

**SKILLS TO ENHANCE TEACHING EFFECTIVENESS
FOR TECHNICAL TRAINERS**



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SKILLS TO ENHANCE TEACHING EFFECTIVENESS FOR TECHNICAL TRAINERS

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ABSTRACT

The purpose of this research was to study the skills used to enhance teaching effectiveness for trainers teaching technical courses. The sample was 30 technical trainers, with at least 3 years work experience. The instrument was a structured interview questionnaire developed by the researcher. The statistical techniques employed were frequency distribution and percentage.

The findings were as follows:

1. The opinion of the sample was that skills trainers should enhance teaching effectiveness by motivating learners, using training aids, explaining and giving examples, questioning, personality and gesture, lecture, and variation.
2. The samples did not use only a single method in teaching but a variety of methods, which could be classified into two groups. The first group was one in which trainers mainly combined lecturing with demonstration and/or practice, along with additional other methods. The second group was one in which lecturing was mainly used as a method of teaching, along with other methods.
3. The samples employed more than one training aid, which could be classified into two main groups. The first group was one in which computers along with other training aids, such as real objects and transparent sheets, were mainly used. The other group used various materials simultaneously, which were real objects, transparent sheets, opaque sheets and blackboards.

KEY WORDS: TEACHING / TEACHING IN TECHNICAL COURSE / TRAINER /
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ปราณี แซ่หว่าง 4436195 SHAC/M

ศษ.ม (การศึกษาผู้ใหญ่และการศึกษาต่อเนื่อง)

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บทคัดย่อ

การวิจัยเรื่องทักษะที่เพิ่มประสิทธิภาพการสอนของวิทยากรด้านช่างเทคนิค มีวัตถุประสงค์เพื่อศึกษาถึงทักษะต่างๆที่นำมาใช้เพื่อเพิ่มประสิทธิภาพการสอนของวิทยากรที่สอนวิชาด้านช่างเทคนิค กลุ่มตัวอย่างที่ใช้ในการวิจัยครั้งนี้คือวิทยากรที่สอนวิชาด้านช่างเทคนิค จำนวน 30 คน เครื่องมือที่ใช้ในการวิจัย ได้แก่แบบสัมภาษณ์ที่ผู้วิจัยสร้างขึ้นจำนวน 1 ชุด สถิติที่ใช้ในการวิจัย ได้แก่การแจกแจงความถี่และร้อยละ

ผลการวิจัยพบว่า

1. กลุ่มตัวอย่างมีความเห็นว่า ทักษะที่วิทยากรควรนำมาใช้เพื่อเพิ่มประสิทธิภาพการสอนวิชาด้านช่างเทคนิค ได้แก่ การกระตุ้นและจูงใจ การใช้สื่อและอุปกรณ์การสอน การอธิบายและยกตัวอย่าง การใช้คำถาม บุคลิกภาพและการใช้ท่าทาง การบรรยาย การแปรเปลี่ยนความสนใจ
2. การสอนวิชาด้านช่างเทคนิค กลุ่มตัวอย่างไม่ได้ใช้วิธีการสอนเพียงวิธีเดียว แต่ใช้หลายวิธีร่วมกันโดยแบ่งได้เป็น 2 กลุ่ม คือกลุ่มที่สอนแบบบรรยายร่วมกับการสาธิต และ/หรือการฝึกปฏิบัติเป็นหลัก อาจมีวิธีการสอนอื่นร่วมด้วย เช่น การดูงาน กรณีศึกษา เป็นต้น กลุ่มตัวอย่างอีกกลุ่มหนึ่งจะสอนโดยใช้วิธีการสอนแบบบรรยายเป็นหลัก ร่วมกับวิธีการสอนอื่นเช่น การดูงาน การศึกษาด้วยตนเอง การถามตอบ
3. การสอนวิชาด้านช่างเทคนิคในกลุ่มตัวอย่างใช้สื่อประกอบการสอนมากกว่า 1 อย่าง โดยแบ่งออกเป็น 2 กลุ่ม คือ กลุ่มที่ใช้สื่อคอมพิวเตอร์เป็นหลัก อาจมีสื่ออื่นร่วมด้วย เช่น ของจริง แผ่นใส กระดาน โสตทัศนูปกรณ์ และกลุ่มที่ใช้สื่ออื่นๆร่วมกันเช่น ของจริง แผ่นใส แผ่นทึบ กระดาน เป็นต้น

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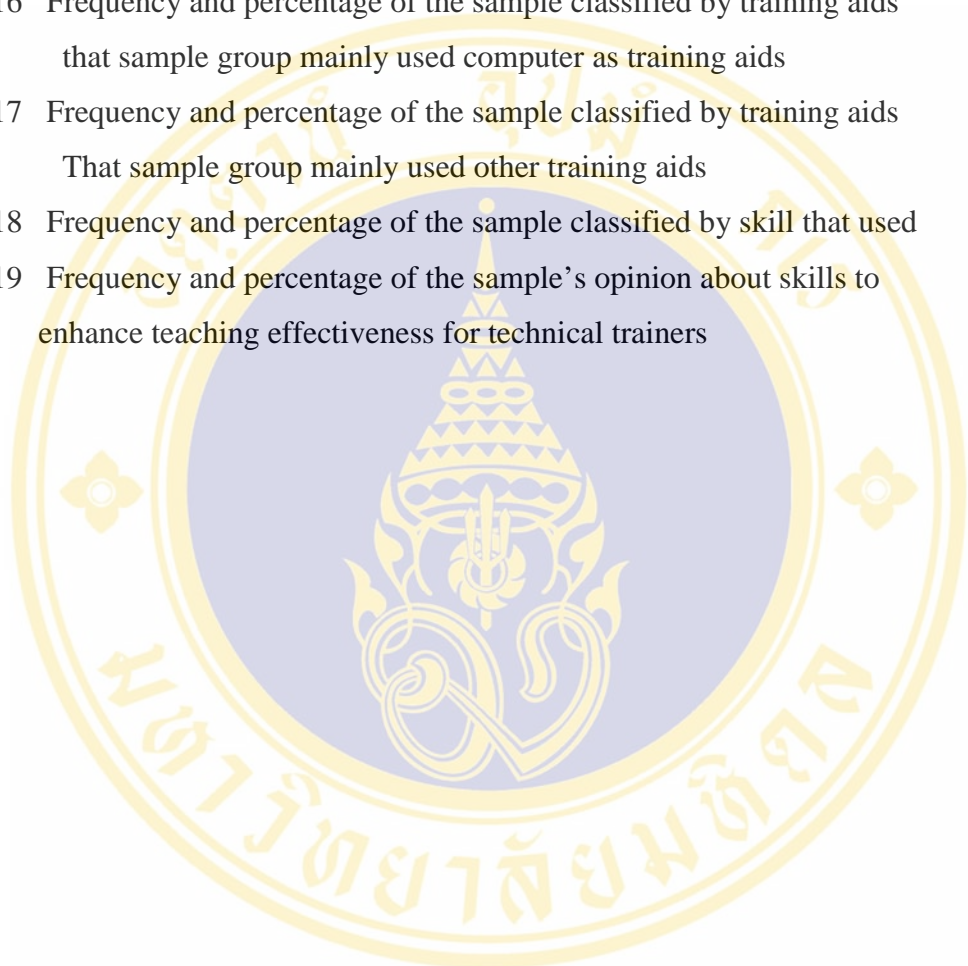
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CHAPTER 1

INTRODUCTION

Background and the significance of the study

Training was one of the most popular human resource development activities among various organizations. That was because it had low risk to investment. Besides, it yielded results faster than other human resource development activities. Nevertheless, in the training management bringing about an achievement in objectives, there were several factors resulting in the successful training program. One of these was a trainer who took charge of passing on knowledge, understanding, attitude and experience.

In each training session, the trainer needed to know what the purposes of the training were, and what the expected outcomes toward learners were. As Somkid Issarawatana (2000:12) proposed that there were three domains of the purpose of training which were Cognitive Domain, Affective Domain and Psychomotor Domain. These three domains proposed corresponded precisely with Bloom's concept (1956:221) which stated that the trainer should set the purpose of training to cover cognitive, affective and psychomotor domains.

According to that purpose, it was impossible to achieve the purpose by means of lecturing alone since it could attain only cognitive domain. In order to achieve all the three domains, the trainers had to seek various strategies and techniques (Apps, 1991:154) and assimilated them to accomplish the purpose of training.

Addition to the three purposes of training, another reason that made trainers pursued the efficient strategies and techniques were the difference of adult learners. Since they were different in terms of psychological, emotional, environmental, social, physical, intelligent and generation backgrounds, they could learn at different paces.

Somkid Issarawatana (2000:7) proposed the method that enhanced teaching effectiveness by employing various skills that enabled trainers to teach adults more effectively. These skills were:

1. Appropriate use of words and body gestures
2. Set Induction
3. Closure
4. Stimulus Variation
5. Explanation and use of example
6. Reinforcement
7. Lecturing
8. Demonstration
9. Questioning
10. Use of training aid

Additionally, there were many other academics mentioning various skills which could be used to improve the teaching effectiveness. That was why the researcher was interested in studying all skills that trainers could employ to improve the teaching effectiveness. It was hoped that the results would be useful for trainers to enhance their teaching performance, which would ultimately benefit learners.

Purpose of the study

To study the skills used to enhance teaching effectiveness of trainers who taught the technical courses.

Research Questions

1. What were skills that technical trainers used to enhance teaching effectiveness?
2. What were teaching methods that technical trainers used in technical courses?
3. What were training aids that technical trainers used in technical courses?

Scope of the study

The emphasis of this study was put on the study of trainers' skills which were used in the technical courses only.

Definition

Trainer meant a person assigned by the organization to teach a given topic within the specific period of time.

Technical Course meant course that helped develop knowledge and skills needed in technical work such as machine maintenance, car repair and analysis.

Effective teaching meant a use of lesson plans, or teaching methods, which could change learners' behaviors to correspond with the cognitive, affective and psychomotor domains.

Teaching method meant technique that trainers used to help learners gain knowledge, behaviors and attitudes.

Teaching skill meant activities that trainers always used when they taught by sense in order to reach the teaching objective.

Skill to enhance teaching effectiveness meant trainers' skill which enabled learners to change their behaviors to expected or more than expected goal.

Expected outcomes and benefits

1. Gained guidelines for developing and improving technical trainers' teaching performance, which would ultimately benefit learners.
2. Gained information needed to organize a training program for technical trainers.

CHAPTER 2

LITERATURE REVIEW

The study on “ skills to enhance teaching effectiveness for technical trainers” aimed to study the skills that were used to enhance teaching effectiveness for trainers who taught technical courses. The researcher reviewed documents and literatures on the following aspects.

1. Who was trainer?
2. Characteristics of effective trainers
3. Training methods in technical courses
4. Teaching aids
5. Skills to enhance teaching effectiveness

1. Who was trainer?

Trainer meant scholars performing as key person in enabling participants to generate proper given knowledge, understanding and attitudes, including full skills on what he taught (Krit Umpote et al, 1995: 15)

Trainer meant person with knowledge who performed to propagate information, or modify attitudes, or improve understandings, or enhance skills toward training program members as long as having their behaviors changed in accordance with determined goals. (Somkid Isarawatana, 2000: 9)

Trainer meant person who was in charge of passing subject content of curriculums on learners to make a progress in terms of knowledge, understanding, skills and positive attitude toward the work. (Nirachara Thongthamachart et al 2001: 120)

Trainer was defined as person responsible for dissemination knowledge, establishing clear understanding, modifying attitudes, and enhancing skills regarding training topics to participants until he could generate learning and modify objective-

based behaviors, as well as apply gained knowledge not only to their work but also to their diary lives. (Chutatip Toryord, 2002 : 9)

Trainer meant person who expertised in the field he taught and possessed skills in presentation and passing on knowledge to make learners change their behaviors according to the purpose. (Somchart Kijyanyong, 2002: 37)

It could be concluded that trainer was a knowledgeable person who took responsibility in disseminating knowledge on learners by means of several teaching methods. An effective trainer could make a progress on learners in terms of knowledge, understanding, attitudes and skills according to the determined purposes and they could utilize what they had learnt in their work and daily lives.

2. Characteristics of effective trainers?

Krit Umpote et al (1995: 21) stated that effective trainers should comprise the following qualifications:

1. Knowledge of each specializing subject was necessary for trainers, and always kept updating information.

2. Ability to disseminate knowledge was required for trainers who possessed training techniques, psychology for learning, art for disseminating knowledge as well as tact in providing constructive ideas and advice.

3. Attitudes suitable for practicing trainers were also crucial. Trainers had to realize that it was a professional for them to provide participants with learning as best and most as possible. It was not for a profit profession, but requiring dignity of being trainers beyond any benefit. Faith toward performing trainers or training was indispensable. It was highly needed to be respectful with other trainers as well as participants. Since participants were important persons in further applying given knowledge, trainers had to pay enough attention to them, including not disdaining their capabilities and experiences. Trainers should never behave like omniscient and never treat participants as experimental objects.

4. Personalities for being proper trainers should be respectable and trusting in verbal expression, body posture and dressing, including appropriate

emotions such as patience, tolerance, calmness, and a suitable sense of humor.

Kamp; Di (1996: 71-74) described the characteristics of a good trainer as follows:

1. Flexible
2. As learner
3. Patient
4. Inquisitive
5. Judicious
6. Dauntless
7. Up-to-date
8. Enthusiastic
9. Open-minded
10. Communicable
11. Good explanation
12. Enchanting in teaching
13. Considerate
14. Constructive in idea
15. Respectful
16. Optimistic in making progress on people
17. Helpful
18. Admissible
19. Adroit
20. Concentrated

Sombat Teekasarp (2000: 9) defined good characteristics of a trainer as follows:

1. He/she must possess knowledge, expertise and experience related to the topic of training and could provide suggestion and solution to a given problem.
2. He/she must have an excellent interpersonal skill.
3. He/she must be widely recognized in the society and was well known to the public.

4. He/she must possess excellent skills in presentation, using various types of teaching aids and be able to create environment appropriate for learning which consisted of :

- Knowing and understanding background of trainees.
- Being well prepared in content and details.
- Clear explanation.
- Appropriate use of words.
- Being able to observe and understand trainees' reaction and always adjust his/her teaching method to the condition of a training session.
- Being able to draw trainees' attention by using various techniques.
- Being able to well organize the content of training.

5. He/she must be a well-informed and up-to-date person.
6. He/she must always listen to other people's opinion and keep improving himself/herself.
7. He/she must be able to solve both unexpected and general problems.

In 2000, Dusit Detsamran conducted a study of "trainer's characteristics needed by administrations of the Siam Commercial Bank Public Company Limited." The purpose of study was to study the trainer's characteristics needed by administrations of the Siam Commercial Bank Public Company Limited. The sample were 192 administrations of the Siam Commercial Bank Public Company Limited, selected by simple random sampling. The instrument was questionnaire. Percentage, Mean, Standard Deviation, t-test, F-test were used in analyzing data.

The results indicated that the trainer's characteristics needed by administrations of the Siam Commercial Bank Public Company Limited were:

1. Good knowledge and comprehension of the subject.
2. The ability to teach the trainees to understand the content and correctly in direct agreement with the objective.
3. The ability to guide the trainees to utilize their knowledge realistically.

4. Readiness to teach and good preparation before teaching.
5. Ability to transmit knowledge to trainees with accuracy.
6. Ability to teach according to the objective of the subject.
7. Respect and acceptance to trainees' comments.
8. Use of correct words and language with clarity and accuracy.
9. Good in questioning, listening and explaining.
10. Having experience in the subject.
11. Use of correct teaching aids which were easily understood.
12. Punctuality.

In 2001, Thompson, Kevin D. conducted a study of trainee perception of effective trainer characteristics. The purpose of this study was to investigate the interpersonal, instructional and climate building characters of effective trainers. A list of characteristics and attributes associated with trainers was obtained from the adult education and training literatures. Sample of this study were 212 participants from five different companies. An online survey instrument was designed with thirty-two trainer characteristics.

The following seven variables entered the regression model in the following order, the trainer, was creative, enjoyed training, communicated effectively, showed he/her feelings, was organized, had a good sense of humor, and was trustworthy.

