# CHAPTER 1
## INTRODUCTION

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CHAPTER 1
INTRODUCTION

1.1 PREFACE

Based on the State’s vision which confirms education policy in building up quality manpower, creating jobs to redeem the economy and social crisis, establishing sustainable national security, strengthening the nation through education, revising the education infrastructure and systems, emphasizing quality, effectiveness and equality, applying education technology, having a firm belief in education for creating manpower, integrating education, religion and culture in learning reformation and national education policy for creating jobs, assuring knowledge and career for the youth, the Ministry of Education, consider appropriate to formulate Basic Education Core Curriculum A.D. 2008. This core curriculum includes the subjects required for improving the quality of Thai life, good citizenship, life skills, careers, and further education. Educational institutions are responsible for preparing the learners to be good members of the family, community, society and the country. Consideration is given to the relevancy to the learners’ potential, aptitude and interest.

Education management emphasizes the importance of knowledge thought, capability, morality, learning processes and social responsibility. The aims are to foster the well balanced development of each individual as learner is the most important. Every one is capable of learning and self-development; learners shall be encouraged to develop themselves in line with their natural inclinations, and to fully realize their own potential. The following subjects are considered very important: knowledge about self, relationship between self and society, family, community, country and the world; Thai society historical development, political system, democratic government and monarchy under constitution; science and technology knowledge and skills; knowledge, and sustainable experience in management, preservation and utilization of natural resources and environment; knowledge about religion, art, culture, sports, Thai wisdom and their application; knowledge and skills in mathematics; languages and their application, in particular Thai language; knowledge and skills in careers; knowledge and skills in leading a happy life.
Educational institutions are responsible for administering learning development which emphasizes thinking processes, management and confronting real situations and the application of knowledge for preventing and solving problems; organizing activities to enable learning from actual experience; arranging practical exercises to enhance skills in doing, critical thinking and satisfactory achievement; fostering reading habits, the thirst and continuous search for knowledge, inculcating skills for a well balanced integration of all subjects; facilitating learning processes to enable learners to be all round knowledgeable and training in application of research procedures as part of learning processes. For all these activities, consideration is given to the differences among learners. Attempts are made for learning at any time, in any place. Therefore, in addition, to achieve the ultimate goals of basic education core curriculum, the government and the educational institutions have to support and develop the process of teaching-learning and creation of knowledge. Student learning must be focus on the efforts to facilitate students learn by enhancing the quality of learning experiences.

As the recent changes in the world i.e. technological changes have brought about changes in educational goals and the body of knowledge grew larger and larger with varied dimensions, change in instructional practices and others aspects of education also attribute to the world changing. The greatest contribution of cyber age technology and the development of computer have influence on all walks of life. Technology became the most powerful change agent in human culture and it has resulted in the introduction of innovation to facilitate, improve and enhance the quality of teaching-learning process. Over centuries educators have been concerned with the issue of increasing the efficiency of learning experience. Thus, the use of computer in teaching-learning process has stepped many stages of its evolution. Need for methods and strategies to enhance the quality of learning originated. The government and educational institutions put more concentration on the more production of technologies for education and also support the school personnel to produce computer media and technology accordingly, with quality, and efficiency.

In the present situation, the learning management focuses on student as the most important factor. The educational contents and activities are relevant and related to student’s interest and aptitude which also concerned upon the difference between individuals (Ministry
of Education: 2008)\(^2\). Therefore, computer must be introduced into learning & teaching nationwide and in different forms especially computer course ware in the form of multimedia. Computer usage in schools is becoming widespread, and it is considered to be an influential learning tool. Computer use in classrooms as an aid to teaching and learning processes has increasingly popular during the last two decades.

