CHAPTER I

INTRODUCTION

Music is one of the most significant manifestations of humanity's fundamental needs for more than mere biological existence. Existing is not the same as living, for living is making life interesting, satisfying, and meaningful. Music represents a desire to achieve and create. It is a kind of aesthetic experience. The characteristics of aesthetic experience are as follow (1) it has no practical or utilitarian purpose; it is an end in itself, (2) it involves feelings; there is a reaction to what is heard or seen, (3) it involves the intellect; the mind consciously contemplates an object, (4) it involves a focus of attention, (5) it must be experienced; no one can successfully tell another about an aesthetic experience and (6) it makes life fuller and more meaningful (Abeles, Hoffer, & Klotman, 1984).

In learning music, which is one of the created art subjects, one must know the music subject matter. The characteristics of the music subject matter is an aural art and performing art. The structure of the music subject consists of music content and music skills. The music content consists of 2 important parts : (1) music elements which include rhythm, melody, harmony, form, tone color and characteristics of sound, and (2) music literature which includes repertoire and music history. For music skills, they help learners to understand music subject and they are the core in music education for those aspiring to be a musician or performer. Music skills consist of listening, singing, playing, moving, creating and reading. These skills should be included in music learning activities (Bergethon and Boardman, 1979 ; Lament 1976).

Creating is one of the important activities in music learning. This activity will help the learners learn the

music subject matter and at the same time also develop their thinking and their abilities to create something for their own. When the learners have the opportunity to use their thinking to create, cognitive development of the learners should be improved. In music, creating can be divided into 2 categories (1) improvisation implies extemporaneous music making : a person has to create at that moment, he has no opportunity to mould and perfect his material. The creation can be performed by playing or singing after the person had read or listened to a piece of rhythm or motif then the person composes a phrase or a song or develops it to become the whole completed song; (2) composition involves the planning and relating of musical elements into a permanent design and notation the final product in order to preserve it for future performance. In this respect, a person has time to mould and perfect his material to his utmost satisfaction before performing to the audience (Bergethon and Boardman, 1979; Sloboda, 1987).

As for improvisation, it is a very interesting subject to study the way to improve music improvisation ability of the music learners. If the learners could use the music elements and techniques they have learned to perform with any song they like, they would be more enjoyable in playing and learning music. This is the most important objective in learning music. However in most cases learners learn to perform what the music scores have been written only. Without the written scores, they do not know how to perform with the given melody. In the music examination, especially for Grade 5-4-3 of Yamaha Grade Examination, a music improvisation part will reflect a person's overall music abilities. This part is the most problematic part in the examination which causes an examination failure. Other parts of the music examination are repertoires and sight playing. The learners' failure in doing improvisation is primarily due to their inadequate methods to analyze the given melody, and the management of music elements and playing techniques.

Success in improvisation relies on structural grasp and also the ability to rapidly choose appropriate, yet novel, elements to fill the slots in a basic script (Sloboda, 1987). However the problems which confront most of the music learners in doing improvisation are how to use and combine all the music elements and techniques they have learned to create a novel music statement in an appropriate and successful way. In order to perform good and appropriate improvisation, a person must well arrange and plan the frame or structure and the elements to be used beforehand. That is, a person should manage his cognitive processes; he should know what, when, and how to do the what. This is the idea of the metacognition which is based on the information-processing model. In this study, the researcher aims to develop a teaching model based on metacognition to improve music improvisation ability. The scope of music improvisation will be confined on the performance of improvisation through keyboard instrument, namely, electronic organ.

Theoretical and Research Backgrounds

This section comprises 3 major parts; (1) the information-processing model : this is an overview of the information-processing approach; (2) metacognition : the meaning, components, development, researches, and training are being examined and discussed; and (3) music improvisation : the meaning, music elements, music teaching methods, the factors of Electone improvisation, and measurement of musical performance are also examined and discussed.

I Information-processing Model

The information-processing approach relies on the computer as a model for human learning. Like the computer, the human mind takes in information, performs operations on it to change its form and content, stores and locates it, and generates responses to it. Thus, processing involves

gathering and representing information, or encoding, holding
information, or retension; and getting at the information
when needed, or retrieval. Figure 1 shows a schematic repre-
sentation of a typical information processing model. The three
boxes depict cognitive structures where information may be
held and transformed. The arrows indicate the flow of infor-
mation. The long oval shape at the top of the figure represents
control processes that affect the flow of information through-
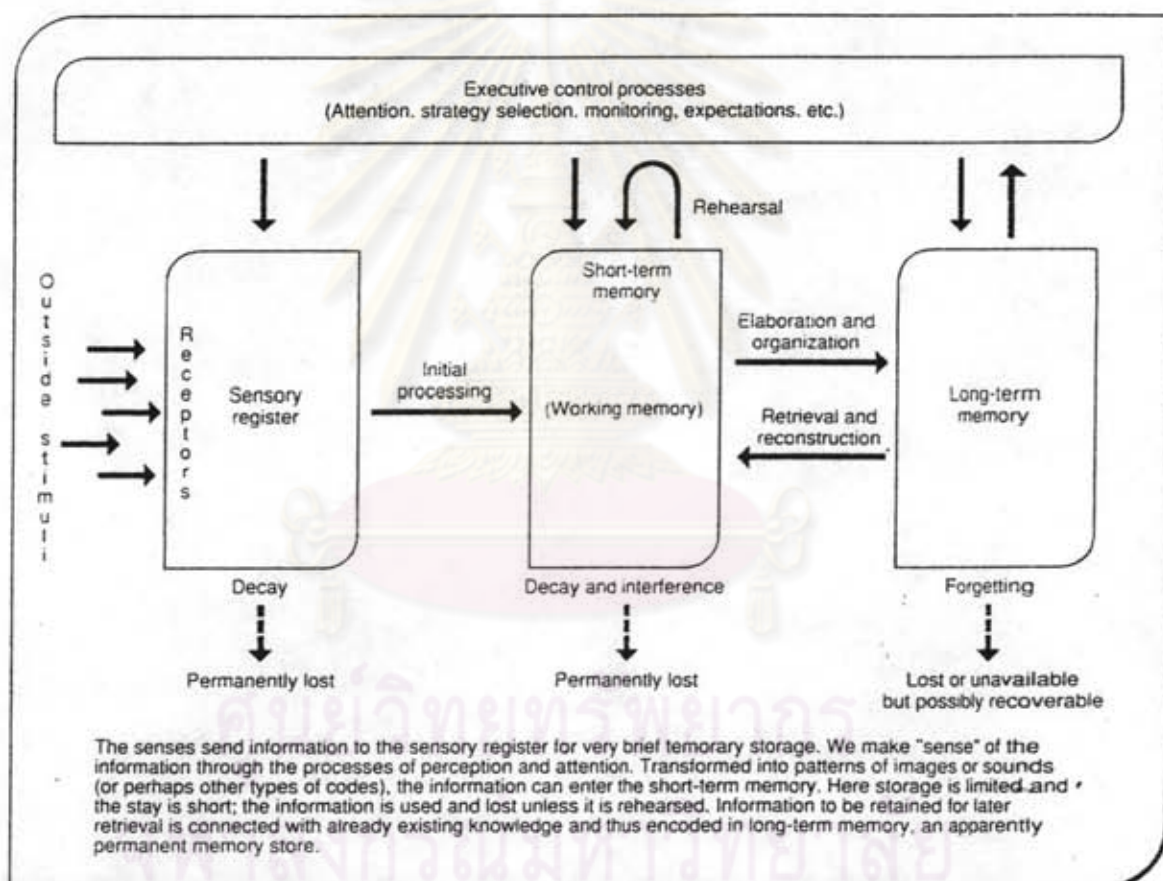out the system (Woolfolk, 1990; Salvin, 1988).

Figure 1 Information Processing Model (Woolfolk, 1990, p.231)

The sensory register is where the information is held
in raw sensory form for no more than 1 to 2 seconds. Informa-
tion is then catagorized and passed on to the short-term
memory or forgotten altogether. The short-term memory is a
temporary working memory of limited capacity. This limited
capacity can be demonstrated with a memory span task in which

individuals are asked to recall stimuli in the order they are presented. Adults' span for digits is nearly 8; for letters, 6; and for words, 5. Rehearsal is used to transfer information from short-term to long-term memory : a limit-less, permanent storehouse of knowledge of the world. Once information reaches long-term memory, very little is lost. Failure to remember at this stage is due to the inability to retrieve information rather than an actual loss of the infor-mation.

Information-processing is the study of how humans perceive, comprehend, and remember the information they gain from the world around them. The principles of information-processing have been used to explain cognitive development which is the ongoing improvement of a person's system for processing information. One characteristic of cognitive development is a growing ability to monitor and direct one's own thinking : to keep track of how well one is paying atten-tion and to select an effective strategy for solving a problem. This activity of monitoring one's own cognitive process is metacognition.

II Metacognition

Meaning

In a literal sense, the term metacognition means "transcending knowledge" (Armbruster, Echols & Brown, p.45, 1982). This term was introduced and used by psychologist to refer to knowledge about and control over thinking and learn-ing activities (Baker & Brown, 1984 : Babbs & Moe, 1983; Cross & Paris, 1988; Flavell, 1976 : cited by Woolfolk, 1990). Flavell defined metacognition as "one's knowledge concerning one's own cognitive processes and products or anything related to them....." (Flavell, 1976, p.232 : cited by Garner, 1987). Meichenbaum and his colleagues described metacognition as people's "awareness of their own cognitive machinery and

how the machinery works" (Meichenbaum, Burland, Gruson & Cameron, 1985, p.5 : cited by Woolfolk, 1990). Costa described metacognition as people's ability to know what they know and what they don't know. It is the ability to plan a strategy for producing what information is needed, to be conscious of their own steps and strategies during the act of problem solving, and to reflect on and evaluate the productivity of their own thinking (Costa, 1987).

The meaning of the term metacognition has been defined and described by many people but overall it shares the same idea, that is, it refers to the ability to monitor one's own cognition; it is a person's knowledge of and conscious attempts to control his/her own cognitive processes. In this research, metacognition will be defined as awareness and regulation of one's own cognitive activities.

Components

Metacognition involves at least two separate compo-nents (Baker & Brown, 1984, Palincsar & Brown, 1987; Woolfolk, 1990); (1) an awareness of the skills, strategies, and resources needed to perform a task effectively : knowing what to do; and (2) the ability to use self-regulatory mechanisms to ensure the successful completion of the task : knowing how and when to do the what.

