into any of the three maritime academies in Mexico:

- primary school,
- secondary school, and
- preparatory or vocational school (attainment of high school degree in physics and mathematical sciences)
- Mexican by birth
- in good condition, both physically and mentally
- single
- between 16 and 22 years of age
- successful completion of examination

2.3 Physical and psychological prerequisites for entrance into the maritime academies in Mexico:

The Communications and Transport secretariat (SCT) has
a department which is in charge for these examinations. The FIDEICOMISO established its medical department through SCT.

The following are the entrance requirements for maritime education in Mexico:

- minimum height is 1.65 meters
- weight must be within the established parameters shown on the next page with a minimum or a maximum variation of 15%.

Candidates for the engineering and nautical sciences must pass the following specific medical requirements:

- clinical examinations
- ophthalmological examination
- otolaryngological examination
- neurological examination
- odontological examination
- psychological examination
- laboratory examination, and
- any other medical examinations to be considered by the medical department.
2.4 Entrance examinations:

Each academy has a maximum capacity of 80 places, of which 40 are for engineering sciences and 40 places are for nautical sciences.

The examinations are carried out in every nautical academy. Each nautical academy designs them and provides special staff to carry out the selection procedure. The examinations are carried out during the last week of July each year. During the week of examinations, students from other cities have the opportunity to use the accommodation facilities in the nautical academies.

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Height in meters weight in kilograms

The selective examinations will determine which students are accepted or not. The academic and physical examinations are the main requirements for a candidate to be accepted as a cadet in a maritime academy.
2.5 Foreign students

There are two places for foreign students in each academy. The arrangements for entrance are made through the Mexican Diplomatic Embassy and IMO. The academic and medical requirements are the same for foreign applicants.

2.6 The academic examinations:

The academic examinations consist of four main subjects:

- mathematics,
- physics,
- chemistry, and
- English language

Each academy provides study guides for examinations to the future cadets.

2.7 The training process in Mexico maritime education system:

The following information is about the training process to get the certificate of master or chief engineer.

1. A three year period of professional studies, which are divided into:

- A two year period of shore base education in one of the three maritime academies,
- A one year period of education and training on board the training ship, "Nauticas Mexico". After assessment
2. A six month period of engine room department or bridge watchkeeping duties under the supervision of a qualified officer on board a sea going vessel. After this period as "Officers in training", officers are qualified to perform duties as "maquinista naval" or "bridge watchkeeping" officers on board sea going vessels. They are awarded a certificate of sea experience.

3. A three year period of sea service, as "maquinista naval" or "piloto naval" officers on board sea going vessels or equivalent sea period, which will entitle the candidate to an assessment for the chief-mate and first officer engineer. Some courses are included during the period before the examinations.

4. A three year period of sea service as chief-mate or first engineer on duty on board sea going vessels or equivalent sea period, which will entitle the candidates to an assessment for a master mariner or chief engineer certificate.
CHAPTER III

FACTORS AFFECTING THE TRAINING PROCESS

3.1 Introduction:

In order to give good training and to reach our objectives of a course, it is necessary to eliminate certain factors which can affect the training process. These factors should be eliminated according to the economy of our country.

3.2 Health factors:

Problems of health can be the following:

- toothache
- headache
- stomachache
- and other medical problems

Before 1972 these problems were presented and the nautical academy did not have good control of them. But after 1972 the FDEICOMISO provided a doctor for each nautical academy to cover the medical needs of the students and the teachers. Each doctor has full time in every maritime academy.
3.3 Environment factors:
Sometimes we need to have comfort in our classroom to reach our objectives as well as our having a good physical and mental condition. Below I will mention some factors which affect classroom comfort.

- the classroom atmosphere including:
- the heat,
- the noise,
- uncomfortable seating,
- the lighting, and
- other factors which can affect the training

Sometimes the classroom itself is a factors which affects the training process. The classroom must be fitted to the available resources of our country, in good or bad condition.

According to Kenneth E. Eble, "no one has demonstrated convincingly that the classroom and the fifty-minute hour are the best arrangement for learning. Obviously, the classroom offers a gathering place for a specific activity at a specific time. But the classroom is more than its physical configuration; teachers and students together can create a good classroom even in poor rooms. The classroom provides a place for such a gathering reinforcing both good teaching practices and bad. So long as the classroom does not rule out other possibilities and so long as it stimulates human interaction in contexts that matter, it remains a central place for information."
The following factor is linked with noise:
Sometimes students talk in the classroom and unconsciously other students become involved in the same conversation.

Another problem is too much noise produced by cars, this problem is presented when the school is next to a street which has too much traffic.

3.4 Communication and media factors:

One of the most important tasks of the lecturer is the following:

Sometimes a lecturer does not have experience to break the ice among students and himself. In my opinion the lecturer should establish a degree of free communication in order to discuss objectives of the course and other problems which can present themselves during the training process.

Another problem which affects the training process is feedback. Sometimes we do not use media in the correct way, due to the fact that the closed-circuit T.V. and computer are relatively new technologies, and we do not have enough experience to use their potential or reorganize our strategies in order to use them correctly. For this reason we need to be careful in the selection of print formats, as well as the audio-visual presentation.

The last problem which can affect the training process is motivation. One of the most important problems that we can present to student to motivate them is the content of
the course and its application. There are other sources of motivation such as:

- curiosity
- competence, and
- conflicting motives

These sources of motivation I will discuss further in chapter V.

3.5 Factors which were corrected by our Mexican government after 1972 in the nautical academies:

I have been working as a professor at the Nautical Academy of Tampico since 1972, and I have seen a series of factors which were affecting the training process. I am going to mention some of them in the following paragraphs:

Before 1972 the entrance examination was not very strict due to the fact that the number of candidates was low, and so we did not have opportunity to make a good selection of the new cadets. For this reason we had problems with the training process. The students who were accepted in the nautical academies had low academic level in mathematics and physics. This deficiency was corrected with the introduction of courses in physics and mathematics during four weeks before the normal classes. The objective was the standardization of the students in mathematics and physics.
After 1976 the FIDEICOMISO did a program about the nautical academies on the television in almost all states. Mexican television made a strong propaganda to motivate the students from different states of the Mexican Republic to apply to the academies. The prerequisites for entrance of the new cadets were given. Finally in 1977 we had an average of 200 candidates who were attending the examinations. Therefore we could correct the problem mentioned earlier, because selection was strict.

Before 1976 we had problems with desertions of the cadets in the first two months. Maybe they could not withstand the discipline of the nautical academies. The average number of desertions was 2 or 3 cadets per nautical academy and per year. The desertions are no longer a problem.

Another problem which affects the training process of almost all universities and technological schools in Mexico as well as other countries of the world is student strikes. Reasons for these strikes include:

- political problems
- fighting among teachers and students
- administration of the school etc.

Fortunately this problem does not affect maritime education in Mexico.
Before 1972 we did not have enough laboratories to provide good training. Presently we have the following types of laboratories:

- pneumatic
- electricity
- electronic
- boiler
- auxiliary engine
- refrigerator system
- digital system

The needs of our nautical academies were well covered by the installations of these laboratories.

Some problems were affecting the training process in the three nautical academies, but were corrected by our government. Perhaps in the future we will have more problems due to the introduction of new technology but the maritime education should be evolved in accordance with the economy of our country.
4.1 Presentation:

We can have a successful programme of training, but it is important to consider the activities carried out by the lecturer during the training process. The training process should be carried out in accordance with the characteristics of the group. The lecturer will establish the atmosphere to reach the objectives of the syllabus in the classroom. One important factor is the selection of the media and methods of teaching.

4.2 The handling of the training:

A course consists of:

- planning
- organization
- management
- control

It is not easy to handle the training process, because each participant has different behaviour, and each group adopts different attitudes. Therefore, it is not possible to recommend an exact procedure to manage a group. So it is necessary to analyze different elements which intervene in the success or failure of the course. The
first factor which intervenes in the training process is communication. I will list several recommendations essential to achieving good communication.

