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Authentic Assessment for Improving Cognitive Skill, Critical-Creative Thinking and Meta-Cognitive Awareness

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Abstract
Authentic Assessment, also known as alternative assessment, is an assessment used to holistically and continuously record students' achievement, including both product and learning process, and is inseparable from teaching and learning process. Authentic assessment is considered more applicative and meaningful as it improves motivation, leads to effective learning, and demonstrates students' knowledge, skill, and competence. The types of authentic assessment include paper and pencil test, portfolio, study journal, performance assessment, presentation discussion, and the like. Authentic assessment, directly and indirectly, improve students' achievement. Authentic assessment is continuous, thus enables students to monitor their progress. Monitoring skill is a part of meta-cognitive awareness, as meta-cognitive awareness includes thinking how to think (in this case the ability to control the mind). Authentic assessment improves meta-cognitive awareness and thinking skill. Thinking falls within two categories. Lower-ordered thinking includes knowledge, comprehension, and application; while higher-ordered thinking, known as thinking skill, includes critical and creative thinking. The two of which are inseparable like a two-sided coin. They contribute one another in sharpening critical and creative thinking skills.
Keywords: authentic assessment, critical-creative thinking, meta-cognitive awareness

1. Introduction

Accountability is one of principles in assessment that shows that an instrument is reliable in terms of the technique, procedure, and result. The assessment is conducted based on scientific principles and results in objective findings. Authentic assessment aims at finding accurate result.

One of the principles in assessment is "assessment is instruction" which implies "assessment and teaching can be one and the same". In an authentic-assessment-based class, teacher and students experience real teaching and learning process as well as an improvement in achievement (Stiggins, 1994). A proper assessment, authentic assessment, improves classroom instruction, and a good classroom instruction eventually improves students' achievement. According to Marzano (1993), assessment directly and indirectly affects students' learning process; assessment directly provides feedback for effective learning, and the indirect effect is that assessment tends to be based on what is taught and affects what is learnt.

In accordance with the above statement, assessment is expected to be effective and based on the standard principles. Gronlund (1998) states that effective assessment is designed clearly to mark study result during certain time frame; when its function is in line with the assessed result; is designed based on students' characteristic, relevant, and open for everyone; is to provide meaningful and relevant information; and is designed to give early feedback for students. Accordingly, assessment is inseparable from teaching and learning process.

2. The Nature of Authentic Assessment

Hart (1994) states that authentic assessment requires students to perform and complete meaningful tasks. According to Corebima (2004), authentic assessment, within the same perspective, is different from non-authentic assessment as its counterpart. It is illogical to describe non-authentic assessment as paper and pencil test; because the use of paper and pencil cannot be automatically claimed as non-authentic. In addition, traditional test is not always non-authentic.

The differences between traditional assessment and authentic assessment are presented in Table 1. In short, authentic assessment incorporates students in authentic, useful, important, and meaningful tasks. Besides, authentic assessment is inseparable from and integrated to classroom instruction.

Muller (2003) differentiates authentic assessment from traditional assessment by drawing continuum point progression from traditional assessment (left) to authentic assessment (right direction). In traditional assessment, students are given a number of choices (like a, b, c, d; true-false) and are required to choose the right answer. Different from traditional assessment, authentic assessment is more applicative and meaningful as it requires students to demonstrate their knowledge, skills, and competence. Authentic assessment encourages students to use their scientific knowledge in the real context, not constructing something new and unrecognizable. Authentic assessment entails analytical, synthesizing, and evaluative skills as well as creative thinking and action. Students

are also to implement their knowledge and incorporate new and substantial things. In contrary, traditional assessment only requires students' memorizing instead of building and applying the concept. Figure 1 shows the continuum point progression from traditional assessment to authentic assessment.