According to the related researches and literatures, the characteristics of effective trainers were keen mastery, sound understanding and experience in the taught content. Moreover, they were competent not only to keep their knowledge up-to-date but also to disseminate it. They also had adult learning psychology, mature, good personalities, a sense of humor, attitudes and ethics appropriate to be trainers.

3. Training methods in technical course

3.1 Definitions of training method

Training method meant a technique was used for learners to gain and develop knowledge, behaviors and attitudes, which was a well-organized process of transferring and demonstrating knowledge and skills so that effective learning took place. (Camilon, 1961:23)

Training method meant the way the trainers organized and used techniques of teaching, subject matter, and teaching aids in order to reach teaching objectives. (Leonard Clark and Irving Starr, 1976: 6)

It could be concluded that a training method meant a method that trainer use for disseminating knowledge, skills and attitudes toward participants in order to reach teaching objectives.

3.2 Training method

As, generally, there were many training methods which were wildly defined and applied for different objectives and for various opportunities, then, training methods were categorized as follows:

Armstrong and Lonentzen (1977: 255) classified training methods into 3 groups according to training' s types, as follows:

1. On the job techniques included demonstration, coaching, job rotation, and planned experience.
2. Off –the-job techniques comprised lecture, talk, discussion, discovery method, group exercise, group dynamics, business game, and programmed learning.
3. Both On-the-job and Off-the job techniques consisted of coaching, job skill instruction, question and answer, assignment, projects, and guide reading.

Salvaneer Sikabandit(1985: 134-135) collected sorts of training methods which were used nowadays, as follows;

1. Problem solving method
2. Project method
3. Microteaching method

4. Experimental method
5. Deductive method
6. Role playing
7. Lecture method
8. Integration method
9. Group working method
10. Teamwork method
11. Individual method
12. Learn and play
13. Case study
14. Off the job training
15. Study center method
16. Constructive method
17. Demonstration
18. Discussion
19. Fact-finding method
20. Inductive method
21. Hair-Bart method

In addition, Sombat Teekasarp (2000: 1-2) classified training method into 3 groups which were:

1. On-the-job training could be classified as:
 - 1.1 Job instruction
 - 1.2 Job rotation
 - 1.3 Brainstorming
 - 1.4 Workshop
 - 1.5 Committee
 - 1.6 Exercise
 - 1.7 Management game
 - 1.8 In basket training
 - 1.9 Laboratory
 - 1.10 Training

2. Off-the-job training: information techniques could be classified as:

- 2.1 Lecture
- 2.2 Conference
- 2.3 Seminar
- 2.4 Symposium
- 2.5 Panel discussion
- 2.6 Syndicate discussion
- 2.7 Round table discussion
- 2.8 Forum
- 2.9 Buzz session
- 2.10 Convention
- 2.11 Colloquy

3. Off-the-job training: behavioral programs could be classified as:

- 3.1 Case study
- 3.2 Role playing
- 3.3 Simulation
- 3.4 Field trip
- 3.5 Demonstration
- 3.6 Interviewing
- 3.7 Skit
- 3.8 Sensitivity training
- 3.9 Group dynamic
- 3.10 Recreation activity
- 3.11 Behavior role modeling
- 3.12 Fish bowl
- 3.13 Incident method

3.3 Training methods in technical course

Thanapon Sorynum (2000:19) classified courses in technical or vocational education into two main sectors:

1. Theoretical courses

For teaching theoretical courses, learners should be encouraged to search for the solution on their own because when working, they would be more confident. Methods that a trainer only fed knowledge to learners would not encourage learners to learn independently because learners lacked practice of problem-solving skills while learning. The teaching methods for theoretical course could be classified into three methods:

- 1.1 Lecturing
- 1.2 Prompting
- 1.3 Independent study

2. Practical courses

Learners should be encouraged to develop working skills, solve problems on their own so that they would gain confidence in real working situation. In addition, they could understand the procedure of work they assigned and could analyze any given problem. There were two methods in the practical courses:

- 2.1 Demonstration
- 2.2 Experiment

The following were the explanation of Theerawut Sophon (1984:9) about the teaching methods for factory technician.

1. Lecturing was a method which learners must listen attentively to a lecturer and take notes simultaneously. In order to make the lecture effective and interesting, it was necessary to use certain teaching aids e.g. transparent sheets, slide shows and movies. Besides, it was recommended that lecturers should allocate sufficient time for learners to ask what they did not understand.

2. Demonstration was a method that lecturers explained procedures, requirements, and steps in working first and then they would demonstrate. After that,

learners would follow the trainers. In this case, learners might need to practice over and over again in order to gain expertise and accuracy.

3. Authentic working was a method that trainers would have learners work in a real situation. After a training session, trainers would evaluate the working performance of learners.

Pairoj Teeranatanakul (M.P.P.: 143) proposed a practical learning for industrial factory:

1. Brief lecturing prior practicing was a teaching method which lectures briefly explained concepts, theories and procedures related to that work then had learners practice.

2. Demonstrating prior practicing was a teaching method that lecturers taught procedures of that work in order to ensure that learners understood and followed them. After this demonstration, learners had a chance to practice all by themselves.

3. A hand on experience was a teaching method that was usually used with learners with some experiences. This method was related to the unfinished previous work.

4. Group discussion after practicing was a method that sought results from learners. Then learners had a chance to discuss on advantages and disadvantages of the training skills; also they could suggest solutions to further problems.

5. Writing a report after practicing was a method seeking results in written form that could be used as a reference later.

6. Learning kit was a self-study by which ones could learn independently. It became more numerous and much more significant.

7. Project-work practicing was used to remedy the lack of some working standard of technicians or to increase learners' experiences in creative thinking.

In 1972, Carroll, Paine conducted the research to find the best training method by gathering information from 200 directors of different training agencies. The purpose of this research was to find teaching methods leading to any expected goal. For instance, if the purpose of training was to change the attitude of learners, the

methods suitable to this purpose would be a cognitive learning, role-playing and group discussion respectively. But if the purpose of training was to enhance the problem-solving skill, the method should be a case study method, strategic game and role-playing respectively.

In 1977, Bunlert Pairin et al conducted the research on the cognitivity and attitudes of 514 civil servants ranking at three administrative levels; junior, middle, senior administrators. The research focused on the efficiency and effectiveness of training program corresponding with objectives on the aspects of cognition, skills and attitudes. The results from questionnaire were that the proper use of training methods depends on several learning factors. For example, if the purpose was to change behavior of knowledge, all three levels of administrators agrees that the best methods would be lecturing, discussion by experts in the field and seminar respectively. However, if the purpose was to change attitude. The best methods would be lecturing and discussion by the experts in the field, seminar and group discussion respectively.

4. Training aids

4.1 Training aids used by trainer

Jarvis (1983: 158-159) classified the training aids in adult teaching as follows:

Audio	Audio-Visual	Visual	Learning Aids
Cassettes Broadcasting radio Phonograph	Film Slide Television VDO tape	Model Chart Diagram Picture Photograph	Academic Article Academic Journal Textbook Handbook Computer programme

In 1980, Chamnong Pumkan conducted the study of The Problems, Needs and Uses of Teaching Aids in Teaching Mechanical Subjects at King Mongkut's Institute of Technology North Bangkok Campus. The purpose of this research was to study the availability of teaching aids, needs, problems, obstacles and opinions concerning uses of teaching aids of trainers who taught mechanical subjects at the King Monkut's Institute of Technology, North Bangkok Campus. Furthermore, the study and data collected were used for the project to establish The Center for The Development of Education Media in Technical Education.

In this research, the information was obtained from 90 trainers from Department of Teacher Training in Mechanical Technology, Department of Mechanical Engineering, Department of Material Handling Technology, Department of Production Technology, Industrial Plumbing Section, Machine Mechanic Section, Metalworking Bench work Section, Auto Mechanic Section and Teaching Aids Distributor during the second semester of the academic year of 1979. An open-end questionnaire based on related researches and other suggestions was used in collecting data.

The result was that mechanical trainers who taught technician diploma level and bachelor degree level placed a very high importance and needs for teaching aids. Blackboard and model real objects were the popular teaching aids.

In 1987, Supote Niemthieng conducted the study, "Needs and Usage of Instructional Media Auto Mechanics Subjects of Technical Teachers in the Technical Colleges under the Department of Vocational Education, Ministry of Education"

The objective of this research was to study the needs, usages, problems, obstacles and opinions regarding the types of appropriate teaching aids for teaching Auto Mechanics subjects of the technical level (grade 10-12) in 1986 academic year in technical colleges under the Department of Vocational Education including the comparison of the needs for services and the problems in teaching aids according to the educational qualification variations. The research population consists of Auto Mechanics subjects' teachers on the vocational level in the academic year of 1986

from 73 technical colleges to the amount of 788 persons. The instrument used in this research was a questionnaire. Frequency counts, percentage, mean scores, standard deviation and t-test for the significant differences were used to analyze the questionnaire.

It was found that the popular instructional medias of Technical Teacher were real objects, wall pictures and transparencies, and most of Auto Mechanics teachers needed videotapes, slides and models for the use of teaching aids types.

In 2002, Varadorn Tiranarat conducted the research of problems and needs of the Metropolitan Electricity Authority staff on training aids. The objective of the research was to study problems and needs of Metropolitan Electricity Authority staff on training aids. The target group was the human resource concerned in training in Metropolitan Electricity Authority in 2002 with the total of 117 people. The questionnaire was used to collect data and the employed statistics for analysis included percentage, mean, and standard deviation.

From the result, it was found that need of training aids utilization were both materials and equipment. Computer, transparencies, whiteboard, blackboard, and paper were the most desired. About the technique and activities; training aids were stated in high level, training by demonstrating were stated in middle level and training by lecturing were stated in low level.

It could be concluded that training aids included computer, cassette tapes, transparencies, Videotapes, slide, model, real objects, pictures, chart, television, and paper documents.

5. Skills to enhance teaching effectiveness for trainers

5.1 Definition of teaching skill

Teaching skill meant an ability to perform teaching tasks expertly, which was feasible. As long as trainers had a thorough understanding of the subject matter and could do the work fluently. (Tisana Khamanee, 2002: 384)

Teaching skill meant a technique or method that trainers used to run their classroom activities effectively. (Penpimol Koosiriwichean, : 186)

Teaching skill meant the expertise and fluency in doing activities related to a training program, which made training effective in quickest time. (Srimonkol Teprenoo, 2002:37)

In conclusion, a teaching skill was an ability to do any activity related to teaching fluently and expertly in order to make training effective in shortest time.

5.2 Concepts of skill to enhance teaching effectiveness for trainer

There were several academics proposing concepts of skills to enhance teaching effectiveness for a trainer.

Dwight Allen (1969:15) stated that there were many general teaching skills that could be applied at many levels of teaching in many different subjects as follows:

1. Stimulus variation

The instructional styles of many trainers did little to relieve learners' boredom. Its purpose was to help trainers become more varied stimuli in a classroom. Trainers were trained in; movement, gesture, focusing, interactional styles, and shifting sensory channels.

2. Set induction

Set or pre-instructional orientation helped trainers prepare learners for the lesson in order to induce the maximum pay-off in learning. Set was more than a brief introduction. Its purpose was to clarify the goals of instruction by using learner's present knowledge and skills to involve them in the lesson. It could take many forms; an analogy, a demonstration, or the posing of an intriguing problem learners could solve.

3. Closure

Closure was achieved when the major purposes and principles of the lesson, or a portion of it, were judged to be learned so that new knowledge could be related to past knowledge.

4. Silence and nonverbal cues

This skill was to keep a trainer away from continually interjecting himself in the discussion and at the same time enable him to keep discussion moving.

Nonverbal cues gave learners' feedback from their answers without a trainer having to make comments on each answer; nonverbal cues also kept the

discussion moving. Allen identified four broad categories of nonverbal cues; first, facial cues (a smile, a frown, a serious or quizzical look); second, body movement (moving toward the responding learner or adopting some types of thinker's pose); third, head gestures ("yes" and "no" nods or the cocking of the head); fourth, body gestures (pointing to a learner, motioning to go on or to stop, and pointing from learner to learner).

5. Reinforcement of learner participation

Many trainers fell in to the pattern of responding to learners' answers with a bland "okay" or "good," regardless of whether the answer was a brilliant summation of an issue or a trite comment.

In addition, there were other teaching skills as follows:

6. Fluency in asking question
7. Probing questions
8. Higher –order questions
9. Divergent questions
10. Recognizing attending behavior
11. Illustrating and use of examples
12. Lecturing
13. Planned repetition
14. Completeness of communication

Draves,Bill (1984: 211) stated that a few basic skills trainers should have or develop for the best possible teaching experience as follows:

1. Listening.

A could listen to and encourage learners' speaking by some sorts of acknowledgment, either a verbal "uh-hah," or "I see" or non verbal cues, such as a nod or smile.

2. Helping insecure learners.

Learners who lacked confidence in themselves were common in adult learning. A good trainer needed to make learning environment secure for those.

3. Wrong thing.

One of the skills a trainer needed to develop was handle situations in

which a learner was something wrong. Here were some “wrong situations and how to correct them”

When the other people was doing the wrong thing,

- didn't talk to the person, talked to the condition;
- described what you saw;
- depicted what you felt;
- described what needed to be done;
- said nothing to the person about himself.

4. Supportive Actions.

Certain words, phrases, gestures, or actions would go far in building a supportive atmosphere in which participants will felt free to glow, learn, and respond to the group. It might seem to be repetitive, but adult learners learnt best when they felt secure, and supportive words built that security.

5. Humor.

Humor was a good therapy. It put people at ease, allowed them to relax a little, and relieved tensions.

Somkid Isarawatana(2002: 240-248) stated that there were skills to enhance adult teaching effectiveness for trainers as follows:

1. Explanation and example citing skill

Explanation and example citing were skills which helped communicate clearly between learners and trainers. The learners could understand abstract concepts which were usually difficult for them. But by materialized ways of examples and additional clear explanation, learners could understand were easily. Consequently, Explanation and example citing were skills necessary for every trainers.

2. Lecturing Skill

Lecturing was a teaching method requiring trainers to explain content to learners. Trainers were responsible for not only preparing and choosing the content they would teach but also disseminating knowledge while the learners took responsibility in receiving information by taking note or memorizing the content.

It was one of the most popular methods among trainers perhaps because it took them less time to prepare the lesson and could be used with a great number of

learners. Also, it was believed that trainers could easily cultivate ideas and attitudes in learners' minds.

3. Questioning Skill

By being questioned, learners could develop a thinking skill. Apart from that, It also allowed learners to explore different ideas and attitudes. This method was relatively appropriate for adult learners. The achievement of the teaching depended on the trainers' abilities to ask question. The trainers needed to know questioning technique. For example, trainers should not ask many questions continuously but should give some time for the learners to think. If the learners could not answer, the trainers would have to explain further. But if they still could not understand, the trainers would have to change the question. The last technique was a yes-no question.

The questioning manner must not embarrass the learners who gave wrong answers; and also trainer must not insult them.

4. Stimulus Variation

Naturally, when human did one thing continuously for a certain period, such as sitting in a lecture room for three hours without moving or changing position, it was tedious and distracted for learners to pay attention. To attain the goal of a course, it was necessary for trainers to know how to stimulate learners or draw their attention back. For instance, trainers might shift the method from lecturing to watching video, role playing, game playing, tuning on-off the light, increasing voice or whispering, participating in brief activities such as clapping hands, standing, sitting or answering, or trainers' moving. These shifting could stimulate and bring back learners' attention to the content.

The trainers might use several kinds of shifting attention within one session. But they needed to consider the use of those suitable to purpose of the teaching within given time.

5. Demonstrating Skill

Demonstration was a method which trainer shown or experimented and explained to let learners understand by watching, listening and also taking notes.

Good demonstration required learners' participation in practicing so that it would be deep learning. The case that there was only one trainer demonstrating without learners' participation was called surface learning.

6. Listening Skill

Listening was equally important to speaking. In adult teaching, trainers needed to listen to what learners said in order to know what they thought and what they knew. Listening attentively could stimulate learners' attention because they felt that what they said was important. At the same time, the trainers should show some body gestures such as nodding or saying something while listening so that the listening was signified.