1. The lecturer should use vocabulary appropriate for the level of the students.

2. He should have good intonation in his voice.

3. He should use different branches to transmit the information, for example, transparencies, films, recordings, etc.

4. He should establish communication with participants.

5. Finally, he should give an examination to know if the communication has succeeded or not.

Therefore, the most important elements in classroom communication is the interaction between the students and the lecturer during the training process. It is necessary for any lecturer to use simple words to have good communication.

4.3 Participants:

There are three important points in this topic:

1. young students
2. adults as students
3. groups

Students who are going to be future cadets in the three
nautical academies arrive from different states of Mexico, with different academic levels and behaviours. Sometimes they are not well disciplined, but as soon as they are accepted their behaviour and discipline change completely. This factor facilitates the training process.

In the case of adult participants, it is important for lecturers to consider that they have special characteristics. In my opinion it is more difficult to handle adults than younger students in the maritime academies. So a lecturer should know the characteristics of the group so that he can adapt the participants to the syllabus of his course.

Adults have been learning from a series of experiences in different fields. They have habits, opinions, preferences and attitudes. These attitudes have been acquired over a long time. So it is very difficult to change these attitudes, and adults present resistance to change. Sometimes the change is fast and imposed by someone, so the resistance increases in this way. We need to be very persistent and wise if we want to change the behaviour of adults.

Another factor which can affect how adults learn is their self-sufficiency. Sometimes adults arrive with strong feelings regarding their economic independence and the self-determination of their behaviour. So it is more complicated to change the behaviour of these persons. Therefore, these adults only learn something to solve their necessities.
4.4 Recommendations:
The following recommendations can be applied in the training process for adults:

1. The lecturer should recognize that the participants may have experiences in other branches unrelated to the course objectives.

2. The lecturer should listen to the opinions of the participants to stimulate their involvement.

3. The lecturer should give his syllabus to the participants.

4. The lecturer should relate the training with the utility that they are going to acquire in the practice.

5. The lecturer should communicate to every participant his praise for progress discretely.

4.5 Groups:
The training can be given to one participant, or to a group. Sometimes the training is given to one participant, so the participant will react differently than if he is a part of the group.

What is a group?

A group is the association of two or more persons who are united to interchange ideas to achieve common objectives. These objectives may be economic, cultural, religious etc.
The internal dynamics of a group consists of the characteristics of the participants, and the external dynamics is represented by social rules, etc.

The dynamics of a group is the interaction among the internal and external forces. Sometimes the group members have meetings to satisfy certain necessities, such as:

- the need for help and protection
- the need for new experiences
- the need for achieving objectives, and
- the need to be useful and necessary

Groups always have a dynamic. This dynamic is a form of interaction among them. Group should establish good relationship among them. Therefore, the lecturer should be very skillful in developing interaction among the members of the group. The control and management of the course will depend on the interaction of the group.

It is important to achieve the interaction of the members of a group in accordance with the following points:

- enthusiasm in the activities
- stimulate in the activities
- organization
- planning
- revising media and equipment
- preparing handouts
- checking the handouts to detect mistakes
4.6 Attitudes of the lecturer:

There are some differences among lecturers with respect to the attitude taken in front of the group. These attitudes are important in the activities of the training process. Therefore, the lecturer should have special characteristics to reach his objectives; they are:

- enthusiasm
- security
- knowledge
- interest
- personality
- responsibility
- voice
- gesture
- attitudes
- friendly relationship

The lecturer should have all these characteristics in order to be an effective teacher.

4.7 Recommendations:

Certain recommendation can be applied to the teachers to give appropriate training:

- start the class exactly in accordance with the timetable;
- be careful with personal presentation;
- show respect for the participants; and
- avoid attitudes of superiority.

Certain recommendation can be applied in the management of the group:

- break the ice among the participants;
- give an opportunity for every participant to take part actively during class activities;
- avoid problems among the participants because these problems can affect the training;
- form small groups to discuss certain topics;
- give special attention to participants who are, timid, inattentive or apathetic.
- prevent the participants from evading responsibility; and
- make good use of the experience of the participants.

4.8 Planning:

The following recommendations apply to planning and conducting a class.

- avoid improvisation
- prepare perfectly the objectives
- orient and convince, but never impose authority
- do not mix personal problems with work
- give the participants equal opportunities to participate in the activities
- pay attention to all participants
- stand in a natural position and avoid sitting
- use a natural voice and speak clearly
- use the media and methods of teaching in the correct way and finally
- make an examination

In conclusion:
Teachers, lecturers and professors must have certain knowledge about planning, organization, management and control in order to provide good training.
I investigated information about communication in different books of teaching in the W.M.U library. I found significant information in the book Communication in the Education Process by P.J. Hills. Compared with other authors, in my opinion it is the best in this field.

5.1 Introduction to the communication process:

Education can be seen as a communication process between society and the individual and we need constantly to keep this in mind. Education must be looked at constantly in order to determine how well it is communicating the standards of society and the store of man’s knowledge.

5.2 Education as a communication process:

The communications model of Shannon and Weaver (1949) was developed to apply to an electrical system. Nowadays, it is applied to human communication. The model consists of the following parts:

- input
- coding
- channel of communication
- decoding and output
- feedback
5.2.1 Input:

The input in educational communication can be thought of as society transmitting its knowledge, skills, values, and standards to coming generations. The teacher supplies and manages the "input". In the case of school subjects input is often accepted as the subject matter of a particular specialisation, largely predetermined by an examination syllabus.

5.2.2 Coding:

Coding takes place when teachers put facts, statements, ideas, attitudes, etc. in the sort of form which students can assimilate and thus learn from. Considering this in broad terms, messages are coded into the printed word, visual images or sound. These are modified, changed and reinforced by a variety of non-verbal messages. Coding is thus the process of making the desired input visible to the students; and therefore teachers have the responsibility of seeing that the coding is such that the student is able both to receive the material and to understand and decode it.

Teachers make their ideas visible by coding them into a series of symbols which make up spoken or written language or pictures. The essential condition is that the student should speak and understand the same series of symbols, including the specialised symbols associated with particular subjects.
5.2.3 Channel of communication:

The channel of communication conveys the message to the student accurately. If a teacher is directly concerned, he may be using his voice as the channel of communication in conjunction with a variety of visual methods, the simplest of which is the chalk-board. There are now available many varieties of audio-visual equipment which can be used either to aid the teacher or as a method of instruction without the teacher either in group or individual work by students. On the visual side these range from simple aids like the overhead projector and 35mm slide projector, to cine-projectors, video-records, video-disc players and computers.

The main consideration in choosing the channel of communication is that it should clearly and accurately convey the message to the student.

5.2.4 Decoding and output:

The "output" received by the students is not always that intended by the designers of the "input". What is received will depend on a number of factors, including the student's previous knowledge of a subject. Teachers expect students coming from school to an institution of higher education to have enough background in a subject to be able to decode the material presented. Students are also often expected to possess skills of notetaking, writing up practical work, an ability to use books and extract information from them, and to have acquired skills of argumentation and discussion. This is
often not the case.

5.2.5 Feedback:

The student is central to the communication process which in the formal education setting includes teachers, books, audio-visual media and a range of resource materials and information sources. Channels of communication are for the most important part those of sight and sound and should be arranged to convey the input to the student in as accurate a way as possible. Feedback plays an essential part in regulating this. Feedback is an important part of any self-regulating system.

Feedback from student to teacher giving information on how the message has been received is an essential part of the educational communication process. Such feedback enables the teacher to vary the input depending on student response and to reduce or eliminate errors of decoding or factors caused by "noise" in the system.

5.2.6 Teacher / student process:

The model of education has been simplified to the following elements:

- teacher
- channel of communication
- student
- feedback channel
5.3 The psychology of educational communication:

In the teaching and learning process, communication between a teacher and student is concerned with the transmission of a message either to increase a student’s knowledge or change his attitudes, his beliefs or his behaviour in some way. Learning can be defined as a process of acquiring knowledge or changing attitudes, behaviour or beliefs by contact with external events. The purpose of formulating learning theories is to give a deeper understanding of the process of learning. In the past psychologists based their consideration of the communication which must exist between the teacher and the learner in terms of stimulus and response without regard to the human organisms involved, however, recent interest has centered more on the individual and the variety of motives, stimulations and functions which modify his reception of the message.