Authentic assessment includes: 1) portfolio, 2) journal/paper, 3) simulation, 4) design and presentation, 5) critical observation, 6) individual and group project, 7) reporting the result of site visit, 8) problem solving, 9) concept mapping, etc. The strategies for continuous assessment are: Performance Assessment, Observation, Questioning, Presentation, Discussions, Experiments/Demonstration, Projects/Exhibition, Story or Text Retelling, Investigation, Portfolio, Journal, Interview, and Self Evaluation (O'Malley and Pierce, 1996). Indiana Department of Education, Office of English Language Learning and Migrant Education from Authentic Assessment for English Language Learners: Practical Approaches for Teachers by O'Malley and Pierce categorizes the types of authentic assessment as presented in Table 2.

Authentic assessment also includes performance assessment. According to Marzano (1993), performance assessment is effective for measuring the ability that is not detected in paper and pencil test. Performance assessment measures the ability to communicate, solve a problem, and conduct critical thinking. In other words, performance assessment improves meta-cognitive skill as it leads the way students study. This is impossible to occur in paper and pencil test. Ibrahim (2002) states that paper and pencil test with true and false task never evaluates students' performance. Teachers are supposed to change the way they teach and assess their students. Changing the assessment means changing the way teachers teach and the way students study (Hart, 1994). Therefore, performance assessment is designed to facilitate students to "learn how to study".

Hart (1994) further states that authentic assessment challenges students to complete authentic tasks that are interesting, useful, and relevant to their lives. This type of assessment enables students to be innovative and creative as they are exposed to a number of opportunities to self-develop and to have positive response towards the school, learning process, and themselves. Positive manner affects the way of thinking, and thus resulting in positive achievement.

The above statement is in accordance with Marzano et. al (1993) who states that authentic assessment comprises three innovation aspects. First, it does not measure the goal of traditional teaching, but more on the real ability of students. Second, it is holistic and improves students' ability through constructivism instruction. Third, it is not simply administered with traditional test but various ways.

Authentic assessment changes the role of students, from passive to active, as they actively collaborate and participate in evaluating their progress. Different from exclusive and limited standardized test, authentic assessment activates classroom instruction in various ways. River (2001), Schraw & Dennison (1994) report that students who are skilful in self-assessment are more aware of their abilities and act more strategically than those who are not. Authentic assessment sharpens students' higher-ordered thinking when they are to analyze, synthesize, identify, and solve problems, as well as incorporate cause-effect analysis (Johnson, 2002). Authentic assessment requires students to be effective performers with their acquired knowledge. Traditional test only measures whether students recognize, memorize, or "comprehend" the materials apart from the real context.

The principles of authentic assessment are continuous, meaningful, triggering motivation, and improving achievement. According to Nur (2001), the principle of continuity measures all basic competences, analyzes assessment result, and conducts follow-up program for improvement and enrichment. The characteristics of authentic assessment are as follows: 1) measuring students' knowledge and skills; 2) requiring students to implement their knowledge and skills; 3) assessing product or performance; 4) contextual and relevant; and 5) measurable process and product.

Based on the research findings of Mary and Issac (2006), continuous assessment improves students' achievement both quantitatively and qualitatively. Quantitatively, students' score will improve; and qualitatively, students will improve their motivation, interest, and study habit.

In this case, it is necessary that teachers conduct authentic classroom instruction that links the materials and tasks into daily experiences in the real life. This should be conducted in order to be consistent with the goal of authentic assessment and subject to the assessment principles. Implementing proper instructional principles results in innovative education.

Teaching, learning, and assessment are inseparable aspects in an instructional activity. However, in traditional assessment process, assessment is conducted after teaching and learning activities. Different from traditional assessment, in authentic assessment, the three aspects to name teaching, learning, and assessment are conducted simultaneously and inseparably. The illustration of authentic assessment is shown in Figure 2.

3. The Nature of Thinking Ability

Thinking is a mental activity to develop and generate knowledge to enrich meaningful experiences in teaching and learning activities. Johnson (2002) explains that thinking is a mental activity to formulate or solve a problem, take a decision, comprehend a particular thing, find an answer to a question, and find the relevant

meaning.