Computer assisted instruction (CAI) is an interactive instructional technique whereby a computer is used to present the instructional material and monitor the learning that takes place. It uses a combination of text, graphics, still images, animations, sound and video in the learning process. The computer has many purposes in the classroom, and it can be utilized to help a student in all areas of the curriculum. CAI refers to the use of the computer as a tool to facilitate and improve instruction. CAI programmes use tutorials, drill and practice, simulation, and problem solving approaches to present topics, and they test the student's understanding. These programmes let students progress at their own pace, assisting them in learning the material. The subject matter taught through CAI can range from basic math facts to more complex concepts in math, history, science, social studies and language arts (Sharp, 1996)\(^3\). The computer assisted instruction (CAI) can increase students interest of the curriculum because computer assisted instruction (CAI) bring new exciting learning experience to classroom and simulate the real world situation and in the end the students will be keen to learn, practice exercise, and participate in classroom activities. Computer will keep track of each student assignment points and behaviour so the teacher can collect data and prepare for better lessons and class materials. The computer assisted instruction (CAI) can be use for individual lesson excellently by give different students various premises and show the result of each student adaptation immediately. The characteristic of computer assisted instruction (CAI) gives students their own privacy, which help students who are a slow learner to be able to learn at their own pace without any hurry, without any embarrassment when perform assignment wrongfully, and also expand the ability of teacher in controlling learners closely because it is very simple and easy to record learners scores and behaviours (Ministry of Education. 2008)\(^4\). The computer course ware can be use for learning & teaching instead of teacher when the student miss a class or the students would
like to review the previous lesson, but computer assisted instruction (CAI) shouldn’t replace the teacher totally. (Ladda Pumuthaiwirat: 1999).

Presently, computer is widely applied in learning & teaching throughout various curriculums. Most teachers study for new knowledge and improve new computer media that are more advance and high quality, which have many advantages over other kinds of educational media. As of now computer assisted instruction (CAI) had become very popular among teachers, instructors, and people interested in this field. At the moment players in the field of education direct much attention into the development of computer assisted instruction (CAI) in order to use it to enhance learning & teaching process because computer assisted instruction (CAI) can fulfill learning & teaching in many aspects. In order to effectively apply computer assisted instruction (CAI) in the learning & teaching process the teachers or instructors must fully understand the characteristic of computer assisted instruction (CAI) so the best computer assisted instruction (CAI) can be provided to the students (Pichain, 2005). Other than that, one can use the computer’s ability such as animations and graphics which help presents course material in the orderly fashion starting from easy to hard. This will also increase student’s aptitude towards the subject and the subject will be more excited to the students. Likewise, there will be immediate reaction to the subject being teach and stimulate the students to do their homework and assignment and best of all the students can learn or do their homework on their own. On the other hand, teachers will act as the supporter and guidance as the class progress (Thanomporn Laocharatsang, 1998).

From the teaching experience on website programming class one, the problem occurred frequently that the lack of learners understand the menu in English. This heavily impacts the learning outcomes of the students and mostly the students perform poorly when this problem occurs. This influence the researcher to develop the course on website programming through computer assisted instruction (CAI) under the subject of “Website Implementation by using Namo WebEditor 5.5” for eleventh grade students of Saklee Witthaya, Pranakhon-sriayuddhaya Province with the highest quality.
Therefore, the learning & teaching process will concentrate on content presentation that related to technique of using Namo WebEditor 5.5 in order for the students to understand the beneficial of using computer application at the highest level. By using computer assisted instruction (CAI) as a course ware will benefit the students greatly since various techniques can be explained thoroughly including graphics work and able to search for various problem solving methods for implementing a website. The researcher foreseen that with the right step displayed through CAI the students will be able to see how website can be implement and what will be the obstacles along the way. The students can then learn to adapt to various problems and be able to solve problem professionally. By implementing computer assisted instruction (CAI) on this course will help students increase their class performance and be able to solve the lack of qualify computer personnel problem at the same time. The students can learn the lesson by themselves this will decrease the cost human resource and the work load of teachers. The computer assisted instruction (CAI) can also be use for demonstration and teaching in large classroom by connecting it to computer projector. This will also become an innovation for computer assisted instruction (CAI) development and improve the learning & teaching process further.