5.3.1 Stimulus / response theories:

In 1913 John Watson (1878-1958) published a paper, "Psychology as the Behaviourist Views It". As the father of the behaviourist movement, Watson was not interested in the inner self of the person but only in the way in which thought and emotion showed itself in behaviour. He was concerned with reducing complex behaviour to simple stimulus / response units so that any learning which occurred at the level of these simple units could then be built into complex repertoires of behaviour.
5.3.2 Practical learning:
From an analysis of learning theories, although it is difficult to extract practical applications for learning, they all centre on the internal process of the learner:

- the motivation of the learner
- the physical and intellectual ability of the learner
- the need for perception of a meaningful relationship by the learner
- the need for feedback
- the experiencing of satisfactory personality adjustment and social growth by the learner

These principles contain a mixture of factors, most of which are capable of being manipulated directly by the teacher in designing educational communications for students. Some, however, like maturation, can only be taken account of by the teacher; he has little or no direct control over them.

There are some factors which affect the reception of the message. These factors are, motivation, activity, understanding and feedback.
5.3.3 Motivation:

Motivation is concerned both with factors of arousal of interest and with maintenance of that interest. Since curiosity is thought to be a natural trait in human beings, interest should be aroused if some novel stimulus is presented; conversely interest will be diminished if a task becomes repetitive or boring. This is often the experience of a lecturer when his interest wanes in a subject because he has to give the same lecture time after time. If, however, the presentation can be varied or new material introduced, all the interest and enthusiasm for the subject revives.

The need for the arousal of interest thus requires that material be presented in a way that not only engages the student in the task but which also, most importantly, contains elements of challenge. Apart from the need to design the material so that it continues to engage the interest of adults, this interest should be maintained by the teacher.

The personal interest of a student is, or should be, a normal factor in a teacher's repertoire, but this is not necessarily so for a lecturer. This is perhaps due to both a freer atmosphere and the feeling that a lecturer is there only to lecture and to have little other contact with students. The two points which emerge most strongly for any teacher or lecturer at any level are the need to present material in such a way that will both engage and maintain a student's interest by making the material stimulating, and by making him feel that he is not being
left to struggle with it completely on his own.

5.3.4 Activity:

The principle of activity is a fairly obvious one, for without some level of activity in the student, learning cannot take place. The picture of the lecture situation most commonly presented is that of the passive student and the active lecturer; the process should, however, be designed to turn towards inducing activity in the student. The need for activity was one of the central themes of the programmed learning movements where the assumption was that a good level of activity could be maintained by making the student work through material containing a sequence of questions and answers of increasing complexity. The problem was that these materials were restrictive, repetitive and often boring.

The Keller Plan and others (Hills, 1976) also build in these elements of activity by working with structured work books, practical work and a variety of media. What is most important with regard to activity, however, is the need to ensure that the student knows how to be active.

5.3.5 Understanding:

When a young child has new information or a new experience presented to him it can alter his behaviour drastically. However this does not usually occur to such a great extent in adults, since a frame of reference already exists into which the new information is incor-
porated. It is important for us as teachers to recognise that when we communicate new information to our students we should attempt to ensure that each student receiving it has a sufficient understanding of the background and context of the communication.

5.3.6 Feedback:

Just as we should ensure that a student has a background knowledge of a subject before he goes further into it, so we ought to help him to continue to monitor his progress, giving him continued assurance that he is progressing or alternatively giving him help if he is failing to achieve his objectives. There are some ways which students can give information on the result of the tests, by the comments and marks on an essay, and by end-of-term and end-of-year examinations. The possibility of feedback of information to the student on his progress is becoming increasingly recognized as individualised methods like the Keller Plan begin to be more widely known. In the Keller Plan the course is split up into units of material, each of which contains a test of progress which the student takes at the end. The test is then marked by a tutor and discussed with the student immediately so that any problems can be sorted out.

5.4 Verbal and non-verbal communication:

In the teacher’s interaction with students, both in one-to-one situations, small groups and large groups, there is a good deal of information passing which is not necessarily concerned with the subject content of the material.
Verbal communication: the teacher’s viewpoint
In a formal lecture or lesson the teacher conveys information to the student either by talk, by demonstration or through the use of audiovisual aids. The formal lecture is perhaps the most useful example of verbal communication to consider here, since with one teacher and a large number of students there is little opportunity for student interaction with the teacher. In verbal communication there is a considerable variation possible just in the use of the voice to vary sound, tone, pitch and, rhythm etc.

5.4.1 Verbal communication: the student’s viewpoint

The teacher’s words are conveyed to the student but it is the student as a listener who converts these words into meaning. It is important to distinguish between "hearing" and "listening". Hearing occurs when sound falls upon the ear; listening, however, involves more than this. It involves the processing of the message by the listener, and this can be considered as involving the following:
Sounds or words may only be heard indistinctly, and thus the stage at which any missing parts are supplied by the listener is conditional on previous knowledge or experience. This is why verbal communication can often be misheard. Clarity of speech and planned repetitions may be important in this context.

5.4.2 Interactive verbal communication:

So far the kind of verbal communication discussed has been teacher speaks / student listens; but when we extend this to a question and answer discussion or even simply a conversation between two people, obviously the number of possible interactions is considerable. When a
dialogue takes place, people take turns speaking, and if the conversation is following easily there will be a definitive rhythm of length of talk for each person, of the speed of reply, the tendency to interrupt, etc. When a conversation is not going well between a teacher and a student, a teacher goes on talking so that the contact between them is not broken by awkward silence. This is done in the hope that it will encourage the student to speak, and once the rhythm of conversation has begun it will continue. Questioning can be used by teachers as a technique to draw responses from the students. Once set in motion the conversation can be shaped into a discussion covering the main points of the subject under consideration. The best way to get someone to talk is obviously to ask an open-ended question, since one which merely requires a 'yes' or 'no' answer or a choice between alternative answers will effectively terminate the conversation.

5.4.3 Non-verbal communication:

When someone speaks he moves his head, his hands, perhaps his whole body. These and other non-verbal signals can give emphasis and force to a spoken message, and may often show more accurately what the person speaking really feels especially if the non verbal signal is in opposition to the spoken one. A simple example of this would be agreement when someone says 'yes', and nods his head to show his agreement. On the other hand, if people disagree but feel they must appear to agree, they may say 'yes' but at the same time shake their heads in disagreement. In this latter example, the person speaking may be totally unaware that he is betraying his true feelings by a non verbal signal. The general
emotional state of a person is often signalled by the
tense or relaxed way in which that person holds himself
of the words spoken, teachers are often totally unaware
of the non-verbal component of their communication.

What is communicated by non-verbal behaviour?
There are three main areas:

1. supporting or denying verbal communication

2. taking the place of verbal communication

3. showing emotions and attitudes

There are many variants and variations which can show non
verbal behaviour; these include those we have already
mentioned, that is, voice variations, head movements, eye
variations as well as head and foot movements, nose and
lip movements, posture, gait, hesitation and silences,
touching, breathing, dress. To give some further
examples, let us consider briefly eye contact and
breathing and dress.

Eye contact is not the only possible variation, the eye
can be narrowed, indicating that the receiver of the
message is puzzled or perhaps afraid. The size of the
pupil itself can change; for example, one's pupil
enlarges when one is looking at something which is
pleasurable.

Breathing varies with emotional state and is a good indi-
indicator of inner feelings. We tend to breathe faster when we are afraid, when we are in a difficult situation or when we are tensed up ready for action. We breathe more slowly when we are relaxed; when we are emotionally disturbed we may breathe more heavily and yet be completely unaware.

5.4.4 The teacher and non-verbal communication:

Teachers may think that they communicate mainly through verbal means, whereas in fact they also communicate many non-verbal components of their teaching behaviour. It is possible to control these. In the absence of a definite taxonomy of non-verbal behaviour, the best advice one can give to someone aspiring to investigate his own non-verbal behaviour is to read into the subject and to engage in self-observation. The use of videocassette recorders with a television camera to record teaching behaviour can be very valuable in this connection. It is important that the non-verbal component of teacher communication should complement and reinforce the verbal component. In addition the teacher should use the nonverbal component to support and help the student, depending on the desired circumstances. The following continuum for non-verbal gestures in a teaching/learning situation ranges from those which are supportive to those which are unsupportive.