According to Bloom classification, (Anderson andKrathwohl, 2001), thinking skill falls within two categories. Lower-ordered thinking includes knowledge, comprehension, and application; while higher-ordered thinking includes analysis, evaluation and creativity. In details, the classifications are as follows: 1) Knowledge is the simplest stage that includes memorizing factual information and conditions. 2) Comprehension is the result of studying one-step higher than knowledge. In this case, students are not only required to memorize things but are to paraphrase, provide concrete examples, etc. Comprehension is divided into three stages: translation; interpretation that includes connecting and differentiating; and exploration that includes broadening perception, making prediction, etc. 3) Application means implementing the abstract comprehension in a concrete and specific situation in the form of generalization, summary of information, or problem solving based on theory and acquired knowledge. 4) Analysis is an effort to break down the integrity into several aspects with clear hierarchy, structure, and relation. This ability requires higher comprehensive understanding and correlates with the three above-mentioned stages. Synthesizing skill helps students to unify separated aspects/information into one complete idea. Synthesizing skill requires divergent thinking, considering unreliable answers; however, training this skill improves creativity to investigate causal relationship and operation of certain functions. 5) Evaluation is a decision making process that incorporates goal, ideas, methods, working performance, and problem solving. This skill requires comprehensive understanding on particular concept; and 6) Creativity is a creation. Creativity puts its emphasis on the true novelty. However, this idea might sound impossible for students. Accordingly, creativity is better defined as combining the existing ideas to create something new.

In higher-ordered thinking, there is critical thinking that belongs to convergent thinking, leading to one point. Creative thinking (divergent thinking), the antonym of critical thinking, disperses from one point. As the result, thinking skill falls within two categories, critical thinking and creative thinking (Johnson, 2002).

Paul and Elder (2002) state that critical thinking is a mental process to analyze and evaluate information, as well as produce a statement properly. Someone with critical thinking can provide better information by elaborating the result of observation, experiences, and communication. According to Eggen and Kauchak (1996), higher-ordered thinking and critical thinking combine comprehensive understanding on particular topics, the skill in effectively using cognitive process, comprehension and control on basic cognitive process (meta-cognitive), manner, and behavior.

In other words, critical thinking is the skill to reason in an organized way, to solve a problem, to take a decision, to convince, to analyze assumptions and findings, to analyze and interpret data in scientific inquiry, to communicate with meta-cognitive skill, and to behave well.

There are twelve components of critical thinking based on Ennis (1985), namely: (1) formulating a problem; (2) analyzing arguments; (3) asking and answering questions; (4) assessing the credibility of information sources; (5) observing and reporting the result of observation; (6) making and assessing deduction; (7) making and assessing induction; (8) evaluating; (9) defining and assessing definition; (10) identifying assumption; (11) deciding and implementing; and (12) interacting with people. In addition to the twelve components above, Dressel & Mayhew (1954) cited in Morgan (1999) quote critical thinking skills developed by *Inter-college Committee on Critical Thinking* as the followings: (1) the ability to identify problems; (2) the ability to select information for problem solving; (3) the ability to identify assumptions; (4) the ability to formulate hypothesis; and (5) the ability to arrive at a conclusion.

The above-mentioned components of critical thinking can be developed at schools by focusing on systems, structures, concepts, principles, and the tight relations among the aspects. Kember (1997) worries that the lack of awareness on teachers halts the teaching and the assessment of critical thinking on students. Teachers tend to define critical thinking as problem solving; while actually problem solving is a minor part of critical thinking skill. Further, Lawson (2001) states that students can think critically and creatively provided that the curriculum is explicitly designed for inquiry instruction. In this case, curriculum, along with other instructional components, determines the development of critical and creative thinking skills.

Creative thinking, according to Johnson (2000), is a thinking process that results in original and constructive idea and emphasizes intuitive and rational aspects. Creativity covers the ability, behaviour, and process in understanding problems and proposing solutions with divergent strategies or methods.

