

# DEVELOP HIGH SCHOOL TEACHERS' ASSESSMENT COMPETENCY IN ASSESSING PUPILS' LEARNING MATHEMATICS PROCESS IN VIETNAM

**Trinh Thanh Hai<sup>1</sup> and Tran Trung Tinh<sup>2</sup>**

<sup>1</sup>*Thainguyen University, Thainguyen province, VIETNAM*

<sup>2</sup>*Hanoi National University of Education, Hanoi city, VIETNAM*

E-mail: tinhtekh@gmail.com

**Abstract.** Assessment is an important procedure in teaching process at high schools. The assessment results may affect teaching programs and the methods. It also affects pupils, teachers and managers. This paper proposed some assessment methods and techniques to develop high school teachers' assessment competency in assessing pupils' learning process in Vietnam.

**Keywords:** *Teachers' assessment competency, classroom assessment, mathematics teaching methods.*

## **1. Introduction**

Assessment is one of the most powerful educational tools for promoting effective learning. But it must be used in the right way. We need to be on helping teachers use assessment as part of teaching and learning, in ways that will raise pupils' achievement.

Before teaching, the teachers need to determine educational aims and appropriate teaching methods for each pupil. Therefore, teachers need to have the initial assessment of the competence of each pupil about attitudes, ability to acquire knowledge, they use knowledge in practice, circumstances, factors that impacts pupils educating process. Therefore, in teaching mathematics, the teachers should also have diagnostic competence, assessment competence of comprehensive.

Some related researches: Marzano, R., D. Pickering, and J. McTighe., 1993, "*Assessing Student Outcomes*". Sadler, R., 1989, "*Formative Assessment and the Design of Instructional Systems*". Sutton, R., 1995, "*Assessment for Learning*". Western and Northern Canadian, Protocol for Collaboration in Education, 2006, "*Rethinking Classroom Assessment with Purpose in Mind*".

Currently assessment competency development of mathematics teachers is not good in Vietnam. In this paper, I suggest some measures aimed at assessment competency development for pupils' process learning.

## 2. Content

### 2.1 The teacher's technical assessment for learning process pupils

Assessment as process learning is the use of ongoing self-assessment by pupils in order to monitor their own learning, which is “characterized by pupils reflecting on their own learning and making adjustments so that they achieve deeper understanding.”

How often should teachers assess the pupils about applying their knowledge, integrated skills, thinking, learning attitude, cooperative learning, ...

Teacher assessment should be based on diverse information from multiple sides, teachers assess pupils, pupils self-assess, pupils assess each other, personal assess, assess by group.

Assessment methods and assessment techniques are various. For examples: interview, closed questions, open questions, solve practical problems that involve knowledge, ... We have some of the following assessment methods:

- *Questions and answers*: Ask and answer, converse to assess pupils' understanding.
- *Observation*: Pupils' behaviors and some concrete manifestations in learning process.
- *Check writing*: Objective test and essay test.
- *Assessing product of the pupils*: By portfolios: collection result, homework, articles, research exercises, ...
- *Pupils self-assessment*: Pupil self-assessment is more often a device to save the teacher's time than a way of engaging pupils in their own learning.
- *Expert opinion*: Specialist in the assessment of intellectual functioning.

Today, education aims to pupils' competency, hence, many teaching and learning methods are applied. So a questions emerged: how to evaluate learning process accurately? To cope with this task, teachers need to combine multiple methods and techniques to assess learning process.

**Table 1. Assessment Tool Kit [1]**

Method	Description
<b>Gathering Information</b>	
<i>Questioning</i>	Asking focused questions in class to elicit understanding
<i>Observation</i>	Systematic observations of pupils as they process ideas
<i>Homework</i>	Assignments to elicit understanding
<i>Learning conversations or interviews</i>	Investigative discussions with pupils about their understanding and confusions
<i>Demonstrations,</i>	Opportunities for pupils to show their learning in oral