1.2 STATEMENT OF THE PROBLEM
The present research has studied under the following problem:

"A STUDY OF THE EFFECTIVENESS OF COMPUTER ASSISTED INSTRUCTION ON LEARNING ACHIEVEMENT IN CAREER & TECHNOLOGY SUBJECT FOR ELEVENTH GRADE STUDENTS"

1.3 DEFINITION OF THE IMPORTANT TERMS
(1) Effectiveness
Effectiveness means the ability to accomplish a purpose; the power to be effective, the quality of being able to bring about an effect. It refers to the degree to which objectives are achieved and the extent to which targeted problems are resolved.

In the present study, effectiveness refers to the ability of computer assisted instruction (CAI) to accomplish a learning purpose in the career and technology subject for eleven grade students. This includes the power or the degree to be effective and the quality
of being able to bring about the highest level of students’ learning achievement in knowledge and understanding, skills/performance and desirable characteristics.

(2) Computer Assisted Instruction (CAI)

Computer Assisted Instruction (CAI) is an educational medium or interactive tutorial technique in which instructional contents or activities are delivered by computer which is used to enhance education of students and served as an audio-visual device. Computer assisted instruction (CAI) contains the instruction which is designed to teach, guide, and test the student until a desired level of proficiency is attained. The students learn by reading the material presented or by observing the graphic information displayed. They learn by interaction with the computer and appropriate feedback is provided.

In the present study, computer assisted instruction (CAI) refers to a form of learning that utilize computers, and is typically intended as a way to supplement traditional teacher-based learning. The researcher attempts to present this research on the effectiveness of computer assisted instruction (CAI) as a teaching tool, especially as it impacts on the learning achievement. Following the definition for computer assisted instruction (CAI) above, this study aims to find out whether or not CAI can be effectively utilized for teaching and the eleventh grade students’ learning achievement in career and technology subject.

(3) Learning achievement

Learning achievement refers to the real accomplishments in the students’ learning process i.e. knowledge and understanding, skills/performance, and the ability to perform the desirable characteristics which derived from the computer assisted instruction (CAI) that can be measured by achievement tests, performance test and desirable characteristics test.

In the present study, learning achievement means the score obtained from the evaluation that came from the test of the subject before and after the teaching & learning procedure as well as the test in each unit of learning management plan. By employing the test form that measured the achievement of the teaching & learning, which is concerned to the knowledge and understanding, skills/performance, and desirable characteristics that created from learning or receiving the proper teaching method and computer assisted instruction (CAI) in each instructional plan.
Therefore, the learning achievement means the scores obtained from the learning achievement test under the teaching & learning method through computer assisted instruction (CAI). The achievement test on the career and technology subject title “Website implementation by Namo WebEditor 5.5” of eleventh grade students was created by the researcher, which was the multiple choice test with 4 options in the amount of 40 questions and is covering the measurement of knowledge, understanding, implementation, analysis, synthesis, and problem solving. This test also has been tested for the item analysis, which gave three kinds of information such as the discrimination, difficulty, and reliability. The learning achievement scores was analyzed in terms of mean (\(\bar{X}\)), standard deviation (S.D.), t-test (dependent).

(4) Effectiveness of computer assisted instruction (CAI) on the learning achievement

Effectiveness of computer assisted instruction (CAI) on the learning achievement refers to the ability of computer assisted instruction (CAI) to accomplish a learning purpose in the career and technology subject for eleven grade students. The learning achievement scores were obtained from the learning achievement test of eleventh grade students, before and after instructed by computer assisted instruction (CAI) in career technology subject under the title “Website implementation by Namo WebEditor 5.5”. This includes the power or the degree to be effective and the quality of being able to bring about the highest level of students' learning achievement in knowledge and understanding, skills/performance and desirable characteristics.

1.4 OBJECTIVES OF THE STUDY

The study was to investigate under the objectives as follow:

(1) To study the effectiveness of Computer Assisted Instruction (CAI) on learning achievement (pretest-posttest) in career and technology subject for eleventh grade students.

