CHAPTER II

REVIEW OF RELATED LITERATURE

2.1 Higher Order Thinking Skills (HOTS) in EFL

2.1.1 Definition of Higher Order Thinking Skills (HOTS)

From mere recall of facts, Higher Order Thinking Skills (HOTS) pass on into the realms of analysis, evaluation, and creation of new ideas. This lies in contrast to Lower Order Thinking Skills (LOTS). In Bloom's Revised Taxonomy, as Anderson & Krathwohl (2001) point out, it covers in general the upper three levels: analysis, evaluation, and creation. Therefore, these essential skills will enable students to deal with problems, think critically, and adapt to certain situations. Besides, HOTS are defined by Brookhart (2010) as skills that involve going beyond memorizing facts to manipulating those facts to solve problems, generate hypotheses, and make decisions. These skills are critical for preparing students to function effectively in a complex world where problem-solving and creative thinking are increasingly valued.

2.1.2 The History of HOTS in Indonesia

The Higher Order Thinking Skills concept relates mainly to the cognitive theory developed by Benjamin Bloom, who, in 1956, published his *Taxonomy of Educational Objectives: The Classification of Educational Goals.* This model represented levels of cognitive skills, from mere recall of facts to higher-order

functioning skills such as analysis, evaluation, and creation. It then becomes very significant for the teacher that he can use the above capacities to help the student reach a fuller understanding of what he learns. Further, Blooms classified thinking skills into six levels: knowledge, comprehension, application, analysis, synthesis, and evaluation. These general levels are ideal guidelines for curriculum and assessment developers in higher-order thinking. By expounding learning activities in terms of cognitive levels, teachers would better orient students to real-life problems and help them think critically about the information they encounter.

The above explains the division of the levels under two broad categories: Lower Order Thinking Skills (LOTS): knowledge, understanding, and application; Higher Order Thinking Skills (HOTS): analysis, synthesis, and evaluation. This classification marks an ascending order from the simplest to higher forms of memory information to the very complex and abstract. Such a development is imperative in training the learners to think critically and solve problems; this invokes their knowledge and understanding of the content but applies it at a greater depth. Hence, LOTS and HOTS development make education more relevant in preparing students for the realities of life with which they will have to grapple.

Initially, HOTS was designed to help educators understand and measure students' ability to think more deeply and remember information. However, this concept has changed to focus on developing critical, creative, and problem-solving skills. Bloom said that education should go beyond mastering facts and focus on how students use information to make meaningful decisions (Bloom, 1956).

Anderson and Krathwohl (2001) replaced the term synthesis with creation and turned it into the highest level in the taxonomy, which substantiates creativity's importance amid modernity in learning. Besides that, HOTS is emerging as more relevant for education today, with the advent of several other activities intended to mold students into those who would be able to face the realities of the 21st century. Those would cover an ability to think critically, adapt to change, and solve complex problems. According to Facione (2011), HOTS forms the heart of critical thinking, comprising such abilities as analyzing arguments and evaluating evidence toward making rational decisions.

In Indonesia, the application of HOTS has begun to receive attention along with changes in the national curriculum that emphasize the importance of developing 21st-century skills as described in Table 2.1. The curriculum adopts a more flexible and student-based learning approach, with competency-based assessments that emphasize higher-order thinking skills.

Picture 2.1 *The history of HOTS in Indonesian Curriculum (Pasutri, 2020).*

No	**Name of curriculum**	**Learning material**	**Level of thinking**
1.	1947 curriculum	Focus on the development of independent humans such as students' character and social awareness.	Didn't focus on the development of students' thinking
2	1952 curriculum	Every learning material should be related to daily life.	LOTS, because of the level of students' thinking only on applying the learning material in daily life
3	1964 curriculum	Pancawardhana program (the development of creativity, taste, intention, work, and morals)	Still in LOTS, on applying level.