<i>presentations</i>	and media performances, exhibitions
<i>Quizzes, tests, examinations</i>	Opportunities for pupils to show their learning through written response
<i>Rich assessment tasks</i>	Complex tasks that encourage pupils to show connections that they are making among concepts they are learning
<i>Computer-based assessment</i>	Systematic and adaptive software applications connected to curriculum outcomes
<i>Simulations, docudramas</i>	Simulated or role-playing tasks that encourage pupils to show connections that they are making among concepts they are learning
<i>Learning logs</i>	Descriptions pupils maintain of the process they go through in their learning
<i>Projects and investigations</i>	Opportunities for pupils to show connections in their learning through investigation and production of reports or artifacts
<b>Interpreting Information</b>	
<i>Developmental continua</i>	Profiles describing pupil learning to determine extent of learning, next steps, and to report progress and achievement
<i>Checklists</i>	Descriptions of criteria to consider in understanding pupils' learning
<i>Rubrics</i>	Descriptions of criteria with gradations of performance described and defined
<i>Reflective journals</i>	Reflections and conjecture pupils maintain about how their learning is going and what they need to do next
<i>Self-assessment</i>	Process in which pupils reflect on their own performance and use defined criteria for determining the status of their learning
<i>Peer assessment</i>	Process in which pupils reflect on the performance of their peers and use defined criteria for determining the status of their peers' learning
<b>Record - Keeping</b>	
<i>Anecdotal records</i>	Focussed, descriptive records of observations of pupil learning over time
<i>Student profiles</i>	Information about the quality of pupils' work in relation to curriculum outcomes or a pupil's individual learning

	plan
<i>Video or audio tapes, photographs</i>	Visual or auditory images that provide artifacts of pupil learning
<i>Portfolios</i>	Systematic collection of their work that demonstrates accomplishments, growth, and reflection about their learning
<b>Communicating</b>	
<i>Demonstrations, presentations</i>	Formal pupil presentations to show their learning to parents, judging panels, or others
<i>Parent-pupil-teacher conferences</i>	Opportunities for teachers, parents, and pupils to examine and discuss the pupil's learning and plan next steps
<i>Records of achievement</i>	Detailed records of pupils' accomplishment in relation to the curriculum outcomes
<i>Report cards</i>	Periodic symbolic representations and brief summaries of pupil learning for parents
<i>Learning and assessment newsletters</i>	Routine summaries for parents, highlighting curriculum outcomes, pupil activities, and examples of their learning

## **2.2 Measures to help teacher's assessment learning process of pupils**

### **2.2.1. Planning for assessment technical**

Careful planning is required to ensure that there are logical connections among the purpose, methods, and use of the results. Classroom assessment is planned in relation to purpose and in alignment with curriculum and instruction. Curriculum, assessment, instruction, and learning are interconnected and interact in an iterative and sometimes (but not always) cyclical process. All four need to be aligned and coherent for the learning to be effective and meaningful.

The process of planning is what provides a blueprint that centers on the purpose, makes the connections explicit, and creates a coherent organizational structure. Against this blueprint teacher can constantly question their strategies: Are my strategies still appropriate and aligned? Do I need to make adjustments or perhaps even shift direction? Although teachers do not need to adhere strictly to their plans, without proper planning it is difficult to ensure balance and coherence.

Section next outlines a set of planning considerations for designing and using assessment for learning, assessment as learning, and assessment of learning.

**Table.2. Summary of planning assessment for learning [1]**

<b>Why am I assessing?</b>	To enable teachers to determine next steps in advancing pupils learning
<b>What am I assessing?</b>	Each pupil's progress and learning needs in relation to the curricular outcomes
<b>What assessment method should I use?</b>	A range of methods in different modes that make pupils' skills and understanding visible
<b>How can I ensure quality in this assessment?</b>	<ul style="list-style-type: none"> <li>- Accuracy and consistency of observations and interpretations of pupil learning</li> <li>- Clear, detailed learning expectations</li> <li>- Accurate, detailed notes for descriptive feedback to each pupil</li> </ul>
<b>How can I use the information from this assessment?</b>	<ul style="list-style-type: none"> <li>- Provide each student with accurate descriptive feedback to further his or her learning</li> <li>- Differentiate instruction by continually checking where each pupil is in relation to the curricular outcomes</li> <li>- Provide parents or guardians with descriptive feedback about pupil learning and ideas for support.</li> </ul>

## Reference Points

Curriculum learning outcomes or, for some pupils, learning outcomes of an individualized learning plan, are the reference points for assessment for learning. They serve as guides in providing feedback and in planning instruction. Learning expectations that are clear and detailed, with exemplars and criteria that differentiate the quality and the changes along the learning continuum, enable teachers to accurately consider each pupils' work in relation to these expectations.

### 2.2.2. *Using assessment techniques in teaching*

Alternative assessment techniques have been part of the educational landscape for several decades, and, although many of them seem to have been adopted, significant changes in process learning. Some of the technical used in process learning assessment ([1-4]):

#### *Fuzzy point*

This technique helps teachers to determine the lesson's important points which pupils have missed by making them write down difficulties they encountered. Apply this technique as follow:

- Handout answer sheets, pupils have three minutes to complete. Depend on use purposes, pupils could answer as anonymous or not.
- This technique should not be used after every lessons, or it may become monotonic and return useless information.