Creative thinking, a counterpart of destructive thinking, is used to seek opportunities to make something better, but not necessarily in a firm way like critical thinking. Creative thinking is a habit to make use of intuition, imagination, possibilities for aspiring ideas, and unexpected inspirational ideas.

The definition above strictly highlights the differences between creative thinking and critical thinking. Lawrence (without year) states that creative thinking and critical thinking are like the two sides of a coin; both constitute main skills for decision making. However, they are different in characteristics and indicators.

Creative thinking has some systematic stages. Dumire (2004) categorizes creative thinking process into four main stages, namely: 1) preparation; 2) incubation; 3) illumination; and 4) verification. Preparation stage

includes identifying a problem, gathering relevant information, and proposing alternative solutions. Incubation stage occurs when someone is striving to solve a problem and bringing the problem into his sub-consciousness. During the stage, someone is willing to get rid of a problem, and his sub-consciousness plays its role. In illumination stage, "Happy idea" comes up; this stage is also called as "Insight" stage that is very aspiring. Although the ideas do not exactly solve the problem, some key ideas possibly lead to the right solution. The fourth stage, verification, is the last stage in constructing creative thinking. During this stage, the previous ideas are developed and critically assessed based on reality.

The systematic stages are then followed by critical thinking that is marked by fluency, flexibility, originality, and elaboration (Wechsler, 2003). Fluency shows the ability to come up with a number of ideas for solving a problem. The characteristics of fluency are: 1) proposing various ideas for solving a problem; 2) proposing various answers to a question; 3) proposing various ways or suggestions to do things; and 4) working faster and doing more than others. Flexibility is defined as the ability to transform information, to reinterpret, and to redefine. The characteristics of flexibility are: 1) proposing various solutions for a problem or various answers to a question; 2) viewing a problem from different perspectives; and 3) presenting a concept in different ways. Originality is defined as the ability to propose unique ideas. The characteristics of originality are: 1) proposing new ideas for solving a problem or proposing different answers to a question and 2) making unfamiliar combinations out of various parts or aspects. Elaboration is the ability to disperse and to develop ideas as well as to imply the available information. The characteristics of elaboration are: 1) developing and enriching the ideas of other people and 2) adding and dispersing an idea in order to improve the quality of the idea.

Improving creative thinking skill means improving students' ability in understanding a problem, being fluent, being flexible, and proposing new solution. Students are said to understand a problem when they know what is exactly asked to them; they are said to be fluent when they are able to propose various and logical ideas or answers for solving a problem. Students are said to be flexible when they can solve a problem with at least two correct ways or more; students are said to acquire the skill for proposing new solution when they come up with unique and unfamiliar ideas or answers, different from the previous and common ideas or answers, to solve a problem

It is pivotal to control and lead someone's thinking skill. The ability to understand, control, and manipulate this cognitive process is called as meta-cognitive skill, first defined by Flavell (1979). Arends (1997) defines meta-cognitive as the knowledge about self-learning or the ability to apply strategies for learning correctly.

There are two components of meta-cognitive skill, namely (1) the knowledge about cognitive skill that comprises information and the understanding of students about their self-thinking, and the knowledge about learning strategies and (2) self-control mechanism like cognitive control and monitoring (Nur, 2000). With meta-cognitive skill, an individual is skilful at determining necessary strategies and sources for completing tasks, knowing what he/she actually does and how to do it, ensuring the pre-requisite of the tasks, and knowing when to do it.

Howard (2004) believes that meta-cognitive skill plays an important role in various types of cognitive activities like understanding, communication, attention, memory, and problem solving. According to Preisseisen (cited in Paulinna Panen et. al, 2001), meta-cognition includes four skills such as problems solving, decision making, critical thinking, andcreative thinking. Problems solving is the ability of an individual in solving a problem through fact gathering, information analysis, proposing various alternative solutions, and choosing the most effective solution.