Trainers whose learners were adult had to listen to them because it shown acceptance to learners and their opinions. Adults always wanted others to listen to what they said. They would be proud of themselves when other people accepted in what they said, which would increase the level of classroom participation.

7. Helping insecure learners Skill

Adult learners who experienced failure in learning might feel hesitated and insecure when returning to classes or attaining activities. They were not confident that they would be able to learn. In this case, a trainer could help them by establishing a situation which they be successful or rewarding no matter what the reward was. It could be either material or psychological reward.

8. Situation controlling Skill

If adult learners did something wrong and trainers did not know how to make the situation better, the learners would be embarrassed, frustrated, awkward and etc. Consequently, they did not want to study, And might skip the class or avoid participating in class activities. The trainers, therefore, needed to know how to control a situation in which adults made mistakes.

9. Sense of humor

A sense of humor helped learners relax and reduce stress. If trainers could create a sense of humor in class by using words and gestures, the atmosphere would accommodate better learning. Nevertheless, if the trainers did not have a sense of humor in themselves, they did not have to try otherwise because it would make him look like a clown.

Nirachara Thongthummachart et al (2002: 123) stated that there were five essential skills for enhancing teaching performance:

1. Verbal and Non-Verbal language

An appropriate use of verbal and non-verbal language was very important for trainers because they had to use verbal language and body gestures to convey meaning. The trainers that knew how to use verbal and non-verbal language appropriately were likely to know how to talk interestingly and appropriately. As a result, they would be able to perform a teaching task effectively and interestingly.

2. Questioning Skill

Questioning played a significant role in teaching and learning. It prompted learners to think. If trainers knew how to ask a question efficiently, they would greatly help learners develop thinking, analytical, criticizing skills. It was, therefore, necessary for trainers to possess effective skills in asking questions purpose of this method was to develop learners' thinking skills.

3. Appropriate use of teaching aids

Teaching aids were like great helpers for trainers. They could use them to make teaching more interesting. Also, the trainers' energy could be considerably saved because these teaching aids would play a role in explaining. Additionally, they would be able to stimulate learners' attention and made the lesson more vivid. The learners would consequently remember the lesson longer.

4. Explaining Skill

Like verbal and non-verbal language, an explaining skill was very essential particularly for trainers. If trainers possessed such the essential skill, it was relatively easy for learners to follow the thorough lesson. But if trainers lacked this skill, it was considerably difficult for learners to follow the comprehensive lesson. That trainers lacked the skill was considered a flaw. Trainers, therefore, should keep practicing the explaining skill until they mastered it.

5. Variation

Variation was a skill that aroused learners' interest and made them ready for the lesson. In class, trainers could arouse learners' interest by changing the teaching technique, or activities in different manners. It was one of the several teaching methods that made learning more effective.

In addition, other academic experts had gave concepts of skills to enhance teaching effectiveness for trainers, as follows:

1. Set induction
2. Closure
3. Explanation
4. Listening
5. Questioning and Answering
6. Discussion skill
7. Stimulus variation
8. Manage classroom
9. Trainer liveliness
10. Use training aids

(George Brown; 1975: 86-130, Sukhothaimathirat Open University; 1989: 167-192 Kenneth D. Moore; 2001: 11, Srimongkol Theprano; 2002: 35-315)

5.3 Concepts of skills to enhance teaching effectiveness for technical trainers

Pairoj Teeratanakul (1989:174-201) elaborated the skills needed for technical trainers.

1. Stimulus variation

Stimulus variation was movement for remaining learners' interest. Stimulus variation could be demonstrated in many ways such as trainers' movement, gesture during speaking, and physical interaction.

2. Silent communication

Generally, a trainer was a center of attention in class. However, if he/she talked too much, even stimulus variation could not help. It was inevitable for learners to be bored. Therefore, trainers should sometimes use body language that was a silent communication in order to give learners a chance to elaborate, negotiate, or discuss with each other. Trainers could control classes by using non-verbal language. The non-verbal language could be the following:

2.1 Facial expression, e.g. smiling, doubting was used to say “yes”, “no”, “ask.

2.2 Body movement was used to show acceptance, to stimulate discussing, or to be doubtful for example, bend the body forward, shake the body, and act like thinking

2.3 Head movement, e.g. nodding, shaking was used to say “yes”, “no”, “encourage to keep discussing”

2.4 Hand posture, e.g. waving, pointing, raising hands, was a gesture used to give a sign to start or stop discussing or to slow or speed of talking.

3. Verbal language Skill

Generally, lecturing comprised not only main sentences and phrases which related to content but also, many other sentences and phrases used for elucidating and citing examples. Therefore, it was essential that learners pay attention to these sentences by changing tones, high or low voice, slow or speed speaking, or deliberately stop talking, for instance.

4. Set induction and closure skill

There were a very significant skills which helped learners prepare themselves for the lesson. Unfortunately, many trainers frequently overlooked it due to the belief that it was a waste of time. On the contrary, if managed functionally, these skills could save a lot of time.

4.1 Set induction did not have to be done only in the beginning of the lesson but all through the lesson especially when starting a new topic or new concept. This was because it was the technique which informed learners new topics. It was a relationship between trainers and learners in terms of knowledge.

4.2 Closure was a parallel to set induction which was usually done at the end of the lesson, or any particular topic, or if appropriate, in the middle of the lesson. The closure should be more detailed than summary and had to be linked with the obvious events or evidences. Moreover, it should be easily understood.

5. Questioning Skill

In this case of questioning, the question was an answer-requiring question not including a guiding question. Questioning here had three functions:

5.1 Questioning to develop learners' knowledge was a question used in teaching or transferring new knowledge. It was a kind of teaching methods.

5.2 Questioning to evaluate learners' intelligence or knowledge gained from previous learning and abilities to apply.

5.3 Questioning to reinforce and determine relationship between learners and trainers.

6. Reinforcement Skill

Reinforcement was needed to encourage learners to be a part in class activities. Reinforcement could be classified into two types.

6.1 Non-verbal or sign language was reinforcement by means of desirable behaviors such as smiling, nodding, and thumbing up. Learners would be encouraged to think or participate in class activities by this non-verbal language.

6.2 Verbal language could be used as a compliment to learners' opinion, action or written work so that they were encouraged to keep giving opinion or participating in class activities.

Verbal acceptance and reinforcing were "right", "very good", "excellent", for example.

Verbal acceptance but discouraging was "you're right but it's more likely to be....", "Yes, but it's better if you add...", for instance.

Verbal denial but reinforcing was "It's not quite right but worth considering. Try to think again.", "close to the point, try again."

Verbal denial and discouraging were "absolutely wrong!", "That's exactly not the answer to this question."

7. Shifting Sensory Skill

Shifting sensory was an action which made differences in sensual response, for example, from listening to looking at still pictures or motion pictures or taking part in activities. However, taking part in activities had to serve the need of a trainer only. On the other hand, changing one book to another was not considered the right shifting attention.

Also, several teaching aids used to shift attention must be employed according to the content and must be informative. Another thing that had to be taken into consideration was that the cost of teaching should not be expensive.

Nonetheless, too often shifting attentions would probably cause a stir or resistance. As a result the period of each shifting should be meticulously planned. Apart from that, after shifting to a new topic, a trainer should focus only on the new one otherwise there was no value in doing so.

8. Demonstrating and showing skill

To make sure that learners understood the lesson, changing sensual response by means of demonstration and picture show must be done correctly and fluently. Additionally, choosing featuring pictures, demonstrating, and picture drawing should be carefully chosen on the basis of its use and creative, analytical, synthetic thought. Moreover, demonstration and show must be organized according to its difficulty.

In addition, a group of faculties at the King Mongkut University of Technology Thonburi (2002, 1-43) stated skills that technical trainers should have:

1. Stimulus variation skill

A stimulus variation skill consisted of trainers' behaviors that could draw learners' attention to the lesson. That behaviors such as;

1.1 Body movement should be moderate so that learners would not be bored. Body movement was not only to walk forward, backward, sideward or to stand charismatically with hands naturally putting together but also to move head, body, arms, legs, eyes. This was because it was a trainer's change from static to dynamic.

1.2 Gestures while speaking were equally important. The examples of gestures were using fingers to count, raising fist, pointing, and showing numbers.

1.3 Center of attention might be demonstrated in many ways, for example, using various tones, changing talking speeds, stressing key words. Moreover, trainers could use tones and gestures simultaneously as a center of attention.

1.4 Stopping was used to get attention after saying significant concepts or while learners were chatting. As a result, learners would pay more attention to what trainers were saying which became more meaningful by stopping.

1.5 Changing interaction: That a trainer was an only speaker was a tedious thing. Therefore, it was recommended that trainers should have learners take part in class activities by asking, talking to whether a group or the individual.

1.6 Shifting sensual response : Trainers had to try to keep motivating, stimulating learners by changing their sensual responses. Learners would learn best when all their senses were used. As a result, it was advisable that trainers change from lecturing to playing video clips or other activities.

2. Set Induction Skill

The purpose of set induction was to let learners have the idea of what they were going to learn. Thus, they could apply their knowledge and skills learned previously to the lesson that a trainer was teaching. Besides, set induction would provide learners with the purpose of the lesson. Set induction could be done by:

2.1 Using teaching aids relating to the content.

2.2 Asking questions to link previous experiences with the new one.

2.3 Creating a situation, condition or problem to have learners analyze.

2.4 Reviewing previous lessons that were related to the new one.

2.5 Demonstration

2.6 Using current events or affairs.

3. Closure Skill

At the end of each lesson, to make learners get a right concept and to link with the next one, a trainer needed to summarize the key matter of each lesson.

4. Training aids using Skill

Training aids using skill was a trainer's ability to choose teaching aids appropriate to that particular lesson and to use them effectively. Following was the guideline of how to use teaching aids effectively.

4.1 Training aids should be put in chronological order and showed to the whole class. For example, a trainer should hold a picture at the chest level.

4.2 A big object should be used with a stand.

4.3 A pointer should be used and the position of a trainer was at the edge of either side of an object.

4.4 Learners should take part in training aids for example, describing picture.

5. Explaining and story telling Skill

This skill was an ability to compare, contrast or cite an example in order to make learners more understand by using tone of voices appropriately. The principles of explaining and story telling were as follows:

5.1 To keep the main concept

5.2 To understand the concept

5.3 To avoid confusing by putting a story in chronological order

5.4 To using teaching aids while explaining

5.5 To prepare expressions or saying in order to make learners have a picture in mind.

In 1970, Harvey and Barker was studying learners' opinion toward teaching efficiency. Subjects of this research were undergraduate and graduate learners at Texas A&M University. Questionnaire was composed of 21 questions, and there were ten scales ranging from absolutely efficient to totally inefficient. The relationship between subjects and criteria was determined by co efficiency

According to the research result, there were certain characteristics related to efficient teaching. One of them was that a trainer clearly told the purpose of a course. Another thing was a subject matter. Also, factors like individual interest, culture, preparation, teaching methods, lecturing skills, discussion leading skills, assignments, interest arousing, guidance skill, body gesture, scoring, good tone of voice, senses of humor teaching estimation played a crucial role in contributing to efficient teaching.

According to the related researches and literatures, it was found that there were many to enhance teaching effectiveness for trainers such as Set Induction, Closure, Explanation, Example citing, Lecturing, Demonstration, Reinforcement, Stimulus variation, Questioning, and Using training aids.



CHAPTER 3

METHODOLOGY

The objective of the study on skills to enhance teaching effectiveness for technical trainers was to study what skills to enhance teaching effectiveness for technical trainers were. The research methodology could be indicated as follows:

1. Population and Sample

1.1 Population

The population of this study was 240 technical trainers that experienced in large organizations (The organizations that have more than 5,000 employees: Personal Management Association of Thailand) or Institute of technician training and development which located in Bangkok.

1.2 Sample

Selection of the sample

1.2.1 The researcher indicated criteria for sampling: details were as follows

1.2.1.1 Being a trainer who had experience in technical course in large organization or the institute of technician training and development which located in Bangkok.

1.2.1.2 Having at least 3 years experience as a trainer.

The researcher categorized sample whose qualification was in agreement established criteria according to 1.2.1 and being pleased in cooperation from 21 organizations. In the case that there was more than one trainer an organization, the researcher employed the simple random sampling, 30 sample were selected by drawing a name from each organization. Agency-based data were indicated as follows:

King Mongkut's Institute of technology North Bangkok	
Technical Education	3 persons
Engineer	1 person
Chulalongkorn University(Engineer)	1 person
Kasetsart University (Science)	1 person
King Mongkut's university of technology Thonburi	
Technical Education	1 person
Rajamangala Institute	
Engineer	1 person
Thai Airway International PLC. (Technical Group)	1 person
Thailand Automotive Institute	1 person
Toyota Motor Thailand Co.,Ltd.	1 person
Total Access Communication PLC.	1 person
Bridgestone Co.,Ltd.	1 person
Yokogawa (Thailand) Ltd.	1 person
S.G.S. (Thailand) Ltd.	1 person
Siam Cement Industry Co., Ltd.	1 person
Thai-German Institute	6 persons
Bureau of Supporting Industries Development (BSID)	2 persons
Thailand Promotion Association	1 person
Institute of Technological Development for Industry (ITDI)	1 person

2. Instrument of the research

Instrument methodological employed in this study include 1 set of structured interview questionnaire established by the researcher. There were two important parts as follows:

Part 1 Demographic information

Part 2 The opinions of the sample towards the technical teaching

3. Instrument formation and quality investigation

3.1 Identified main point of issue and scope of question items in accordance with the purpose of the research.

3.2 Studied by reviewing literatures, documents and other related research papers.

3.3 Generated the questionnaire to collect data.

3.4 Such created questionnaire was examined to refine validity and give suggestions by research advisors.

3.5 Refined and revised the questionnaire.

3.6 Brought such created questionnaire by researcher to experts for refining validity and making improved suggestions. Those distinguished experts were indicated as follows:

3.6.1 Mr. Sommai Satayapanta, Line manager, Top Trend Manufacturing Co, Ltd.

3.6.2 Mr. Bunpoj Moonprasert, Chief Instructor, Thai Airway International Public Co, Ltd.

3.6.3 Mr. Wichit Surapananonchai, Consultant, Thai Rung Union Cars Co., Ltd.

3.7 Modified and reviewed the questionnaire and had the research advisors reconsider it.

3.8 Tried out the questionnaire with 3 technical trainers, who were not the sample, from the following agencies:

3.8.1 King Mongkut's University of Technology Thonburi

3.8.2 Technology Promotion Association (Thailand-Japan)

3.8.3 Thailand Automotive Institute

3.9 Examined the data derived from interviewing trainers to determine if the questionnaire was efficient, and sufficient enough to analyze and summarize.

3.10 Altered and corrected the questionnaire to complete the instrument.

4. Procedures of research

This research was a qualitative research of which the procedure was as follows:

- 4.1 Studied by reviewing literatures, documents and other related research papers.
- 4.2 Generated the instrument in the research.
- 4.3 Brought such created questionnaire to experts and research advisors for inspecting the content accuracy and validity.
- 4.4 Refined and revised the questionnaire.
- 4.5 Brought such questionnaire, in order to try out, to trainers who were not the sample.
- 4.6 Collected data by interviewing.
- 4.7 Investigated data by Triangulation method.
- 4.8 Analyzed data and summarized.
- 4.9 Wrote the complete.

5. Data Collection

The data were collected by the researcher as the following steps:

- 5.1 Made an informal contact with the sample by telephone or a letter before.
- 5.2 Demonstrated the interview-requested letter, endorsed by the university, for gathering cooperation and making arrangement for appointment.
- 5.3 Prepared all necessities for the interview, such as questionnaires, a recorder, a notebook and some gimmicks.
- 5.4 Interviewed in person according to the appointment including the interviewees gave permission to record the interview.
- 5.5 Confirmed and elucidated the answer, in the order to collect clear data, questions were repeatedly asked if the responses were ambiguous.

6. Treatment of the data

The Triangulation Method (Denzin, Norman K., 1978: 293-304) was applied to verify such gathered data.

6.1 Data Triangulation Verification

6.1.1 Space Verification. The sample were selected from various organizations in order to avoid the bias from the interview.

