CHAPTER TWO

REVIEW OF LITERATURE

This chapter reviews the literature in six main areas along with a summary: Definition of Behavior, Learning Principles and Applications, Backward Design Knowledge, Impact of Backward Design on Teachers, How to Use Backward Design Effectively, and the Role and Trend of Backward Design among Teachers in Thailand. A summary is also provided.

2.1 DEFINITION OF BEHAVIOR

There are many definitions of behaviorism. Klien writes that Behaviorism is a way of thinking about the role of experience in administering behavior. The important processes ruling behavior can be learned. Our drives that initiate behavior and specific behaviors are learned through our interaction with surroundings. The main aim of behaviorists is to determine what governs learning. However, one important origin of behaviorism comes from Aristotle's concept of the association of ideas (Klien, 1996, p. 23). Tolman's study (as cited in Klein, 1996, pp. 42-44) suggests a cognitive approach. He says that we behave to reach a specific goal and our goals control our behavior. However, the American behaviorist Skinner (as cited in Klein, 1996, pp.44-46) argues that psychologists should attempt to identify the environmental factors controlling behavior. He says that when variables are discovered, we will be able to predict and control behavior. Skinner also says that an operant response is a behavior that operates on its environment and a reinforcer is any event that increases the frequency of behavior. A contingency occurs if there is a relationship between behavior and reinforcement. Since behavior is studied by learning, learning principles will be presented in the next section.

2.2 LEARNING PRINCIPLES AND APPLICATIONS

As learning is the important process for helping to study the behavior of each person in each situation, we should pay attention to the definition of learning. Klein writes that the definition of learning has three important elements. First, a change in the potential for a behavior is reflected by learning. Second, changes in behavior because of learning are relatively permanent. This means that previously learned behavior is no longer shown if new experiences occur. Third, our behavior can change because of motivation rather than learning. Many behavior changes are also the result of maturational development and instinctive processes rather than learning (Klein, 1996, p. 2). Lorenz's study (as cited in Klein, 1996, p. 3) suggests that instincts enhance our ability to adapt to the environment. In other cases, learning provides new behavior that enhances survival or learning allows us to adapt to the environment. We all have an innate ability to learn. However, functionalists disagree on the nature of instinctive processes. Many psychologists such as Thorndike, Pavlov, and Watson have adopted the behaviorist view, or the belief that most behavior is learned. Moreover, Lorenz asserts that knowledge represents an increased ability to understand other people's feelings and problems about particular aspects of the environment. Evolution occurs when we can absorb knowledge concerning the people and things around us in our lives. Moreover, Liberman says that knowledge can be recalled as needed to plan behavior (Liberman, 1993, p. 418). Before we study the behavior of Backward Design users, we need to understand Backward Design theory.