Decision making is the ability of an individual to take the best decision out of several alternatives. The decision should be based on experiences, information, ethic, values, and rational reasoning. Decision making skill shows the level of maturity and wisdom of an individual. Critical thinking is the ability of an individual to critically think about and respond to a concept, argument, and policy. Similar to decision making, critical thinking is based on rational logics and the finding of gaps between the concept and reality, between *das Solen* and*das Sein*, or an analysis based on something given by God. Creative thinking is the ability to think critically or create and modify something new based on the concepts, laws, logics, and intuition. The four skills are integrated; it means that upon solving a problem, an individual conducts a decision making process based on critical reasoning and creation.

Brown (cited in Weinert and Kluwe, 1987) states that meta-cognitive process or skill requires specific mental operation that enables an individual to investigate, plan, manage, monitor, predict, and self-evaluate the thinking process. Flavell (cited in Weinert and Kluwe, 1987) further explains that self-monitoring is included in meta-cognitive process. Students with meta-cognitive knowledge are aware of their strengths and weaknesses in studying; it means that they are willing to confess when they make mistakes and to correct the mistakes. Students with meta-cognitive knowledge work more strategically and better than those who are not; therefore, meta-cognitive awareness help students to plan, design, monitor their study, and self-improve their performance.

Schraw (1998) summarizes three sources of meta-cognitive knowledge on adults. First, direct learning improves

declarative, procedural, and conditional knowledge. Second, group learning strengthens meta-cognitive skill. Cooperative group learning improves self-efficacy, strategic selection, conditional knowledge, and self-regulation in studying. Third, independent learning helps students to construct knowledge and strategies on tasks based on the domain. In other words, learning strategies facilitate students to develop their meta-cognitive skill through direct, collaborative, or individual learning.

Students with meta-cognitive skill can develop further thinking skill that facilitates their learning. Schraw (1998) proposes three stages in the mastery of thinking of an individual. First, an individual adjusts to cognitive skill and strategies. Next, an individual constructs meta-cognitive knowledge to manage the first stage. Finally, an individual develops conceptual theories based on self-cognition. It is necessary to build meta-cognitive awareness on students as they will possibly generalize the strategies in a new situation.

An instructional activity with meta-cognitive approach builds students' awareness on how to design, monitor, and control what they have learnt, what is needed, and how to do it. This kind of instructional activity emphasizes students' learning activity, helps students solve problems, and helps students to develop their self-concept in learning

4. The Role of Authentic Assessment in Developing Thinking Skill

Assessment, an integrated part in instructional activity, is important in detecting the real study growth and development as the result of students' study. Assessment helps teacher and students to adjust to and focus on teaching and learning process; therefore, assessment is inseparable from instructional activity. Proper assessment improves instructional activity; and proper instructional activity improves students' achievement.

Classroom instruction with authentic assessment builds self-awareness on the reality of nature and science by self-constructing "meaning" based on self-relevance. Students are encouraged to think and act creatively and critically, to get involved in exploration process, to critically consider and respond to a problem, and to solve a problem realistically.

Authentic assessment is designed to complete standardized test. The result of the study is not necessarily represented by the final score but more importantly by learning process. As an integrated part of teaching and learning activity, assessment aims at improving the quality of teaching and learning process. In a classroom with authentic assessment, it is possible that teacher and students monitor the real teaching and learning activity.

Authentic assessment is designed to help students to "learn how to study" and to build their meta-cognitive awareness on learning process. This is impossible to occur in paper and pencil test because paper and pencil test with true and false task never evaluates students' performance. Authentic assessment encourages students to demonstrate their performance and to have higher-ordered thinking.

