BUILDING CAPACITY FRAMEWORK OF MATHEMATICS TEACHER IN ASSESSMENT OF HIGH SCHOOL STUDENTS IN VIETNAM

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ABSTRACT: Assessment is an important procedure for teaching in the high schools. Evaluation results may affect curricula and methods. It also affects students, teachers and managers. This article proposes to build the capacity of teachers to evaluate the academic performance of students at the high schools in Vietnam.
KEYWORDS: Teachers' assessment competency, classroom assessment, learning outcomes, mathematics teaching methods.

1. INTRODUCTION

In recent years, Vietnam has recognized the power of evaluating students/ learning in statements to reinforce focus on assessment to enhance learning for all students.
As Marzano, Robert J., It may be argued that the most fundamental issue that teachers may consider is what they will do to establish and communicate learning goals, monitor students progress ([Mar07]).
With the goal of enhancing students/ learning and assisting teachers to evaluate students effectively, efficiently and fairly, and as a basis for designing professional learning. The concept of the teacher's capacity structure for evaluation is an important concept.
When society changes, educators find themselves faced with the task of creating schools that will serve their students well, even if they are unsure of the nature of the society in which their students will. Face in the future. Over the past 30 years, major changes in culture, society, economics, politics, environment and technology have meant that every aspect of learning is forbidden to study and rethink, including Evaluate students learning outcomes. Throughout much of the 20th century, evaluating students learning outcomes was viewed as a mechanism that provided a learning indicator and a predictable pattern: the teacher taught, tested the knowledge of students about the material, made the verdict on students achievement based on the test, and then moved on to the next unit of work.
However, recently, this methodology has been questioned because social expectations for learning have changed; cognitive science has provided new insights into the nature of learning and The traditional assessment role in promoting students/ learning has been challenged.
([EK06]) says that, in the past, learning beyond basic skills and knowledge was viewed as a requirement of a few. But now, the upper secondary school graduation is considered essential for all, and the education community is required to ensure that graduates are proficient in critical thinking, problem solving and communication, effective to meet the social, economic and technological challenges. Learning has long been thought to be the accumulation of hierarchical, decentralized, and explicitly-taught particles. Learning is now seen as a process of building understanding in which individuals try to connect new information with what they already know, so that ideas have a personal attachment. Individuals build this understanding in a variety of ways, depending on their preferences, experience and learning style.
According to research ([EK06]), the impact of classroom assessment on learning, there is considerable evidence that evaluation is a powerful process for enhancing learning. Black and Wiliam ([BW98]) synthesized over 250 studies that link assessment and learning and found that the use of deliberate results evaluates student learning outcomes in the classroom to promote improved learning, student achievement. This article focuses on the type of assessment that is an integral part of the regular activity in every classroom, every day.
It is designed to provide a framework for thinking as teachers, managers and professional developers work together over time in developing and using classroom assessments to differentiate and create. Conditions for learning for all students..

- ***Purpose of the study***

The main objective of the study was to understand the assessment forms. Thence, build teacher capacity framework in assessing students' Mathematics studies at high school in Vietnam.

- ***Research questions***

This study to answer the following questions:

1. The views of assessment and their trends in education today?
2. Basic capacity framework of teachers in assessing students' mathematics learning outcomes in high school in Vietnam?

- ***Research method***

This study use following methods: theoretical studies (analysis, synthesis, systematized, generalized, ...); Practical observation; Interviewing experts, education management, teachers and students.

2. BASIC CAPACITY FRAMEWORK OF TEACHERS IN ASSESSING STUDENTS' MATHEMATICS LEARNING OUTCOMES IN THE HIGH SCHOOLS IN VIETNAM

2.1. Teachers' mathematics capacities

Mathematical competence, is one of the most important and complex topics for teaching. The mathematical ability of the teacher can also be used, as a teaching method, to better understand the concepts. Solving a successful math problem depends on many factors and skills with different characteristics. The competence to teach mathematical topics through problem-solving environments and on-demand environments is characterized by teachers helping students build a profound understanding of mathematical ideas and processes. Learn by participating in math work: guesswork, discovery, verification.

In fact, one of the main difficulties in teaching mathematics is the fact that many skills are needed for a teacher to be an effective problem-solver. In addition, these factors and skills make problem-solving instruction one of the most complex topics to teach.

Mathematical educators have accepted the idea that teaching mathematics is important but not enough. Teachers should learn to use these events to develop thinking and problem solving.

As the emphasis has shifted from problem-solving teaching to teaching through problem solving, many writers have tried to unravel the meaning of a problem-solving approach to teaching mathematics.