5.5.1 Practical communication:

As practical advice to achieve good communication it is suggested to follow the following rules:
1. Stop talking when necessary. You cannot listen if you talk.

2. Help the speaker feel at ease.

3. Pay attention and be interested when someone is talking.

4. Remove distractions. Do not do another thing when someone is talking.

5. Try to put yourself in the speaker's position to see his point of view.


7. Do not get involved in arguments or disputes, keep your temper.

8. Do not argue or criticise.

9. Ask questions.

10. Stop talking. This is the first and last because all other parts of the communication process depend upon it.

When you have something to communicate, think out the reaction you want and how your words, actions and attitudes can make this clear. To improve your communication skills, follow these ten rules:

1. Plan what you want to say and consider the aims and attitudes of those who will receive the communication.

2. Ask yourself what you want from the communication. Do you want information, action, a change of attitudes? Adapt the content and style of your communication to the purpose of your communication.

3. Consider the timing of the communication. Is the place appropriate?
Is the atmosphere right?  
And what do the students expect in the form and style of communication?

4. Get the help of others in planning your communication. Those who help to plan will be more likely to support your aims.

5. Be careful of your tone and voice, your expression and manner. This can play a big part in shaping the listener’s attitudes.

6. Try to communicate in ways which will be of value or help to those who listen. Consider their interests and needs.

7. Follow up the communication. Check how well your message has been understood by asking questions, encouraging people to say what they think, and check later with people.

8. Be consistent. Although the communication may deal with one situation, consider how other situations might change or influence what you say.

9. You can persuade more people by what you do rather than what you say. Do not let your actions contradict your words because people will ignore what you say if you do something different.

10. First, last and always try to be a good listener and understand what people say and perhaps what is behind their words.
CHAPTER VI

DIDACTIC GUIDANCE FOR A TEACHER

6.1 Introduction:

In the nautical academies there are syllabi for the nautical and engineering course. These syllabi have a number of objectives. Sometimes it is necessary for a new professor to know how to implement these objectives. These syllabi have been designed for large classes. I am going to mention certain tips which can aid new professors in using the syllabi correctly.

6.2 Guidance for officers who are going to be employed as professors.

It is a great responsibility for an officer to be employed as a professor in a nautical academy. He needs to know the objectives and development of the course. Sometimes it is going to be necessary for him to prepare handouts and audiovisual aids in order to give good classes.

The following guidelines deal with aspects of teaching:

- background of the students
- objectives
- set of topics
- methods of teaching
- time
- media
- didactic structure
6.2.1 Background:

Sometimes in the beginning of a course it is necessary to determine the academic level of the participants.

6.2.2 Objectives:

What are the participants going to learn in the course? Sometimes:

- abilities (psychomotor)
- knowledge (cognitive)
- attitudes (affective)

The participants should be able to acquire one or more of these skills by the end of the course.

Ruth Beard and James Hartley say that "objectives provide specific statements of what students will be able to do at the end of the instruction. Most objectives contain three elements; these are:

- a description of what the student should be able to do or produce after the instruction,

- a statement of the conditions under which the student should be able to do this,

- a statement of the criteria, or standards of performance that will be used to judge what has been done.

I would like to clarify these concepts of objectives. The
first question is:
What is the meaning of the three kinds of objectives?

Ruth Beard and James Hartley give us clear concepts of these objectives. For instance, they say that, "the psychomotor objective is concerned with physical abilities. For example, reflex, movements, physical abilities, skilled movements, basic movements and so on. The affective objectives are those dealing with attitudes, values and emotions. At the lower end of the hierarchy are objectives like willingness to receive and respond to instruction. After this one moves up to the development of internally consistent and coherent qualities of character and conscience. At the lower levels of cognitive learning one is concerned with knowledge of facts and the correct use of terminology. As the objectives become more complex one wants learners to be able to apply what they know to situations".

On the next few pages, there is a table with the main verbs which are used in the elaboration of the syllabus. This table is important for us due to the fact that we can find all the verbs that we can use in our syllabus.

The three main areas of objectives:

Cognitive objectives

major categories associated action verbs:

1.0 Knowledge to describe, recall, state, identify, recognize, name, list, etc..
2.0 Comprehension  to comprehend, understand, predict, interpolate, extrapolate, interpret.

3.0 Application  to apply, show, use, demonstrate, perform, relate, construct, explain.

4.0 Analysis  to analyse, separate, discriminate distinguish, detect, categorize.

5.0 Synthesis  to synthesize, combine, restate, summarize, generalize, conclude, derive.

6.0 Evaluation  to evaluate, judge, decide, choose, assess, contrast, criticize, defend.

Affective objectives:

major categories  associated action verbs:

1.0 Receiving  to listen, attend, to be aware, (attending) accept.

2.0 Responding  to state, answer, comply, applaud.

3.0 Valuing  to accept, recognize, participate debate, appreciate, prefer.

4.0 Organization  to discuss, organize, relate, correlate, formulate, weigh.

5.0 Characterization to revise, change, face, accept, resolve, resist, reject, believe.

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Psychomotor objectives:

major categories associated action verbs:

1.0 Reflex movements to reflex, stretch, extend, tense, relax.

2.0 Basic movements to crawl, creep, glide, walk, run.

3.0 Perceptual abilities to catch, bounce, write, draw from, memory, distinguish by touching.

4.0 Physical abilities to stop, start, move, precisely, improve.

5.0 Skilled movements to type, saw, play the piano, skate, dance.

6.0 Non-discursive movements to gesture, carry oneself, perform skilfully, to smile knowingly.

Sometimes it is necessary for a new professor to have certain concepts of the planning of their courses by determining objectives. Ivor K. Davies recommends that "each objective should contain the following: the verb of the action, a statement of the performance or behaviour required, a statement of the conditions under which mastery will be observed, and a description of the standards to be reached."
6.2.3 Set of topics:

The total objectives consist of a series of chapters, and every chapter is divided into topics which are requirements for the development of the course.

6.2.4 Period of the course:

We need to indicate the total period of the course, and the period of each activity per objective. Sometimes it is necessary to take into account the minimum period and maximum period of the course and objectives.

6.2.5 Methods of teaching: (discussed in further detail in the next chapters)

There are several types of teaching methods and it is necessary for us to select the appropriate method or combination of methods for use in a particular course.

The next step is to select the media in the correct way. We can use the following:
- printed documents
- audio-visual aids
- closed circuit television
- computers

6.2.6 Didactic structure:

This document is the guideline for a new professor. The didactic structure contains all the activities that are going to be developed during the course. This structure
is the basis of the course. It consists of objectives, topics, activities, time, methods of teaching and media for the purpose of the course. Therefore a new professor should know how to use the didactic structure.

The didactic structure should be:

- simple
- flexible
- practical
- progressive

The didactic structure consists of objectives, topics, activities, media, time, and methods. This structure has two areas, the informative and the developmental.

Informative areas:

Column of objectives and topics:
The objectives appear in the structure. They describe clearly what students will be able to do at the end of the course.

Developmental Areas:

Column of activities:
These activities should satisfy the interest of the participants. These activities can be modified without varying the objectives.

Column of materials:

The professor will select the appropriate media:
Column of the time: The time for any activity must be determined in advance. The professor should pay attention into the area of development. This area is important due to the fact that participants and professors are the protagonists of the training process.
Objective: The participants will be able to solve quadratic equations.

Topic: Quadratic equations.

Activities: The participants will solve the following problems 3, 10, 7, 20, of the book by Gordon Fuller.

Materials: Books, guidelines, handouts, blackboard.

Time: 30 minutes (class) explanation by the professor. 25 minutes to solve problems by the students.

Method: Expository, working in small groups.

Subject:

Name of the professor:

Date:

Number objective:
There are several methods of teaching strategies. We need to be careful to choose one or more of them to reach our effectiveness in teaching. We can use them in large classes. Therefore we should select our methods of teaching with the following criteria:

Ivor K. Davies states that "Generally speaking three basic criteria can be used by a teacher-leader in order to choose the appropriate teaching method.