The first component is concerned with a person's knowledge about his or her own cognitive resources and the compatibility between the person as a learner and the learn-ing situation. It refers to the stateable knowledge in that one is able to reflect on the processes and discuss them with others, and the stable knowledge one possesses about his/her own cognitive processes in that one would expect that a person who knows pertinent facts (e.g., that organized material is easier to learn than disorganized material) would continue to know these facts if interrogated properly. It is

the knowledge and beliefs that a person has accumulated through
experiences and stored in long-term memory. The strategies in
the first component, knowing what to do, include identifying
the main idea, rehearsing information, forming associations
and images, using mnemonics, organizing new material to make
it easier to remember, applying test-taking techniques,
outlining, and note taking.

The ability to reflect on one's own cognitive pro-
cesses, to be aware of one's own activities while reading,
solving problems, and so on, is a late-development skill with
important implications for the person's effectiveness as an
active, planful learner. If the person is aware of what is
needed to perform effectively, then it is possible for him/her
to take steps to meet the demands of a learning situation more
adequately. If, however, the person is not aware of his/her
own limitations as a learner or the complexity of the task at
hand, then the person can hardly be expected to take preven-
tive actions in order to anticipate or recoup from problems.

The second component consists of the self-regulating
mechanism used by an active learner during an ongoing attempt
to solve problems. The regulatory mechanisms, knowing how and
when, include checking to see whether the person understands,
predicting outcomes, evaluating the effectiveness of an
attempt at a task, planning the next move, testing strategies,
deciding how to apportion time and effort, and revising or
switching to other strategies to overcome any difficulties
encounterred. These are not necessarily stable skills in the
sense that although those skills are more often used by older
children and adults, they are not always adopted for their
usage, and the quite young children may monitor their own
activities on simple problems. Effective learning requires
an active monitoring of one's own cognitive activities. These
regulatory mechanisms can be thought of as a part of the
executive control processes on the flow of information
through memory systems in the information processing model
(see Figure 1, p. 4).

In general, metacognitive abilities begin to develop around ages 5 to 7 and improve throughout schools. But there is a great variability even among students of the same age. Most children go through a transitional period during which they can apply it on their own (Brown, Campione, & Day, 1981: cited by Woolfolk, 1990).

Research on Metacognition

Metacognitive skills are believed to play an important role in many types of cognitive activities, including oral communication of information, oral persuation, oral comprehension, reading comprehension, writting, language acquisition, perception, attention, memory, problem solving, social cognition, and various forms of self-instruction and self-control (Flavell, 1985).

Metacognition has important applications in the field of education (Baker, 1982; Baker & Brown, 1984; Brown, Bransford, Ferrara, Ferrara & Campione, 1983; Flavell, 1979, 1981; Markman, 1981; Paris, Lipson, Jacobs, Oka, DeBritto, & Cross, 1982 : cited by Flavell, 1985). In reading, most characterization of reading includes skills and activities involved metacognition, since effective readers must have some awareness and control of the cognitive activities they engage in while reading. Some of the metacognitive skills involved in reading are : (a) clarifying the purposes of reading, that is, understanding both the explicit and implicit task demands; (b) identifying the important aspects of a message; (c) focusing attention on major content rather than trivial; (d) monitoring ongoing activities to determine whether comprehension is occurring; (e) engaging in self-questioning to determine when failures in comprehension are detected (Brown, 1980 : cited by Baker & Brown, 1984).

In recent years, metacognitive research has made significant contributions to the understanding of metacognitive

process in reading comprehension. Since a good deal of the knowledge available to students in schools is packaged in the form of written materials, reading comprehension is important to all school subjects. Reading comprehension is a much more complicated process than just "reading the words". Comprehension is the result of an interaction between the text itself and the cognitive structures (story grammars, other schemata, propositional networks, strategies) that the reader draws on and applies to during the reading process. This interaction could be examined from the differences in metacognitive skills between experienced (older or better) readers and novice or unskilled (younger or poorer) readers (Woolfolk, 1990).

Kreutzer, Leonard, and Flavell (1975) had made an initial effort to get an estimate of elementary school children's knowledge of memory phenomena sampled from person, task and strategy catagories. Children from four grades (kindergarten, 1, 3, and 5) were interviewed individually for about 30 minutes in a relaxed and informal session. It was found that the older children (grade 3 and 5) differred from the younger children (kindergarten and grade 1) in a number of important ways. One was that of conceptualizing memory ability as something that varies with occasions and with individuals. A second difference was the older children's understanding the information in short-term memory is susceptable to rapid forgetting. A third difference was that the older children recommended using catagory structure to memorize a set of pictures. A fourth difference was that older children provided more means of assisting recall than younger children. A fifth difference between the older and younger children was the older children's awareness of the difference in difficulty between gist and verbatim recall tasks. Clearly, the major finding of this important investigation was that younger children know substantially less than older children about the variables affecting their own performance (Kreutzer, Leonard, & Flavell, 1975 : cited by Garner, 1987).

Myers and Paris (1978) modelled their investigation after the Kreutzer et al. (1975) study, but focussed on meta-cognitive knowledge about reading processes. They found that the younger children (second grade) showed a lack of know-ledge about critical reading parameters. Compared to the sixth-grade readers, they mostly did not know the following: (a) readers have special skills, (b) motivation is linked to reading performance, (c) reading silently is faster than reading aloud, (d) the first and last sentences of a para-graph are particularly important ones, (e) retelling a story is more efficiently done at gist level, rather than at verbatim level, (f) skimming is reading the words that yield the most information, and (g) reading of text is an important strategy for resolving comprehension failures. The young children focussed quite consistently on the decoding rather than on the comprehension aspects of the reading process.

Canney and Winograd (1979) investigated second, fourth, sixth and eighth graders' conception of reading, using both interviews and tests. They also concluded that younger and poorer readers treated reading as a decoding process rather than as a meaning-getting process. In the interview part of their study, students were asked, "What is reading ?" At all grade levels, better comprehenders (determined by teacher judgements in combination with standardized test scores) were more aware of meaning-focussed features of reading than poorer comprehenders. The poorer ones attended more to the mechanical, decoding aspect of reading, Furthermore, the difference between the emphases of better and poorer compre-henders increased with age (Canney & Winograd, 1979 : cited by Armbruster, Echols, & Brown, 1982).

Differences between good readers and poor readers in decoding versus comprehension emphases were also examined by Garner and Kraus (1981-1982). Students in grade 7 at two reading levels were asked eight questions about reading in one session and were administered on an error-detection task

in a second session two weeks later. A sample of responses illustrated the distinctive different emphases found in the two groups. To the question "What things does a person have to do to be a good reader ?" good readers gave such responses as "understand what you are reading" or "get the idea", whereas poor readers provided such answers as "pronounce the word right" or "know all of the words". To the question "if I gave you something to read right now, how would you know if you were reading it well ?" good readers responded with "if I could understand it without reading it over and over again" or "if I didn't have trouble getting the point". Poor readers respond to the same question with "if I didn't pause much" or "if I read fluently out aloud". Finally, to the question "What makes something difficult to read ?" the good reader responses of "if you're not familiar with the important ideas" or "badly written stuff where the ideas are hard to get" can be contrasted with "small print", "a lot of big words", or simply "long words" mentioned by poor readers. For the error-detection task, the same readers who emphasized decoding at the expense of comprehension failed to detect investigator-inserted comprehension obstacles in text.

Even if the learners know that the purpose of reading is to get the meaning, they must also know how to modify their reading behaviors appropriately in response to various tasks. Smith (1967) asked twelfth-grade readers (good and poor) to read for two different purposes : details and general impressions. After reading, the students were interviewed about the processes they used when they read for two different purposes. The good readers reported that they adjusted the procedures they used according to the purpose. They claimed to use a variety of processes and, in general, the specific procedures used for the two purposes were different. On the other hand, the poor readers made only slight variations in their approach when reading for the two purposes. In addition, the good readers were more successful than the poor ones in keeping the purpose for reading in mind.

In a study of Forrest and Waller (1979), third and sixth graders read two different stories for each of four different purposes : (a) for fun, (b) to make up a title, (c) to find one specific piece of information as quickly as possible (skim), and (d) to study. After reading each story, the children were given a comprehension test. The result was that the ability to adjust reading strategy in response to the assigned purposes increased with age and reading ability, as reflected in performance on the comprehension test within the four conditions (Forrest & Waller, 1979 : cited by Baker and Brown, 1984).

Realizing differentially difficult tasks, the strategy of wise study time allocation is necessary for knowing when and where to expend the effort. This strategy involves (a) evaluating whether or not something has been understood, remembered, perceived adequately, and so forth, and then (b) planfully regulating subsequent activities on the basis of this evaluation. Masur, McIntyre, and Flavell (1973) investigated the management of resources for a memory task by subject in grade 1, 3, and college. No first-grade subjects spoke of selecting missed items for further study, but the most frequent selection explanation for the third-grade and college subjects was focussing on the items they had just failed to recall.

Both poorer and younger readers also have difficulty selecting the important ideas in the text. In a study by Brown and Smiley (1977), 8-, 10-, 12-, and 18-year-olds were asked to evaluate the importance of the idea units of complex folk tales by rating them according to four levels of relative importance to the theme of passage. After students had finished reading one story, they read and recalled another story. Results showed that the ability to distinguish relative importance was strongly related to age. Eighteen-year-olds could reliably discriminate across the four levels of importance, while the eight-year-olds made no reliable distinction

between levels of importance in their ratings. Brown and Smiley (1978) found that when given an extra period for study, children from seventh grade up improved considerably their recall for important elements of text while recall of less important details did not improve. Children below seventh grade did not show such effective use of an additional study time.

Readers' sensitivity to important parts of the text enables their efficient allocation of attention and efforts in the focussed study of relevant information. Winograd (1984) investigated difficulties in summarization of eighth graders. It was found that good and poor comprehenders absorbed strikingly different notions of important sentences in the given passage. The poor comprehenders selected important sentences containing details, which specifically were of highly visual nature. The good comprehenders, in contrast, selected main ideas or topic sentences. Moreover, their choice of important sentences parallelled to that of adult readers.

Markman (1977) studied the developmental changes in comprehension monitoring. Children who were asked to serve as editorial consultants, were presented with instruction on performing a task from which critical information had been deleted. The measure of whether or not the children noticed the incomprehensible nature of the instructions depended upon their ability to ask question or request additional information from the investigator. The first-grade children differed from the third-grade ones in the point at which they realized instructions incomplete. They did not demonstrate much awareness that their comprehension of instruction was faulty. Markman (1979) studied the detection of textual inconsistencies. In his investigation, children from grade 3, 5, and 6 were asked to be editorial consultants and assigned to conditions of either implicit or explicit inconsistencies. The results were that the implicit condition was more difficult for children than the explicit one. There

were no grade differences of inconsistency detection for the latter as well. However, when specifically warned about the inconsistencies, a greater proportion of children, sixth graders in particular, reported them.