Mathematical Modeling Capabilities. According to <The Key Competences for Lifelong Learning – A European Framework, 2007>, Competence in mathematics is the competence to develop and apply mathematical thinking to solve a range of problems in everyday situations. Based on the expertise in math, emphasis is on process and activity, as well as knowledge.

Mathematical competence involves varying degrees of ability and willingness to use mathematical thinking (logical and spatial thinking) and presentation (formulas, models, structures, graphs, market, chart). As pointed out by ([BJ07]), mathematical competence is analyzed by a set of mathematical abilities, and it is a very interesting challenge to try to make suggestions and illustrate Its elements; According to mathematical modeling capabilities such as someone's profound readiness to perform through all parts of a mathematical modeling process in a given situation. ([BJ03]); Or, as ([Gol87]) argues, the ability to solve problems based on cognitive expression represents competence as the ability to perform successfully on one type of job; ([BJ07]) defines competence as a keen readiness to act to meet the challenges of a particular situation. According to them, it makes the capacity for action, and based on, but not the same as, knowledge or skill. On the other hand, in their view, competency development is a continuous process.

According to ([LeH16], [LD03]), ensuring that the distinction between models and the world is not merely a matter of identifying the right symbols - The accumulation of experience and symbolic symbols of it over time

We state that, Modeling is one of the practical learning activities, it represents and solves problems in the real world. Students learn to use many forms of representation of mathematics and select and apply appropriate mathematical methods and tools to solve real world problems.

From the results of the research ([BJ03], [BJ06]), we declare that the competency model for a student's mathematical to be set is: someone's profound readiness to perform through all parts of a mathematical modeling process in real-world situations life.

The teacher's linguistic ability to teach mathematics, teachers must build a common understanding of mathematical terminology to share success and refine their ideas for students. This can be a challenge, because students must learn new mathematical knowledge and unique mathematical symbols, as well as new precise meanings for words that teachers are familiar with. All students can benefit from teaching differential learning in terms of terminology and symbols. In fact, some struggling teachers may need support and practice to gain confidence in using language in math instruction.

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Mathematical connection capacity. Why are math connections important? Why are they considered part of the sample evaluation criteria? And how do teachers encourage their students to become more independent in mathematics? Explore mathematical connections and provide tutorials, strategies and suggestions to help teachers develop this way of thinking from their students. We find many teachers love making connections once they learn how to reflect and question effectively. As students begin to explore mathematical relationships, teachers should be at the forefront by providing orientation assessments that introduce new learning opportunities and provide practice, so they can be transformative into independent problem solvers. As part of this process, teachers will want to focus on five key areas to help students develop an understanding of mathematical connections.

The ability to connect mathematics to math instruction is "to recognize and use connections between mathematical ideas, understand math ideas connected and build each other to create a coherent whole; Know and apply mathematics in a mathematical context. Therefore, this is the important competence of the teacher.

2.2. Teachers' diagnostic competence about students' math study

The teacher needs to be able to diagnose the diagnosis. Because diagnostic assessment is a kind of assessment that tests what a student knows and can do before a program of study is done.

Assessing students' skills and knowledge when participating in the program provides a basis for assessing progress. It is particularly important in reengagement programs because of the complex learning needs and barriers of students in these programs, which must be taken into account in the design and delivery of individualized study programs.

Based on research by Eunice Eunhee Jang, Maryam Wagner (2013), assessment assessments allow teachers to reason about learner strengths and weaknesses in the skills being taught. Teachers can provide diagnostic feedback to students to create positive learning outcomes. The pedagogic desire for on-the-spot diagnostic assessment reflects well with process assessment. However, the potential for this construct to promote student learning is only made when diagnostic feedback is used by teachers and learners. These responses are interpreted and used depending on a variety of variables at the individual and structural level (e.g., classroom, school, and community).

Asking questions assumes that passive learners of feedback, chapter investigations of conditions and variables allow or discourage the maximum use of diagnostic feedback. While the focus of the diagnosis is ability of students/ cognitive, the parameters of diagnostic assessment involve more than one cognitive dimension. Viewing students as change agents in diagnostic assessments requires looking at the characteristics of the learner unaware such as the students' attitude towards learning and evaluation, especially goal orientation. their. Students/ goals are expressed in terms of adaptation results, persistence, and effective self-regulation strategies that facilitate the performance of assessment tasks. Few studies have examined whether there is a direct link between students orientation and their attitudes toward and use of diagnostic feedback. This section examines whether student orientation is the gateway to understanding how students can interpret feedback and use it in their learning. Other structural conditions, in addition to personal orientation, are also explored to understand the role of context in which attitudes and direction of learners are shaped and influenced through interaction with learners, teachers, parents and other social norms.