Continuous assessment improves students' achievement both quantitatively and qualitatively. Quantitatively, students' score will improve; and qualitatively, students will improve their motivation, interest, and study habit. Authentic assessment challenges students to complete authentic tasks that are interesting, useful, and relevant to their lives. The improvement in teaching and learning process is evident provided that students are accustomed to reflecting what they have learnt and working collaboratively to complete tasks. In collaborative learning, it is possible that students clarify and generate definition, solve a problem, create something new, and support their comprehension. Collaborative learning requires systems and strategies of alternative assessment that are different from that of traditional assessment.

Students with meta-cognitive awareness possess self-assessment. Knowing their ability, students perform a lot better. Meta-cognitive, as a cognition, involves the control over cognitive activities. Meta-cognitive awareness is believed to play an important role in various cognitive activities like understanding, communication, attention, memory, and problem solving. Meta-cognitive awareness is also important for the success of teaching and learning process. As stated above, students with meta-cognitive knowledge work more strategically and better than those who are not; therefore, meta-cognitive awareness help individuals to plan, design, monitor their study, and self-improve their performance.

Meta-cognitive awareness plays an important role in managing and controlling cognitive process of an individual, and results in more effective and efficient learning and thinking process. With meta-cognitive skill, an individual is aware of his/her knowledge and reflects the knowledge effectively. Cognitive knowledge is the awareness on what an individual knows; and cognitive regulation is about how an individual effectively manage his/her cognitive activities. In other words, cognitive knowledge includes declarative, procedural, and conditional knowledge; while cognitive regulation includes planning, prediction, monitoring, assessing, revising, investigating, and evaluation.

High meta-cognitive skill indicates creative thinking, critical thinking, and high cognitive skill. High cognitive skill is shown by high ability in knowledge, comprehension, application, analysis, synthesis, and evaluation. Critical thinking and creative thinking are included as higher-ordered thinking skills. The higher the critical thinking of an individual, the higher the creative thinking is. Without meta-cognitive approach, students become

less-guided and less-skilful in monitoring progress, achievement, and learning in their future.

Learning approach to improve comprehension on the materials is influenced by cognitive development and learning concepts. Development is a life-long process. Cognitive development, critical thinking, creative thinking, and meta-cognitive skill should be facilitated and evaluated on students. Students need academic situation that offers freedom and security to express ideas during instructional activities.

Critical thinking can provide better information by elaborating the result of observation, experiences, and communication. Creative thinking is a thinking process that results in original, aesthetic, and constructive idea and emphasizes intuitive and rational aspects. Creativity covers the ability, behaviour, and process. Creative thinking and critical thinking are like the two sides of a coin; however, they are different in terms of thinking skill.

Authentic instructional activity encourages students to solve a problem and stimulates their critical thinking, analytical skill, and observational skill. With critical thinking skill, students are capable of organizing information from various sources to arrive at a conclusion and decision. Students who are not equipped with critical thinking skill fail to take a decision from what they think about, believe in, or do.

School is an external environmental factor that determines the success of students in learning. The determining factors include teaching methods, curriculum, the relation between teacher and students, the relation among students, lessons, school hours, as well as consequent and consistent rules at school. In addition, intelligence as an internal factor determines the result of study. Intelligence is defined as psycho-physical ability to respond to stimulation or to adapt with the environment. Intelligence constitutes the most important psychological factor in the learning process. The higher the intelligence, the more successful an individual will be. In contrary, the lower the intelligence, the more difficult an individual reaches the success in the learning process. Schools with high-category inputs, facilities, and human resources generally have students with high intelligence and high achievement.

With regards to cognitive skill, critical thinking, creative thinking, and meta-cognitive awareness, students with high academic ability are more highly-achieved than those who are not. Intelligent students have more energy, do not memorize, and believe in themselves. They can easily complete regular tasks, are ready to solve even challenging problems, can be trained to diagnose themselves, and improve themselves. These capabilities are identified as meta-cognitive skill that can be used to develop other skills.