Children have some difficulty in detecting even gross violation of logical structure. Danner (1976) presented children in grade 2, 4, and 6 with short expository passages which were either organized around three topics or arranged randomly. The children were asked to perform several tasks including the recalling of the passages and the determination of which more difficult passage type to learn. They had to justify their answers. For all subjects, the organized passages were recalled better than disorganized ones. Although the majority of children reported that disorganized passages were more difficult to remember, only older children attributed the difficulty to differences in structure. The younger children had less awareness of the cause of the differences in difficulty.

Owings, Petersen, Bransford, Morris, and Stein (1980) also showed that less able students had littel awareness of the text and task characteristics. These factors should be taken into account when studying, eventhough their memory was affected by the structure of the text. Owings et. al. manipulated the logical structure of passages by varying the extent to which descriptions of characters were logically related to their behaviors. In "nonarbitrary" versions of the stories, subjects and predicates were appropriate and consistent with each other. For example, the hungry boy had eaten the hamburger: the sick boy had gone to the doctor. In the "arbitary" version, the subjects and predicators of these sentences were re-paired, generating such strings as : the sleepy boy had eaten hamburger; the hungry boy had played basket-ball. Successful and less successful fifth graders read and studied "arbitrary" and "nonarbitrary" versions of stories, rated them for difficulty and justify their responses,

then recalled the stories. All children remembered the logi-
cally structured passages better than the arbitrary passages,
but only the more successful students consistently recognized
that the arbitrary passage was more difficult and justified
their answers appropriately. Furthermore, the better students
spent more time reading and studying arbitrary passages, while
the less successful students spent equal amount of time for
the two passage types.

Younger and poorer readers also have few strategies
at their disposal for dealing with any failures to understand
the text, even if they become aware of problems (Baker &
Brown, 1984). Myers and Paris (1978) asked the second and the
fifth graders of the strategies for comprehension failures at
the word and sentence level. Older readers tended to say they
would resolve a difficulty by using a dictionary or by asking.
Younger readers had few strategies for deciphering the meaning
of unknown words or sentences and were more insensitive to
the need for resolving comprehension failures. Paris and Myer
(1981) obtained several measures of the comprehension moni-
toring and studied strategies of good and poor readers in the
fourth grade. Students were directed to read and remember a
story containing some difficult words. Each was provided with
blank paper, a pencil, and a dictionary and asked to write or
ask questions. Good reader asked more questions, took more
notes, and used dictionary more often.

From the study cited above, the development of metacog-
nition is related to proficiency in learning. In general,
younger and poorer readers have less adequate understanding
of how the various factors involved in the learning situation.
Furthermore, these readers also tend to be less adept at using
the knowledge they do have about characteristics of the learn-
ing situation to enhance their learning. In other words,
younger and poorer readers tend to be deficient in both com-
ponents of metacognition (knowledge and control).

Metacognition has made important contribution to the field of learning-disabilities (LD) in three specific areas : (1) through highlighting the critical role of phonemic awareness in the child's process of learning to read, metacognition provides understanding of the failures of certain children to learn to read; (2) metacognitive skills underlie efficient reading and effective studying. LD students lack these skills, and their poor scholastic achievements reflect not only deficient basic skills, but also deficient metacognitive skills; (3) metacognition is one of the contributors to the failure of LD students to maintain and generalize learning skills/ strategies. It also contributes important insights into the reasons for educable mentally retarded (EMR) students' failure to generalize learning skills/strategies (Wong, 1986).

Metacognition also has been explored in the field of giftedness. Chatman and Williford (1982) studied gifted grade-four students' awareness and use of cognitive strategies while solving problems. Using an unstructured interview to assess awareness, none of the subjects could verbalize their thought processes. In a second experiment with the same sample, the children were asked whether particular strategies could have been helpful in solving the problems. Although many of the students understood how specific strategies could have helped, only few reportedly utilized them. This result suggests that while gifted students possess some metacognitive knowledge, they may incorrectly utilize it (Chatman & Williford, 1982 : cited by Shore & Dover, 1987). Dover (1983) found that academically gifted children may be differentiated according to their metacognitive abilities. Twenty-five gifted and twenty-five nongifted children in grade five and six performed Luchins's (1942) Einstellung water-jar task. Comparison was made among the groups on flexibility, accuracy and speed, and on a measure of metacognitive knowledge assessed by a structured interview about their solution processes. Gifted students performed the task more quickly, as expected. They also gave the alternative solution more often when it was

available. They demonstrated more superior problem-solving skills, greater awareness of their solution processes, and more efficient monitoring skills (Dover, 1983 : cited by Shore & Dover, 1987).

Metacognition and Training

Successful metacognitive skills training programs include three factors : (1) training and practice in the use of task-specific strategies (skills training), (2) istruction in the orchestration, overseeing, and monitoring of these skills (self-regulating training), and (3) information concerning the significance and outcome of these activities and their range of utility (awareness training). Students who received only skill training often fail to use them intelligently and on their own volition because they do not appreciate the reasons why such activities are useful, nor do they grasp where and when to use them. An additional instruction in "awareness", or knowledge, over a skill's evaluation, rational, and utility greatly increases the positive outcome of training studies (e.g., see Paris, Newman, and McVey, 1982). This is to instruct students about where, when, and how to use a strategy in a variety of appropriate domains (Baker & Brown, 1984).

Brown, Campione, and Day (1981) identified two approaches to strategy training. The first was labelled as an "informed training" because students were both induced to use a strategy and also given some information concerning the significance of that activity. The second type of instruction was a "self-control training" where students were explicitly instructed how to monitor and self-regulate their use of strategy (Brown, Campione, and Day, 1981 : cited by Paris, Wixson, & Palincsar, 1986).

Informed strategy training emerged in part from research on the development of memory strategies. Paris, Newman, and McVey (1982) showed that first-graders who were

informed of the usefulness of memory strategies maintained
the strategies without prompting more often than children
simply directed to use the strategies. Informed training also
led to increased recall and increased metacognition about the
strategies. Thus, children's understanding about the benefits
of strategic learning can provide a personal rational for
action that motivates continued use of the effective strategies.

Hansen (1981) examined the effects of three different
instructional interventions on students' ability to answer
inferential comprehension questions. In the first condition,
students received a traditional "diet" of literal (80%) and
inferential (20%) questions along with "ordinary" story
introductions. The second treatment was a "practice-only"
treatment in which students received only inferential questions
following their stories along with the "ordinary" story intro-
ductions. The third treatment included "strategy training" in
which students received the traditional assortment of questions;
however, prior to reading, they were asked to use their own
experiences to predict and evaluate story characters' problems
and actions. This final treatment represented an attempt to
help students to be aware of the "known to new" people, and to
allow them to apply this principle to their reading. The
results of this study indicated that both the practice-only
and the strategy training group demonstrated improved perfor-
mance on four different measures of comprehension including
a standardized achievement test. In a subsequent study, Hansen
and Pearson (1983) combined the practice-only and strategy
training interventions into a single treatment and trained
classroom teachers to administer the treatments. The results
of this study indicated that the informed strategy training
was most effective for poor readers.

Raphael and McKinney (1983) examined the effects of
a ten-week program designed to heighten fifth- and eighth-
grade students' awareness of information explicitly stated
in text, information implied by text, and information found

only in the individual's knowledge base. In addition, the
relative usefulness of prompting students to think of these
relationships between questions and sources of information
was examined. Results indicated that while the training pro-
gram was effective at both the fifth and eighth grades, the
eighth-grade students benefited as much from a 10-minute
orientation to the concepts. Prompting students to use their
knowledge of question-answer relationships, it was helpful
in the fifth grade, but disruptive in the eighth. In another
study of informed strategy training, Raphael and Pearson
(1985) designed an instructional sequence bssed on (1) model-
ling, (2) guided practice, (3) independent practice, and
(4) direct feedback. Students were taught to identify different
types of questions based on the source of information required
for a correct answer. The results indicated that trained
students were better than those in the untrained control group
at discriminating questions of different types, on evaluating
their own question-answering behavior, and in giving high-
quality responses.

Self-control training procedures instruct students
explicitly how to monitor and evaluate their performance.
Short and Ryan (1984) designed an instructional intervention
to promote comprehension for poor readers. They provided
students with self-control training regarding story schemata
so that students would ask themselves five questions as they
read : (1) Who is the main character ? (2) Where and when
did the story take place ? (3) What did the main character
do ? (4) How did the story end ? and (5) How did the main
character feel ? This was compared to an attribution condi-
tion which students recited to themselves positive state-
ments such as "Enjoy the story", "Try hard", and "Give your-
self a pat on the back". Skilled and unskilled fourth-grade
readers were assigned to one of these groups or to a group
that received both kinds of metacognitive training. It was
found that strategy training on story grammar questions
enhanced comprehension significantly and that self encouraging

statements had no impact on comprehension. Although less-skilled readers maintained the strategy of asking wh- questions, there was no evidence of increased awareness about reading or generalization of the strategy.

Interventions that combine informed strategy and self-control training procedures seemingly resulted in transfer of training to appropriate settings. Day (1980) trained groups of junior college students of average and poor reading and writing ability to use basic rules of summarization. There were four conditions to which the students were assigned. In the self-management condition, students received only the most general guidelines that summaries are completed by including main idea infromation and exercising economy with words. In the rules condition, students were taught the definition of a summary and rules for completing a summary. Students in a rule plus self-management condition received the same instruction as those in group one and two but they were not provided information on how to integrate these rules. Finally, a fourth group received the rule and self-management instruction and also received explicit directions regarding when to use each of the rules and how to evaluate the effectiveness of implementing the rules. The researchers measured performance on written summaries according to the use of the summarization rules. The data indicated that rules plus self-management training was necessary at least for those students who had no identified learning problems in order to implement successfully the summarization rule. For students with learning problems the most explicit of the conditions was necessary to enhance their summarization skills (Day, 1980 : cited by Paris, Wixson, & Palincsar, (1986).

Kurtz and Borkowski (1985) were also interested in the relationship between metacognition and strategic behavior. They included a separate condition in their intervention program comprising meta cognitive components. Their population of sixth graders was evaluated to determine knowledge about

memory, reflectivity or impulsivity, and skill with the task
summarization. The students were then assigned to one of
three conditions : (1) strategy condition in which the students
received instruction on the use of superordinates, identifi-
cation of main idea information, and invention of topic
sentences for the purpose of summarizing; (2) an executive
condition, in which the students, in addition to the summari-
zation instruction, received instruction regarding the value
of monitoring reading performance, the importance of deli-
berating strategy selection, the flexible use of strategies,
and the need to work slowly; and (3) an attention control
condition in which the students read and summarized the
instructional materials. The results indicated that the
students in the two intervention conditions performed better
than the attention control students on the summarization task.
Further, those students in the executive condition who
received the metacognitive instruction performed better than
those who had received the summarizing instruction only (Kurtz
& Borkowski, 1985 : cited by Palincsar & Brown, 1987).