Research from other sources (such as www.academyofmine.com), they say, teachers acknowledge that their students will come to their school from a variety of backgrounds, math skills, life experiences, and Cultural reality.

Diagnostic assessments involve the teacher making an assessment to assess the overall general understanding that a student body has, with regard to upcoming content to be taught, whether it is at the beginning of the course Learn, start a new unit, or simply be a new mathematical concept. This evaluation may take the form of a shorter, more formal examination, practice dialogue, research essay, or some actual, written or verbal assessment of the body. Determine where each student when it comes to the content being taught. Obviously, this assessment must be done in advance of any actual

lessons taught to the student, but it is not good in advance.
It can be done as the first exercise in an introductory class, or it can be done to finish an introductory lesson of a course. It can even be done a few weeks before a course starts, perhaps in the form of a quick survey completed and submitted on the first day of class. But the main element of diagnostic assessment is to benefit the facilitator in preparing for content distribution.
However, it is not meant to be used as a rating for student classification and should not be used as such. From this evaluation, if you find that many of your students have little knowledge of the math content you are about to teach them, you can be sure to add more background information in your curriculum to Make sure that your students do not lose when you start Including more advanced materials. If your diagnostic assessment results show that your students have in-depth knowledge of your course content, you can tailor your curriculum to spend less time on basic materials and More time on advanced concepts.

2.3. Teachers' competence to use appropriate strategies and assessment methods in teaching mathematics

Research shows that evidence-based instructional strategies will undoubtedly have the greatest impact on student outcomes.
Teachers play a fundamental role in the classroom of the students. Teachers provide teaching-learning methods, behaviors, beliefs and ambitions when they spend nearly eight hours a day full of activity. Accordingly the teacher holds the position of the basic educator, the ability of the teacher to use the appropriate strategies and methods of assessment in teaching mathematics. If the capacity of the teacher is good, the student's academic results will be good.

2.3.1. Competence to assess using questionnaire

An objective test evaluation is a test that has the right or wrong answer and can thus be marked objectively.
The type of assessment question is firmly anchored in the task of placement and allows the student to identify his or her relevant knowledge. Reporting questions are carefully developed to identify specific behaviors, education, knowledge, and experiences that separate good students from the students.
It can be compared to a subjective test, judged by giving opinions, often based on agreed criteria. Target tests are very popular because they are easy to prepare and implement, fast to mark, and provide a measurable and specific result.
These assessment forms play an important role in assessing the students' academic performance. Therefore, teachers need to be able to evaluate.

2.3.2. Formative assessments capabilities of teachers

As stated in [Mar07], process evaluation is not only a powerful measurement tool but also a powerful teaching tool because it allows students to track their progress. As I explained, evaluating the process is used while students are learning new content. In the case of a unit of instruction, the evaluation process is used from beginning to end.
In order to provide students with effective and accurate feedback, teachers should assess regularly and regularly where the student is involved in the learning unit of study or final purpose (total assessment safes). Hattie recommends that teachers spend the same amount of time evaluating the process as when they do the overall assessment.

2.3.3. Competence to assess authentic

In education, the term "authentic learning" refers to many teaching and learning methods that focus on connecting what students are taught in school with problems, problems, and applications. the real world
The more traditional forms of evaluation, such as essay and test, are not specific in most practical settings. Accurate assessments help students understand their learning context and to see actual conditions and situations in all their unpredictable, vague, and complex situations that affect their theoretical knowledge. When they collect knowledge and skills together to learn effectively and solve problems, their behavior clearly shows the level of competence or ability they have. Authenticity is a fundamental trait of good evaluation practice and students often appreciate it.
An authentic assessment aims to assess the students' ability in the context of reality. In other words, Students learn how to apply their skills to real tasks and projects. Authentic evaluation does not encourage pure and passive learning to test. Instead, it focuses on students' analytical skills; Ability to integrate what they learn; creation; Ability to work collaboratively; And writing and speaking skills. It evaluates the learning process as much as the finished product.
Assessments actually address assessment tasks that are similar to reading and writing in the real world and in school ([HVA94]).
Why can I use authentic assessment methods in my classroom?
Many teachers are not satisfied just by using traditional testing methods. They believe that these

methods do not test many skills and abilities that students need to succeed. Educators insist that students be prepared to do more than memorize information and use algorithms to solve simple problems. They believe that students should practice higher-order thinking skills and criticize tests they do not feel capable of measuring.
Its purpose is to evaluate various types of mathematical abilities in contexts that are close to the actual situation in which those abilities are used.
Working on authentic tasks is a useful, engaging activity in itself; It became a "learning" for students ([Wol89]). From the teacher's point of view, teaching such jobs ensures that we are focusing on valuable skills and strategies ([Wig89]). Students are learning and practicing the application of knowledge and skills important for authentic purposes. They should not simply recall information, they should apply what they know for new tasks.