4	1968 curriculum	Learning material focus on the theory	LOTS (applying)
5	1975 curriculum	Focus on how to make the teaching and learning process become effective and efficient. So, the method, learning material, and learning goals designed in a lesson plan.	LOTS (applying)
6	1984 curriculum	The student are a subject of learning. They decide to be able to learn, observing, classifying, discussing and reporting the subject	HOTS in a high level of school (Analyzing)
7	1994 curriculum	The changing system from 'caturwulan' to semester.	HOTS in a high level of school (Analyzing)
8	2004 curriculum (Competence Based Curriculum or CBC)	Education by developing abilities based on competency targets	HOTS in a high level of school
9	2006 curriculum (School-Based Curriculum or SBC)	Reducing the burden of learning and simplifying the basic framework in the curriculum unit and the teacher has the freedom to associate learning material with the daily life.	HOTS in a high level of school
10	2013 curriculum	Thematic learning model	HOTS at senior high school up to the university
11	2013 curriculum revise on 2015/2016	Adding HOTS as a goal of the curriculum	HOTS not only at senior high school and university level but also for elementary and junior high students
12	2013 curriculum revise on 2019	Including ICT in the teaching and learning process	HOTS from elementary students up to the university

2.1.3 Characteristics of Higher Order Thinking Skills

HOTS are characterized by several key attributes that set them apart from lower-order thinking:

1. Complexity:

   HOTS deal with several cognitive processes associated with understanding, interpreting, and manipulating given information (Anderson & Krathwohl, 2001). LOTS emphasize memorization, whereas HOTS demand a higher level of cognitive processing, requiring students to analyze, evaluate, and generate new ideas.

2. Abstract Thinking:

   Whereas LOTS operate with concrete concepts and facts, HOTS often deal with abstract concepts and ideas. This necessitates that students intervene in the case beyond direct observation (Brookhart, 2010).

3. Transferable:

   One certainly cannot discuss HOTS without considering its application to new or unexpected challenges. Further, Facione (2011) argues that HOTS should challenge students to apply their learning in different contexts that are a prerequisite for being a lifelong learner.

4. Metacognitive:

   HOTS presuppose some level of self-awareness and reflection about one's own thinking processes. Students with strong HOTS abilities can monitor

and regulate their thinking independently (Flavell, 1979).

2.1.4 Types of Higher Order Thinking Skills

Higher Order Thinking Skills (HOTS) fall into various classifications based on the cognitive functions they represent. These are as follows:

1. Analysis:

   This process refers to the breaking up of information into components and relating these components to each other. Analysis requires pupils to look at information, draw a pattern, and infer meanings. Anderson & Krathwohl (2001) state that this particular skill is crucial for understanding complex concepts and solving problems.

2. Evaluation:

   Evaluation is the making of judgments on the worth or value of information according to some criteria. Critical thinking is involved in evaluation, and it is the ability to assess the validity of reasons or evidence. Facione (2011) affirms that the evaluation is the very basis upon which the entire process of decision-making stands. It also helps weigh the pros and cons and provides a well-thought-out opinion.

3. Creation:

   Creation is HOTS's highest level that introduces the new (ideas, products, or solutions). It requires that students apply creative and synthetic thinking to information and knowledge. In this sense, creating implies generating novel and useful work, which Torrance (1988) highlighted.

2.1.5 Advantages and Disadvantages of Higher Order Thinking Skills

2.1.5.1 Advantages:

1. Assertive Problem-Solving Skills

   HOTS enable students to address complex problems by adequately analyzing information and evaluating the feasibility of a solution. Halpern (1998) states that students who develop HOTS become much better able to navigate real-world circumstances.

2. Improved Critical Thinking

   A core element of HOTS is critical thinking, which enables students to analyze information and to make reasoned judgments (Facione, 2011). This skill is increasingly requisite in today's information-rich world.

3. Promotion of Creativity

   HOTS, in encouraging the generation of new ideas, promotes creativity and innovation (Torrance, 1988). The adaptability is especially crucial in fields that experience continuous innovation.

4. Transference

   HOTS provide students with various opportunities to apply what they have learned in a particular case to other instances while demonstrating flexibility and adaptability (Anderson & Krathwohl, 2001).

2.1.5.2 Disadvantages:

1. Time-Consuming:

   This feature of HOTS is tedious for both teacher and student, needing more attention and time in lesson planning and classroom activities (Brookhart, 2010).