(2) To test the difference between the effectiveness of Computer Assisted Instruction (CAI) on learning achievement scores (pretest-posttest) in career and technology subject for eleventh grade students.

(3) To study the effectiveness of Computer Assisted Instruction (CAI) on learning achievement (knowledge and understanding, skills/performance and desirable characteristics) in career and technology subject for eleventh grade students in each unit of
learning management plan

(4) To study the eleventh grade students’ opinions pertaining to computer assisted instruction (CAI) title “Webstie Implementation by Namo WebEditor 5.5”.

(5) To compare the mean scores of eleventh grade students’ opinions pertaining to computer assisted instruction (CAI) title “Webstie Implementation by Namo WebEditor 5.5” classified by sex of students

1.5 VARIABLES OF THE STUDY

(1) Independent Variables

The learning management plan on career and technology subject under the title “Website implementation by Namo WebEditor 5.5” taught by the Computer Assisted Instruction (CAI).

(2) Dependent Variables

(2.1) The effectiveness of Computer Assisted Instruction (CAI) on learning achievement in career and technology subject for eleventh grade students

(2.2) The eleventh grade students’ opinions pertaining to Computer Assisted Instruction (CAI) in career technology subject title “Website implementation by Namo WebEditor 5.5”

1.6 HYPOTHESES OF THE STUDY

(1) There will be no significant difference between the effectiveness of Computer Assisted Instruction (CAI) on learning achievement scores (pretest-posttest on knowledge and understanding) in career and technology subject for eleventh grade students.

(2) There will be no significant difference between the effectiveness of Computer Assisted Instruction (CAI) on learning achievement scores (pretest-posttest on skills/performance) in career and technology subject for eleventh grade students.

(3) There will be no significant difference between mean scores of eleventh grade students’ opinions pertaining to computer assisted instruction (CAI) title “Webstie Implementation by Namo WebEditor 5.5”. classified by sex of students

1.7 IMPORTANCE OF THE STUDY

Educational management emphasizes the importance of knowledge, thought, capability, morality, and social responsibility. The aims are to foster the well balanced
development of each individual as learners is the most important. Everyone is capable of learning and self-development, learners shall be encouraged to develop themselves in line with their natural inclinations, and fully realize their own potential. Teachers are responsible for administering learning development which emphasizes thinking process and group working skills. Therefore, teachers must change the roles from knowledge transferring to helping, promoting and encouraging learners to acquire knowledge from various media and learning centres. The duties of teachers are to provide correct information to learners for use in creating their own knowledge. Different procedures, various materials and actual teaching-learning situation should be applied in each level of learning management. Therefore, it is very importance for refinement and development of professional instructors. Teacher’s potential development aims at creating academic leadership and competency in conducting teaching and learning process. Teachers are required to integrate innovation of educational technology in learning management for learners’ quality development.

Secondary school teachers generally frustrate about their work load. Some of them may experience stress in dealing with large classes and some students come from disadvantaged or multicultural backgrounds. Accountability standards also may increase stress levels, with teachers expected to produce students who are able to exhibit satisfactory performance on standardized tests. Teachers are sometimes having over duties to perform outside the classroom. Development of effective CAI programme and its widespread acceptance with provision of necessary ‘facilities for CAI may suggest an alternative mode of instruction.

Computer assisted instruction (CAI) has the potential to cope with the needs of individualized learning, cooperative learning and constructivist approaches (Maddux, Johnson, & Willis, 1997). Rapid pace of improvement in computer technology and software development suggests that CAI will acquire the potential to change the state of traditional teaching learning process (Bitter & Pierson, 1999). To face the challenges of present and future, to compete the nations in this information age, every nation will have to enhance the quality of its education system, which is possible only by exploring the new dimensions and benefiting from latest means of communication.