The blend of direct instruction, informed training,
and metacognitive self-management is examplified in an expe-
rimental curriculum for reading comprehension called Informed
Strategies for Learning, or ISL (Paris, Cross, & Lipson, 1984).
ISL was designed to teach children directly about what
strategies are, how they operate, and when they should be
applied, and why they foster comprehension. The purpose was
to promote children's metacognition about reading strategies
which, in turn, would promote their strategic reading and
comprehension.

Two of the key features of ISL were the use of
metaphors to teach strategies and the use of group discussions.
For example, students and teachers discussed how they could
be "reading detectives" and how they should "plan their read-
ing trips". The metaphors provided concrete examples of cog-
nitive strategies that could be used before, during, and

after reading. In addition, the metaphors stimulated group discussions about thinking; they provided shared insights into children's understanding of reading and thinking for both teachers and peers.

The instructional techniques incorporated in ISL included : (1) informing students about particular strategies; (2) using metaphors and visual displays to illustrate concrete analogs of reading strategies; (3) discussing strategies explicitly among the entire class; (4) practising the strategies immediately and receiving feedback; and (5) using reading selections from various contents areas (science and social studies) to promote generalization of strategy use across the curriculum. The srtategies addresses three generic comprehension processes : constructing text meaning, monitoring comprehension, and identifying meaning. The strategies were arranged sequently and organized in whole group lesson plans (Paris, Wixson, & Palincsar, 1986).

In the first study, two third- and two fifth- grade classrooms were taught ISL twice each week for 4 months. Compared to children in control classrooms, children who received metacognitive instruction about reading increased their awareness about comprehension strategies significantly (Paris & Jacobs, 1984). They also exhibited significant advantages on cloze and error detection task that required strategic reading, but there were no differences on standardized reading comprehension test (Paris, Cross, & Lipson, 1984). In a subsequent study, Paris and Oka (1986) conducted an instructional study designed to improve students' use of reading strategies by increasing metacognitive knowledge about reading. Approximately 500 third-graders and 500 fifth-graders received an experimental curriculum that explicitly taught them to use reading strategies. An additional 600 children participated as controls. Again, findings indicated that subjects in experimental group classrooms made significantly greater gains in awareness about reading than controls

and demonstrated superior strategic skills. The results gained
in Paris and Oka (1986) were also found in the study of Cross
and Paris (1988). These studies show that principles of cogni-
tive strategies and self-regulation fostered by metacognition
can be translated into practical classroom instruction that
helps students to read better.

Considerable attention has been focused on the role of
scaffolding in cognitive strategy instruction. Scaffolding has
been described as instructional assistance that enables someone
to solve a problem, carry out a task, or achieve a goal that
the person could not accomplish alone (Wood, Bruner, & Ross,
1976 : cited by Paris, Wixson, & Palincsar, 1986). The instruc-
tional problem is to choose the best way in which teachers can
assist students to move from one level of competence to the
next so that, in time, students will be able to apply problem-
solving strategies independently and judiciously. The hallmark
of scaffolded instruction is the interplay between teachers
and students in the joint completion of a task.

An intervention that reflects the essence of scaffolded
instruction is the procedure developed by Palincsar and Brown
(1984) to teach poor comprehenders how to enhance and monitor
their understanding of text. The procedure, called "reciprocal
teaching", is best represented as a dialogue between teachers
and students as they take turns assuming the role of the
teacher. The purpose of the dialogue is to arrive at an under-
standing of the text being read. The dialogue is facilitated
by the use of four strategies : (1) predicting, or activating
relevant background knowledge for the purpose of hypothesizing
what the author will discuss; (2) question-generating, or iden-
tifying key content, framing that information in a question,
and self-testing for understanding and recall; (3) clarifying,
or noting when there has been a failure to comprehend, identi-
fying the source of the breakdown, and taking the appropriate
steps to restore meaning; and (4) summarizing, integrating
information across sentences, paragraphs, and pages of the

text. The person who is assuming the role of teacher for a segment of text gives predictions about what might occur next and, following the reading of the text, generates a question to which the others in group respond, notes or solicit points to be clarified, and summarizes that portion of text. Other members participating in the discussion comment and elaborate upon the teacher's contributions (Paris, Wixson and Palincsar, 1986).

Series of instructional studies in reciprocal teaching had been conducted by Palincsar and Brown (Brown, & Palincsar, 1984, 1986 : cited by Palincsar & Brown, 1987). During the initial days of instruction, the teacher initiated and sustained the dialogue, but with each day of instruction, the teacher attempted to transfer more responsibilities for the dialogue to the students while the teacher provided feedback and coached them through the discussion. Before beginning the dialogue each day, the group reviewed what strategies they were learning, why they were learning them, and in what situations they should be helpful. Instruction took place over a period of 20 consecutive school days. The middle school students participating in these studies were typically acheiving two years below grade level on measures of comprehension while their decoding skills, in contrast, were generally grade appropriate. An array of measures were used to determine the effectiveness of reciprocal teaching and indicated that, with guided practice, the students became adept with the independent use of the strategies. Acquisition of the strategies in this contex resulted in significant, reliable improvements in comprehension that maintained over the time and generalized to improve classroom performance.

The trainings of metacognition discussed above, are mainly used in the areas of reading and comprehension and aim to promote students' strategic reading and comprehension. Each of the trainings seems to be effective. In the informed training, students are both induced to use a strategy and

also given some information concerning the significance of that activity. This would cause the students to understand the benefits of strategic learning and would lead them to continue to use effective strategies. In the self-control, students are explicitly instructed how to monitor and self-regulate their use of strategy. The Informed Strategies for Learning (ISL) is a blend of direct instruction, informed training, and metacognitive self-management. The use of metaphors to teach strategies and the use of group discussions are the key features of ISL. The metaphors provide concrete analogs of reading strategies, and the group discussions provide shared insights understanding of reading and thinking of teashers and peers. Lastly, the reciprocal teaching, a method for teaching metacognitive reading comprehension skills to students with comprehension difficulties, is emphasized in scaffolded instruction. There is an interplay between teachers and students. At the very beginning stage, the teacher initiates the dialogue by modelling the use of 4 strategies to solve each problem (predicting, question-generating, clarifying, and summarizing) and the students take turns assuming the role of a teacher. As the training days go by, the teacher gradually transfers more responsibility for the dialogue to the students enabling them to adopt the strategies of solving the problem by themselves.

Eventhough metacognitive training is often used to train students with difficulties in reading and comprehension, it should also be applied to students who have difficulties in music improvisation. Poor comprehenders know much less than good comprehenders about the variables affecting their own performance. They attend more to mechanical, decoding aspect of reading rather than on the comprehension aspects of the reading process. They are neither aware of the reading purpose nor efficient in the allocation of attention and efforts for different task difficulties. This is because of the lack of the awareness and regulation of their cognitive processes (Armbruster, Echols, & Brown, 1982; Baker & Brown, 1984; Garner, 1987).

As for music improvisation, from the researcher's experience and contacts with music learners, it might be concluded that poor improvisors also know the variables affecting their own performance less than good improvisors. They emphasize just on note reading without being aware of the flow in melody and harmony that must be considered in doing improvisation. The allocation of attention and efforts to various parts of the piece are not efficient. Therefore, the improvisation performed is not attractive. It is just only a sound, not music. Apart from the performance skill training, the music students must be also trained to be aware of and to regulate in their cognitive processes for doing improvisation. Then their music improvisation ability would be eventually improved.

III Music Improvisation

Meaning

The word "improvise" means to compose and recite or perform without preparation (Davidson, 1950). In music, improvisation is the art of spontaneously creating or recreating the whole or a part of a composition (Muro, 1980). It is an instant composition (Dobbins, (1980). Improvisation implies extemporaneous music-making. It occurs on the spur of the movement without preplanning and is often of trainitory nature (Bergethon & Boardman, 1979). Improvisation is a result of training in motion and training in pitch and theory (Abramson, 1980). To improvise implies a preliminary knowledge and comprehension of concepts (Thomas, 1980).

Jaques-Dalcroze had stated improvisation as the study of the direct relations between cerebral commands and muscular interpretations in order to express one's own musical feelings (Jaques-Dalcroze : cited by Abramson, 1980). Improvisation has been described as the spontaneous expression of musical images that directly reflected the immediate ideas, emotions, and sensations of the improvisor (Dobbins, 1980).

Overall, improvisation could be defined as a spontaneous music-creating. In this research, music improvisation will be defined as a spontaneous performance in developing one-staff score of the song given to be performed, and as a fully completed song (2-3 choruses with introduction and ending) through the keyboard instrument, electronic organ.

Basic Elements

Although the music styles and vocabularies of various historical periods and cultures may be vastly different, certain basic characteristics of music improvisation seems strikingly universal. To develop a capacity for improvisation in an advanced music styles such as jazz, a musician must come to a clear understanding of the relationships between the basic elements of melody, rhythm, and harmony (Dobbins, 1980).

Melody has been defined as simply a succession of tones. All too often, unfortunately, it is treated as no more than that. An overly academic approach to the understanding of melody entirely missed the emotion intuitive aspects that enable a musician to "play melodically". In an actual performance, melody can convey an almost vocal transmission of tones and shapes through an instrument. A thorough understanding of tone production, phrasing, articulation, and dynamics is, therefore, essential if the melodic content of musical sound is to make a vivid impression.

The most convincing melodies seem to follow certain basic schematic designs. The most general of these patterns involves a gradual stepwise movement, ascending or decending, through relative long melodic sections. This stepwise movement is often disguised through decorative use of melodic embellishments, arpeggioes, octave displacement, and chromaticism. The most communicative melodies are usually developed from short motivic fragments of extreme clarity

and simplicity. Complex and overwritten melodies are less
likely to make a lasting impression on the listeners.

The principle function of rhythm is that of framing
the melodic content and its accompaniment in figures that
are appropriate to the tempo, mood, and general style of the
music. Rhythm is probably the most communicative element in
music. Many listeners can identify a familiar tune just from
hearing its rhythm played on an indefinitely pitched instru-
ment such as a snare drum. Rhythm, then, has great potential
for an improvisor in terms of clarifying the development of
melodic ideas. Rhythmic figures also can be developed inde-
pendently through simple techniques such as call and response,
repetition, extension, and fragmentation, as well as augmen-
tation and diminution of note values within a given figure.