2. Assessment Challenges:

   Evaluating HOTS is quite difficult since most traditional examinations are concerned mainly with LOTS. Careful design will be required to develop assessments validly measuring HOTS (Halpern, 1998).

3. Difficulty of Implementation:

   HOTS becomes difficult to implement in classrooms, especially when they are large or in resource-poor settings. consequently, teachers often require additional professional development to enhance their ability to teach Higher Order Thinking Skills (HOTS) effectively (Brookhart, 2010).

4. Potential for Student Frustration:

   Since HOTS require higher cognitive engagement, students who are not adequately prepared may find it frustrating and challenging (Facione, 2011).

2.1.6 Implementation of Higher Order Thinking Skills in EFL

There are several ways to use HOTS in EFL environments to enhance language learning:

1. Problem-Based Learning (PBL):

   PBL encourages students to solve real-life problems using their skills in the language. This situation encourages HOTS, prompting students to analyze the problem, evaluate possible solutions, and develop an appropriate response. (Hmelo-Silver, 2004)

2. Project-Based Learning (PjBL):

   Researching, collaborating, and presenting projects are tasks where students can develop HOTS in EFL settings. They need to provide information, evaluate sources, and create presentations (Thomas, 2000).

3. Debating and Discussion:

   The activity of debating and discussion allows students to put into practice their critical thinking and evaluation. This enables students to express their thoughts clearly while substantiating their argument with evidence (Zare & Othman, 2013).

4. Writing Composition:

   Writing tasks requiring analysis, comparison, and creative expression help develop HOTS in language learners. Students can

compare themes from two texts or create an alternative ending to a story (Brookhart, 2010).

5. Technology Application:

   The use of digital tools and platforms facilitates the fostering of HOTS through interactive and multimedia resources. For example, online simulations, educational games, and collaborative platforms encourage active and higher-order thinking among students (Koehler & Mishra, 2009).

2.2 Teacher Strategy in Implementing HOTS in Indonesia

2.2.1 Definition of Teacher Strategy

Teacher strategies are the means and methods teachers use to help students learn in the classroom. Consequently, teachers adjust these strategies based on educational goals, student needs, and cognitive development. Brown (2007) informs us that teacher strategies really matter in trying to provide an avenue for the students to use their Higher Order Thinking Skills (HOTS), especially in the area of foreign language learning. Further, Richards and Rodgers (2001) emphasize that effective teacher strategies not only foster learning but also encourage student engagement and participation.

2.2.2 Types of Teacher Strategies in Implementing HOTS in Indonesia

In implementing EFL instruction in Indonesia, educators shape HOTS based on the specific needs of the educational environment. According to Anderson and Krathwohl, HOTS consist of six cognitive processes: analyzing, evaluating, creating, understanding, applying, and remembering. HOTS in an Indonesian setting involves the cognitive strategies of problem-based learning, inquiry learning, and project-based learning (Dewi, 2017). All of these processes aim to develop students' critical thinking and complex problem-solving skills—core attributes of HOTS. The explanation is as follows:

1. Problem-Based Learning (PBL):

   Problem-Based Learning is an approach to education that centers learning around real-world issues. Students are faced with a problematic situation and expected to identify the problem, explore possible solutions, and make decisions of their own based on evidence gathered. PBL lies well within the line of constructivism that advocates active and contextual learning (Vygotsky, 1978).

   In the EFL classes of Indonesia, teachers can incorporate PBL to use English communicatively and meaningfully. For example, if students are asked to survey a pollution problem in their environment and develop an English-language campaign to make public awareness. This activity develops communicative skills while promoting critical thinking, collaboration, and complex problem-solving.

Further, Barrows (1986) stated that PBL enhances not only the process of developing critical thinking but also the process of organizing the way they arrive at solutions to problems. By applying PBL, teachers bring students into a more effective academic world of process and depth thinking while encouraging students toward the analytical ability necessary for the presentation.

2. Inquiry-Based Learning (IBL):

   IBL is the backbone of learning, guiding the student toward the sought answers to the raised questions. This stimulates curiosity and critical thinking while allowing one to evaluate and synthesize information: the IBL in EFL allows students to use English in contexts of research and exploration.