2.3.4. Ict competence of teacher to student's learning ourcome assessment

According to research [HTT16], that the capacity for ICT assessment in teaching, we suggest the following steps:
Step 1. Identify competencies that need to be evaluated, eg basic knowledge; Teaching skills; Use of ICT in specific teaching situations. Moreover, we need to consider the attitude of learning and self-learning ability.
Step 2. Design lesson plans, tests in which teachers and students demonstrate their competence with reports, works, attitudes ... so they can demonstrate skills and knowledge, their mode of study and teaching.
Step 3. Evaluation works best when its purpose is clear, and when it is carefully designed to fit that purpose. Dr. Lorna Earl and Dr. Steven Katz say that assessment for learning is designed to give teachers information to modify and differentiate teaching and learning activities. It recognizes that individual students learn in their own ways, but they also recognize that there are many predictions and pathways that many students take. It requires the careful design of the teacher so that they use the resulting information to identify not only what the student knows, but also to better understand how, when, and whether students apply the information. What they know or not. Teachers can also use this information to streamline and target architecture and resources, and provide feedback to students to help them advance their learning.
Step 4. Save evaluation results.
These results provide students and their parents or guardians with accurate descriptive feedback to further their studies. It also helps teachers adjust and develop the ICT capacity of students.

2.3.5. Competence to instruct students to self-assess

Why should teachers be able to guide students self-evaluation? Because self-assessment plays an important role in developing self-awareness that leads to greater motivation. It must be clearly defined that student engagement depends on the students' own beliefs about their self-confidence - their ability to do well in specific tasks and good work values ([PS02]).
Self-assessments provide timely and effective feedback and allow quick assessment of student learning. Allows faculty to understand and provide quick learning feedback. Enhance academic integrity through student self-reporting on academic progress. Promote reflective practice skills and self-monitoring. Develop self-directed learning. Increase student motivation. Improve satisfaction from engaging in collaborative learning environments. Helps students develop a range of personal skills to meet the expectations of society.
Research by James H. McMillan and Jessica Hearn shows that self-assessment is more accurately identified as a process where students 1) monitor and evaluate the quality of their thinking and behavior while learning, and 2) Identify strategies to improve their understanding And skills. That is, self-evaluation occurs when students evaluate their work to improve performance because they determine the difference between current performance and desire. This aspect of self-assessment is in tune with standards-based education, providing clear goals and criteria that can enable students to self-assess. The popularity of standards-based guidelines provides an ideal context in which clear standards of performance and product evaluation criteria of students, when collected by international students, Provide the knowledge needed for self-assessment. Finally, self-assessment identifies the next learning goal and the instructional strategies that students can apply to improve performance.
For classroom teachers, students self-assess their cognitive development of metacognitive strategies using and when to use them.
Teachers guide students to these skills when they set clear learning objectives and specify assessment criteria that allow students to evaluate their work. These practices attract students as they actively participate in the learning process and become more engaged and committed to learning outcomes. Student self-assessment also shows that teachers learn to pass on assessment responsibilities to

students by setting the scene, evaluating, adjusting, and reflecting.
The students, ask the teacher to come back and serve as a trainer and counselor when students learn from their own experiences ([JWC94].) In addition, students believe that they Can accomplish tasks more efficiently and more motivated. Teachers should maintain high achievement expectations when students set goals and work through self-assessment. That way, self-assessments of students in the classroom have identified clear learning objectives, identified assessment criteria, provided tools for assessment, and allowed time to reflect.