Harmony is the most developed element in Western music.
Most traditional musics outside of Europe and North America
are not based on any system of vertical harmony, although
these musics tend to be highly advanced in terms of melodic
and rhythmic development. Convincingly harmonic progressions
are usually composed of several interdependent melodic lines
that, together, suggest harmonic movement in relation to an
implied tonal center or key. Harmony can be used effectively
to increase the color and density of the melodic and rhythmic
content when this complexity seems appropriate. Furthermore,
the tendencies of resolution inherent in common harmonic pro-
gressions can be used to great advantage in heightening
melodic and harmonic tensions or expectations.

A skilled improvisor in any tradition, then, must be
able to deal with the relevant elements of melody, rhythm,
and harmony in a spontaneous and expressive manner. These
music elements must be thoroughly understood and assimulated
technically, aurally, and kinetically, as well as theoreti-
cally.

Music Teaching Methods

There are 4 teaching methods that have been widely used in music education.

1. The Dalcroze Method

Emile Jaques-Dalcroze (1865-1950), a Swiss musician, believed that the development of musical feeling was as important as the acquisition of formal knowledge (Hargreaves, 1988). He developed a system of instruction based on the theory that the human body is the first musical instrument on which we express our perceptions. Thereofre, instruction using this instrument should precede all others.

Although eurhythmics is commonly thought to be the Dalcroze method, that is only one of its three aspects. The other two are ear training (solfège) and improvisation. Eurhythmics consists of exercises for the physical response to music. Students are helped to become sensitive to rhythm by responding with their entire bodies. Musical concepts are internalized by means of rhythmic movement (Mark, 1986). Jaques-Dalcroze used the word rhythm to mean a balance and ratio of the flow among body, mind, and feelings. In his theory, rhythm exists in time-space-energy context, but is produced by complicated interactions among many elements of motion. Sometimes these elements work together (for example, the beat and its subdivision) and sometimes they are in strong opposition (syncopation and polyrhythm). Sometimes several different layers of rhythm may produce extremely complex waves of motion (Choksy, Abramson, Gillespie, & Woods, 1986).

The second aspect of the Dalcroze method is solfège : solfège - rhythmique. Just as Eurhythmics suggests the ear and body as ideal instruments for the study of rhythm, solfège

suggests the ear and body combined with the speaking and singing voice as the ideal instruments for the study of musical tone, tonal combinations and tonal relationships. In Eurhythmics lessons the body and the ear are taught to perform efficiently. In Solfège lessons the ear is trained to listen, discern, select and remember many qualities and combinations of sounds and motions through singing, reading and writing (Choksy, Abramson, Gillespie, & Woods, 1986).

Improvisation is the third and final part of Jaques-Dalcroze's complete method. Its goal is to produce skillful ways of using movement materials (rhythm) and sound materials (pitch, scale, harmony) in imaginative, spontaneous, and personally expressive combinations to create music.

The tools of improvisation may be movement, speech, story, song, percussion, strings, winds, piano, or all of these combined. The beginning of improvisation may come from the transformation of a spoken story into movement and sound, or the reverse, the transformation of movement and sound into poetry and story. An improvisation can be built from movement, stories, poetry, noises, musical sound, or even visual images. The driving force for motivating improvisation is limited only by a teacher's imagination and courage. An improvisational approach in the hands of a well-trained teacher allows for individual attention to discoveries made by students. The teacher must be trained to create and develop many variations of materials, techniques, exercises, and games through improvisation. The teacher must become a creative artist and a model of artistry for the students.

In the classroom, students use improvisation in every lesson in many ways. They improve movement expressions to demonstrate what they hear. They use speech, clapping, song, and percussion to develop and play with the ideas and materials of the lesson. In more advanced lessons, rhythm

and pitch are combined in increasingly complex variations of
musical grammar and syntax, leading to studies of variations
of phrases and periods. In turn, these lead to the simpler
sectional form (two-part, three-part, and compound song and
dance forms); then to the rondo and theme and variations;
and finally to the larger forms of sonata and concerto. Later,
more sophisticated improvisations are made, combining rhythm
and pitch; and finally, students progress to instrumental
improvisation on recorders, strings, and piano.

On the function of improvisation, Jaques-Dalcroze
wrote :

> Improvisation's function is to develop rapidity
> of decision and interpretation, effortless con-
> centration, the immediate conception of plans,
> and to set up direct communications between the
> soul that feels, the brain that imagines and
> coordinates, and fingers, arms, hands, and
> breath that interpret, thanks to the nervous
> system which writes all the particular senses -
> hearing, seeing, feeling, touching, and thinking
> in time, energy, and space.
>
> (Jaques-Dalcroze, "Rhythmics", p.371 : cited by
> Choksy, Abramson, Gillespie, & Woods, 1986).

The interaction of the movement in time, space, and
energy of rhythm and pitch is represented on the base-line
of the triangle. Melody and harmony are created by the inter-
action and are represented as two sides of a large triangle.
In the Jaques-Dalcroze Method, improvisation is represented
by the central vector and apex of the two smaller triangles.

Improvisation / melody / harmony / rhythm / pitch
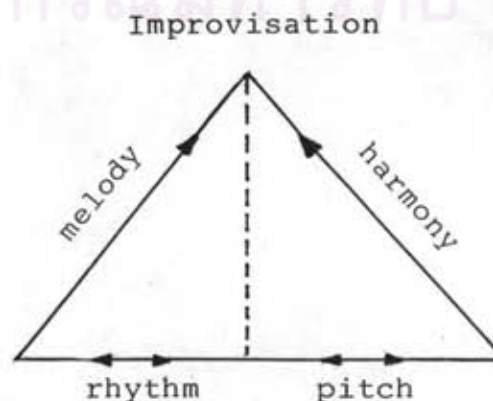
Any lack of training or experience or lack of technique in those areas along the baseline of this triangle will lead to difficulties on the sides or at the apex.

When improvisation is added to Eurhythmics and Solfège there is a synthesis of all the elements which comprise the musical universe, and the study of music centers on the presentation of ideas and findings through sound. Improvisation not only unites the first two branches of Jaques-Dalcroze's method but also acts as an assortment of the effectiveness of the whole (Choksy, Abramson, Gillespie, & Woods, 1986).

2. The Orff Approach

Carl Orff (1895-1982), a German composer, educator, and musicologist believed that music education should be patterned on the evolutionary stages of mankind. Children must relive the historical development of music in order to develop musicality within themselves. Orff used the word elemental to refer both to the music of early man and to the music of young children. The music of young children is unsophisticated and unrefined but natural and capable of development. Improvisation, as important part of elemental music, must be introduced at the child's level before it can be developed into a mature form. To Orff, this meant beginning with rhythm and allowing other music elements to grow out of it. He devised simple rhythms and chants to serve as the basis for sequential developmental activities. Speech patterns familiar to children become their first musical materials. The patterns come from chants, games, and the vocal sounds that are already part of the child's vocabulary. The patterns are chanted, clapped, danced and sung.

Orff's emphasis on rhythm suggested to him to need for percussion instruments in music education. He developed an ensemble of percussion and stringed instruments that

include xylophone (soprano, alto, and bass), glockenspiels (soprano and alto), metallophones (soprano, alto, and bass), drums, cymbals, woodblocks, rattles, viola de gamba, and lutes. The instruments are designed to create the proper instrumental timbre for the music contained in the Schulwerk. Children are encouraged to develop sufficient techniques to play them correctly so they can be used expressively.

Children are encouraged to imitate and improvise vocally and instrumentally. They create their own music both from inner feelings and in imitation of the sound of their environment. They learn to become sensitive to sound and to use them as sources for the development of other sounds. Rhythm serves as sources for imitation, answers to contrasting rhythms, and melodic invention (Mark, 1986).

Keys to the Orff process are the exploration and experience. The elements of music are gradually explored in their simplest, almost crude forms. Through experience, these elements are refined and elevated to more complex levels of exploration and experience. Orff process at every level includes exploration of space through movement, exploration of sound through voice and instruments, and exploration of form through improvisation.

In Orff-Schulwerk, imitation is used to insure a role model for creativity. The teacher in Schulwerk is like the "master" or major role model. The role of the teacher is gradually lessened as children exhibit more and more independence and finally demonstrate the ability to solve their own problems and answer their own questions through the process : observe ⟶ imitate ⟶ experiment ⟶ create.

At each step of the process the learners move from imitation to creation, from part to whole, from simple to complex, and from individual to ensemble. All of which

supprots Carl Orff's ultimate goal of music life for children
(Choksy, Abramson, Gillespie, & Woods, 1986).

Orff activities awaken the children senses and engage
the child's total awareness. Orff lessons usually start with
games and exercises designed to heighten the students' power
to differentiate between small variations in sound, a neces-
sary skill for any musician. Orff games also sensitise the
child's awareness of space, time, form, line, color, design,
and mood. In Orff process, children perform and create music
and movement activities in groups, yet each contributes with
an individual part. They must listen to each other to fit
their individual parts into the ensemble. In Orff classroom,
all children are active and involved in part of the ensemble -
moving, conducting, playing, as well as singing. Children are
not passive observers. Because they are practising constantly,
teachers can give continuous and frank feedback (Banks, 1982).
Orff approach is clearly "child-centered", and amenable for
use with very young children. It has become well known and
widely adopted throughout the world (Hargreaves, 1988).

3. The Kodály Method

Zoltán Kodály (1882-1967), a fervent nationalist,
a Hungarian composer, ethnomusicologist, and educator believed
that Hungarian music education should be designed to teach
the spirit of singing to everyone, to educate all to be
musically literate, to bring music into everyday use in homes
and in leisure activities, and to educate concert audiences.
He was concerned with the creative, humanizing enrichment of
life through music and regarded the goal of music literacy
for everyone as the first step toward his ideal (Mark, 1986).

Zoltán Kodály offered to the musical education of the
child precisely what Orff had not emphasized - music literacy,
a sequential approach of singing which leads to the under-

standing of musical concepts, including notation. Kodály's basic aim is to teach children to read and write music through singing. Exponents of the Kodály concept are vitally concerned with having children develop comprehensive musicianship, cultivated through following a carefully sequenced plan which focuses on preparing them for the understanding and identification of concepts, as well as the reinforcement of these learnings. Children are encouraged to participate in a variety of musical activities, including singing games and dances, the learning of a large repertoire of songs for the cultivation of in-tune singing, memory singing, memory training, inner hearing (internalization), interval, scale and chordal analysis, Experiences are structured to encourage success and minimize the risk of failure. Each lesson is built on previous understanding and includes activities in singing, writing, reading, recognition, dictation, improvisation and composition. The ability to read and write is considered, ultimately, the demonstration of the individual's conceptual understanding of music (Wheeler & Raebeck, 1985).