   Pedaste et al. (2015) describe five phases of IBL:

   a) *Orientation*—introducing a problem or question;

   b) *Conceptualization*—formulating questions and hypotheses;

   c) *Investigation*—carrying out exploration and information search;

   d) *Conclusion*—deriving conclusions from investigation results;

   e) *Discussion*—discussing findings and reflection as a group.

   This model promotes systematic inquiry in teaching, allowing educators to implement it effectively in EFL classes. Hence, the role of the teacher is now shifted into that of a facilitator who guides the students through these

phases, ensuring systematic engagement in higher-order thinking processes. For instance, teachers can ask students to research and present their findings in English about cultural differences between Indonesia and a native English-speaking country. The activity encourages students to access sources of information, organize their ideas, and communicate research results logically.

3. Project-Based Learning (PjBL):

Project-Based Learning (PjBL) is a learning approach that focuses on a variety of challenging tasks that require a lot of time to complete. It engulfs students in the integration of numerous skills alongside research, collaboration, communication, and creativity in the learning process.

For instance, in English language learning in Indonesia, some projects that teachers could design may include making a school magazine in English, producing educational videos, or preparing regional cultural presentations in English. These activities prepare students not only for language communication but also for critically thinking about information and actual work creation.

According to Thomas (2000), project-based learning is characterized by several key features, including:

- Focus on challenging questions or problems;
- Encourage authentic investigation;

- Give students freedom in decision-making;
- Create final products and present or publish them.

In sum, the PjBL journey fits significantly well into HOTS development because the learners do not merely memorize the information; rather, they evaluate it, organize it, and even create products reflecting their understanding. In addition, the collaborative learning activities help learners manage their time, share roles within the team, solve problems, and take responsibility for the final product. Besides, this approach aids in the development of Higher Order Thinking Skills (HOTS) because it exposes students to content that demands more than simple knowledge.

2.2.3 Implementation of Teacher Strategies

It requires cautious planning and adjustment with regard to the students' proficiency levels to apply such strategies in the classroom. Harmer (2015) argues that teachers can successfully implement HOTS in EFL only when they integrate it into their daily lessons. That is why they must prepare lesson plans with activities that require students to analyze, evaluate, and create. For example, teachers could ask students to compare texts, evaluate their claims, and develop arguments of their own in English.

In Indonesia, where students have different levels in EFL, scaffolding is important because the teacher has to scaffold the strategies and bring them into a format, which provides child support at the initiation of the process and subsequently

withdraws as the students make progress (Wood, Bruner, & Ross, 1976). So, students build confidence by developing skills through simple tasks, which later help them independently tackle more complex challenges. The following is the explanation:

2.2.1.1 Scaffolding in EFL Instruction

2.2.1.1.1 **Advantages:** Scaffolding is a very student-centered procedure whereby students are guided into a complex task as far as it is necessary for the struggling learner to be meaningfully engaged according to her or his understanding. The approach goes in the spirit of the statement made by Wood, Bruner, and Ross (1976), who argued that the ultimate aim of scaffolding is to assist the students to become independent learners. Gradually, as external assistance is reduced, learners become capable of completing tasks independently.

2.2.1.1.2 **Disadvantages:** However, the disadvantage is that the teacher needs to sell a lot of time and attention to every child, and if there is too much dependency on support, then the students may eventually struggle once such assistance is withdrawn (Puntambekar & Hubscher, 2005).

2.2.1.2 Problem-Based Learning (PBL)

2.2.1.2.1 **Advantages:** PBL teaches the students to think critically while solving real-life problems, which strengthens their analytical and synthesis skills. Barrows (1986) argued that PBL promotes motivation in students since they learn by solving problems relevant to their lives.

2.2.1.2.2 Disadvantages: Meanwhile, implementing PBL might be time-consuming and requires thorough preparation by the instructor. Further, Schmidt et al. (2001) speculate that in the absence of proper guidance, students might become frustrated or confused.

2.2.1.3 Inquiry-Based Learning (IBL)

2.2.1.3.1 Advantages: IBL offers students opportunities to carry out research resulting in the improvement of investigative skills and the development of critical thinking. Hmelo-Silver et al. (2007) define IBL as a means through which students can become engaged in their learning.