2.3.6. Teachers' competence to use assessment results

How do learners know they are moving forward without consistent, consistent feedback? Teachers need to provide group feedback on the models they see in the development of the team and the issues they need. Students should also have the opportunity to provide feedback to the teacher so that they can tailor the learning process, materials and instruction accordingly.
According to research [EK06], descriptive feedback is the key to assessing academic success. Students learn from the assessment when the teacher gives specific, specific feedback and direction to each student to guide his / her learning. Feedback to learning is part of the teaching process; The section after the initial instruction takes place, when information is provided about how the students handled and explained the original material. This is an important link between the teacher's assessment of students learning and the action taken after the assessment.
To be successful, feedback needs to be immediate and determine the path ahead. It's not just about telling the learner whether their answers are true or false, or simply providing feedback as points and brief comments that are not specific about praise or criticism.
This second type of feedback affects the senses of the students and tells them about their relationship with others, but it offers very little direction to move forward. Feedback to learning, on the other hand, is descriptive and specific. Descriptive feedback creates a clear link between student thinking and expected learning. It solves the misinterpretation and lack of understanding. It provides students with the next steps to manage and an example of a good job.
Feedback for learning provides evidence that confirms or challenges the idea that the student holds. It shows success and growth, and it includes clear directions for improvement. It encourages students to think and respond to suggestions. And it focuses on both quality and learning.

3. CONCLUSIONS

Assessing the development of teacher competencies, measures to assess the development of teacher competencies, are important because they can raise teachers' awareness of the need for capacity development. teacher; Can support a shift in math instruction and practice; Allow recognition (new) development; Play the role of quality assurance and control of training and development, thereby improving and helping to achieve excellence; Can help develop confidence in teaching; And - can facilitate timely intervention to improve mathematics teaching.
The main result of this study is the understanding of the assessment models and the development of teacher competency framework in assessing mathematics of students in secondary schools in Vietnam..

REFERENCES

[BJ03] **M. Blomhøj, T. H. Jensen** - *Developing mathematical modelling competence: Conceptual clarification and educational planning.* Teaching Mathematics and its Applications, 2003.

[BJ06] **M. Blomhøj, T. H. Jensen** - *What's all the fuss about competencies? Experiences with using a competence perspective on mathematics education to develop the teaching of mathematical modelling* (to appear in Blum et al., 2006).

[BJ07] **M. Blomhoj, T. H. Jensen** - *What's all the fuss about competencies?* In Blum, W., Galbraith, P., Henn, H., Niss, M. (eds). Modelling and Applications in Mathematics Education. 14th ICMI Study. New York, USA: Springer, 2007.

[BW98] **P. Black, D. Wiliam** - *Assessment and Classroom Learning*. Assessment in Education, 5(1), 1998.

[EK06] **L. Earl, S. Katz** - *Rethinking Classroom Assessment with Purpose in Mind*, Western and Northern Canadian Protocol for Collaboration in Education, 2006.

[Gol87] **G. A. Goldin** – *Cognitive representational systems for mathematical problem solving,* In Janvier, C. (ed.), Problems of Representation in the Teaching and Learning of Mathematics. Hillside, New Jersey: Lawrence Erlbaum Associates Publishers, 1987.

[HTT16] **T. T. Hai, T. T. P. Thao, T. T. Tinh** - *Assess ICT Competences in Teaching of Teachers and Trainee Teachers at Highland North Vietnam,* Annals. Computer Science Series, Tome 14, Fasc. 2. Romania, 2016.

[HVA94] **E. H. Hiebert, S. W. Valencia, P. P. Afflerbach** - *Understand authentic reading assessment: Definitions and perspectives*. In S. W. Valencia, E. H. Hiebert, & P. P. Afflerbach (Eds.), Authentic reading assessment: Practices and possibilities. Newark, DE: International Reading Association, 1994.

[JWC05] **B. R. Joyce, M. Weil, E. Calhoun** - *Models of Teaching,* MyLabSchool Edition (7th Edition), 2005.

[LeH16] **Q. Le Hong** - *Mathematical Modelling in a solves problem-based Learning,* Journal Psychology, Vietnam, 2016.

[LD03] **R. Lesh, H. M. Doerr** - *Foundations of a models and modeling perspective on mathematics teaching, learning, and problem solving*. In R. Lesh, & H. M. Doerr (Eds.), Beyond constructivism: Models and modeling perspectives on mathematics problem solving, learning, and teaching. Mahwah, NJ: Lawrence Erlbaum, 2003.

[Mar07] **R. J. Marzano** - *The art and science of teaching : a comprehensive framework for effective instruction.* Printed in the United States of America. Cover art copyright © 2007 by ASCD.

[PS02] **P. R. Pintrich, D. H. Schunk** - *Motivation in education: Theory, research, and applications* (2nd ed.). Upper Saddle River, NJ: Prentice Hall, 2002.

[Wig89] **G. Wiggins** - *A true test: Toward more authentic and equitable assessment*. Phi Delta Kappan, 79(7), 1989.

[Wol89] **D. P. Wolf** - *Portfolio assessment: Sampling student work*. Educational Leadership, 46(7), 1989.