2.3 THE THEORY OF BACKWARD DESIGN

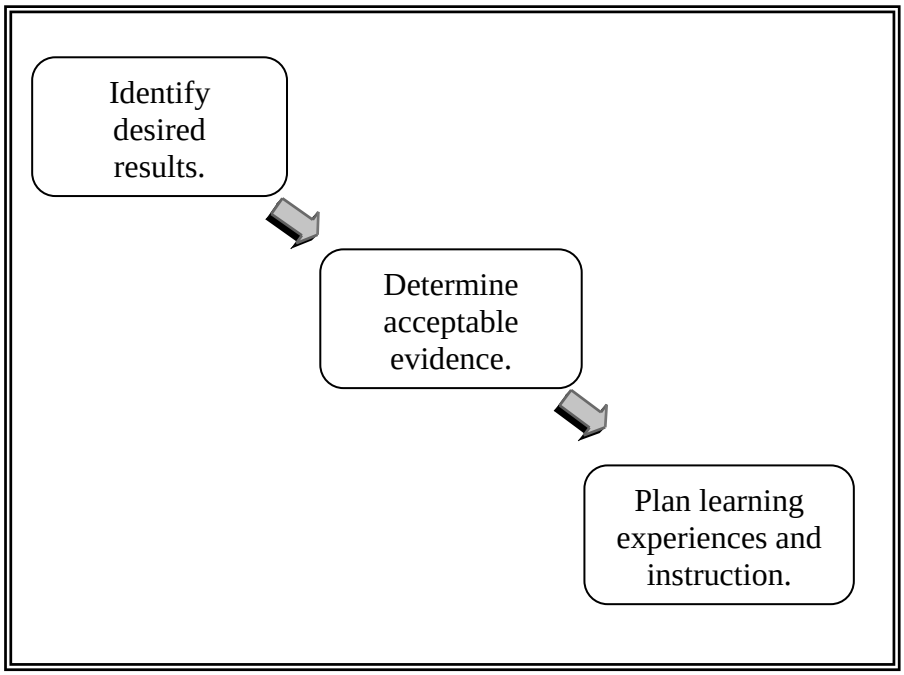
To increase our understanding of Backward Design, we should look closely at the theory behind it. In The Seven Habits of Highly Effective People, Cover's study (as cited in Wiggins & Mc Tighe, 1998, p. 7) says that we will move in the right direction if we begin with the end in our mind. Moreover, design-(vb) means to plan or develop something for a specific purpose. (**Longman dictionary of contemporary English**, 2003, p. 424)

Backward Design is a process of designing a learning process. It identifies the evidence of learners' performance or activities for evaluating the learners' results

according to a learning standard or the expected learning results. Teachers or instructors design learning activities in order to allow learners gain knowledge or ability, and then express their knowledge or ability as evidence showing their understanding as determined by the evaluation of activities. This theory was issued by Grant Wiggins and Jay Mc Tighe in 1998, and it consists of three processes as described in the figure below:

1. Identify desired results -Enduring Understanding, Big Idea
2. Determine acceptable evidence of learning- Six Facets of Understanding
3. Plan learning experiences and instruction -Review and Refine

Figure 1. Stages in the backward design process.



From: *Understanding by Design* by G. Wiggins and J. Mc Tighe, 1998, Upper Saddle River: Merrill Prentice Hall. (p. 9)

Furthermore, Backward Design also helps teachers reach their goals or standards in terms of assessment evidence when teachers plan their own units or courses. It reminds teachers to question what they will accept as evidence that students have succeeded in achieving the desired proficiencies before they plan teaching and learning experiences. Many teachers who have used this design

approach report that the process of “thinking like an assessor” about evidence of learning can help them to clarify their goals and results in order to get their students to perform better. Desired results, key performances, and teaching and learning experiences which are coherent can result in better student performance which is the purpose of Backward Design. (Wiggins & Mc Tighe, 1998, pp. 8-9)

Roth, Anderson, and Mayes (2007) found that Backward Design can help experienced and inexperienced teachers overcome obstacles by providing concise and practical guidance. In programs sponsored by the National Science Foundation and the National Institute of Health, teams composed of University of Wyoming graduate students and science teachers from grades 6 to 9 utilized the Backward Design process. They said that Backward Design helped them avoid content overload and promote self-directed and life-long learning.

Furthermore, Reed (2005), a 3rd grade teacher for the Ralston School District in Ralston, Nebraska and a graduate student in Elementary Education at the University of Nebraska, said that Backward Design helped her with curriculum issues and rethink curriculum and assessment development as well as her teaching. In order to elevate knowledge of Backward Design theory, we need to study the impact of this design on teachers.