Meta-cognitive skill requires specific mental operation that enables students to investigate, plan, manage, monitor, predict, and self-evaluate the thinking process. An instructional activity with meta-cognitive approach builds students' awareness on how to design, monitor, and control what they have learnt, what is needed, and how to do it. The correlation among assessment, school category, cognitive skill, critical thinking, creative thinking, and meta-cognitive awareness is described in Figure 3.

5. Conclusion

Authentic assessment is inseparable from and integrated to instructional activity, and contributes to students' achievement. Authentic assessment improves thinking skill because its principles develop meta-cognitive awareness. One of the principles of authentic assessment is continuous assessment; students are continuously encouraged to monitor and control their study. Students' developed meta-cognitive awareness continuously improves their thinking skill. The higher students' academic skill, the more meta-cognitively aware the students are, and vice versa. The higher meta-cognitive and academic skill, the better cognitive skill is. The higher cognitive skill, the higher critical thinking is. As critical thinking and creative thinking are like two sides of a coin, the higher critical thinking, the higher creative thinking skill is. To sum up, meta-cognitive awareness, academic skill, and authentic assessment are important components to improve thinking skill.

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Table 1. The Differences between Traditional Assessment and Authentic Assessment

Traditional Assessment	Authentic Assessment
Within certain time frame	The time frame is determined by teacher and students
Measuring lower-ordered ability	Measuring higher-ordered ability
Drilling and doing exercises	Implementing critical and creative strategies
Limited perspective	Holistic perspective
Discovering facts	Discovering concept
Using group standard	Using individual standard
Memorizing	Internalization
Only one correct solution	Various correct solutions
Discovering skill	Discovering process
Teaching for test	Teaching based on need

(Source: Fraze and Rudnitski, 1995 cited in Corebima, 2004:9)

Traditional	Authentic
Selecting response	*Performing a task*
Contrived	*Real-life*
Recall/Recognition	*Construction/Application*
Teacher-structured	*Student-structured*
Indirect Evidence	*Direct Evidence*

(Muller:2012)

Figure 1. Continuum Point Progression from Traditional Assessment to Authentic Assessment

Table 2. Types of Authentic Assessment

Assessment	Description	Advantages
Oral Interviews	Teacher asks students questions about personal background, activities, readings, and interests	✎ Informal and relaxed context ✎ Conducted over successive days with each student ✎ Record observations on an interview guide
Story or Test Retelling	Students retell main ideas or selected details of text experienced through listening or reading	✎ Student produces oral report ✎ Can be scored on content or language components ✎ Scored with rubric or rating scale ✎ Can determine reading comprehension, reading strategies, and language development
Writing Samples	Students generate narrative, expository, persuasive, or reference paper	✎ Student produces written document ✎ Can be scored on content or language components ✎ Scored with rubric or rating scale ✎ Can determine writing processes
Projects/Exhibitions	Students complete project in content area, working individually or in pairs	✎ Students make formal presentation, written report, or both ✎ Can observe oral and written products and thinking skills ✎ Scored with rubric or rating scale
Experiments/ Demonstrations	Students complete experiment or demonstrate use of materials	✎ Students make oral presentation, written report, or both ✎ Can observe oral and written products and thinking skills ✎ Scored with rubric or rating scale
Constructed-Response Items	Students respond in writing to open-ended questions	✎ Student produces written report ✎ Usually scored on substantive information and thinking skills ✎ Scored with rubric or rating scale
Teacher Observations	Teacher observes student attention, response to instructional materials, or interactions with other students	✎ Setting is classroom environment ✎ Takes little time ✎ Record observations with anecdotal notes or rating scales
Portfolios	Focused on collection of student work to show progress over time	✎ Integrates information from a number of sources ✎ Gives overall picture of student performance and learning, student's strong involvement and commitment ✎ Calls for student self-assessment

(Indiana Department of Education. Office of English Language Learning and Migrant Education www.doe.in.gov/englishlanguagelearning)