- the nature of the learning objectives to be realized;
- the need to enrich the learning experience, so as to harness intrinsic as well as extrinsic motivation;
- the ability of the students involved in the task"

The professor can choose the following strategies for instruction in the training process:

1. Strategies for instruction:

   - lecture method

   - demonstrative method

2. Strategies for discussion:

   - asking questions
- working in small groups

3. Strategies for fulfilling tasks:

- independent study

- case study

4. Strategies for games and simulations

- role playing

- simulations

There are more methods of teaching, but in my opinion these are the most common.

In this chapter, I will mention the demonstrative method.
CHAPTER VII

DEMONSTRATIVE METHOD

7.1 Introduction:

In my experience as teacher/instructor of the Nautical Academy of Tampico, I used the demonstrative method in a practical way. I used this method to demonstrate the operation and control of the Autochief II in the simulator of engine room control during the course of automation.

7.2 Description:

This teaching is the most deductive and can be linked with other methods in teaching to get good results.

When I was using this method the first questions for me were the following:

1. What was the objective of the lesson?

2. What was being demonstrated?

3. What was the importance of the demonstration?

In order to give the demonstration first I needed to know how much knowledge the participants had about the equipment. I met with them to discuss certain topics related with the subject matter.
Second it was necessary to have handouts for each participant and ensure that the equipment was in good condition.

Third in accordance with my experience, I recommended that two demonstrations should be made in order to get very good results from the operation and control of the equipment. The first time the demonstration should be carried out normally, while the second time it should be done slowly.

Since any demonstration is linked by explanations, it is necessary to repeat the demonstration several times to reach the objective.

After the second demonstration I asked the participants:

1. Are there any questions about this?
2. Did you understand everythings about this?

Fourth one participant will do the demonstration in front of the class. The participant explained the operation of the equipment step by step. Sometimes it was necessary to ask questions during the participant's demonstration. Sometimes it was also necessary to correct certain mistakes during the participant’s demonstration.

7.3 Advantages:
There are several advantages to the demonstrative method.
- We teach to one participant or a small group.
- It is easy to fit it to the characteristics for each participant.
- Participants can learn quickly depending on their interest.
- We can check the development of the demonstration step by step.
- It is very useful to learn something practical.
- It reduces bad operation.
- We can reach high effectiveness.

7.4 Recommendation:

In order to make use of the demonstrative method effectively, we need to apply the following recommendations. The equipment should be in good condition. Sometimes there is equipment that is very small and it is recommended to teach this individually. We can use the demonstrative method linked with the following materials: graph representations, real equipment, and handouts.

7.5 Conclusion:

For many years this method has been used by officers of the engine department on board ships all over the world. But it is important that it is used correctly so that good training can be assured.
CHAPTER VIII

THE LECTURE METHOD

8.1 Introduction:

In any large or small course it is necessary first to define the purpose of the course. Ruth Beard and James Hartley say that, "Since one purpose of a lecture, as in all teaching, is that students should learn something, the first step is to state what the students may be expected to know or be able to do as a result of it."

Once the objectives of any course have been defined, they must be explained to the students in order to motivate them and help them.

8.2 Content:

The content of the course must be clear. Sometimes a lecturer does not give enough information about the content of the course, but it is necessary to give sufficient information to make the course content clear.

In my opinion in order to eliminate this problem we should have a meeting with the students, and then give ample information to avoid confusion.
8.3 Organization:

During our life, we have learned certain steps of organization, but the application of organization in teaching require something else than this.

Before a lecturer gives his lecture he should organize the following:

First:
The main objective of the course

Second:
How many objectives is the lecturer going to have in the content of his course?

Ruth Beard and James Hartley say that to have a very good organization it is necessary to use the following methods of organizing lectures, " the classical, the problem centred, the sequential, the comparative and the thesis.

- The classical method is divides each chapter in topics and then these topics are subdivided too.

- Using the problem centred method, the problem is given to the students, who can give us certain alternative solutions with advantages or disadvantages.

- The comparative method involves the comparison of two or more documents with the same meaning in order to choose the best.

- In the thesis method the process of the thesis begins with a small statement describing the research."
8.3 Handouts and visual aids:

In order to give a very good lecture it is necessary to design handouts and visual aids. One of the advantages of designing handouts is that it makes the lecture easier for the students. But we need to be careful in their preparation because we can make certain mistakes which can produce confusion in our lectures.

Other advantages are the following:

We can give much knowledge in a short time and very effectively, whenever the handouts and visual aids are used in the correct way. Therefore, the academic level can increase using the handouts.

8.4 Presenting the lecture:

When the lecture is going to be presented, the lecturer should do the following:

- speak clearly
- lecturer should use clear diagrams
- call the attention of the students
- have very strong beginning and end
- be well dressed

There are some methods to stimulate the attention of the students. So Ruth Beard and James Hartley suggest that "good lecturers use illustrative examples or visual illustration, gestures and their voices to give emphasis."
8.5 The advantages and disadvantages of lecturing:

In the past the lecture method has been criticized due to the fact that it is a passive method, because students have little contact with the professor and do not have the opportunity to ask questions. One advantage however is that much knowledge can be obtained in a short time.

A second advantage is an economical method; with this method it is possible to give lectures to big groups.

Sometimes it is necessary to use closed-circuit T.V or microphones.

In conclusion, even without the aid of television, lecturing is still an economical method.

8.6 Evaluating lectures:

Any method in teaching should be evaluated. The lecture method can be evaluated in accordance with the following:

- questions asked by the lecturer to the students
- discussions between the lecturer and the students

Sometimes the students complain about the lecturer, perhaps because he speaks too fast or not clearly. In my opinion it is necessary to investigate all those things in order to prepare and organize our lectures in a very good way.
8.7 Advice to young lecturers:

I agree with the recommendations of Ruth Beard and James Hartley that the following points should be taken into account for young lecturers to get experience in lecture method: they are

- "speak loudly and clearly, use changes in tone, use pauses, and do not go too fast.

- plan, prepare and structure every lecture to give a clear, simple and original perspective to the subject.

- make it understandable; explain, emphasize, repeat and summarize main points and relate to current examples and applications. Do not confuse with unnecessary long statements; be clear and simple.

- watch out for reaction and feedback; invite questions and ask questions, encourage participation and involve your audience.

- do not try to cover everything and give too much factual information.

- read widely about the subject area from different sources; know your subject and understand your material.

- keep time; do not rush, do not arrive late, do not worry about finishing before time.

- look at your audience; meet their eyes, do not talk when you are facing away from your audience, do not
distance yourself.

- do not read from your notes or dictate or transcribe notes.

- project your enthusiasm for a topic; do not look bored be interesting and humorous but not too much.

- prepare handouts for students.

8.8 Conclusion:

1. Any lecturer needs to have enough knowledge about the planning of his course.

2. In some cases it is necessary to mix this method with another in teaching to get the best results.

3. This method is very effective and economical, therefore, the majority of developing countries can contract lectures in different subjects in order to get vast knowledge in a short time due to the fact that is not expensive.

4. Lecturers should be careful in their planning, purpose, content, organization and presentation.

5. In my opinion this method has given very good results in the W.M.U. This method can be suitable for different persons (engineers, doctors, captains etc.).
The following presentation of the discussion method was found in Teaching Tips, a step-by-step teaching guide by Wilbert J. McKeach.

Each step of these methods is outlined by the author.

Strategies for discussion consist of two methods: (the discussion method and working in small groups.)

9.1 Introduction:

Discussion methods are among the most valuable tools in a teacher's repertoire. Often teachers in large classes feel that they must lecture because discussion is impossible. In fact, the discussion method can be used in classes of all size. This is not to say that small classes are not desirable; generally they are more effective, but large classes should not be allowed to inhibit the teacher's ability to stimulate student thinking and participation.

Discussion is probably not effective for presenting new information the student is already motivated to learn, but rather discussion techniques seem particularly appropriate when the instructor desires the following:

- helps students learn to think in terms of the subject
- matter by giving them practice in thinking;
- helps students learn to evaluate the logic of, and evidence for, their own and others' positions;
- gives students the opportunity to formulate applications of principles;
- helps students become aware of and formulate problems using information gained from readings or lectures;
- gains acceptance for information or theories counter to previous beliefs of students;
- uses the resources of members of the group;
- develops motivation for further learning; and
- gets prompt feedback on well objectives are being attained.