2.4 IMPACT OF BACKWARD DESIGN ON TEACHERS

Wiggins and Mc Tighe say that the teachers are designers. They must do what they may not agree with. They are not free to teach any topic they choose. Moreover, teachers are guided by national, state, district, or instructional standards that specify what students should know and be able to do. Backward Design can provide a framework to help teachers identify teaching and learning priorities and guide their design of curriculum and assessments. (Wiggins & Mc Tighe, 1998, pp. 7-8)

The impetus for Backward Design in Thailand comes from Kasama Varavarn, Secretary-General of the National Primary Education Commission. Her understanding of the book “Understanding by Design” of Grant Wiggins and Jay Mc Tighe was publicized through several media such as the internet or academic documents. She says that Backward Design can solve the problem of the

disconnection between curriculum and assessment. All teachers should be designers. The main responsibilities of being teachers are to design the course and learning experience to bring their students to the determined goal, and to design needed assessment devices to prove whether students have achieved the goal or not. In Thailand, most teachers plan their teaching by selecting textbooks, teacher manuals and activities instead of creating devices based on learning goals and determined standards. The book "Understanding by Design" of Grant Wiggins and Jay Mc Tighe proposes the learning design process in the Backward form. It starts from fixing the learning goals, and then designs the curriculum and teaching plan. However, teachers must analyze curriculum design from the beginning. There needs to be some evidences that learners understand content at a satisfactory level. When teachers understand goals and evidence clearly, they should be able to create their teaching plan. Therefore, this method will help teachers determine goals in line with teaching activities. If the learners understand the content, they should be able to get the expected outcomes to be as follows: (1) explain why and how something happens, (2) interpret it, (3) apply it, (4) have perspective about it, (5) empathize with it, and (6) have self-knowledge (กษมา วรวรรณ ณ อยุธยา, 2551).

Moreover, Tairong Janekarn (2007) from the Bureau of Academic Affairs and Educational standards says that we can do the Backward Design process by improving our curriculum. The frame of this design is useful for teaching when Backward Design is used with learning guideline frames and other useful documents (ไตรรงค์ เจนการ, 2550).

Furthermore, Chalerm Fugaeon (2007), educational supervisor from the Bureau of Academic Affairs and Educational standards at Lampoon Province, says that Backward Design is a hands-on process for teachers. Teachers have to create a work plan for students to practice and then teachers will learn how to plan teaching content (เฉลิม ฟักอ่อน, 2550).

2.5 RELEVANT RESEARCH ON HOW TO USE BACKWARD DESIGN EFFECTIVELY

To do research on Backward Design, we need to study the relevant research. To teach skillfully, teachers must know their students well in all aspects especially their needs, characteristics, and individual differences (Elliott, Kratochwill, Cook, & Travers, 2000, p. 3) According to Boyer's study (as cited in Elliott, Kratochwill, Cook, & Travers, 2000, p. 6), the former U.S. commissioner of education and president of the Carnegie Foundation for the Advancement of Teaching, identified that teachers relate what they know to their learners so that students become aware of the beauty, the power, and the application of knowledge.

Borich's study (as cited in Elliott, Kratochwill, Cook, & Travers, 2000, p. 520) reviewed recent research on teaching effectiveness and concluded that the key behaviors characterizing effective teachers include lesson clarity, instructional variety, task orientation and engagement in the learning process, and student success. Backward Design has been used for a long time in education. It is a process that helps teachers to avoid common inadequacies in curriculum and assessment planning. Tyler's study (as cited in Wiggins & McTighe, 1998, p. 8) ever described the logic of Backward Design clearly and concisely about 50 years ago by writing that "educational objectives become the criteria by which materials are selected, content is outlined, instructional procedures are developed, and tests and examinations are prepared. The purpose of the statement of objectives is to indicate the kinds of changes to be brought about in the student so that instructional activities can be planned and developed in a way likely to attain these objectives."

Additionally, Backward Design can help students understand and retain knowledge. Bruner's study (as cited in Wiggins & Mc Tighe, 1998, p. 11) wrote in *The Process of Education* that for every subject that is taught in school, educational reformers and teachers should ask whether it is valuable, and whether it can make their students be better adults in the future.

Bruner's study (as cited in Wiggins & Mc Tighe, 1998, pp. 11-12) proposed that the objective of Backward Design is to extend the idea, topic, or process and to represent a big idea which has enduring value beyond the classroom. Therefore,

teachers' knowledge is very important for students since the knowledge that students will gain usually comes from their teachers. Brown, Collins and Duguid's study (as cited in Pressley & McCormick, 1995, p. 80) found that knowledge is inseparable from actions. Therefore, teachers should act in ways that enhance their teachers own knowledge.