The tools employed in Kodály practice are (1) tonic solfa, (2) hand signs, and (3) rhythm duration syllables (Choksy, Abramson, Gillespie, & Woods, 1986; Wheeler & Raebeck, 1985).

Tonic solfa is a system of syllables - do, re, mi, fa, so, la, ti. dó - in which do is considered to be the keynote or tonal center in all major keys and la is considered to be the keynote or tonal center in all minor keys. It is a way to train the musical ear, since it focuses the attention initially not on a specific pitch but on pitch relationships and pitch functions within a tonal system. Children are begun with relative - do, but once they are secure in that easier way of singing, reading, and writing music, better means for the notes are introduced and then sung interchangeably with solfa until they too are secure. The absolute note names (A-B-C's) must

also be taught because they are vocabulary of the porfessional musicians.

Kodály's system of hand signs offer a vital ingredient to the task of learning to sight reading, it gives the child another way of expressing what he hears, through the visual image. Using the basic system of hand signs developed by the Englishman John Curwen in 1870, Kodály had developed a method which enables children to see the general height or depth of the sound they hear. The hand signs used in Kodály practice to-day are illustrated in Figure 2. They are performed in an area more or less between the top of the head and wrist.

DO' or 1' (arm's length above head)

TI or 7

LA or 6

SOL or 5 (even with eyes)

FA or 4 (shoulder level)

or

MI or 3 (even with chest)

RE or 2

DO or 1 (waist level)
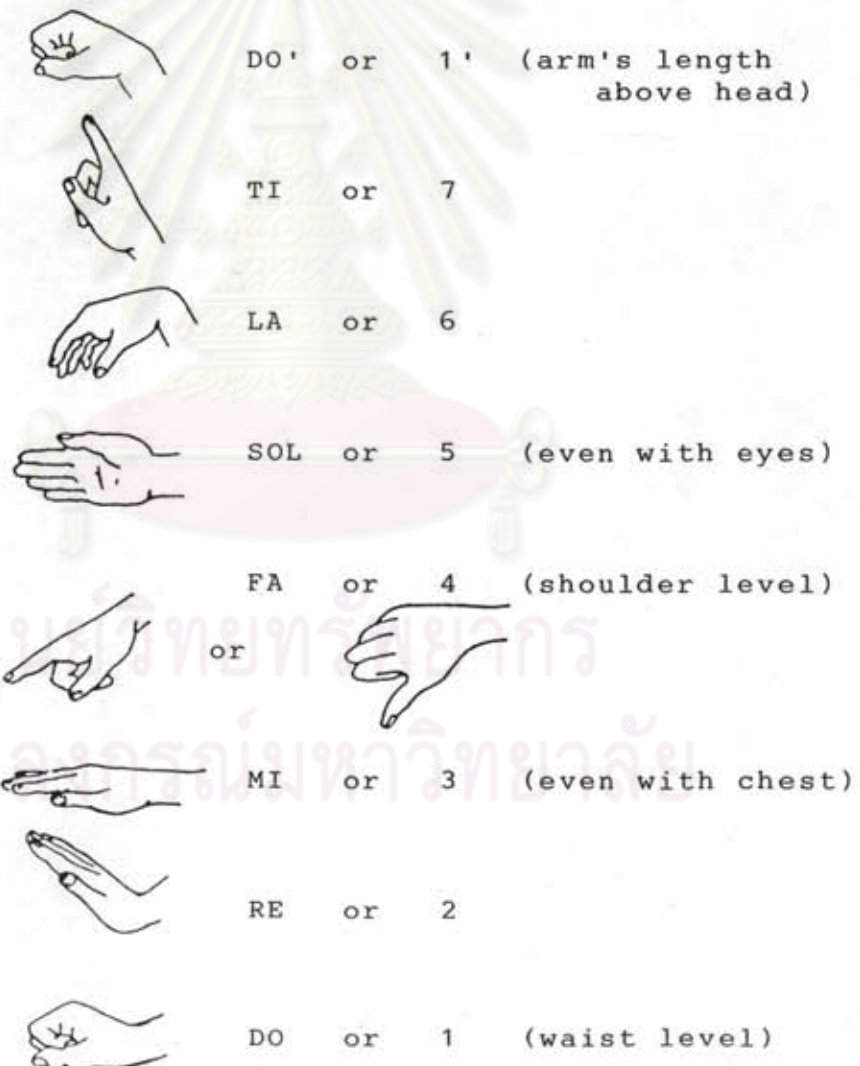
Figure 2 Hand signs used in Kodály practice
(Wheeler & Raebeck, 1985, p.15)

Rhythm in a Kodály approach is taught by pattern and by relative duration over the beat as expressed in a series of syllables adapted from those invented by Jaques Chev in 1800's. These syllables are not names; they are merely a way of voicing rhythm. Kodály used the word "ta" to represent the quarter note and "ti" to represent eighth note. The notation, the notes are shown with stems only, for example " | ⊓ | | " (called "stick notation") (McDonald and Simons, 1989).

Creativity, in Kodály method, comes from knowledge. It is necessary to have a musical vocabulary in order to create music. One must know the vocabulary of music aurally and orally before improvising. One must be able to hear, think, and write notes and know how to organize them into patterns, phrases, and forms in order to compose (Choksy, Abramson, Gillespie, & Woods, 1986).

Comprehensive Musicianship

Comprehensive Musicianship (CM) is a concept about the teaching and learning of music based on the premis that all facets of music study should be integrated and related. It is an approach to musical study in which the source of all music learning is the liturature of music. CM encourages students to grow in musical knowledge and skill at all level of instruction by synthesizing the musical materials they are working with and by making conceptual connections through performance, analysis, and composition.

CM is based on principles that are divided into three broad catagories which include common elements, musical func-tions, and educational strategies.

Through the common-elements approach to the compre-hensive study of music, students can gain an awareness and

understanding of the structural elements of music common to any culture, tradition, or style. The common elements are experienced in performance : reading and creating music written by a composer, analysis : describing the music through perceptive listening, and composition : understanding and utilizing compositional techniques.

The CM approach stresses that students should become actively involved in the common elements of music through participatory experiences as performers, listeners, and composers, and through educational activities that require their personal interaction, involvement, discovery, and inter-pretation of music of all times, places, and cultures. Students of CM assume increased responsibility for their own learning and they develop the capacity to formulate and express their own musical judgements and values (Choksy, Abramson, Gillespie, & Woods, 1986).

The aforementioned music teaching methods have appa-rently included all the components of a good music program for children. They include listening, singing, rhythmic movement, playing instruments, and creating music. Yet they are different in their focal emphases. Rhythmic movement is the heart of Dalcroze instruction. The Orff approach empha-sizes creativity and improvisation. The Kodály Method focuses upon the development of reading, writing, and listening skills. The Comprehensive Musicianship (CM) is a total and integrated approach to the study of music through common structural elements. Eventhough, improvisation is taking role as one of the activities in these teaching methods, it still lacks a specific systematic teaching approach. In doing improvisation, the learners usually start by imitating what they hear or observe, then they must take a chance to experience how to perform the improvisation by themselves. Therefore, if there is a specific systematic teaching approach for improvisation, the learners could do much better in creating music. The

teaching model based on metacognition is to have the learners
to manage their cognitive processes, to think and plan earlier
well so as they could perform good and appropriate music
improvisation.

Improvisation with Electone

Electone refers to an electronic organ, a kind of the
keyboard instrument. It usually consists of 3 parts : upper
keyboard, lower keyboard, and pedal keyboard or bass. The
registration or tone color of various musical instruments
and various patterns of rhythm are also included in this
instrument.

In improvisation, the three factors : feeling, playing
techniques application, and correct use of notes, must be
combined as one, in order to make a good performance. The most
important thing in improvisation is to find the mood of a
playing piece for tempo, rhythm, introduction, etc. which are
all determined from this point of view. Therefore, it is
important to find out necessary factors in creating the most
suitable mood for the piece from the given informations
(Masuzawa & Iwama).

1. Understand the mood of a piece
   and setting tempo

It is one's solfège ability that helps to under-
stand the mood of a piece properly. First, sing the melody
in mind, feel the sound in the head, and try to find a
suitable mood. The mood of any melody changes according to
tempo, rhythm, and style of performance. But normally there
is a most natural tempo, and a most appropriate rhythm that
should be determined from what the learners have experienced.
Light melody demands a considerable speed, and serene melody
demands a tempo slow enough to play it with much expression.

2. Choosing the accompaniment rhythm

After the mood of a piece has been decided, accompaniment rhythm suitable to that mood has to be determined. There are various styles of accompaniment. Besides the style using chord, there is another style, the broken chord accompaniment. This kind of accompaniment style is often used in gentle, flowing piece. Moreover, even though the rhythm is the same when written on the score, the mood changes quite a lot according to the way the piece is played when using different articulations.

3. Style of melody and choice of tone colors
   appropriate to the mood of the piece

The effect of tempo and rhythm will be reduced by half if the style of melody is not appropriate to the mood of the piece. The mood of a two-beat piece played legato is totally different from that of the same melody played with staccato, and naturally the tone color should be changed accordingly. Therefore, at the point where the mood of a piece has been properly understood, the tone colors to be used and the manner to play the given melody must also be determined.

The factors of Electone improvisation are as follows (Masuzawa & Iwama) :

1. Bass Progression

Bass is the most important part in determining the harmony. In order to maintain a smooth chord progression, the correct bass must be played accurately.

There are many kinds of bass progression such as alternating bass, bass progression using the third note of the chord, and melodic bass line.

2. Counter Melody

Counter melody is brought out from the chord pro-
gression. It helps deviate the melody from monotonous, and it
has the effect to further enrich the harmony. Therefore, in
most cases, the note which is characteristic to each chord is
used to make up a counter melody.

The counter melody can be used in case of dominant
motion, passing chords, a consecutively fourth upward progres-
sing chord, and cliché.

3. Double Notes

Double notes are very effective in changing the
mood of the piece and making the piece more attractive. Single
note has a tidy, simple taste. Single note combined with ten-
sion notes or those used in fast passages are able to satisfy
these factors, but it is difficult to find satisfaction musi-
cally with only the single notes. It is more difficult when
playing improvisation in particular. If played with only single
notes all the way through inexpressively, the performance will
be very monotonous. Double notes help the performance away from
monotonous and also serve as a foil to monotones.

For double notes, the third and the sixth of the
basic note is very often used. Besides double notes, there are
other kinds of double notes such as triple notes, quadruple
notes, and quintuple notes.