#### *Quick survey questions table*

This technique is very usefull for it encourage pupils to be more active. Quick answer sheets could be used after a lesson or at the start of a new lesson. Pupils answers if the purposes of the lesson have been archived or not and which part needed

to be reviewed.

### ***Lists table***

- Use this technique to assessing pupils' memorization.
  - Use right after the lesson or after review.
  - Need to limit some answer chooses and/or time.
  - Review answer sheets, compare pupils' answers with teachers' expectations. Based on the results, teachers could help improve pupils.
- Note:* This technique only help discover pupils' memorization. It doesn't show how much they understand.

### ***Apply table***

- This technique show weather pupils understand the contents or not.
- Use after the lesson. Teachers handout answer sheets, pupils are given 10 minutes to answer.
- The results show how well pupils memorize and apply the lesson.
- If there are any arguments, teachers could discuss with class.

### ***Matrix memo***

- Teachers could use a matrix with any rows and columns, fill in the titles and let pupils fill the appropriate contents. This technique's purpose is to assess pupils' memorizing and information classification abilities.
- This technique could be used right after the lesson or after review as a pre-assessment.
- Set time limit (10 minutes for example) guild pupils to answer.
- While review answer sheets, teachers should take note pupils' advantages and disadvantages.

### ***Diary writing class and forum share and experiences forum***

In order to reduce difficulties, writing diary is a good method for teachers to self-adjust. This method is recommended to use with some another popular methods in teaching process.

### ***Summary assessment***

Summary technique shows pupils' learning and helps developed communicating skills.

- This technique is most effectively used in class; it could also be used as homework.
- Pupils need to practice this technique under the help of teachers before they could use them effectively.
- Pupils could keep a copy of answer sheets for further study.

### ***2.2.3. Changing learning activities of pupils through assessment tests***

Based on research, teachers focus on process pupils' tests. When encounter pupils' mistakes, teachers do as follow:

Step 1: Mark the mistakes; Step 2: Take note in diary and point out the reason of the mistakes; Step 3: Explain; Step 4: Correct; Step 5: Correct some typical mistakes in class.

### 2.3. Research results and discussion

In five years from 2010 to 2014, We conducted the techniques, help some mathematics teachers in schools in Vietnam. We conclude as follow:

- Assessment is an important procedure of teaching and learning. Teachers and managers could be based on assessment results to make decisions which help pupils more effectively:
  - Help managers come up with better decisions to improve teaching contents, innovate teaching programs...
  - Encourage teachers to innovate their teaching methods, pupils to adjust their learning ways.
- Using an assessment technique affects teachers' teaching and pupils' learning. Thus, using assessment technique is necessary for teachers. The level of assessment depends on classes and pupils.
- Assessment is a motivation for innovating teaching quality step by step. Teachers need to improve their assessment skill to assess pupils correctly.
- Create environment for teachers to share and learn experience: choose appropriate
- Teaching methods; explain the tests result; make decisions based on assessment results; send assessment results to pupils, their parents, educators.

### REFERENCES

- [1]. *Rethinking Classroom Assessment with Purpose in Mind*. Western and Northern Canadian, Protocol for Collaboration in Education, 2006.
- [2]. Robert J. Marzano. *The art and science of teaching: a comprehensive framework for effective instruction*. 2007.
- [3]. Rebecca Cartwright, Ken Weiner, Samantha Streamer-Veneruso. *Student Learning Outcomes Assessment Handbook*. Montgomery College Montgomery County, Maryland, 2010.
- [4]. Series: *Education science*. Journal of Science, Hanoi National University of Education, years: from 2012 to 2015.
- [5]. *Self-Assessment and Goal-Setting: For Use in Middle and Secondary School Classrooms*. Courtenay. BC: Connections Publishing, 2000.
- [6]. Gronlund, N.E. *Assessment of Student Achievement*. Boston: Allyn and Bacon, 1998.
- [7]. Hill, B.C., C. Ruptic, and L. Norwick. *Classroom-Based Assessment*. Norwood, MA: Christopher-Gordon, 1998.
- [8]. Linn, R., and N. Gronlund. *Measurement and Assessment in Teaching*. San Francisco: Prentice Hall, 2000.
- [9]. Marzano, R.J., D. Pickering, and J. McTighe. *Assessing Student Outcomes: Performance Assessment Using the Dimensions of Learning Model*. Alexandria, VA: Association for Supervision and Curriculum Development, 1994.
- [10]. Stiggins, R.J. *Leadership for Excellence in Assessment: A Powerful New School District Planning Guide*. Portland. OR: Assessment Training Institute, 2001.