9.2 Problems in discussion:

The main problems in discussion groups are:
- getting participation in the discussion,
- making progress toward course objectives, and
- handling emotional reactions of the students.
9.3 Developmental discussion:

One of the reasons discussion often seems ineffective and disorganized is that different members of the group are working on different aspects of the problem and are thus often frustrated by what they perceive as irrelevant comments by other students. In developmental discussion the teacher tries to keep the students aware of the stage of discussion that is the current focus.

The term "developmental discussion" was coined by professor Norman R.F. Maier (1952) to describe a problem-solving discussion technique in which the teacher breaks problems into parts so that all group members are working on the same part of the problem at the same time.

Typical stages might be:

1. formulating the problem,
2. suggesting hypothesis,
3. getting relevant data, and
4. evaluating alternative solutions.

Typically, an early step in developmental discussion is to get information relevant to the problem for discussion. Such information can be supplied by lecture, by reading, or by group members. In this method teachers should feel free to give information or raise questions. Often an appropriate problem for developmental discussion is the application or implications of a particular principle or findings presented by lecturers or reading.
Like other discussion methods, developmental discussion implies active participation of group members. In developmental discussion, participation is directed to a definite goal.

9.4 Breaking a problem into subproblems:

One of Maier's important contributions to effective group problem solving, as well as to teaching, is to point out that groups are ineffective because different participants have different ideas of what the problem is, and group members may feel frustrated at the end of the discussion because the group never got to the real problem.

A first task is likely to be, "what do we know?" or "what data are relevant".

A second task may be, "what are the characteristics of an acceptable solution?".

"A third task could be, "what are possible solutions?" and fifth task may be to evaluate these solutions against the criteria for a solution determined in the previous step.

9.5 Skills in leading discussion:

In a developmental discussion the teacher attempts to guide a discussion along a certain line, but not to push it beyond the group's interest and acceptance. Obviously this requires skill in initiating discussion, getting student participation, appraising group progress, asking questions and overcoming resistance.
9.6 Starting discussion with common experience:

One of the best ways of starting discussion is to provide a common experience through presentation of a demonstration, film, or role playing. Following such a presentation it is easy to ask, "Why did ?". Such an opening has a number of advantages. Since everyone in the group has seen it, everyone knows something about the topic under discussion. In addition, by focusing the discussion on the demonstration, the instructor takes some of the pressure off anxious or threatened students who are afraid to reveal their own opinions or feelings.

9.7 Starting discussion with a question:

The most common discussion opener is the question, and the most common error in using a question to open discussion is not allowing students time enough to think.

Types of questions:

Critical questions examine the validity of an author's arguments or discussion. Being so critical that students feel that their reading or class preparation has been a waste of time is not helpful. The lecturer must be careful in presenting an alternative argument. Eventually you want students to become critical readers who themselves challenge assumptions and conclusions.

Comparative questions, as the name suggests, ask for comparisons between one theory and another, one author and another, one research study and another, etc. Such questions help students determine important dimensions.
Connective questions involve attempts to link material or concepts that otherwise might not seem related. One might, for example, cut across discipline to link literature, music, and historical events.

9.8 Starting discussion with a controversy:

A third technique of stimulating discussion is to cause disagreement. Experimental evidence is accumulating to indicate that a certain degree of disagreement arouses curiosity, a basic motive for learning. Some teachers effectively play the role of devil's advocate; others are effective in pointing up differences in point of view. There are some points about the devil's advocate role worth considering.

First, it can be an effective device in getting students to think actively rather than accept passively the instructor's every sentences as "truth". Yet it has its risks, the most important of which is that it may create lack of trust in the instructor. Of course, instructors do not want their students to feel they are untrustworthy, lying about their beliefs.

A second danger in the "devil's advocate" role is that it will be perceived as manipulative. Students may feel that the instructor "is just playing a game with us, trying to show how smart he is and how easily he can fool us".
A third danger in the "devil's advocate" role is that it may prevent students from ever successfully challenging the instructor. In this case the instructor, whenever the student wins an argument, simply says, "well I just presented that position to see if you could see its weakness." 

In any case the instructor should realize that disagreement is not a sign of failure but may be used constructively. When rigid dogmatism interferes with constructive problem solving following a disagreement, the instructor may ask the disagreeing students to switch sides and argue the opposing point of view. Such a technique seems to be effective in developing awareness of the strengths of other positions.

9.9 In conclusion:

There are a lot of ways to start discussion in a group, but in my opinion the main discussion methods are those mentioned in paragraphs beforehand. Regardless of the discussion method, if an instructor is enthusiastic, friendly, and obviously interested in the subject, students also will be. Let me emphasize again that both lecture and discussion may have advantages at certain points in a course. Skillful teachers will choose the method best adapted to their objectives rather than rigidly sticking to one method only.
CHAPTER X

METHOD OF WORKING WITH SMALL GROUPS

10.1 Introduction:

The method of working with small groups was designed to accommodate the dynamic nature of groups. This method has one of the best advantages in that it is easy for a lecturer who has a minimum of experience. This method assures the active participation of the members of the group. And the participants through active participation in certain discussions and can make their own conclusions.

10.2 Description:

This method consists of the following:
The group is divided in small groups (4 or 5 participants). Each group receives the same information to analyze and discuss; finally they arrive at one general conclusion.

10.3 Role of the lecturer:

The lecturer can get the best results with this method, but should apply it step by step. It is necessary to follow these steps:
1. introduction
2. study
3. interaction
4. synthesis
10.3.1 Introduction:

The head of the group, the lecturer, explains to the participants the development of this method in accordance with the following:

- purpose and goals that the participants will reach
- participate in the group
- present the goals in limit time
- prepare small groups
- distribute the tables to work

The lecturer invites to the participants to form small groups. After that, each group names a secretary and an arbiter. Finally the lecturer explains the function of the secretary and arbiter.

10.3.2 Arbiter’s function:

The arbiter has the following functions during small group work:

- stimulates the participants in the discussion;
- controls some problems that may be presented during the discussion;
- handles the analysis and discussion of the information that is given by the lecturer; and

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- prevent deviations related to the information.

10.3.3 The function of the secretary:

The secretary of a small group:

- writes the answers of every one of the small group;
  and

- gives to the lecturer the conclusion of the small group in writing.

As soon as the lecturer names the arbiters and secretaries of the small groups, he gives a card to the secretary of each small group. On which the activities of the small group are written. Finally the lecturer delivers a questionnaire and an informative document.

10.3.4 Study:

In this phase the participants start the activities mentioned on the card. The questionnaire can be used as a guideline for analysis and discussion. Ten minutes before the class is to finish the participants explain their individual conclusions and then one conclusion for each small group.

During the activities of the small group, the arbiter should give opportunities to the participants to discuss. This motivates their participation and helps them finally to reach a conclusion.
10.3.5 Interaction:

The lecturer informs to the participants when the class is going to finish. Afterwards the lecturer asks every secretary for his conclusion. Then he writes them on the blackboard and clarifies their meaning. He proceeds through the comparison of the conclusions in order to obtain a general conclusion. Finally, the lecturer makes a general conclusion.

10.3.6 Synthesis:

In the last phase the participants and lecturer prepare a summary to know whether the objectives were reached. Sometimes it is necessary to repeat the introduction in order to make more clear the development of the method.

10.4 Media:

The blackboard and the small group's card constitute the basic materials for this method. The blackboard is important to:

- write the activities of the participants;

- write the basic aspects of the conclusion obtained by the small group; and

- write the final conclusion.
10.4.1 The small group’s card:

The small group’s card is a document that:

- helps the lecturer to plan and handle all the activities with effectiveness; and

- gives the participants all the necessary information about the objectives and the arrangement in which participants will realize the activities.

10.4.2 Questionnaire:

The questionnaire is a document which contains a series of questions about the basic aspects of the information which is given by the lecturer. They are generally three or five questions.