4. Fill-in

When the melody is sustained for a long time, or
when there is a long rest, a kind of rhythm pattern or another
melody is inserted to supplement the monotony of that part.
This is called a Fill-in.

There are various kinds of melodic Fill-in depend-
ing upon the position of the long note, and it is important
to choose the appropriate one to suit the context. Rhythmic
Fill-in is also used when there is a long note, but the style
differs in accordance with the type of rhythm. The notes used
in this case should be 2 or 3 notes which are all within the
chord. The combination of rhythmic and melodic Fill-in is also
often used when there is a long note. Furthermore, Fill-in can
serve as a link to the next note. When a new phrase starts, it
is sometimes linked with the previous phrase by a scale or a
rhythmic pattern. This is often used when the piece is built
up to climax. Sometimes Fill-in is played with the left hand
to gain changes in tone color or in tone range. Sometimes,
Fill-in is played in the bass to gain a unique effect. It is
used rhythmically within the same chord or to connect with
the next.

5. Fake

The word Fake is often used to mean trickery,
fraudulent deception, imitation or counterfeiting. They all
give a very negative impression, but if one consults the
dictionary more carefully, it says "In Jazz it means to play
extemporarily". However, melody fake means changing the melody
to some extent, and it is something very important in popular
music. With skillful Fake, it is possible to change the mood
of a piece. Furthermore, Fake is a first step to ad-lib. There
is no rule for Fake. In order to use it skillfully, one has to
listen to various music as much as possible and acquires the
feel for it.

Fake can be done by using anticipation and synco-
pation, changing to dotted notes or triplets, using ascending
semi-tone ornament notes, using turns (∾), using plural tril-
lers (∿), using passing notes, using adjacent notes, using the
chord tones separately as an ornament, modifying the melody by
maintaining its original feeling, and using glissando.

Apart from various factors of improvisation, structure of the piece must be also determined. Each "note" that makes up a piece has its own meaning, and the necessity of its existence is inevitable. In other words, when one note moves on to another, each note is a must, and when that note moves on to the next there must also be necessity which overlaps with that of the first note; and the same occurrence will be when moving on to the next ..... and so on. Continuation of this makes up a phrase. And that develops to the necessity of each phrase. This is how a music is formed. Arrangement of these necessities is the structure. The better it is, the more appeal it has over people who listen to it.

When playing improvisation, it is necessary to organize ideas in the head how to arrange each chorus beforehand. The performance will be very monotonous if there is not any change between choruses, and if too much factors are incorporated too early, there will be nothing left to do afterwards. The followings are some examples of the overall structure for improvisation.

① Introduction	First Chorus	Second Chorus	Third Chorus	Ending
	Melody and simple accompaniment	Fake	Double Notes	
② Introduction	First Chorus	Second Chorus	Third Chorus	Ending
	Melody and simple accompaniment	Change rhythm, raise the melody an octave. Change the tone color too.	Double Notes with much Vibrato	
③ Introduction	First Chorus	Second Chorus	Third Chorus	Ending
	Melody and simple accompaniment	Double Notes and Triple Notes. Change the tone color of them.	Former part: same as the First Chorus. Latter part: much Fake with Triple and Quadruple Notes.	

Introduction is a means which introduces the general view of the piece to the listeners for certain purpose so that they can accept the music smoothly and be prepared for it in

mind. There are various ways in making introduction : intro-
duction by vamp, using last four bars, using the motif of
the theme, and deriving from chord progression.

As for ending, it gives an impression of termination
to a piece. In other words, it is something that gives a
feeling of satisfaction to the extinction of energy. Ending
can be done by cutting method, using chord progression apply-
ing and developing plagal cadence (I - IV - I), repeating
the last four bars, and using the introduction also for ending
(Masuzawa & Iwama).

Improvisation can be done by developing the piece or
the motif given. The motif is the beginning of a melody
(1 or 2 bars). To develop a motif is called motif improvi-
sation. The most important exercise for the development of
motif is to derive a natural flow from the motif and to keep
some kind of unity in the style of handling the motif within
one chorus. Also, it is necessary to choose the rhythm pattern
and accompaniment pattern that best suit the feeling of the
motif. In some cases, factors such as counter melody, bass
line, Fill-in also become necessary. Tone colors and effects
used should also be carefully chosen.

To connect and arrange the motif depends on the charac-
teristics of that motif and the style of performance. One
chorus usually consists of even number bars. Short ones consist
of 8 bars and the longer ones about 64 bars. Motif improvisa-
tion could be constructed in the form A - A'- B - B', A - B -
A'- B', A - B - A (aa' - bb'- aa')/64 bars, or A - A'/32 bars,
etc. (Masuzawa & Iwama).

Measurement

The measurement of musical performance is inherently
subjective. Music consists of sequential aural sensations;
any judgement of a musical performance is based on those

sensations as they are processed by the judge's brain. While many listeners may agree regarding particular judgements, especially if they involved "right" notes, discussions involving correct tempi, phrasing nuances, execution of ornamentation, and tone quality are the decisions of individuals functioning as subjects, hence the decisions are subjective.

A musical performance, especially of one distinct work in a given style, may be judged as an entity. It may be classified in one of several catagories ("pass-fail", " 1 - 2 - 3 - 4 - 5 ", etc.), assigned a score, or be ranked in relation to other work. If what is the judge's impression, whatever its basis, the judge may be said to be employing a global approach.

When the global approach is employed, one may explain the judgement in terms of detailed criteria. Two judges may use the same personal criteria and arrive at rather different decisions of they may use rather divergent criteria and arrive at an identical decision. Several performances of a particular work may be heard with differing evaluative emphases given to rhythm, intonation, tone quality, and other aspects.

An approach based on itemized details or specifics of performance contrasts with a global approach. A judge can follow a checklist and assign a score or given a comment for each of several performance aspects, such as articulation, rhythm, intonation, style, dynamics, and so on. The overall performance can be assigned a score that is sum of scores on the several identified aspects.

A balance of global and a specific approach is possible where the particular performance as guidance but not necessarily as specific catagories that must be qualified. The global versus specifics issue probably reduces to a matter of how much structure is desired in the performance measure (Boyle & Radocy, 1987).

Metacognition and Music Improvisation

From the review of theoretical background and research
work, the metacognition based on the information-processing
model appears to have the potential of being used for improving
music improvisation ability. In music improvisation, the
learners should be active learners, they have to pay attention
to what they are doing, they have to organize, monitor, and
regulate their cognitive progresses in order to plan for the
effective arrangement in doing improvisation.

Metacognition which is the key feature in this research
study is the introspective awareness of one's own cognitive
processes, and one's self-regulation. It enables a person to
use suitable strategies in effectively dealing with the task
demands. To think about the adequacy of one's cognitive acti-
vities requires consciousness of them. Metacognitive function-
ing depends on accessibility of thinking and flexible use of
one's thinking skills. People channel and monitor their atten-
tion, draw on their knowledge of cognitive srategies, personal
capabilities, and task demands in considering courses of action.
They evaluate and revise their thinking when their efforts fail
to produce desired results. Such metacognitive skills can be
improved with experience and be taught by cognitive behavioral
means (Brown, 1978 : cited by Bandura, 1986).

Awareness is the ability to reflect on one's own cogni-
tive processes; what one is thinking, feeling, and doing. It is
a person's knowledge about the skills, strategies, and resources
needed to perform a task effectively. A person has to know about
certain pertinent features of thinking, including oneself as a
thinker. The awareness could be enhanced by training and prac-
tice in the use of task-specific strategies; and also give in-
formation concerning the significance and outcome of the acti-
vities and their range of utilization.

For the self-regulation, it is the ability to motivate one's behavior by using internal standards and self-evaluation reactions to one's own function. Bandura (1986) described the subfunctions required if effective self-regulation is to take place. Figure 3 shows subprocesses from Bandura's theory that describes the cognitive processes through which a learner goes, once a learner is motivated to initiate behavioral observation.

SELF-OBSERVATION	JUDGEMENTAL PROCESS	SELF-REACTION

Performance Dimensions
  Quality
  Rate
  Quantity
  Originality
  Sociability
  Morality
  Deviancy
Regularity
Proximity
Accuracy
	Personal Standards
	  Challenge
	  Explicitness
	  Proximity
	  Generality
	
	Referential Performances
	  Standard Norms
	  Social Comparison
	  Personal Comparison
	  Collective Comparison
	
	Valuation of Activity
	  Regarded Highly
	  Neutral
	  Devalued
	
	Performance Attribution
	  Personal Locus
	  External Locus
		Evaluative Self-Reactions
		  Positive
		  Negative
		
		Tangible Self-Reactions
		  Rewarding
		  Punishing
		
		No Self-Reaction

Figure 3   The subprocesses involved in the self-regulation of behavior (Bandura, 1986)

First, the leraner carefully observes one's own behavior and compares it with that of the model. People cannot influence their own actions very well if they are inattentive to relevant aspects of their behavior. Self-observation provides the information necessary for setting realistic performance standards and for evaluating ongoing changes in behavior. Second, the learner judges one's own performance against that has been

earlier set for oneself. Through a judgemental function, actions give rise to self-reaction. The given imformation of how one is behaving regardless of favorable or negative impact depends upon the personal standards against which is evaluated. Third, the learner provides oneself with self-generated reward or punishment based on one's own judgement. People pursue courses of action that produce positive self-reactions and refrain from behaving in a way that results in self-unsure. The self-incentives affect behavior mainly through their motivational function (Bandura, 1977). When people make self-satisfaction or tangible gratifications con-ditioning upon certain accomplishments, they motivate them-selves to expend the effort needed to attain the requisite performance. Both the anticipated satisfactions of desired accomplishments and dissatisfactions with insufficient ones provide incentives for actions that increase the likelihood of performance attainments.

The self-regulatory mechanism is used by an active learner for checking the outcome of any attempt to solve the problem, planning one's next move, monitoring the effective-ness of any attempt action, and testing, revising, and evaluating one's strategies for learning (Baker and Brown, 1984).

The indexes and training of metacognition for the awareness of one's own cognitive processes and one's self-regulation are summarized in Table 1.

The training methods designed to enhance metacogni-tive skills are relied heavily on the person's verbalizations : talking about thinking. They are tools for the instruction (McGuinness, 1990). All of the instructional efforts rely on talk in the context of social interaction as a means for prompting thinking.