6.1.2 Person Verification. All sample were involved in technical work and possessed qualification in accordance with the identified criteria of sampling.

6.2 Investigation Triangulation Verification

In this research, the researcher with 2 assistants personally made an interview by using the same questionnaire to every person in the sample.

6.3 Methodological Triangulation Verification

The researcher applied both interview and recording for gathering data to confirm the accuracy and completion of data.

7. Data Analysis

The researcher made the analysis process of data as the following steps: (Supang Chantavanich, 1999: 131-133)

7.1 Extracted every single word from the tape-recorder and arranged such derived data into systematical categories according to required question item classification.

7.2 Applied Analytical Induction Method to interpret and summarize the data collected. Temporary concepts were then generated in order to set up preliminary analysis and periodic summary. In case of data incompleteness, additional information was collected for concept adjustment. While applied this method, the researcher gave the information to 2 others in order to read and reexamine. In case of in cured argument, 2 out of 3 person perspectives made the approved final summary.

7.3 Discussed the temporary summary with the advisors and experts for summary approval.

8. Statistics application

The statistical techniques employed in this study were frequency distribution and percentage.



CHAPTER 4

RESULTS

The purpose of the research on “skills to enhance teaching effectiveness for technical trainers” was to study the skills that are used to enhance teaching effectiveness for technical trainers. Research methodology was designed to sample who were technical trainers in large organizations or the institute of training and develop technician for industry and had at least 3 years in training experience. The sample comprised 30 technical trainers. Finding was clearly presented into 2 parts as follows:

Part 1: Demographic information

Part 2: The opinions of the technical trainers toward the technical training

1. Demographic information

1.1 Gender

The results of this study showed that the sample (30 persons) were 90.0 percent males and 10.0 percent females, as demonstrate in table 1.

Table 1 Frequency and percentage of the sample classified by gender

Gender	Number	Percentage
Male	27	90.0
Female	3	10.0
Total	30	100.0

1.2 Age

53.3 percent of the sample in this research were aged 20-35 years old. 26.7 percent were aged 46-60 years old and 20.0 percent were aged 36-45 years old, as demonstrate in table 2.

Table 2 Frequency and percentage of the sample classified by age

Age	Number	Percentage
20-35 years	16	53.3
36-45 years	6	20.0
46-60 years	8	26.7
Total	30	100.0

1.3 Educational Background

53.3 percent of the sample in this research possessed Bachelor Degree or equivalence. 36.7 percent possessed Master Degree, and 10 percent possessed Doctorate Degree, as demonstrated in table 3.

Table 3 Frequency and percentage of the sample classified by educational background

Educational background	Number	Percentage	Total (No.)	percentage
Bachelor Degree			16	53.3
Domestic	15	50.0		
Aboard	1	3.3		
Master Degree			11	36.7
Domestic	10	33.3		
Aboard	1	3.3		
Doctorate Degree			3	10.0
Domestic	1	3.3		
Aboard	2	6.8		
Total	30	100.0	30	100.0

1.4 Field of study

53.3 percent of the sample in this research graduated in engineering field. And 23.3 percent graduated in technical education field. As shown in table 4.

Table 4 Frequency and percentage of the sample classified by field of study

Field of study	Number	Percentage	Total(No.)	Percentage
Engineering			16	53.3
Industrial	6	20.0		
Mechanical	4	13.3		
Metal	3	10.0		
Electrical	2	6.7		
Chemical	1	3.3		
Technical Education			7	23.3
Electrical	3	10.0		
Mechanical	2	6.7		
Welding Technology	1	3.3		
Design	1	3.3		
Education Science			4	13.3
Educational Technology	2	6.7		
Electrical	1	3.3		
Technology Education	1	3.3		
Science			2	6.7
Petrochemical	1	3.3		
Inorganic Chemistry	1	3.3		
Others			1	3.3
Research	1	3.3		
Total	30	100.0	30	100.0

1.5 Work experience

46.6 percent of the sample in this research had 3-10 years experience. 26.7 percent had 11-20 years experience and 26.7 percent had more than 20 years experience. As shown in table 5.

Table 5 Frequency and percentage of the sample classified by work experience

Work Experience	Number	Percent
Under 3 years	0	0.0
3-10 Years	14	46.6
11-20 years	8	26.7
Over 20 years	8	26.7
Total	30	100.0

1.6 Work experience as trainer

66.7 percent of the sample in this research had 3-10 years experience as trainer. 20.0 percent had 11-20 years experience as trainer and 13.3 percent had more than 20 years experience as trainer. As shown in table 6.

Table 6 Frequency and percentage of the sample classified by work experience as trainer

Work experience as trainer	Number	Percentage
Under 3 years	0	0.0
3-10 years	20	66.7
11-20 years	6	20.0
Over 20 years	4	13.3
Total	30	100.0

1.7 Work experience as technical trainer

70.0 percent of the sample in this research had 3-10 years experience as technical trainer. 16.7 percent had 11-20 years experience as technical trainer and 13.3 percent had more than 20 years experience as technical trainer. As shown in table 7.

Table 7 Frequency and percentage of the sample classified by work experience as technical trainer

Work experience as technical trainer	Number	Percentage
Under 3 years	0	0.0
3-10 years	21	70.0
11-20 years	5	16.7
Over 20 years	4	13.3
Total	30	100.0

1.8 Teaching content topics

The results of this study indicated that the 30 sample. There were 43.3 percent of the sample taught the machine activation and maintenance. 30.0 percent taught the program CAD CNC CAM, 16.7 percent taught train the trainer for technical teacher, and 10.0 percent taught metal molding. As shown in table 8

Table 8 Frequency and percentage of the sample classified by teaching content topics

Content topics	Number (N=30)	percentage
Machine Activation and Maintenance	13	43.3
CAD, CNC, CAM Program	9	30.0
Train the Trainer for Technical Teacher	5	16.7
Metal Molding	3	10.0
Machatronics	2	6.7
Automotive	2	6.7
Plastic	1	3.3
Solding	1	3.3
Electricity	1	3.3
Fight simulation	1	3.3

1.9 Sources of Technical Knowledge

In this study, found that the 30 sample. There were 83.3 percent of the sample used work experience as source of knowledge, 83.3 percent of the sample used training as source of knowledge, and 83.3 percent of the sample used self study as source of knowledge .Next, 73.3 percent of the sample used educational by academic institute as source of knowledge, and 26.7 percent of the sample used inquiring experts as source of knowledge. As shown in table 8.

Table 9 Frequency and percentage of the sample classified by source of technical knowledge

Source of technical knowledge	Number (N=30)	Percentage
Self study	25	83.3
Work experience	25	83.3
Training	25	83.3
Education by academic institutes	22	73.3
Inquiring experts	8	26.7
Seminars	7	23.3
Abroad field trips	3	10.0
Internet	3	10.0

2. The opinion of the sample toward technical teaching

2.1 Training method that trainers used in technical training courses

Based on 30 sample's interview, it was found that sample used combined various method. All of the sample used lecture, 80.0 percent used demonstration, 63.3 percent used practice and 3.3 percent used role playing, as demonstrated in table 10.

Table 10 Frequency and percentage of the sample classified by training method that used in technical training courses

Training Method	Number (N=30)	Percentage
Lecture	30	100.0
Demonstration	24	80.0
Practice	19	63.3
Field Trip	9	30.0
Discussion	7	23.3
Case study	5	16.7
Self study	3	10.0
CAI	3	10.0
Simulation	2	6.7
Work shop	2	6.7
Role Playing	1	3.3

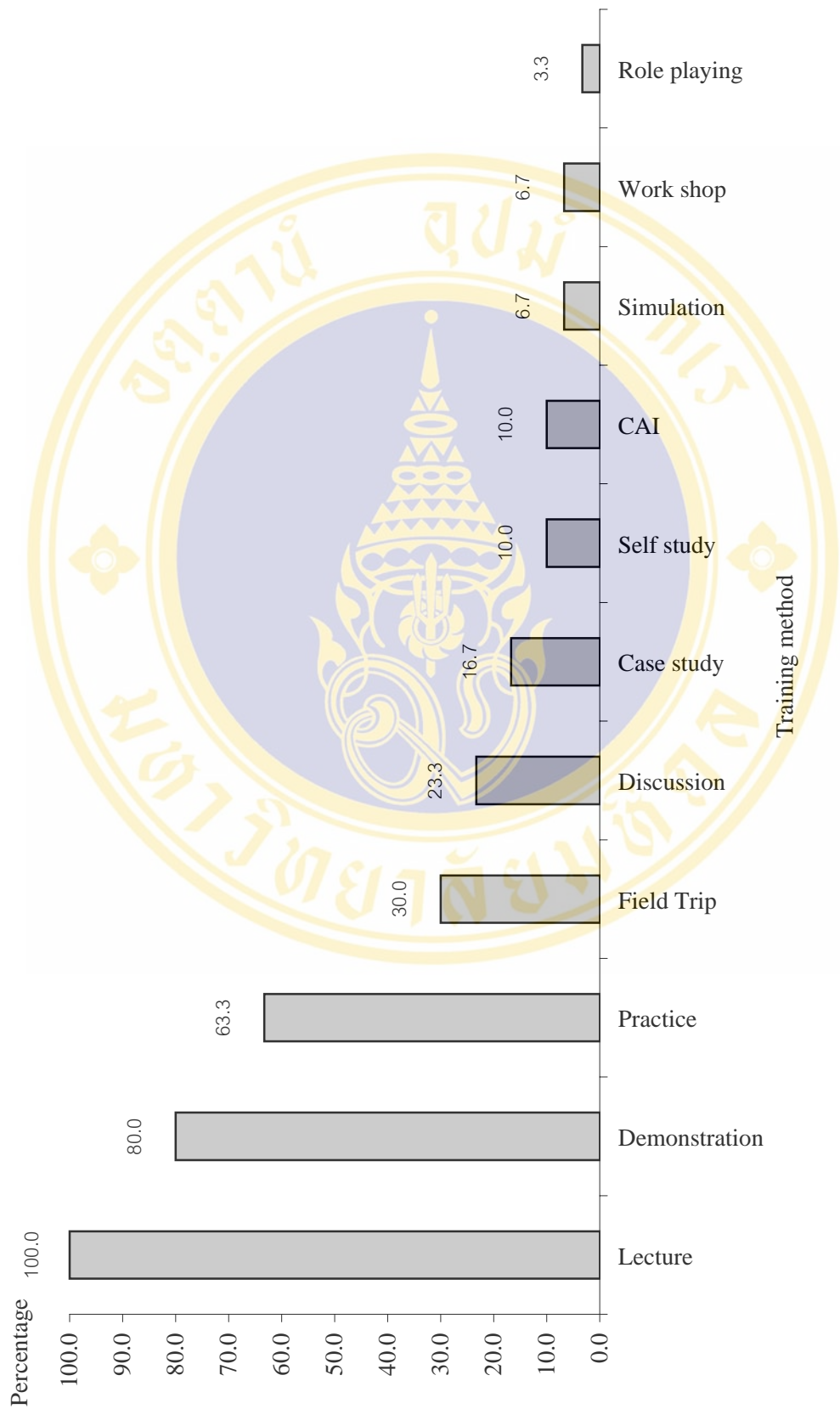


Chart 1 Percentage of sample classified by training method that used in technical course

When the training methods analyzed, they could be divided into 2 categories which were 80.0 percent of the sample were group mainly used lecture together with demonstration or/and practice, and 20.0 percent of the sample were group used lecture together with other methods, as shown in table 11.

Table 11 Frequency and percentage of the sample classified by training method that used

Training method	Number (N=30)	Percentage
Mainly used lecture together with demonstration or/and Practice	26	80.0
Used lecture together with other methods	4	20.0
Total	30	100.0

Group 1 Sample group mainly used lecture together with demonstration or/and practice

This group of the sample (24 persons) used lecture together with demonstration or/and practice. 25.0 percent of them used lecture together with demonstration and practice, 20.8 percent used lecture together with demonstration, practice, field trip and discussion, as shown in table 12.

Table 12 Frequency and percentage of the sample classified by training method that sample group mainly used lecture together with demonstration or/and practice used

Training method	Number (N=24)	Percentage
Lecture +demonstration +practice	6	25.0
Lecture +demonstration +practice +field trip +discussion	5	20.8
Lecture +demonstration +practice +case study	3	12.5
Lecture +demonstration +field trip +CAI	2	8.3
Lecture +demonstration +practice +case study +simulation+work shop	2	8.3
lecture+demonstration+question method	2	8.3
lecture+demonstration+self study	2	8.3
lecture+demonstration	2	8.3
Total	24	100.0

1.1 Sample that used lecture together with demonstration and practice in technical courses

Based on 24 sample's interview, there were 25.0 percent of them used lecture together with demonstration and practice.

"Both lecture and lab, I mean we will show them first but it depends. If some equipment is fragile we will not allow them to use, if not we will." (Calcium)

"We use both power point and lecture, when has a description. Sometimes in the afternoon there is some demonstration such as removing and assembling a machine. At first we will show them how to do it after that we let them try." (Boron)

"I will lecture, demonstrate, or let them try it" (Phosphorus)

"There are both demonstration and lecture together. But the lecture will use materials as well as has a practical section." (Potassium)

"In the morning lecture period I will speak in front of class and prepared hand-on lab in the afternoon after brief lecture I will demonstrate." (Helium)

"It is class lecture. About equipment using such as if it is titration we will teach the way to use bullet and pipette. We will show them how to do first and let them do it."(Nickel)

1.2 Sample that used lecture together with demonstration, practice, field trip and discussion in technical courses

Based on 24 sample's interview, there were 20.8 percent of them used lecture together with demonstration, practice, field trip and discussion.

"There is lecture with materials and lab which teach both theoretical and practical. For theoretical, I will use such teaching materials and has practical hours for them to practice seriously with the real machine. In part of lecture, I will lecture about the processes, how they work, what is the core? When lab hours started we will show what we said and we have to tell them how many times they have to do by themselves. The first time, we have to show them. If the time left, we will let them do but under my control. The second and third time, they have to do it on their own and then we discuss together what we got from lab, sometimes take a field trip." (Titanium)

“Almost is lecture with exempling and sometimes taking a field trip. We also have a practical class for them to see the overview of metal- melting process. In addition, in my class, we discuss what problems in their work are because they came from different places, met different troubles. We also take them outside the class to go a field trip. Sometimes go visiting the real plant where there are both large and small sizes of metal melt but in my demonstration, only small ones were melt.” (Bromine)

“Firstly, I thought as a student so I create my own syllabus, which is almost textbook teaching but after that we emphasize practicing. I will let them analyze, let them talk to each other before and then let them do it on their own. If they have a problem they can come to me. I will just act as their guideline because I taught only theory instructions and their application. If they can't do practice they come to get advice later. I may show them first, another thing I take them to a field trip to see the real situation.” (Platinum)

“Describe in each process, and then take them to the real plant. Demonstrate to them and also let them practice If they have any problem. We will discuss together in class.”(Xenon)

“I start by lecturing to overview and also discussing. When they get the whole concept of it. We'll go to the plant to see the real process I will show them how to do before they trying themselves.” (Aluminum)

1.3 Sample that used lecture together with demonstration practice and case study in technical courses

Based on 24 sample's interview, there were 12.5 percent of them used lecture together with demonstration practice and case study.

“I teach theory by lecturing, demonstrate and let them practice. We occasionally visit certain service centers to practice by giving them worksheets. Well, the other way is study from the case study.” (Argon)

“Mostly, we do every ways; Lecturing, demonstrating, Self-learning. Most of them are case study because I lecture them to see the theory. we almost lecture by using case study as a model.” (Iodine)

“The teaching method, I mostly start with Lecturing, then show some examples, sometimes VDO as a case study. But if we teach at the plant site. We'll see

the real process. We also do the real work at each point by demonstrating first. Because this academic teaching needs technical skills. They'll not realize unless doing.” (Cobalt)

1.4 Sample that used lecture together with demonstration field trip and CAI in technical courses

Based on 24 sample's interview, there were 8.3 percent of them used lecture together with demonstration field trip and CAI when they taught.