10.5 Informative document:

The informative documents are all materials which contain the information for the discussion. These documents may be books, magazines, etc. Films, slides and transparencies are also used in this method to:

- stimulate the motivation of the participants;

- get a basic information; and

- arrive a general summary.
10.6 Advantages and limitations:

Any didactic method implicates some advantages and limitations. It is necessary to classify them.

10.7 Advantages:

This didactic method facilitates the interaction among the participants of the group. First it eliminates the inhibitions of the participants and promotes cooperation among them. Secondly it prevents the intervention of only one participant. It further prevents deviations. And it gives the opportunity to the participants to tell of their experiences.

10.8 Limitations:

This didactic method does not apply well to the learning of skills. It should not be used for groups with low levels in writing and reading. It can fail when the arbiter does not have the ability to handle the group.
CHAPTER XI

METHOD OF INDEPENDENT STUDY

Description:

Independent study is a learning method in which participants work individually in accordance with the information given by the lecturer. The media is printed information and contains the topics which are going to be used by the participants.

11.1 Development:

This method consists of:

- preparation (planning);
- study and supervision; and
- strengthening of the training.

11.2 Preparation:

First lecturer explains to the participants the activities which are going to be made during his lecture. The lecturer gives the following instructions to the participants:

- gives the topics and explain their importance;
- explains the development of this method to reach
- get self-evaluation and synthesis of the training; and

- suggests the following step by step procedures of reading:

1. indicating important parts and underlining
2. making synthesis of the reading
3. commenting on objectives
4. distributing the printed information

11.3 Study and supervision:

During this phase participants do the following activities:

- read the printed information;
- solve their activities from the printed information; and
- compare their results with the solution given by lecturer.

During the development of the activities the lecturer:

- makes observations;
- checks the activities; and
- stimulates the participants.

11.4 Strengthening of the training:

When the participants have finished their activities,
the lecturer asks them one by one for the conclusion. After the lecturer makes a final synthesis together with the participants. Finally the lecturer comments on the group mistakes.

11.5 Media:

The media is the most important factor in applying this method. We can tell that this method is a technique which is developed for the quality of the media.

The media used in this method include the following:

- manuals,
- printed documents,
- books, etc.

The manual of independent study should be:

- sequential,
- self-administrative,
- theoretical and practical, and
- self-evaluative.

a. Sequential:

The topics of the manual should have the following sequence:

- presentation
- objectives (clear)
- information
- exercises
- synthesis

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b. Self-administrative:

The manual should be self-administrative, so that students can proceed individually. If this is the case participants will require little supervision.

c. Theoretical and practical:

The manual should contain the theoretically topics and the practical exercises so that participants can immediately apply their knowledge.

d. Self-evaluation:

After participants finish their activities they should be able to know their results immediately.

11.6 Advantages:

The lecturer must handle this method correctly. The training process is carried out in group. The participants work individually in accordance with their knowledge. Participants make their own self-evaluation. Therefore the lecturer can check one by one the development of the participants.
METHOD OF CASE STUDY

The case study method gives opportunities for the participants to comment, analyse, criticize and reflect. In accordance with the experience of the participants a general conclusion can be made.

A case study should have the following elements:

- description of the case study,
- elements which are involved in the case study, and
- situation of a real case.

12.1 Characteristics:

The following characteristics of a case study are given below:

- Each participant gives us a different answer in accordance with his experience. Therefore, there is not only one solution.

- This method gives us the opportunity to discuss and explain every step of the case study.

- The environment in the classroom should be positive.

- We can use this method for one, two or more hours
depending on the complexity of the case study.

- General speaking, we can use a document and questionnaire as media.

There is interaction among members of the group to make a general conclusion. Therefore this method of case study is used in guided discussion and analysis of real situations.

There are some different types of case study. I am going to mention some of them:

- investigation
- historic
- process
- cause and effect and so on.

12.2 A case study should have the following steps:

1. introduction
2. communication of the case
3. analysis of the case
4. conclusion

1. Introduction:

The introduction should take into consideration the objectives and activities of the small groups.
2. Communication:

We can present to the participants the case study in the form following:

- document
- tape recorder
- film
- a dramatic art

If the case study has good organization and motivation, we can learn the experience of the participants in the discussion of the case study.

3. Analysis of the case:

Participants receive the information of the case study and the questionnarie. After the participants answer the questionnarie individually or in a group.

4. Conclusion:

The results are written on the blackboard to get a general solution of the case study.

12.3 Advantages and disadvantages:

There are many advantages and disadvantages of case studies. Several of each bellow:
Advantages:

- stimulate the participants
- answer for a case study in several forms
- change of ideas among participants
- analize a real situation
- participe in the group and so on.

Disadvantage:

We can present the case study, but these can be differences between the case and real situation.
METHOD OF ROLE-PLAYING

The following information about role playing was taken from the book by Morry Van Ments (Handbook for Teacher and Training).

Introduction:

The idea of role playing is very simple: to give students the opportunity to practise interacting with others in certain roles. The situation is defined by producing a scenerio and a set of role descriptions. The scenerio gives a background to the particular problem or environment and indicates the constraints which operate. The role description give profiles of the people involved.

The role playing can be run for a few minutes up to half an hour or even longer. At the end there is a debriefing session in which the observers may comment on the way in which the characters behaved and the lessons to be drawn from this. The players themselves will always take an important part in this debriefing.

13.1 Types of role play

There are six types of role play, but I will only men-
tion four of them:

1. describe
2. demonstrate
3. practise
4. reflect

1. Describe:

In this category the role play is being used as a means of communication to describe a situation which can be more graphically illustrated by means of dramatization than by pure verbal description.

A tutor may wish to illustrate how it is difficult to avoid an escalation when one of the protagonists takes an uncompromising line. He does this by taking the role of a shop steward and one of the trainers takes the part of the manager or a shop floor worker.

Two teenagers may want to show their youth group how they see the problem of parental control in a typical situation. One of them may take the role of a daughter asking if she can stay out late, the other part of one of her parents. Similarly a student may re-enact how he tried to ask his boss for rise; alternatively he may enact a situation described by another to ensure that he understands it properly.

2. Demonstrative:

There is considerable similarity between this category
and the previous one, but the intention here is to give a demonstration which may be copied by the student. It is what the social psychologist would call a role-model. The salesman demonstrating how to close a sale with client, the social worker showing a parent how to play with a child, or the language teacher exemplifying the use of a particular phrase structure in a realistic scene, are examples of this category.

2. Practise:

This kind is much more common. Typical situations are where a young person is practising social skills; students are trying their hand at using foreign language in a practical context. Preparation for this class of role-play must be detailed and meticulously carried out. Obviously the student must be clear about the task to be performed. He must have some guidance on how to do the job such as a list of a set of procedures or sequences of instructions. This initial framework will also be used to direct the observers and to act as a check on how the student performs.

3. Reflect:

The reflective role-playing of the student is more difficult to describe. It is in many ways similar to the straightforward practising of an approach or method of dealing with a situation but the emphasis is on a continuous analysis of what is being done and its effects on others. In addition to doing there is a lot of thinking going on. In the case of the role-play for practise
purposes, the role player is encouraged to concentrate on doing the job as efficiently possible.

13.2 Advantages of role-play

Role playing has several advantages. It
- enables a student to express hidden feelings
- enables student to discuss private issues and problems
- enables student to empathize with others and understand their motivation
- gives practice in various types of behaviour
- portrays generalized social problems and dynamics of group interaction, formal and informal
- gives life and immediacy to academic descriptive material
- provides opportunity for non-articulate students and emphasizes importance of non-verbal, emotional response
- motivational and effective because it involves activity
- provides rapid feedback for both student and tutor
- closes the gap between training and real life situations
- permits training in the control of feelings and emotions

13.3 Disadvantages:

- The tutor loses control over what is learnt and the order in which it is learnt
- simplifications can mislead
- uses a large amount of time
- uses other resources, people, space, special, items
- depends on the quality of the tutor and students
- impact may trigger withdrawal and so on.
CHAPTER XIV

EVALUATION

14.1 Introduction:

One of the most important tasks in the training process is evaluation. In any university or academy it is necessary to evaluate both the course and the students. Therefore to make a good evaluation, we need to do the following:

- **Student evaluation**
  - **When**: before (course)
  - **What**: level of knowledge, skills, and so on.
  - **During**: during (course)
  - **What**: learning results, during the course, week, month, course
  - **After**: after (course)
  - **What**: learning results; the total course expectations, wishes
  - **On the job**: application of knowledge, new wishes

There are several methods of evaluation. I am going to mention some of them in the following table:

The table indicates six types of evaluation methods and what each type can evaluate.
Evaluation is one of the most difficult tasks in teaching. As A.J. Romiszowski say, "Evaluation implies that one is seeking to assess the value of a certain activity or product of our system. The question of evaluation is closely interlinked with the question of control. Whereas our control strategy defines how we shall measure the results of our instructional system, our evaluation strategies define what we shall measure and why."