Table 1   The indexes and training of metacognition

Metacognition	Indexes	Training
(a) awareness	1. strategic knowledge 2. attention	1. strategic training 2. informed training
(b) self-regulation	1. checking 2. planning 3. monitoring 4. testing 5. evaluating	1. observing oneself 2. judging oneself 3. rewarding oneself

In music improvisation, apart from the performance skills, good improvisors should be good thinkers as well. They have to know about the skills, strategies, and resources needed to perform improvisation effectively. Conclusion from metacognitive studies (Baker & Brown, 1984; and Garner, 1987) indicate that the mature/good thinkers differ from the novice/ poor thinkers because they have a greater knowledge about when and how to use their cognitive resources. Good improvisors differ from poor improvisors in the ability to analyze the piece. They can identify the mood, tempo, and style of the piece by analyzing from the melody; thinking of the accompaniment patterns to be used; and also determine over the chord progression. From this study, the suitable playing techniques and tone colors can be identified for use in developing the piece. Good improvisors can monitor and evaluate their thinking and performance outcomes which serve them to think and perform the improvisation more appropriate and satisfactory. The factors of music improvisation are summarized in Table 2.

Table 2   Factors of Music Improvisation
(Adopted from Masuzawa & Iwama)

Factors	Contents

(a) basic elements	1. melody
	        - mood
	        - tempo
	        - style
	        - key signature
	        - title signature
	2. rhythm
	        - accompaniment
	3. harmony
	        - chord progression

(b) playing techniques	1. bass progression 2. counter melody 3. double notes 4. fill-in 5. fake 6. introduction 7. ending

(c) developing ideas	1. structure of the piece
	        - introduction
	        - first chorus
	        - second chorus
	        - third chorus
	        - ending
	2. tone colors

Apart from performance skill and musical knowledge, music learners must be trained for thinking skill achievements. These could be done by enhancing metacognitive skills. The following is the proposed teaching model based on metacognition which has been developed in order to improve music improvisation ability.

The instructional techniques incorporated in this teaching model include (1) informing learners of significance and usefulness on metacognitive training; and a teacher instructs students to monitor, to judge, and to reward themselves; (2) the teacher models the use of 3 strategies to

analyze a piece (question-generating, clarifying, and summarizing), giving ideas for developing the piece, model performance, and evaluating the outcomes; (3) practising the strategies, developing ideas, performing and evaluating the outcomes through discussion among the entire class.

The informing is adopted for learners' self-awareness and self-regulation. If the learners are aware of the purpose and significance of training, of the relationship between the learned strategy with improved performance, and the strategic applicability; they will maintain and be able to transfer a learned strategy. In addition, the processes of monitoring, judging and rewarding oneself are used along with the instructional techniques incorporated with the teaching model. When the learners pay a close attention to their performance, they tend to set goals of progressive improvement for themselves. Goal setting enlists evaluation of self-reactions that mobilized efforts toward goal attainment.

The instructional techniques used to enhance metacognitive skills comprises of modelling, and group practising. Teacher modelling is used as a facilitator for making thought processes explicit and as a mediator of cognitive change, The teacher models the use of 3 strategies (1) question-generating, to identify the important parts and to think of the characteristics of a piece; (2) clarifying, identifying the unclear part and using relevant information to clarify the unclear part; and (3) summarizing, to integrate information for the whole piece. The teacher also gives idea for developing a piece, then models performances, and evaluates the outcomes. These will help the learners to understand the way of using the strategies for analyzing the piece, getting the ideas for developing a piece, and concerning for the outcomes. After the learners observe the thinking processes modelled by the teacher, they will practise the instructional procedures together, using group discussion. The teacher coaches and

encourages the learners to think and eventually fades out from the discussion.

The above is the description of the proposed teaching model based on metacognition that might be effective in improvising music improvisation ability. The instructional procedures and techniques being used are summarized in Figure 4.
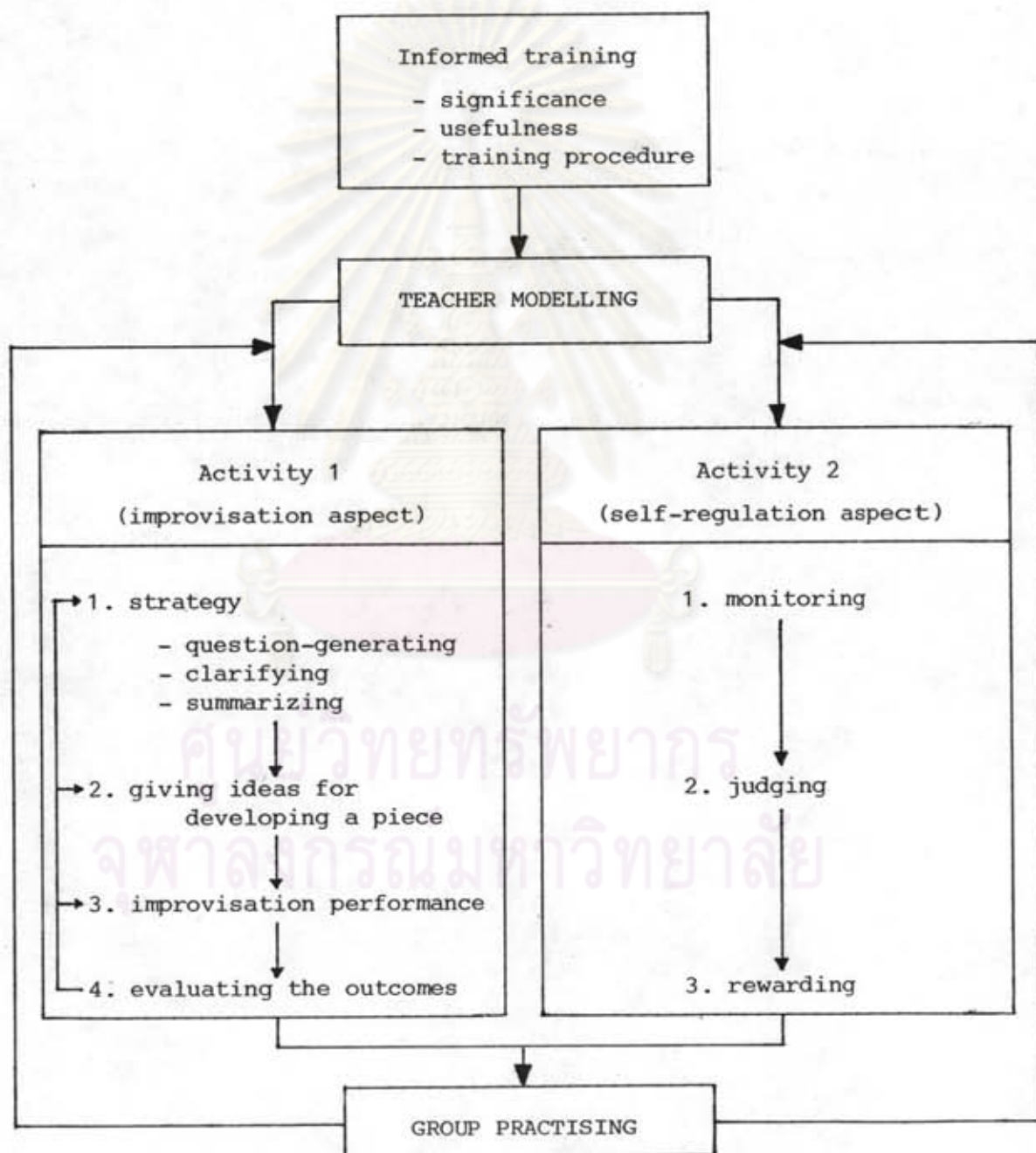
```
                    ┌─────────────────────────────┐
                    │   Informed training         │
                    │                             │
                    │   - significance            │
                    │   - usefulness              │
                    │   - training procedure      │
                    └─────────────────────────────┘
                                 │
                                 ▼
                    ┌─────────────────────────────┐
          ┌────────│      TEACHER MODELLING       │────────┐
          │         └─────────────────────────────┘        │
          │              │                  │              │
          │              ▼                  ▼              │
  ┌───────┼──────────────────────┐ ┌──────────────────────────┐
  │       │     Activity 1       │ │        Activity 2         │
  │       │ (improvisation aspect)│ │  (self-regulation aspect) │
  │       ├──────────────────────┤ ├──────────────────────────┤
  │   ┌──▶ 1. strategy           │ │   1. monitoring           │
  │   │      - question-generating│ │           │               │
  │   │      - clarifying         │ │           ▼               │
  │   │      - summarizing        │ │                           │
  │   │                           │ │                           │
  │   ┌──▶ 2. giving ideas for    │ │   2. judging              │
  │   │      developing a piece   │ │           │               │
  │   │                           │ │           ▼               │
  │   ┌──▶ 3. improvisation       │ │                           │
  │   │      performance          │ │                           │
  │   │           │               │ │                           │
  │   └── 4. evaluating the       │ │   3. rewarding            │
  │        outcomes               │ │                           │
  └──────────────────────────────┘ └──────────────────────────┘
          │                                  │
          └──────────────┬───────────────────┘
                         ▼
              ┌─────────────────────────┐
              │    GROUP PRACTISING     │
              └─────────────────────────┘
```

Figure 4 Proposed teaching model

Objective

This research aims at development of a teaching method based on metacognition for improving music improvisation ability.

Variables

Independent variables are teaching mehtods
(1) metacognitive plus exercise training
(2) exercise training

A dependent variable is music improvisation performance score.

Hypotheses

1. The music improvisation performance score gained at the end of the treatment session and at 4 weeks after finishing the treatment session is higher than that gained before the treatment session for the experimental group receiving metacognitive plus exercise training.

2. The music improvisation performance score of the experimental group receiving metacognitive plus exercise training is higher than that of the control group receiving only exercise training both at the end of the treatment session and at 4 weeks after finishing the treatment session.

Scope

1. Music improvisation will be confined to a spontaneous performance in developing one-staff score of a song given to be performed as fully a completed one (2-3 choruses with introduction and ending) through the keyboard instrument, namely electronic organ (Yamaha Electone model HS-8).

2. The subjects are persons who have been qualified in Grade 6 of Electone Yamaha Grade Examination (see Appendix 1).

3. The contents and level of difficulties of improvisation are based on the level of Grade 5 Yamaha Grade Examination.

Definition

1. Metacognition is an awareness and regulation of cognitive activities of a person.

2. Music improvisation ability is a spontaneous performance ability in developing one-staff score of a song given to be performed as fully a completed one (2-3 choruses with introduction and ending) through the keyboard instrument, namely electronic organ.

Advantages

1. The study would provide more knowledge for the application of metacognition in the field of education.

2. The teaching model based on metacognition would be an inventive approach for teaching music improvisation in a systematic development.

3. The study would serve to stimulate interest in teaching and learning methods which eventually would improve music improvisation ability.