“Firstly, we lecture by myself and demonstrate by the technician. In addition, we visit the firms that have a technical training course or something else. We send student to visit the firms that run related business. O.K., sometimes I used CAI but not often.” (Uranium)

“We use transparencies to explain the details from documents or some of them use CAI form, uhm, but we prefer take a field trip. That's because, in here, there is a room kept my teaching equipment to show them the procedure according to the lecture.... Sometimes, a good demonstration depends on what devices we use. If we can make them run efficiently, we will display them there. But if we can not, we will show parts of them in stead.” (Manganese)

1.5 Sample that used lecture together with demonstration, Practice, case study, simulation and work shop in technical courses

Based on 24 sample's interview, there were 8.3 percent of them used lecture together with demonstration, Practice, case study, simulation and work shop.

“Actually, in technical teaching there are 2 parts. One is theory, it is basic about processes in fixing and maintenance for employee to know how to treat problems. The other is practice, in technical we can't lecture theoretical only because it is a skill that happen only if learners do practice. I will watch and teach them how to do, such as which equipment is suitable for each problem?”

“In practical part, firstly I demonstration after that I will let them do it. But theory part, will be lecture followed by Case Study or workshop. Sometimes we will simulate a real situation for solving. We will know the accurate process of problem solving.” (Sodium)

“First, Lecture, after that we have the experiment with something real, which means we must talk in parts of device that I taught. The experiment is called exercise for mechanics and called Lab for scientists. Moreover, There is demonstration first, then workshop or case study otherwise simulate situation respectively.” (Fluoride)

1.6 Sample that used lecture together with demonstration, and question method in technical courses

Based on 24 sample’s interview, there were 8.3 percent of them used lecture together with demonstration, and question method.

“At here we teach technical by emphasizing on the Question Method. We will lecture sometimes and state questions to answer. We teach both theoretical and practical. If I teach skills and lecture, it means I will first show to my students.” (Silicon)

“The way to teach is well mixed. Starting from general lecture, Q&A, demonstration, it depends on the detail.” (Chloride)

1.7 Sample that used lecture together with demonstration, and self study in technical courses

Based on 24 sample’s interview, there were 12.5 percent of them used lecture together with demonstration, self study.

“Teaching Procedure depends on course description, composed of lecturing and demonstrating. I occasionally assign work without class, I mean trying to guide them about what the concept of each chapter is, where to find any information and let them self study.” (Zinc)

“Most are lecture, and demonstration.... Sometimes, Self-study.” (Copper)

1.8 Sample that used lecture together with demonstration in technical courses

Based on 24 sample's interview, there were 8.3 percent of them used lecture together with demonstration.

"Mainly 1 use lecturing and secondly is demonstration." (Cadmium)

"Lecturing, and demonstration, show them how to, so on." (Led)

Group 2 Sample group mainly used lecture together with other methods

This sample group (6 persons) used lecture together with the other methods 33.3 percent of them used lecture together with field trip, 33.3 percent used lecture together with discussion, and 16.7 percent used lecture together with CAI, self study and role playing, as shown in table 13.

Table 13 Frequency and percentage of the sample classified by training method that sample group used lecture together with the other methods used

Training method	Number (N=6)	Percentage
Lecture + field trip	2	33.3
Lecture + discussion	2	33.3
Lecture +CAI +self study +role playing	1	16.7
Lecture + questioning	1	16.7
Total	6	100.0

2.1 Sample that used lecture together with field trip in technical courses

Based on 6 sample's interview, there were 33.3 percent of them used used lecture together with field trip.

"There are 2 types, one lecture by using PowerPoint, Word, Excel, and something else as a teaching aids, the other is visiting the plant." (Hydrogen)

“Basically, we teach by explaining through PowerPoint, slide and we also visit the plant site.” (Oxygen)

2.2 Sample that used lecture together with discuss in technical courses

Based on 6 sample’s interview, there were 8.3 percent of them used lecture together with discuss.

“I use lecturing with media using. In some courses, I set a syndicate group, I mean I group them to discuss any point.” (Carbon)

“What I teach is discuss. It is the way learners try to think by themselves and I assume conditions to make learner understand easily. Mostly, we lecture generally with the small group.” (Nitrogen)

2.3 Sample that used lecture together with CAI, self-study, and role playing in technical courses

Based on 6 sample’s interview, there were 16.7 percent of them used lecture together with CAI, self study, and role playing.

“Most are media persuading them in the easy way to understand. But owing to time condition. We hand out lecturing sheets to them. Another way is CAI by the Trainer in the form of CD – ROM for self – learning. I mean I almost teach any additional interest not give CD – ROM to them first, because they’ll not participate in class... Addition to lecture, we also have a practice. Sometimes we already trained, but I do not know they will be as expected. Finally, I give a small piece of assignment. For example, we study this module after finishing I assign a job to them like children’s homework. Next training, in the morning, we will check a bit and discuss any problem discussion, it will be like this sir.” (Sulfur)

2.4 Sample that used lecture together with questioning method in technical courses

Based on 6 sample’s interview, there were 16.7 percent of them used lecture together with questioning method.

“We use two ways, lecturing and questioning.” (Magnesium)

It could be concluded that the sample group used a variety of methods in teaching, which could be classified into two groups. The first group is the one, who mainly combined lecture with demonstration and/or practice, the other group mainly used lecture along with other.

2.2 Training aids trainers used in technical courses

Based on 30 sample's interview about training aids, it was found 70.0 percent of them used computer as training aids. 63.3 percent used real object. In addition, there were other training aids such as transparency, audio-visual, as demonstrated in table 14.

Table 14 Frequency and percentage of the sample classified by training aids that used in technical courses

Training Aids	Number (N=30)	Percentage
Computer (VCD, CD, CD-ROM)	21	70.0
Real Object	19	63.3
Transparency	15	50.0
Audio-Visual (Slide, VDO, TV)	12	40.0
Blackboard	7	23.3
Opaque Sheet	3	10.0
Picture	2	6.7

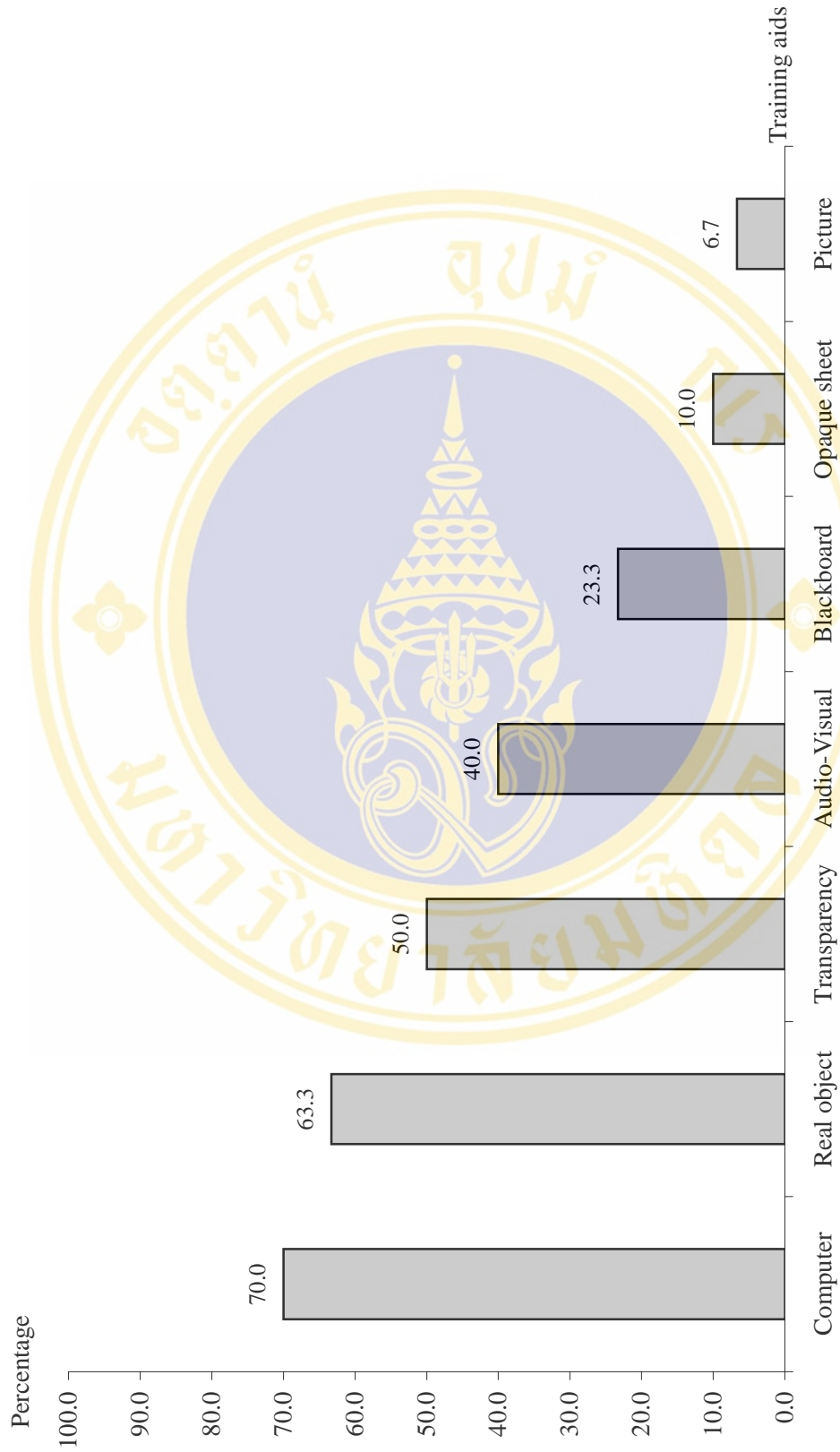


Chart 2 Percentage of the sample classified by training aids that used in technical courses

When training aids analyzed can be divided into 2 categories that were 73.3 percent of the sample mainly used computer as training aids and 26.7 percent of the sample mainly used others training aids as demonstrated in table 15

Table 15 Frequency and percentage of the sample classified by training aids that used in technical courses

Training aids	Number	Percentage
Sample group mainly use computer as training aid	22	73.3
Sample group mainly used others training aid	8	26.7
Total	30	100.0

Group 1 Sample group mainly used computer as training aid

This sample group (22 person) mainly used computer as trainer aid along with other training aids such as 31.8 percent of them used computer together with real object and 18.2 percent used computer together with transparency, and audio-visual, as shown in table 16.

Table 16 Frequency and percentage of the sample classified by training aids that sample group mainly used computer as training aid

Training aids	Number (N=22)	Percentage
Computer + Real object	7	31.8
Computer + Transparency + Audio-Visual	4	18.2
Computer + Real object + Audio-Visual	3	13.6
Computer + Transparent + blackboard	3	13.6
Computer + Real object + Transparent + Audio-Visual	3	13.6
Computer	2	9.2
Total	22	100.0

1.1 Sample that used computer and real object as training aids

Based on 22 sample's interview, there were 31.8 percent of them used computer together with real object as training aid.

"I use two things. First, real pictures on PowerPoint and real object which I carry it in my bag." (Hydrogen)

"Most materials will be in form of PowerPoint, I mean they see the real object and there is an instrument installed to show them." (Aluminum)

"Media I use are computer and also real object." (Zinc)

"PowerPoint, and also the instrument." (Platinum)

"I prefer computer rather than projector. In part of defective tools we will fix it." (Uranium)

"The Media are PowerPoint, VCD, CD and real object." (Fluoride)

1.2 Sample that used computer together with transparency and audio-visual as training aids

Based on 22 sample's interview, there were 18.2 percent of them used computer together with transparency and audio-visual as training aids

"It is some VDO, however now we use computer as a core. Some detail or courses may add a transparency but now it less and we try to use PowerPoint instead." (Cobalt)

"Our materials are transparency, computer. Using slide or TV depends on detail of courses." (Sodium)

"Lecture, PowerPoint showing, transparency writing and VDO watching." (Oxygen)

"Slide, transparency and also Notebook and prepared detail's into PowerPoint and show it on projector." (Potassium)

1.3 Sample that used computer together with real object and audio-visual as training aids

Based on 22 sample's interview, there were 13.6 percent of them used computer together with real object and audio-visual as training aids.

"We use PowerPoint which consists of a description, VDO, sometimes it will be VDO or VCD, and real object that we will set it up." (Boron)

"I use many materials such as PowerPoint program Computer, VDO and other instrument that I prepared." (Phosphorus)

"Our materials consist of Slide, PowerPoint, which almost perfect because it can show movement as I want. The same time, we can simulate the engine, which similar to the real one. Most of our cars are present car not the old one." (Argon)

1.4 Sample that used computer together with transparency and board as training aids

Based on 22 sample's interview, there were 13.6 percent of them used computer together with transparency and board as training aids

"Mostly we emphasize on computer. It has some slide but a few or if we don't have any thing I will write on the board." (Chloride)

"Using PowerPoint, LCD is the main for my teaching and it is similar to others. I use both slide and flip chart." (Iodine)

"Using boards, PowerPoint." (Copper)

1.5 Sample that used computer together with real object, transparency and audio-visual as training aids

Based on 22 sample's interview, there were 13.6 percent of them used computer together with real object, transparency and audio-visual as training aids

"I use VDO as my material. My VDO came from abroad. I got it from Japan. If they can see, it will good for them. And also slide, PowerPoint in some courses I also provide the instruments for them." (Bromine)

"I have a slide with description to show them but in staff teaching our materials are slide, or look at computer or take to real work place and explain." (Xenon)

1.6 Sample that used computer as training aids

Based on 22 sample's interview, there were 9.2 percent of them used computer as training aids.

"It is PowerPoint sir." (Magnesium)

"I use computer." (Led)

Group 2 Sample group mainly used others training aids

This sample group (8 person) used other training aids mixed together. There were 37.5 percent of them used real object along with transparency, picture and board. 25.0 percent of them used real object along with transparency and audio-visual as shown in table 17.

Table 17 Frequency and percentage of the sample classified by training aids that sample group mainly used other training aids

Training Aids	Number (N=8)	Percentage
Real object + Transparency + Opaque sheet + board	3	37.5
Real object + Transparency + Audio-Visual	2	25.0
Real object + Transparency	1	12.5
Real object + Picture	1	12.5
Board + Audio-Visual + Picture	1	12.5
Total	8	100.0

2.1 Sample that used real object together with transparency, opaque sheet, and board as training aids

Based on 8 sample's interview, there were 37.5 percent of them used real object together with transparency, opaque sheet, and board as training aids

"Normally, use board writing, transparency or use visualizer which is slide machine. There is a real object when I demonstrate how to use." (Nickel)

"Use slide, real object, Board writing and also present by using dense slide machine as another assistant." (Manganese)

"There are a lot of materials; board, transparent, dense slide, real model." (Silicon)

2.2 Sample that used real object together with transparency, and audio-visual as training aids

Based on 8 sample's interview, there were 25.0 percent of them used real object together with transparency, and audio-visual as training aids.

"It will be slide, transparency or real model, something like these." (Helium)

"Slide, VDO, Real object." (Titanium)

2.3 Sample that used real object together with transparency as training aids

Based on 8 sample's interview, there were 12.5 percent of them used real object together with transparency as training aids.

"It will be transparency and also showing a real object." (Calcium)

2.4 Sample that used real object together with picture as training aids

Based on 8 sample's interview, there were 12.5 percent of them used real object together with picture as training aids.

"There is two, three dimension picture or the real one." (Silicon)

2.5 Sample that used board together with audio-visual and picture as training aids

Based on 8 sample's interview, there were 12.5 percent of them used board together with audio-visual and picture as training aids.

"I usually write on board, even white board or Flipchart. I do not have any real instrument to show but I have picture, but sometimes I have slide I show slide, some I have picture I showed picture." (Carbon)

It could be concluded that the sample group used more than one training aids, which could be classified into two main groups. The first group was the one, who mainly used computers along with other training aids. The other group used various materials simultaneously, such as real object, transparency, opaque sheet and blackboard.

3. Skills that trainer used

Based on the 30 sample's interview about skills in technical course, it was found that 83.3 percent of them used questioning skill, moreover, 70.0 percent used explanation and giving examples, 63.3 percent used motivation. In addition, there were other skills used, as shown in table 18.