He goes on to identify three functions of evaluation:

- to quantify them, for the purposes of student certification,

- to measure and improve the effectiveness of the course (this is equivalent to quality control and product development in industry), and

- to test out some hypothesis about the course structure
and processes which may give us some insights into the general problems of course design."

Sometimes we need to have certain indicators and instruments of measurement to carry out our evaluation. A.J. Romiszowski proposes the use of the following table for course evaluation.

<table>
<thead>
<tr>
<th>Effects of Instruction</th>
<th>Indicators of Outputs</th>
<th>Instruments of Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do teachers like course?</td>
<td>Teacher attitudes</td>
<td>Teacher questionnaires, report, cards, audience ratings</td>
</tr>
<tr>
<td>Do students like course?</td>
<td>Students attitudes</td>
<td>Student report, questionnaires, audience, ratings/course</td>
</tr>
<tr>
<td>Are students influenced by course?</td>
<td>Changes in student attitudes (to subject or content)</td>
<td>Teacher observations (library usage)</td>
</tr>
<tr>
<td>Do students learn the course content?</td>
<td>Changes in student performance</td>
<td>Performance/capability</td>
</tr>
</tbody>
</table>

According to Dereck Rowntree, "In practice teachers and others carry out evaluation for a variety of reasons. Sometimes their main purpose is to be able to prove that they have done it. However, the main purpose of
course evaluation is to understand the course so as to able to make informed decisions about it. For the teacher, the chief such decision may be how to sustain, develop and improve the course, and perhaps his own expertise as a teacher. Therefore, the main aspects which need to be evaluated are:

- the planning process by which the course was produced;
- the proposed aims, objectives, and content of the course
- the proposed teaching strategy;
- the materials and facilities that might be used by students, and
- the institutional setting within which students will be experiencing our courses."

All of these aspects might be evaluated before, during and after students start and end the course.

Barbara Schneider Fuhrmann and Anthony F. Grasha make the following suggestions about evaluation:

"Decide what aspects of the content you are interested in measuring:
To do this, you simply need to ask yourself how important bloom's categories of knowledge, comprehension, application, analysis and synthesis are for the information covered. So we must be careful when writing exam items. The following suggestions will improve the writing and scoring of multiple-choice, true-false, matching essay, and short answer items."

14.2 Writing multiple-choice:
Some general considerations when writing multiple-choice items are the following:

- do not write all questions in one setting
- write stem first, correct response second and distractors last
- write items on index card

14.3 Points about the stem:

- stems should indicate clearly to the student what he or she is to answer
- direct questions are usually better than filling
- stems should be stated without lengthy qualifications
- stems should pose a unique problem that requires more than a one-word response
- most items should require more than just recall to get the right answer
- stems should be grammatical

14.4 Guidelines to writing alternatives:

- write at least four alternatives
- put alternatives at the end of the stem
- arrange alternatives in a vertical column
- if there is a natural order among alternatives, use it
- put as much of the item as possible in the stem
- make sure each alternatives completes a grammatical statement
- make sure the distractors are plausible or attractive alternatives

14.5 Writing matching items:
- the directions must clearly state the basis on which items are to be matched
- the two sets of items should be homogeneous, for example, events and dates, not events combined with dates and names
- there must be several plausible choices but only one correct choice for each stem
- arrange response alternatives in some order (numerical and alphabetical)
- have more response items than are required
- sets of items should be on the same page
- do not make sets too long
- some choices may be used more than once, but this must be stated in the directions

14.6 Writing true-false items:

- be sure statements are related to important objectives
- write the statements clearly and precisely
- write items that require more than recall to get the right answer
- be sure items require more than common sense or logic
- watch for words such as never and all or often and some. These are cue words for the correct response
- do not make false statements by just inserting no or not into true statements

14.7 Writing essay items:

- items should be stated clearly
- items should be sufficiently limited for the time allowed
- items should challenge students with interesting and worthwhile problems
- items should require more than just memory to respond

14.8 Scoring essays:

- clearly state the question
- write out a model answer
- score item by item rather than scoring all items for a given student
- score questions anonymously. Have students write their names on the back of the papers.
- do not ask pure opinion questions

14.9 Writing short answer items:

- make sure the facts asked for are important
- do not take sentences directly from a book
- have only one blank or require only one word or phrase as the answer
- be sure the questions permits only one answer be careful that the grammar of the sentences does not give the answer away
- make sure the questions specify the knowledge required for a correct answer

These suggestions are relevant to writing good items. A related concern about test items is how to place them on the exam. In my opinion, it is very important to give examinations, but the examinations should be clear and precise."
The maritime education and training in Mexico has been in evolution since the end of the last century. This evolution has produced a unique system according to the national necessities and interests. The system has also been influenced by what has happened in many other countries.

Centralization of the administration in 1972 produced high achievements as regards academic level due to the standardization of syllabus.

In 1970 the international regulations started to produce some important changes in the Mexican maritime education and training system. In 1976 the Mexican merchant marine and its maritime education system acquired autonomy in the national administrative reorganization in which all merchant marine affairs were relocated from the Ministry of the Navy to the Ministry of Communications and Transport. This relocation permitted autonomy which led toward great improvement in all aspects in the national merchant marine. During the years from 1972 to 1987 efforts were stressed in the education and training of engineer and deck officers in order to make the maritime education system more expeditious and to increase in numbers the formation of qualified maritime personnel.

Recommendation to implement short courses about methods
in teaching and evaluation:

1. I recommend that all nautical academies in Mexico should take measures to establish department in charge of giving training in teaching and evaluation methods.

2. All officers that are going to be engage in maritime education as professors, even all teachers who work nowadays, should take a course in the aforesaid.

3. This department should have specialized personnel in this field.

4. I recommend that the training should be given in one week as minimum and two weeks as maximum.

5. The training should be both theoretical and practical.

6. The timetable should be five or six hours every day except Saturday and Sunday.

7. I recommend that the department should have a special classroom with all the arrangements in order to give good training. Maybe, these arrangements are expensive, but we can start in accordance with our economy. One of the most important factors is the use of the closed circuit T.V. With this system teachers can change their behaviour and thinking.

8. My final recommendation about this short course is that it should be given continuously, a minimum of one time per year, so that teachers and lecturers
will always keep their level in teaching. For this course, it is necessary to have enough books about learning and teaching. Below this, I am going to mention some books in teaching

- The Conditions of Learning (Robert M. Gagne)
- The Craft of Teaching (Kenneth E. Eble)
- Developing Courses for Students (Derek Rowntree)
- Research Methods in Education (Louis Cohen and Lawrence Manion)
- Teaching Tips (Wilbert J. McKeachie)
- Developing Auto-Instructional Materials (A.J. Romiszowski)
- Designing Instructional Systems (A.J. Romiszowski)
- Learning Strategies (John Nisbet and Janet Shucksmith)
- Teaching and Learning in Higher Education (Ruth Beard and James Hartley)

Conclusion:

Teachers and lecturers who are engaged with the maritime education in Mexico must have:
Knowledge of syllabus design, teaching methods, communi-
cation and evaluation. Knowledge of all of these topics linked with experience and technical knowledge are the way to reach the best results in the training process.

Therefore, maybe in the future, the maritime education in Mexico will introduce certain measures to issue the certification in teaching applied to the maritime education in Mexico.

The last conclusion is the introduction of short courses about evaluation and teaching methods in order to get high level in our maritime education in Mexico.
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