Backward Design offers teachers a process and set of tools to make the selected curriculum a model of understanding. None of these ideas for better understanding is new. Indeed, Bruner's study (as cited in Wiggins & Mc Tighe, 1998, p. 12) confirmed in *The Process of Education* that the curriculum of a subject should be determined by the most fundamental understanding that can be achieved of the principles that give structure to a subject. Teaching specific topics or skills without making clear their context in a broader fundamental structure of a field of knowledge is uneconomical.

Kanat Thatthong (2008) said what makes Backward Design different from the process of making a lesson plan and instruction plan in the past is that before making a lesson plan and instruction plan, teachers need to set a plan for assessing the results. At the same time they should pay great attention to the clear development of work and performance tasks (ฆนัท ธาตุทอง, 2551, น. 217). To give a clearer picture of how to use Backward Design effectively, we should learn more about the role and trend of this design among teachers in Thailand.

2.6 THE ROLE AND TREND OF BACKWARD DESIGN AMONG TEACHERS IN THAILAND

To improve our educational system in Thailand, we should study the role and trend of Backward Design among Teachers in Thailand. Alexander's study (as cited in Elliott, Kratochwill, Cook, & Travers, 2000, p. 9) noted that people's knowledge base is a structure that can support the construction of all future learning. Backward Design is derived from target goals and standards. It helps teachers avoid teaching only from the textbook, favored lessons, and time-honored activities (Wiggins & McTighe, 1998, p. 8).

In 1998, Grant Wiggins and Jay McTighe disseminated Backward Design by writing the book, “Understanding by Design”. Khunying Dr. Kasama Varavarn, Secretary-General of the National Primary Education Commission read and studied the book, and she summarized, wrote, and had other people analyze several aspects of course curriculum and design learning experiences and instruction plans for teachers in Thailand.

Kanat Thatthong wrote the book about Backward Design in order to help other teachers. He also supports university teachers in the use of this design in their teaching (ฆนัท ธาตุทอง, 2551, น. ค, 222). Lamduan Kasetsuntorn also agrees with Backward Design. She is the dean of the Education Faculty of Songkhla Rajabhat University. She said that Backward Design is an innovation for making a lesson plan and instruction plan, so the Bureau of Academic Affairs and Educational Standards should pay great attention to it (ฆนัท ธาตุทอง, 2551, น. ค).

Backward Design can also help art teachers to guide their students to achieve the standard of Arts Study in Thailand (ประเทศ สุขสถิต, 2550, น. 58-62).

It is clear that teachers are important for students, so teachers should be knowledgeable, capable, and experienced. Good teachers should develop themselves for the new generation. Suthira Suriyawong (2007) notes that modern teachers nowadays should do the following:

- Analyze the curriculum correctly.
- Teach students, so students can bring what they learn to use in their real lives.
- Develop themselves at all times.
- Know ways to assess or evaluate what students learn.
- Do research about their teaching (สุธีรา สุริยวงศ์, 2550, น. 22-27).

Backward Design is very popular in many countries and it is also used by the Association for Supervision and Curriculum Development in the USA. Many educational curriculum experts suggest that designing the curriculum by using Backward Design is effective for developing learners in standards-based education (สำนักคณะกรรมการการศึกษาขั้นพื้นฐาน, 2549, น. 16).

To sum up, the Ministry of Education has paid a great deal of attention to this method of teaching and this is encouraging Thai teachers to use this design. Thai teachers have just been introduced to this design while it has been used in many western countries for several years. This means that Thailand is quite late in studying this design. Therefore, if we want to improve our educational system, Thai teachers' behaviors in obtaining their knowledge and understanding about this approach is very crucial. In the next chapter, the methodology of the study is presented.