Table 18 Frequency and percentage of the sample classified by skills that used

Skill	Number (N=30)	Percentage
Questioning	25	83.3
Explaining and giving examples	21	70.0
Motivation	19	63.3
Lecture	18	60.0
Using training aids	14	46.7
Variation	14	46.7
Demonstration	13	43.3
Practice	8	26.7
Evaluation	8	26.7
Set Induction	5	16.7
Manage classroom	5	16.7
Personality and gesture of trainer	4	13.3

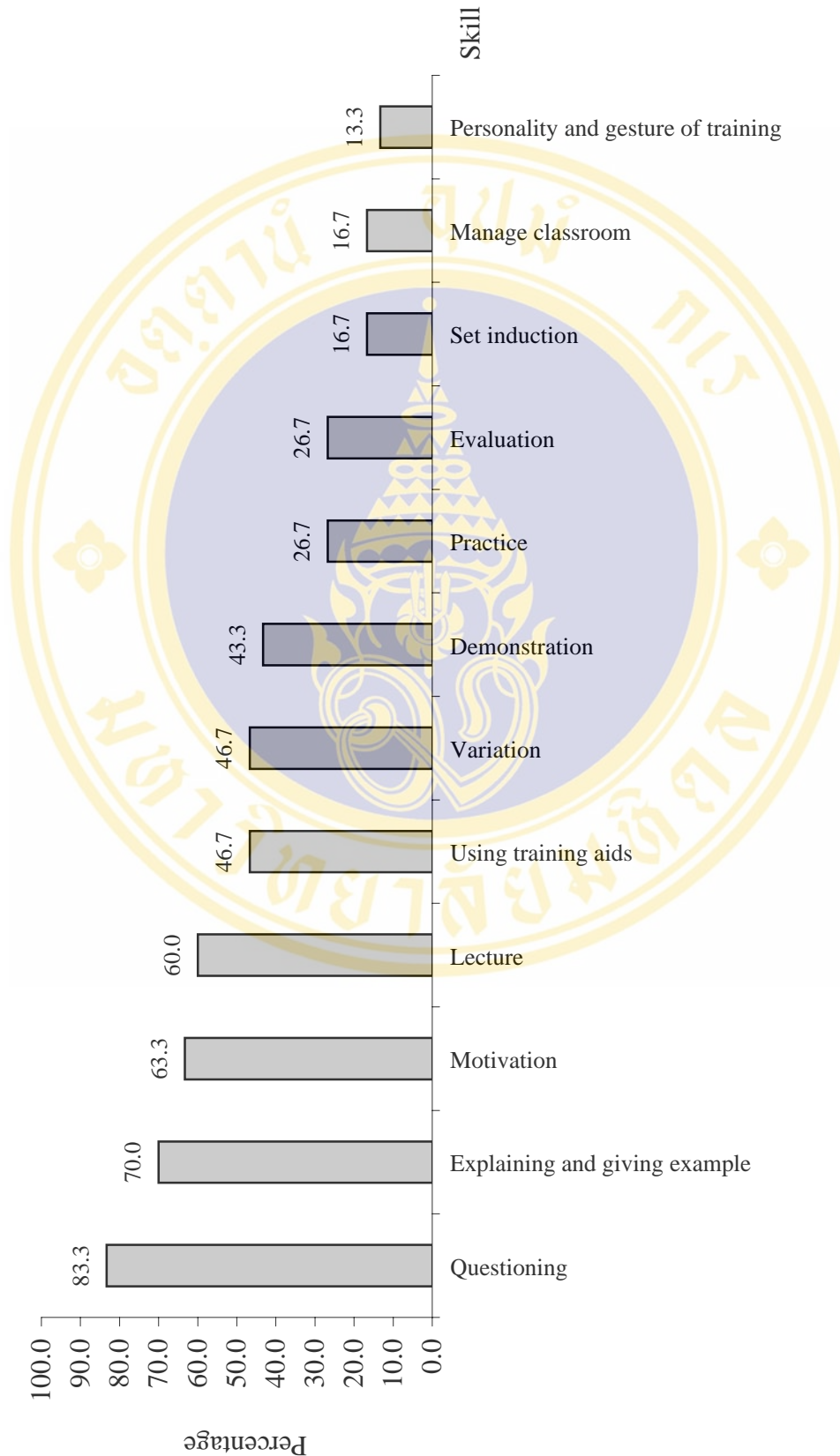


Chart 3 Percentage of the sample classified by skills that used

3.1 Questioning

83.3 percent of the sample used questioning as skill when they taught in the technical courses.

“It’s a kind of using a question I use often.” (Nitrogen)

“Mostly I use Q & A methods. Skills of questions. Just set some problems and give them a moment to think for solving.” (Sulfur)

“Asking in the way that initiate any learning or the way that they are able to give a clearly explanation.” (Oxygen)

“Skill of asking. Give them a chance to ask and answer back..” (Silicon)

“Using question, I not ask them specifically or not compel them to answer. Just ask them directly but not explicitly. But sometimes I’ll ask specifically someone that not pay any attention to answer.” (Phosphorus)

“Using question is important, when I ask, if participants are not listening, they cannot answer. So we should separate question, arrange details. Using question depends on learners whose basic factors are different, on the subjects and other things. Of course, you can ask but you should pause for them to think about the question, not instantly force them to answer.” (Nitrogen)

“Extremely clear skills of asking and answering questions.” (Calcium)

“Any question as I told you. Just remind them how much they can remember and understand then observe them by asking questions about what I have said. It can check how much they pay attention to class.” (Nickel)

3.2 Explaining and using Example

70.0 percent of the sample used explanation and example as skills when they taught in the technical courses.

“It will be a teaching and explaining in front of the board. Which emphasizes that everybody has to understand class lecture. If I feel that anyone is not, I try to make him understand or visualize or find a thing to compare and give example.” (Nickel)

“In machine technical, it is in term of telling each other. It will be involved in academic details, which is one thing but practical will be another thing. It can be the comparison for learner to see, I prefer call communicate way.” (Sodium)

“The examples that I give came from our real life and link it with theory. Theory will be like this and what did u see? Sometimes only theory does not make them understand and clear unless I show the example that is it.” (Calcium)

“As what I said, example comparison is the day – living example, which simple and makes them understand easier.” (Magnesium)

“Sometimes I let learners to know umm... let they know the situation, understand what they saw and I use the example.” (Boron)

“Using the example make them more understanding. Sometimes I just say Ok. There are many ways to get this piecework out. If you say only this, it’s not clear that What, or Which method is. I will give the example; then they will clear it and well understand with real object.” (Bromine)

3.3 Motivation

63.3 percent of the sample used motivation as skills when they taught in the technical courses. The motivation skill was to be familiar while teaching, tell a joke, fulfill learners’ spirit, and motivate them to think together

“Familiarity, one appearance is familiar between learners and lecturers or they will harden. But I still maintain the level for creating respect in lecturer. At first I have general conversation to relax them before starting class. In class we may relax or serious and then relax at some part. Some chatting for releasing stress.” (Manganese)

“The thing that I usually use is making familiarity. I will make students enjoy or laughing. Something like this. It is a part of talking them, sometimes I will say nonsensically but I can connect it with details too.” (Iodine)

“Insert a joke, make them relax because technical stuffs or others are occasional serious, Sometimes learners are hardly understand. I have to add some joke to relax them.” (Boron)

“When I teach this question. I want you to answer back. You just said it. You can complain without telling your name and I will tell Yes or No. You don’t have to be shy. It makes them brave to show off and the important is to do not embarrass them when they make any mistake. If they give wrong example or answer I have to speak in other ways or speak out something that funny than their answer. I have to

add a joke to tell it is ok, don't create their tension, embarrass we are a part of them and let them be a part of classroom. At the beginning period before I start a lesson, I have to talk to them for make clear understand that I come here to study not act to each other, the important is changing the behavior first.” (Cobalt)

“I have to be familiar with people in seminar as much as I can. Lecturers may go to talk or say their name. We will not call glasses boy or fat boy. Name calling will make us feel closely to them.” (Phosphorus)

“To convince them to have enthusiasm in learning and eager to study. It may be speak louder or softer when I speak something, which is a key to motivate learner's intention. Another thing I try to pull them to participate in thinking about details. Whatever I try is to create two ways communication I let them present, speak out but I didn't do only once.

“First time, they may shake because they don't know each other but after many times, they can more practice. I think anybody may have a mistake at their first time. I will tell them not to be afraid. If you wrong, I will not blame anyone. Even me when I started to be a teacher I never presented in front of the class before and I was very shake. But after doing many times, I am familiar with it. It's normal is the way I think as a kind of cheer up.” (Argon)

“Sometimes, something serious I do not try to have them serious. It's a simple thing.” (Helium)

“Mostly, I will talk like a friend not a trainer. The accent will not express in the presentation way.” (Aluminum)

“May ask his background and then create relationship make them be our side.” (Fluoride)

“Another thing is to add a force. It means if you always blame and never cheer up, some people will be like this, it is too much negative reinforcement. I should have some reinforcement to motivate learners to study. If they can do it, praise them.” (Silicon)

“We have to add forces, I mean people who never stand on the stage, when they are called, they will shake. I have to say it is ok. And tell them it is a general conversation but this time it just has a microphone with.” (Sodium)

3.4 Lecture

60.0 percent of the sample used lecture as skills when they taught in the technical courses.

“Skill? It can not run away from lecture.” (Fluoride)

“Class presentation is one of the skills, If you did not speak for a long time and return to speak again, it will not smooth. I use lecture.” (Magnesium)

“Using the lecture.” (Manganese, Sodium, Boron)

“I always use lecture.” (Calcium)

“Mostly I will start with lecture.” (Cobalt)

“Normally, we lecture first, right?” (Potassium)

“Lecture skill, I have to know how to do? It means I should not explain to many details that out of point because it is overload.” (Argon)

“Lecture is the way to teach what they want to know. How I will do? To make them attain in what I teach.” (Sulfur)

3.5 Using training aids

46.7 percent of sample used training aids as skills when they taught in the technical courses.

“We must well – known in materials such as how to use overhead more efficient? How to present without boring? Do not use only transparency for hours it must has other materials.” (Potassium)

“It’s a capability of us that good enough in using training aids.” (Argon)

“I use materials to attract them. Also training aids are used to show them. If it is a real object, they will pay attention because it is real.” (Bromine)

“Skill of using materials more efficient, training aids are very important. I have to know which media is suitable for each topic.” (Silicon)

“A moment ago, I talked about training aids using. I want to say I put Alloy which is a kind of the mixed metals into silver to make a piece whiter. I will show it and they will believe but If there are so many people, I will show a picture on screen. If there are a few people I will show a real one I mean I will show a thing that science can prove.” (Hydrogen)

“Sometimes I use a training aid sir. If I teach I will use a training aid for more understanding.” (Boron)

“Sometimes, if they can not do it I will bring equipment to teach and sometimes If they forgot it, I will take it to teach suddenly.” (Xenon)

3.6 Variation

46.7 percent of the sample used variation as skills when they taught in the technical courses. This skill was required when learning for a longtime by varying learners' attention from one to another.

“In the afternoon which is a tough period, so it must has a technique. A variety of learning way must be activities or forming group for workshop.” (Sodium)

“If there is only one lecturer, learners may be yawn, feel sleepy, or boring I has to change a teaching style such as one hour or one and a half they will tired so after that. I will break it with activities or game playing, VDO watching it has to change, do not repeat it; it will make them change their action.” (Cobalt)

“In the afternoon I always change teaching method I may start from lecture which is boring. I will change to VDO about half an hour.” (Phosphorus)

“Other skills are necessary, sometimes I have to speak fast or slow because some parts have to stress to make them pay attention” (Nitrogen)

“I have to arouse their attention by changing teaching behavior and make them pay more attention. I may use various tones to help. When they sleep they can notice and know from my tone.” (Nickel)

“In some important details I will stress my voice to show clients or listeners. But actually, I have to tell that it's important. Other things, sometimes there are a lot of listeners. I have to know how long they concentrate twenty minutes is ok but after that they will blur I have to pull them back by using voice, or action.” (Helium)

“In the afternoon, I do not have much joke. When I see someone feel sleepy I will ask another one who listens to me and he can answer. Someone sleepy will startle but If they still do not wake up I will call him and ask him, let him speak and he will not be bored. Joke is seldom. I prefer question to motivate them to pay attention.” (Hydrogen)

“I usually capture attention. Sometimes I lecture; I will have a test or let them think about some questions. If one person asks me I will ask others to answer.” (Iodine)

“Additional technique for making him understand is seldom. To create environment that make them pay more attention I often use question.” (Uranium)

“Walk because their eyesight must follow me. In present, I will not stand on the same point, I always move.” (Carbon)

“Sometimes using the action to attract them. I mean, when I teach I usually move to learners walk to them.” (Iodine)

“It happen when they are not listening, not pay attention I will stop at that point because it means they do not want to get it. If I still talk it will useless so I break it and talk about work experience, working life, which is involved in generally working. I think may be a bit fun and relax. When they have concentrate or more relax. I will get back to the detail sir.” (Zinc)

“Sometimes I have to know learners. Some do not pay attention anymore, I may be change from lecture to experience conversation.” (Bromine)

“When they are bored I will use music, VDO and PowerPoint or show a real piece of work.” (Fluoride)

3.7 Demonstration

43.3 percent of the sample used demonstration as skills when they taught in the technical courses. Learners or experts could do demonstration.

“Demonstration.” (Cadmium, Xenon, Platinum)

“Sometimes I will experiment to show them.” (Hydrogen)

“Here, I have workshop. In this room is the operation room for us. I’ll show them, after I finished theoretical lecture, I’ll display to them in this room.” (Cadmium)

“I teach Lab, Right? I have to demonstrate about how to make them work. If I only explain work, they can not go on. I have to demonstrate first.” (Nickel)

“Demonstration, of course. I mean, the more times I demonstrate the more professional I gain.” (Bromine)

“Well, learners occasionally can not illustrate all overview. That’s why I have to display them how to do. Showing them what is real is the main point. Just only listening what I said can not make everything clear, must show them more.” (Helium)

“Yes, demonstration, certainly. The purpose is to let them use that in their work efficiently.” (Aluminum)

“Teaching technician have to show them how to do. If no display, no productivity. I insist that demonstration make everything best. Just lecture is not enough. We show them what we teach.” (Fluoride)

It could be concluded that skills which the sample usually used in technical courses were questioning, explaining and giving examples, motivation, lecture, using training aids, variation and demonstration.

4. Skills to enhance teaching effectiveness for technical trainers

Based on the 30 sample 's interview according to skills to enhance teaching effectiveness for technical trainers. It was found that the skills which sample be of opinion that could enhance teaching effective were Motivation (76.7 percent), Using training aids (66.7 percent), Explaining and giving examples (66.7 percent), Questioning (60.0 percent), as shown in table 19.