2.2.1.3.2 Disadvantages: Students who are not used to independent learning and are unwilling to explore a subject in depth may perceive IBL as a conflicting approach (Kirschner, Sweller, & Clark, 2006).

2.2.1.4 Project-Based Learning (PjBL)

2.2.1.4.1 Advantages: The practical realization projects engage students in real experiences, thereby sharpening their professional skills. Hence, students gain a more comprehensive understanding of a given concept, with a strong potential to apply it in real-life situations. According to Thomas (2000), PjBL develops among students time management and cooperation skills.

2.2.1.4.2 Disadvantages: A disadvantage, though, is that PjBL is time-consuming and often requires students to work beyond school hours,

which can pose significant barriers for those with limited time or resources (Blumenfeld et al., 1991).

2.2.1.5 Collaborative Learning

2.2.1.5.1 Advantages: Collaborative learning assists students in developing social and communicative skills while also promoting a more thorough understanding of concepts through group discussions. Johnson and Johnson (1999) argue that collaborative learning develops more critical thinking skills since the students are then in the position to weigh and substantiate the perspectives of one another.

2.2.1.5.2 Disadvantages: However, upon implementation, collaboration may become counterproductive if the group suffers from membership contribution imbalance or personality clashes that impede effective learning (Slavin, 1995).

2.2.4 Challenges in Teacher Strategies

The implementation of teacher strategies to develop HOTS in EFL classes does have advantages and disadvantages. These disadvantages stem from various factors, such as student-related issues, teacher performance, the learning environment, and limited resources. So, developing practical, evidence-based solutions requires a deep comprehension of these issues. The following is the explanation:

1. Differences in Student Abilities

   One major obstacle is the student's varying ability to understand and apply HOTS. Students with low English proficiency find it difficult to understand instructions or perform tasks requiring analysis, evaluation, and creativity. These students prefer to be quiet during discussions, feeling less confident or fearing that they will make mistakes (Widodo, 2016). On the other hand, brighter students will take charge and dominate discussion, which further brings down the equal participation of members in the group. To overcome this challenge, teachers assign students to diverse groups. Yet, this approach demands close supervision to ensure that each member actively participates and gains equal value from the learning process.

2. Time Constraints

   HOTS demands a lot for tasks that require careful planning, implementation, and reflection, such as debates, creative projects, or complex text analysis. Nevertheless, in practice, teachers feel short of time because of the dense curriculum. The statement put forward by Sugiyono (2014) that the curriculum in Indonesia often tends to rush in delivering material so that teachers do not have much time to carry out HOTS-based activities is true. Therefore, teachers will redesign tasks that are easier but still challenging, such as replacing long essay analysis with short paragraph analysis that still engages students in critical thinking.

3. Low Basic English Language Skills

   Limited grammar, vocabulary, and pronunciation skills among students often hinder their ability to engage effectively in HOTS-based activities. Consequently, a number of them struggle to comprehend instructions or execute tasks that require Higher Order Thinking Skills (HOTS). Brookhart (2010) states that HOTS requires a strong language foundation to enable students to understand tasks and think at a higher level. Hence, teachers often have to spend additional time re-teaching basic English concepts before introducing HOTS-based tasks. The intensive supervision is time-consuming and can hinder the flow of the planned learning process.

4. Technology and Resource Limitations

   In some areas, especially in rural areas, technology and resource limitations are a major challenge too. Teachers often do not have access to digital devices, stable internet connections, or adequate learning media to support interactive HOTS activities. According to Sharma and Barrett (2007), technology can be a catalyst in HOTS-based teaching, but its limitations can reduce the effectiveness of learning. To overcome this obstacle, teachers often use simple media such as concept maps, flashcards, or group discussions to continue to encourage students to think critically even without the help of technology.

5. Lack of Teacher Training and Professional Development

   Even teachers do not all have much understanding of HOTS-based learning designs. In fact, according to Widodo (2016), many teachers in Indonesia still follow traditional ways of teaching that are more focused on memorization, although training or professional development in HOTS has really become an impediment to more innovative learning strategies. Hence, teachers really should be specifically and continuously trained to understand the integration of HOTS in EFL lessons, such as designing analytical tasks, assessing learners, and using technology as an enabling tool.