Effectiveness of CAI has been established in various subjects i.e. in mathematics, social studies, language and science. Advanced countries are improving the quality of
education by introducing innovations associated with technology including CAI. This study may encourage utilization of this innovation as effective mean of instruction in the career and technology subject of eleventh grade students.

The findings of the present research may be a source of encouragement for the widespread use of CAI in career and technology subject and in various subjects. This study may also be a source of inspiration for researcher to develop educational software and may give the idea about the weakness and strength of teaching and learning development, management of basic education learning procedures which can be applied to the effective learning standard to fulfill the objectives of the Basic Education Core Curriculum A.D. 2008

1.8 LIMITATIONS OF THE STUDY

(1) The learning management plan on career and technology subject under the title “Website implementation by Namo WebEditor 5.5” taught by Computer Assisted Instruction (CAI) was used for the learning & teaching process for eleventh grade students of Saklee-Witthaya school, Pranakhon-Sriayutthaya Province, Thailand.

(2) The data has been collected in the academic year 2009-2010.

(3) The effectiveness of Computer Assisted Instruction (CAI) refers to the learning achievement score (pretest-posttest) on the knowledge and understanding as well as the skills/performance and the learning achievement score on desirable characteristics. The data was collected through the learning achievement test made by the researcher.

(4) The data concerning to the students’ opinions was collected through rating scale which was constructed by the researcher.

1.9 CHAPTERIZATION

The researcher divided the present study into five chapters as follow:

Chapter 1: Introduction

The first chapter dealt with the introductory aspect of the study, statement of the problem, objectives of the study, definition of the important terms, variables of the study, hypotheses of the study, importance of the study limitation of the study, and the chapterization.
Chapter 2: Theoretical Orientation and review of the past studies

The second chapter concerned to the theoretical orientation i.e. definition of effectiveness, definition of computer assisted instruction (CAI), definition of learning achievement, characteristics of computer assisted instruction (CAI), types of computer assisted instruction (CAI), advantage and disadvantage of computer assisted instruction (CAI), Effectiveness of computer assisted instruction (CAI) on subjects, career and technology subject under the title “Website implementation by Namo WebEditor 5.5” under the Basic Education Core curriculum A.D. 2008. The review of the past studies done in foreign countries and in Thailand also mentioned in this chapter.

Chapter 3: Plan and procedure

The third chapter based on the technique selected for the study, tools and the characteristics of the tools, steps of construction the computer assisted instruction (CAI) in career and technology subject under the title “Website implementation by Namo WebEditor 5.5” based on the Basic Education Core curriculum A.D. 2008, development of the tools, establishment of validity, discrimination and reliability of the tools, experimental procedure, and technique of analysis of data.

Chapter 4: Analysis of data and interpretation

The fourth chapter described about the analysis of data and interpretation. The data collected by the tools was analyzed according to the hypotheses which concerned to:

1. The study of effectiveness of Computer Assisted Instruction (CAI) on learning achievement scores (pretest-posttest) in career and technology subject of eleventh grade students and the comparison of the learning achievement scores (pretest-posttest) in career and technology subject of eleventh grade students.

2. The study of effectiveness of Computer Assisted Instruction (CAI) on learning achievement (knowledge and understanding, skills/performance and desirable characteristics) in career and technology subject for eleventh grade students in each unit of learning management plan.

3. The study of eleventh grade students’ opinions pertaining to computer assisted instruction (CAI) title “Website Implementation by Namo WebEditor 5.5” and the
comparison between mean scores of students’ opinions pertaining to computer assisted instruction (CAI) title “Webstie Implementation by Namo WebEditor 5.5” classified by sex of students.

The 0.05 and 0.01 level of the significance will be considered satisfactory for acceptance or rejection of the null hypotheses. The frequency distributions, tables and figures were prepared and placed in the report to present the data comprehensively.

Chapter 5: Summary, Major findings, Conclusions, Suggestions and Recommendation for further study

The last chapter discussed about the summary, the major findings, conclusions, suggestions as well as the recommendation for further research work.

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