Table 19 Frequency and percentage of the sample' s opinion about skills to enhance teaching effectiveness for technical trainers

Skill to enhance teaching effectiveness	Number (N=30)	Percentage
Motivation	23	76.7
Using training aids	20	66.7
Explaining and giving examples	20	66.7
Questioning	18	60.0
Personality and gesture of trainer	14	46.7
Lecture	13	43.3
Variation	12	40.0
Demonstration	10	33.3
Evaluation	10	33.3
Practice	8	26.7
Manage classroom	7	23.3
Set Induction	1	3.3

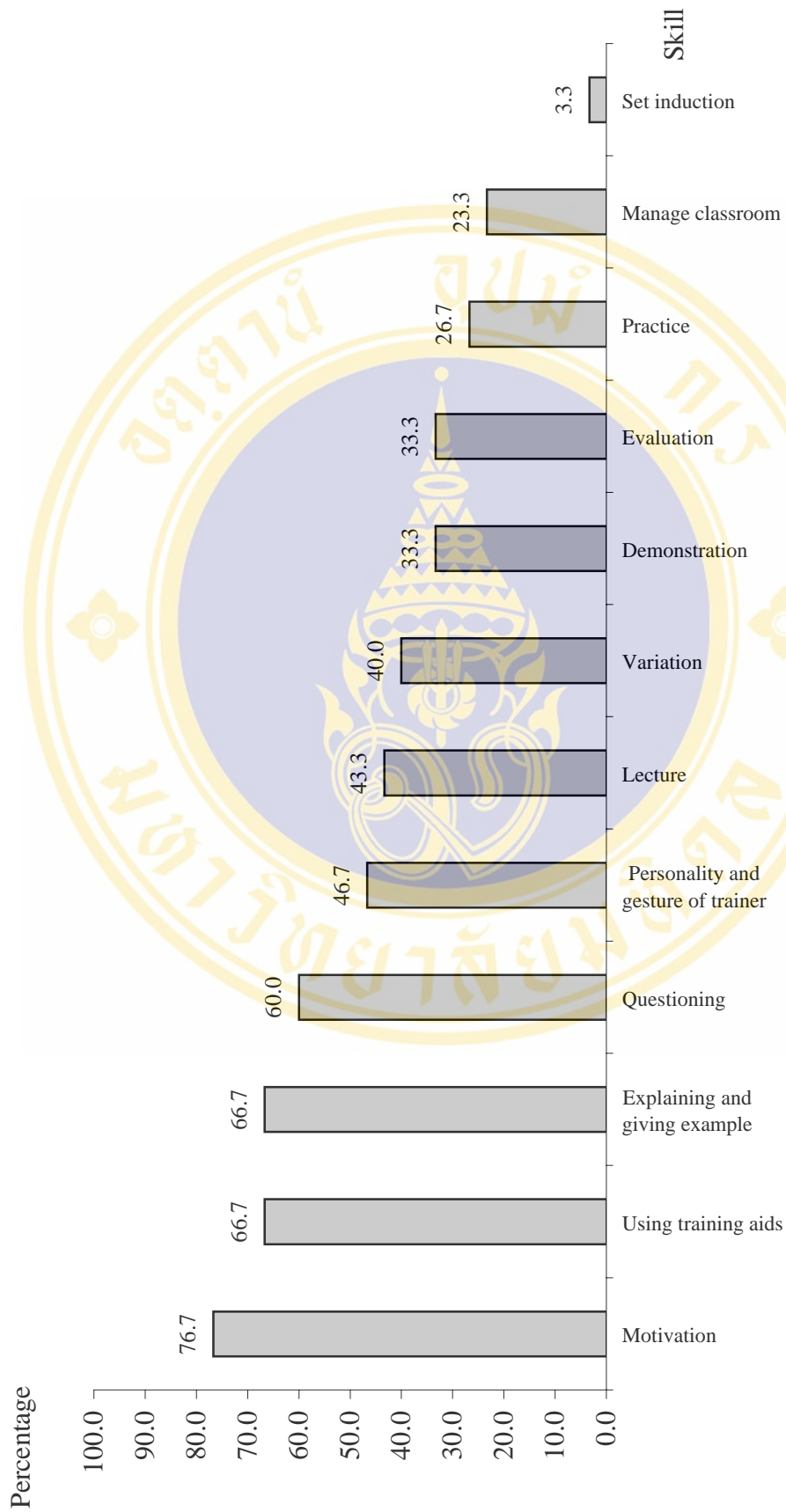


Chart 4 Percentage of the sample's opinion about skills to enhance teaching effectiveness for technical trainers

4.1 Motivation

76.7 percent of the sample considered that the skill to enhance teaching effectiveness for technical trainers was motivation. Motivation could be applied by being familiar with learners, telling a joke and doing activity, for example.

“A trainer should motivate to give big impression of interesting in details that will be given to them.... And should have a reinforcement also.” (Sulfur)

“Actually, students attend class with some tension so I try to relax by communicating each other. If they learn without any stress, it is easy to get new things. That’s why sometimes I tell them jokes for keeping their attentions to listen to what I am saying.” (Aluminum)

“Sometimes, It is serous, so I have to try to relax them. Persuade them to think it is a casual thing and gradually realize together.” (Helium)

“Trainer should have to know when motivating learners. He should tell them what will learn from each chapter and teach them with precise objectives.” (Platinum)

“I have to persuade learners to be enthusiastic by using different voice tones. Another thing is trying to have them participate in ideas and details as many as I can. Whatever I try to have 2 – way communication, so I let then to present first. I do not present only once. When presenting first time, they shake because 1. They don’t know each other well 2. Doing many times make them be accustomed. I think at any first time people can make a mistake. In this point, I always tell them not to be afraid. Mistake is experience. I suggest them that I was also nervous in the first time as a teacher, this is my way to empower them.” (Argon)

“There is knowledge interchanged for making good interaction. And, also casual discussion at the beginning of period. many introduce in a first class.” (Bromine)

“Uhm, knowledge skill means using brain to think it. That’s why I focus on the way leading them to think. Hold activities that make them think. I try to make them have thoughtful skills.” (Chloride)

“Have Participation of class as mush as I can. Trainers will motivate them to think. It will lead to learning process. The other one is reinforcement. I mean, if you always blame them, never give any inspiration, it’s not the best way to do because

some technician can make mistakes. It'll be too much negative reinforcement so I try to do the opposite one.

“It can motivate learners. If they do well, give them some rewards.”
(Silicon)

“Setting activities to let them join or getting in touch with them. I mean try to create an informal class. Just to call my name or their name, not to call Miss fatty or Mister glasses can help everything easier to contact together.” (Phosphorus)

“I mainly try to get closer to learners. I mean, before lecturing, I try to get accustomed to learners. Well, at this point I will persuade them to ask any question. It's better to have activities to class related to subject's objectives. I think some activities can urge their interest and have them be enthusiastic.” (Cadmium)

“Telling funny things helps them relieve tension. In technician cases sometime it is serious. Some case are hard to understand, so I have any joke for relaxing them.” (Boron)

“Smiling faces, be familiar with learners. All will make them not feel worse with stresses when taking a class.” (Manganese)

“Telling a joke is useful. Another way is to make real events be funny. I just try to make them happy with a class, not to get any stress, not to take a nap.” (Xenon)

4.2 Using Training Aids

66.7 percent of the sample considered that the skill to enhance teaching effectiveness for technical trainers was using training aids.

“Lately, I talk about the media using points. What I said is that adding Alloy in Silver can make a model get brighter. I demonstrate to make them believe what they see. But if there are a lot of people, I'll show illustrated photos. In contrast so a group of learners can see a real model that science can prove.” (Hydrogen)

“Using media techniques in teaching is mostly real objects or photos and PowerPoint. I mean I use PowerPoint together with my lecture. Not just lecturing.”
(Sulfur)

“Having devices to support a lecture is more archeivable. Technical fields should have mechanical tools. Although I have many training without additional equipment showing you, you will get only a theory. To see it, do it and prove, can

make you more understand. Even if, I have excellent explanation, learners may create wrong imagination in their mind. Learning materials will support this imagination which can generate their right illusion. Learners can create a right reflection of what they learn.” (Aluminum)

“Using learning materials capability is necessary also. You should prepare teaching aids. Use slides with clear images not only text which learners can be confused. I can have picture and real object to make the atmosphere better.” (Helium)

“When lecturing, I have learning materials for learners so that they can imagine as most as they can. Some learners have different ways of thinking, so I add motioned images in the form of VDO and explain them.” (Titanium)

“Media is a special skill to help time concerns. It will guide us to know what point is. I mean, it’s an ability to facilitate teaching methods.” (Potassium)

“Learning media is also significant because it can attract any interest. If I have quite good learning materials with appropriately using, sometimes they can attract attendants while I explain and describe motioned pictures.” (Uranium)

“Media using skill, of course. If I have materials, they can more understand the subjects I taught. It’s also important.” (Bromine)

“Lecturer use learning tools to support learners. These tools are important I have to know that which tools I should use according to the content I teach.” (Silicon)

“Trainer use media to increase learner’s understanding. Media must be clarified. If not, helping device should be used such as magnification by the scope. For the small device, it must be zoomed for overall learners in the room. That media should be supported by devices or other medias for setting rid of boring of topics. Even the media pictures that displayed in computer, monitor should be moved. They are used by many lecturers to defend boring. Using a real media is good because it is interesting. They can confirm what the lecture said by working on the real media.” (Manganese)

“Well, another thing is using learning materials when lecturing them is not work. Yes, it’s OK. Using media can help but you must know how to use them correctly.” (Iodine)

4.3 Explaining and giving examples

66.7 percent of the sample considered that the skill to enhance teaching effectiveness for technical trainers was explaining and giving examples.

“I suggest the way to show some examples. Well, I want learners know 10 ways, yes of cause, I can teach all of them. However, learners can not understand all. That’s why I show them sample. And, for me, it’s help enhance teaching effectiveness.” (Hydrogen)

“Give information to make clear explanation. If learners can’t depict, I have to give them any exact instance.” (Sulfur)

“You have to clarify anything that make learners understand clearly. Such as finding any key words that easy to remember.” (Oxygen)

“Giving an example for better comprehension. If I just tell learners, OK there are several ways to make this piece of work, they will not know what exact ways to make them up. So I illustrate them, people will imagine and understand.” (Bromine)

“Giving example, comparing them also. Actually, I’ve seen from another using comparative ways to make me easy to see all of the issues.” (Boron)

“Others are giving comparative example to clarify them.” (Magnesium)

“You have to explain in the easiest way to understand. Step by step teaching. Make theories and practices linkable and simple.” (Calcium)

“It is my suggestion that lecturer should have example to show images to them and they can illustrate in their views.” (Nickel)

4.4 Questioning

60.0 percent of the sample considered that the skill to enhance teaching effectiveness for technical trainers was questioning.

“Mostly I use Q & A methods. Skills of questions. Just set some problems and give them a moment to think for solving.” (Sulfur)

“Asking in the way that initiate any learning or the way that they are able to give clear explanation.” (Oxygen)

“Skill of asking is to know how to ask. Give them a chance to ask and answer.” (Silicon)

“Using question, not ask them specifically or not let them answer one by one. Just ask them directly but not explicitly. But sometimes I’ll ask someone that not paying any attention to answer.” (Phosphorus)

“Using question is important in the way that participants can be answer. So I should separate question, arrange details. Question should be composing of different basic factors, who’s the learner, what is the subject. Of course, you can ask but you should pause for them to think about the question, not instantly force them to answer.” (Nitrogen)

“Extremely clear skills of asking and answering questions.” (Calcium)

“Any question. That I told you. Just remind them how much they can remember and understand then observe them by asking questions about what I was lately speaking. It can check how much they pay attention to class.” (Nickel)

4.5 Personality and Gesture of trainers

46.7 percent of the sample considered that the skill to enhance teaching effectiveness for technical trainers was personality and gesture of trainers.

“I think personality is also necessary, Voice of trainer for example. Launder voice makes people concentrate on what I said and stressing voice can also help them. At least, voice with quality can make attendants happy.” (Hydrogen)

“Just about personality, we should be nice or something like this.” (Fluoride)

“Voice control of Trainer, their acting have an effect on the teaching process, also. A mild or lower voice is hard to catch what they are saying. Certainly, their dressing should looks professional as well. That’s because it can make more trust to trainers.” (Aluminum)

“It’s not necessary to be a beauty or handsome but it would be a good personality. Clean dressing is suitable for their ages and also it should be concerned about place that you will go. Clearly speaking Thai, If you’re Thai, you have to speak Thai correctly. Some are bad in using Thai. Almost are in that case I’m saying. At least you should speak fluently, try to practice them.” (Potassium)

“Their trait, their personality, toning or something else about these. All need to be clear.” (Platinum)

“Personality is necessary, you know it’s a main major point to concern. If you dress well, you’ll look well. It’ll help your personality make trustworthy for whoever see and listen you.” (Uranium)

“Lauder speaking and using clearly words added with smiling, be familiar with learners can make them feel great when take in class.” (Manganese)

“Personality is also important. Well, it totally makes teaching process better and please do not use dirty or inappropriate words. I used to hear I feel bad.” (Carbon)

“Your action and your words should be exactly like I expect correctly I mean personality and speaking beats...Trainer personality....well, what I teach should suitable with every style. Punctuality is also essential. You must present all you said to them for making academic trust. Say the same they are interest. To be familiar with everyone make them trust and believe in you, so they will accept.” (Nitrogen)

“Personality and voice tone are used to attract learners. Personality will be a center of participants because everyone looks at the lecturer. That’s why unsuitable traits have an effect teaching process. I mean if your subjects are really nice, however, it’s not work if your traits are not well.” (Sodium)

“Teaching adults requires respectable personality. Both dressing and behaving.” (Nickel)

4.6 Lecture

43.3 percent of the sample considered that the skill to enhance teaching effectiveness for technical trainers was lecture.

“What I met is lecture skill. I mean lecturer can explain clearly and interestingly.” (Cadmium)

“Another skill is firmly lecturing. Speak to them definitely and meaningfully.” (Led)

“Lecture skill, you should know how to do correctly. Well, I mean details of lecture should not be only explained beside the topics because it’s too much for attendants.” (Argon)

“Yes, lecture skill also.” (Titanium)

“Lecture skill, Uhm, you should know how to do. OK, firstly, I should not keep too much on the sidetracks. Because I can not measure directly what I need them to know. You should have them really get that in the way of subjects.” (Argon)

4.7 Variation

40.0 percent of the sample considered that the skill to enhance teaching effectiveness for technical trainers was variation.

“In the afternoon when they feel bored and I’m not a funny guy, I’ll use the way asking them. I mean I see that guy seems sleepy, I’ll ask another. When he can answer me, sleepy guy will panic and think, do the teacher ask me or someone else...If it’s not work, I’ll ask him directly. Just try to let him interact with me by using simply question. For urging them not to be bored with the lesson.” (Hydrogen)

“Other skills are also important. You should know the appropriate time when to stop, when should speak slowly or when should speak fast, what should be stressed.” (Nitrogen)

“I have several ways of teaching. Sometimes I use VDO in the topic they learn while teaching.” (Xenon)

“If I notice that learners become bored with the subject, I will urge them by changing the way to present them. That I told you changing from while board to slide or projector.” (Nickel)

“Only lecture, can make class get boring and sleepy. Sometimes I should change the way I teach for example, one hour, one and a half hour can make class look tired so, I’ll take a break by setting some activities or playing game, watching VDO. Something else that can change. Don’t be the same. That should help to change any action.” (Cobalt)

“Furthermore, when talking, I will walk from this side to the other side of room for urging learners. Their sights will always follow me. All the time I am presenting, I am not only stagnantly standing, but also having any motion.” (Carbon)

“It’s not only lecture at same point I have a break. Breaking time, I mean not a coffee break it’s a subject breaking. I can talk out the subject I learn to create an relaxation.” (Argon)

“Sometimes I have to know what kind of people I teach, how they feel. Learners may be interested in the subjects so I have to change the topics, tell them about any experience or others to get them back to the class. Seminars usually have a break. Those can quietly help or sometimes just walk closely the attendants. I mean having length of time between learners and lecturer can make them don't attend class. So walk closely to them. If you talk at this skills, you should concern several patterns of ways to walk, eye contacts or asking within class, and spread sheets if you have everyone right here.” (Bromine)

“You must not forget one nature about learning cycle or time nature. Actually, giving information almost has a time condition. You should change to any activity. In 2 hours of information part can make people fall asleep. Just have any story or event to motivate them up, interest them to catch what I say. Topics you will talk do not think with lessons you teach. Or just using question to let them think.” (Silicon)

“At an important moment I have to use much information for pausing to think, observing the important something like this. Actually I should also tell them that this is a main point. This is a major part that has to know. Another, some moments class have average time concerning. I mean if they can listen just only 20 minute, then after that they can't get anything. I have to get them back to the topics by using information, behavior. It's a changing moment, not keep on other things. I get sidetrack to pull them back..” (Helium)

It could be concluded that the technical training would be more effective, if trainers had the motivation, using training aids, explaining and giving examples, questioning, personality and gesture of trainers, lecture, and variation as skills when they taught in technical courses.

CHAPTER 5

DISCUSSION

The objective of this research was to study skills to enhance teaching effectiveness for technical trainer. The question from this study was what skills that a technical trainer used to enhance teaching effectiveness were. The total 30 technical trainers in large organizations or the institute of the technician training and development were probed to be as the samples in this study.