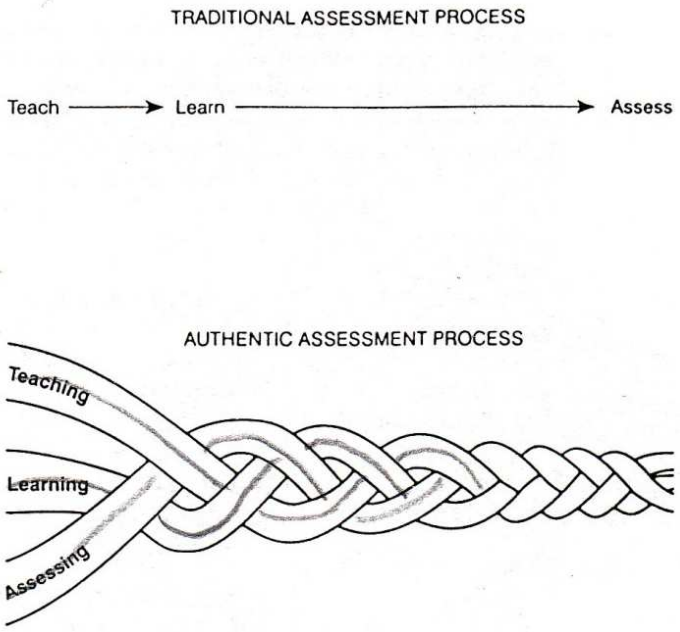

Figure 2. Authentic Assessment Represents Teaching, Learning, and Assessing as Ongoing and Intertwined (Puckett and Black, 1993:34)

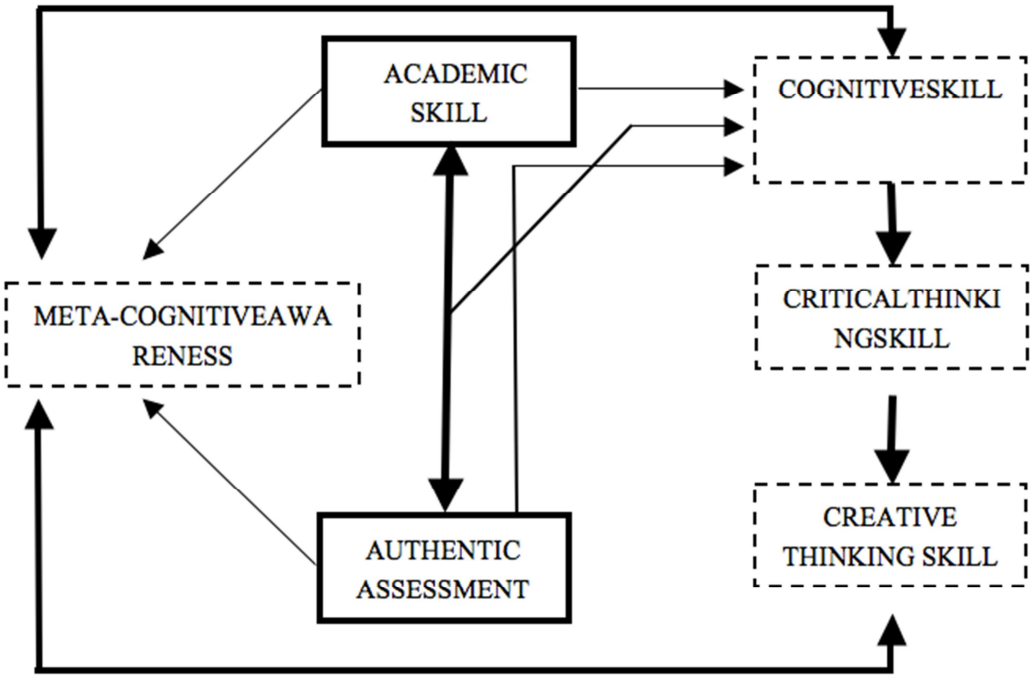

Figure 3. The Correlation between Authentic Assessment and Thinking Skill

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