1. Training method for technical trainer

From this study, it was found that the sampling used several methods in teaching for example lecture together with demonstration and practice, associating with the research by Chuthatip Toryord analyzed the development of resource persons process in the short course training programs (2002). And it was found that an appropriated curriculum should be used from several methods. Lecture, demonstration and practice were chosen in teaching, relating with the idea by Theerawut Boonyasopon (1984:9). This idea indicated that teaching methods for technician in an industrial manufacturer, consisted of lecture, demonstration and practice.

Because of the different and several subjects of teaching, a trainer didn't use only one method through a teaching. For example the equipment activation and maintenance or computer program (CAD CAM CNC), not only lecture but also demonstration and practice should be selected and used in each teaching so that learners could understand more vividly. Furthermore, there were 3 kinds of a teaching goal on which trainers succeeded; knowledge, skill and an attitude. To fulfill 3 kinds of goal, a trainer had to use several methods of teaching (Cranton, 1989 and Apps, 1991).

A technical trainer used lecture with demonstration and practice because subject he taught was new for learners and they have never known in that field. So the trainer had to lecture for learners to understand. Anyhow, lecture could cultivate ideas

and attitudes to learner, as well as the trainer could propose a lot of details in limited time. But disadvantage of lecture was the less retention of knowledge and the surface learning of learners. Learners did not have a chance to express their abilities. (Somkid Isarawatana, 2000: 134). Therefore trainers should apply demonstration and practice in order that learners could participate. This instruction was called the deep learning. Demonstration was one of the teaching methods that trainees could accumulate more useful knowledge and lucidly understanding. After performing the training, learners realized to do expertly in that subject. Thus almost technical trainers prefer to use lecture with demonstration and practice methods.

2. Training aids of technical trainer

In this study it was found that the sampling used more than one kind of training aids, for example computer or real object, relating with the work by Supod Niumtiang (1987). He studied the requirement and the using of training aids in mechanical subject in college and found that the training aids actually used were real objects, picture presentations and projectors. The study of the problem and the need of Metropolitan Electricity Staff on training aids were done by Varandorn Tiranarat (2002) and it was found that the most popular training aids were computers, projectors, white- or blackboards and paper, respectively.

Using training aids of trainers was due to the less experience of new learners. Therefore learners might understand when they faced real objects or other training aids. If there was no any training aid, perhaps, it led learners misunderstand. Computers and real objects in the technical subject were used because the subjects trainers taught were about the application of equipment activation and maintenance and computer program using (CAD CAM and CNC). Because of the unfamiliar subject matter, new learners did not have any skill before and moreover it was due to the complication of operation process of an instrument. The explanation without any training aid might lead misunderstanding occurred between a trainer and trainees.

In the technical study, it emphasized on the performance of learners, called deep learning. If learners had no chance to do real practice, it was difficult for them to understand, therefore in technical teaching, trainers usually used training aids such as computers and/or real objects.

3. The skill to enhance teaching effectiveness

From the study it was found that the skills that enhance teaching effectiveness for technical trainers were motivation, using training aids, explanation and using example, participation, questioning, personality and gesture of trainers, and variation associated with the idea by Somkid Isarawatana (2000: 97), Dwight Allen (1969: 15), Nirachara Tongthammachat and coworker (2002: 123), Moore K.D. (2001: 11), Srimongkol Teprenoo (2002: 35), Pairoj Teeranathanakul (1988: 174) and the researchers from King Mongkut's University of Technology Thonburi (2002:1). Furthermore, it was related to the work by Harvey and Barker (1970) that motivation, using training aids, explanation and using example, participation, questioning, personality and gesture of trainers and variation were the skills used to enhance teaching effectiveness.

Motivation

The group of sampling found that motivation was a skill which could enhance teaching effectiveness of technical trainers because there were 2 different groups of trainees the first group felt interested in the subject and the other group was commanded or compelled to study (Isarawatana, 1987). The later was coerced due to many reasons such as; their existent work and not interesting in the study. The reasons were obstacles of learners' education. Therefore, trainers should activate and motivate learners in order that learners became interested in the subject and could practice as well.

Using training aids

The group of sampling found that using training aids was a skill which could enhance teaching effectiveness for technical trainers because most methods trainers used were lecture and demonstration. These methods had to make learners understand and agree with the trainer, so the training aids were necessary to use for study because it led taught and idea in learners and also retained knowledge for a long time (Gary Kroehnert, 1995:121). During lecturing or demonstrating, learners could be participated in class by training aids. That led to the good study of learners. Furthermore, trainers should experience in the use of training aids because technical teaching always required demonstration and real practice, otherwise the halt of the

study might occur. Thus, the training aids using skill was necessary for trainers to enhance teaching effectiveness.

Explaining and giving example

The group of sampling found that explaining and giving example was a skill which could enhance teaching effectiveness of the technical trainer because explaining and giving example was a basic skill for every teaching in every branch of knowledge. And most trainers always chose this skill to give knowledge to learners. Lecture and demonstration required explanation and giving example in order to more understand between a trainer and trainees. If the skill of explanation and the giving example were lost, it was difficult to succeed in teaching (lecture, demonstration and practice). And learners did not understand clearly. It meant, teaching performance obtained low efficiency. Thus the trainer should use the skill of the explaining and giving example to enhance teaching effectiveness.

Questioning

The group of sampling found that questioning in the class was a skill which could enhance teaching effectiveness of technical trainers because questioning was a method which could be combined with other methods of teaching. For example, lecture would be interesting only if trainers could draw attraction of learners by using questions during class. And trainers also revised knowledge to get more clear understand of learners. Somkid Isarawatana (2000: 156) said that questions could affect learning, especially memorized question, it was classified to be a surface learning. But comprehensive question or questions which needed thinking or some assessments was classified as a deep learning. Furthermore, the interrogation during class could stimulate the interest of learners in the subject indirectly, thus the skill of questioning would be a good skill to enhance teaching effectiveness of trainers.

Personality and Gesture of trainer

The group of sampling found that personality and gesture was a skill which could enhance teaching effectiveness of technical trainers because personality and gesture affected the acceptance of learner group in their trainer. When learners accepted the trainer, after that, interest, faithfulness would be happened, and would have good attitudes to study. Moreover personality and gesture (voice, movement or countenance) were important to activate the attraction of learners to be interested in

study. And the manners of trainer led learners not be afraid and dared to practice. Those led learners feel interested in the study.

Even if the group of sampling had an idea that personality and gesture was important skill to enhance teaching effectiveness of trainers but there were only 4 from 30 trainers using these skill in their teaching. It might be due to most learners were studied in the vocational education and would be male more than female. And teaching was actually practice in laboratory or true location. The manners for communication would be intimately acquainted and dressing should be comfortable for practice and the demonstration. That were the reasons why there were few trainers using personality and gesture skill in teaching.

Lecture

The group of sampling found that lecture was a skill which could enhance teaching effectiveness of technical trainers because lecture was a teaching method which could be easily prepared more than any other method and be able to establish new thinking as well. But disadvantage of the lecture was to reduce the retention of knowledge if the learner did not participate in class. But if the method of teaching was improved and combined with other methods such as; using training aid, the lecture method would be more effective. Thus the group of sampling agreed that lecture was a skill which could enhance teaching effectiveness.

Variation

The group of sampling felt that details of technical theories were complicated. The lecture alone might take time longer than 3 hours in the class. To keep learners sitting still for that long time was impossible to maintain the level of their attention. This finding associated with the idea of Somkid Isarawatana (2543: 108). She stated that the individual limited single span of attention. No one could concentrate on the subject over 2-3 hours without a break for 12-20 minutes (Bligh, 1972; Brown, 1980/ Rogers, 1989). So trainers had to master their skills to diverse the students' attention to maintain the level of interest and to magnetize the learning process.

CHAPTER 6

CONCLUSION AND SUGGESTION

The purpose of this research, skills to enhance teaching effectiveness for technical trainers, was to study skills used to enhance teaching effectiveness for technical trainers. The questions that needed to find out from this research were “ what teaching methods and training aids that technical trainers used were” and “what skills that technical trainers used to enhance their teaching effectiveness were.

The sample of this research consisted of 30 trainers who had experience as technical trainer in large organizations or technical training institutions. Self-made structured questionnaire was used as an instrument in this research.

Data analysis and statistics used in this research were inductive analysis and frequency distribution and percentage.

Summary

Part 1 Demographic information

The sample were a group of technical trainers, most of whom are male in the age of 20-35 years. They obtained the bachelor degree in Engineering, and had 3-10 years work experience; not more than ten years experience as trainer; 3-10 years experience as technical training.

The sample were assigned to teach more than one courses. The most taught course among these trainers was the application of equipment activation and maintenance. Second, was program CAD, CNC, CAM while the third course was train the trainer for technical teacher.

The source of knowledge in technical field was mainly from work experience or training or self-learning. In addition, it was from study in an academic institution.

Part 2 The opinion of technical trainers toward technical teaching

1. The skills that trainers should use for enhancing teaching effectiveness were: (To be arranged from the most percent of samples)

- 1.1 Motivation (76.7 percent)
- 1.2 Using training aids (66.7 percent)
- 1.3 Explaining and giving examples (66.7 percent)
- 1.4 Questioning (60.0 percent)
- 1.5 Personality and gesture (46.7 percent)
- 1.6 Lecture (43.3 percent)
- 1.7 Variation (40.0 percent)
- 1.8 Demonstration (33.3 percent)
- 1.9 Evaluation (33.3 percent)
- 1.10 Practice (26.7 percent)
- 1.12 Manage classroom (23.3 percent)
- 1.13 Set Induction (3.3 percent)

2. The skills that trainers used in technical training courses were: (To be arranged from the most percent of samples)

- 2.1 Questioning (83.3 percent)
- 2.2 Explaining and giving examples (70.0 percent)
- 2.3 Motivation (63.3 percent)
- 2.4 Lecture (60.0 percent)
- 2.5 Using training aids (46.7 percent)
- 2.6 Variation (46.7 percent)
- 2.7 Demonstration (43.3 percent)
- 2.8 Practice (26.7 percent)
- 2.9 Evaluation (26.7 percent)
- 2.10 Set Induction (16.7 percent)
- 2.11 Manage classroom (16.7 percent)
- 2.12 Personality and gesture of trainer (13.3 percent)

3. Most popular training methods were (order from the most percent of samples) lecture, demonstration, practice, field trip, discussion, case study, self study and computer-aided teaching.

The sample did not use a single method in teaching but a variety of methods, which could be classified into two groups. The first group was one in which trainers mainly combined lecturing with demonstration and/or practice, along with additional other methods, like field trip, case study. This group was made up of 80 percent of the samples. The other group was made up of 20 percent of the sample. This second group was one in which lecturing was mainly used as a method of teaching, along with other methods such as field study, independent study, prompting.

4. Training aids used were (order from the most percent of samples) computers, real objects, transparent sheets, audio-visual, and pictures.

The sample employed more than one training aid in technical teaching, which could be classified into two main groups. The first group was one in which computer with other training aids, such as real objects, transparent sheet, handouts, and audio-visual were mainly (73.3 percent). The other group (36.7 percent) used various materials simultaneously, which were real objects, transparent sheets, opaque sheets and blackboards.

Conclusion

1. In teaching effectiveness enhancement, skills used were motivation, using training aids, explanation and show example, questioning, personality and gesture of trainers, lecturing, stimulus variation.

2. Various teaching methods were used in teaching technical courses.

3. The most popular training method was the combination of lecture and demonstration and practice.

4. Training aids used in teaching training courses were computer, real objects, transparent sheets, audio-visual, opaque sheets, board (ordered from the most popular)

Suggestion for concerned parties

1. Suggestions for prospective technical trainers

A recognized and successful technical trainer should be:

1.1 A person did not use only lecture method but a variety of methods. In technical course, it required a lot of practice. Also, he/she must use a lot of demonstration

1.2 A person used a variety of training aids to draw learners' attention.

1.3 A person used a variety of skills to enhance teaching effectiveness.

2. Suggestions for technical trainer training institutions

It was advisable that these institutions should include the following content into their curriculum:

1. Skills to enhance teaching effectiveness.
2. Training methods for technical training course.
3. Training aids application.

Suggestion for further researches

1. Further researches should be focused on skills which can enhance teaching effectiveness of trainers in other fields such as management, finance, accounting and etc.

2. Further researches should be conducted to find out factors resulting in the trainer's ability in using skills.

3. Further researches should be focused on the proportion of skills used by trainers in various situations and different learners.

4. Further researches should be conduct to find other strategies addition to teaching effectiveness enhancing skills.

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LIST OF EXPERTS

The name list of experts who validated the interview of the study of the skills to enhance teaching effectiveness for technical trainers were presented as follows:

1. Mr. Sommai Sattayapanta,
Line Manager,
Top Trend Manufacturing Co., Ltd.
2. Mr. Bunpot Moolprasert,
Chief Instructor, Ramp Service Training,
Thai Airway International Public Co., Ltd.
3. Mr. Wichit Surapananonchai,
Consultant,
Thai Rung Union Car Co., Ltd.

แบบสัมภาษณ์

ทักษะที่เพิ่มประสิทธิภาพการสอนของวิทยากรด้านช่างเทคนิค

ส่วนที่ 1 ข้อมูลทั่วไปของผู้ตอบ

1. เพศ

ชาย

หญิง

2. อายุ

20 - 35 ปี

36 - 45 ปี

46 - 60 ปี

61 ปี ขึ้นไป

3. วุฒิการศึกษา

ปริญญาตรีหรือเทียบเท่า (ในประเทศ)

ปริญญาตรีหรือเทียบเท่า (ต่างประเทศ)

ปริญญาโท (ในประเทศ)

ปริญญาโท (ต่างประเทศ)

ปริญญาเอก (ในประเทศ)

ปริญญาเอก (ต่างประเทศ)

4. สาขาวิชาที่ท่านจบการศึกษา

.....

5. ประสบการณ์ในการทำงาน

ต่ำกว่า 3 ปี

3 - 10 ปี

11 - 20 ปี

21 ปี ขึ้นไป

6. ประสบการณ์การเป็นวิทยากร

- ต่ำกว่า 3 ปี
- 3 – 10 ปี
- 11 – 20 ปี
- 21 ปี ขึ้นไป

7. ประสบการณ์การเป็นวิทยากรในวิชาช่างเทคนิค

- ต่ำกว่า 3 ปี
- 3 – 10 ปี
- 11 – 20 ปี
- 21 ปี ขึ้นไป

8. เนื้อหา วิชาที่ท่านสอนเป็นประจำ (อาจตอบได้มากกว่า 1)

.....

.....

9. แหล่งความรู้ด้านช่างเทคนิคของท่าน

- เรียบจบโดยตรง
- ประสบการณ์การทำงาน
- การประชุมสัมมนา
- การอบรมหลักสูตรระยะสั้น/ยาว ซึ่งจัดโดยสถาบันการศึกษา
- การเรียนด้วยตนเอง
- อื่นๆ โปรดระบุ

ส่วนที่ 2 ความคิดเห็นของกลุ่มตัวอย่างเกี่ยวกับการสอนวิชาด้านช่างเทคนิค

1. เมื่อท่านสอนวิชาทางช่างเทคนิค ท่านใช้วิธีการสอนแบบใดบ้าง

.....
.....
.....

2. สื่อที่ท่านใช้ประกอบการสอน ในวิชาด้านช่างเทคนิคมีอะไรบ้าง

.....
.....
.....

3. เมื่อท่านทำการสอน ทักษะที่ท่านใช้เป็นประจำมีหรือไม่
ได้แก่ทักษะอะไรบ้าง

.....
.....
.....

4. หากจะเพิ่มประสิทธิภาพการสอนให้ดียิ่งขึ้น ท่านคิดว่าทักษะที่วิทยากรควรนำมาใช้มีอะไรบ้าง

.....
.....
.....

BIOGRAPHY

NAME	Miss Pranee Sae-Wong
DATE OF BIRTH	April 28, 1979
PLACE OF BIRTH	Bangkok, Thailand
INSTITUTIONS ATTENDED	Mahidol University, 1996-1999 Bachelor of Science (Chemistry) Mahidol University, 2000-2003 Master of Education (Adult and continuing Education)
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