

Assessing student's competence in the digital age: tools and application orientation

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Abstract:

Currently, using digital technology in teaching, examination and assessment is an inevitable trend in education in all countries around the world. The practical benefits of information technology will maximize the support for the teacher and at the same time develop the competence of the learners. Research results are analyzed through the practice of high schools in Vietnam. The main research methods used are: research, synthesis, document analysis; professional method. The new point of the research is to approach and analyze the assessment of students' competence based on the application of digital technology. The tools are designed and used to assess learners based on the support of digital technology, oriented to the development of learners' competence and suitable to the reality of Vietnam.

Keywords: examination, assessment, competence, application, digital technology.

Date of Submission: 04-04-2022

Date of Acceptance: 19-04-2022

I. Introduction

In the world, many countries such as the England, Australia, Denmark...have been implementing digital transformation in the field of education. In the context of global integration and the 4.0 technology revolution that affects all fields of social life, Vietnam in general and the education in particular cannot be left out of the general trend of the world.

In Vietnam, currently innovating the general education curriculum, so the application of digital technology and digital transformation in education needs to focus on two main contents: (1) in management education and (2) in teaching, learning, examining and assessing. However, in Vietnam, the application of digital technology in education in general and in examination and assessment in particular still faces many difficulties and problems, such as network infrastructure, information technology equipment and Internet services for schools, teachers and students, especially in mountainous, highland and disadvantaged areas, is still lacking, outdated and asynchronous. This is also a cause leading to inequality in learning opportunities and access to knowledge among students in regions, schools and localities. The problem is, in the current general trend, in order to develop the competence for all students, what tools should be used for examining and assessing? What software technology and application are needed to be effective, and at the same time suitable for regional conditions?

II. Material And Methods

To obtain the research results in this article, the author has used specific, appropriate and meaningful scientific research methods: (i) Methods of research, synthesis, and analysis of documents: documents of books, newspapers, specialized journals, works, research topics that have been accepted and other scientific works related to examining and assessing in the teaching process oriented towards development students' competency and application of digital technology in examining and assessing activities; (ii) Professional method: during the research, the author consulted with researchers and experts in the fields of education science and information technology to have a comprehensive and accurate perspective, objective, scientific for research problems.

III. Results

1. Assessing students according to the orientation of developing competence in the digital age

A student's competence is the ability to master systems of knowledge, skills, attitudes suitable for ages and operate them appropriately to successfully carry out learning and training tasks as required, the educational goals of the school level and effectively solve the problems posed to students in their own lives. In other words, competence is the ability to master and reasonably apply knowledge, experience, and attitudes in an interesting way to act effectively in various life situations.

Assessment in the direction of developing student quality and capacity focuses on process assessment to timely detect student's progress and for student progress, thereby making timely adjustments and self-adjustments teaching and learning activities in the teaching process. This point of view is evident in considering each assessment activity as learning (Assessment as learning) and assessment for learning (Assessment for learning). In addition, assessment of learning outcomes (Assessment of learning) will also be carried out at the end of the educational process to confirm what students have achieved against the output standard [2].

Assessing competency is a process in which assessor interact with students to gather evidence of competence, using existing assessment standards to show conclusions about the level of achievement or failure of something competence of the student [1].

Assessing competency is an assessment of students' ability to apply learned knowledge and skills to solve problems in learning or in real life and the student's assessment results depend on the difficulty of the task and exercises completed to different levels. The scale in assessing competence is determined according to the level of competence development of students, not whether or not a content has been learned.

In the digital age, the application of technology to assess students' competence can be as simple as individual activities of teachers such as: designing exam matrix, compiling and managing questions bank, conduct assessment activities in the teaching process...to learning process assessment systems - for the progress of learners such as: assessment of learning projects, academic profile...at the same time can combine different assessment tools based on different technology software.

The strength of technology is creating a new face to help both teachers and learners achieve higher steps in the journey of accessing and applying knowledge. The application of technology in examining and assessing will help teachers and schools more objectively assess students' learning competence, thereby providing timely support and fostering. In addition, the application of digital technology in examining and assessing helps teachers personalize activities, get instant access, and support business processes; at the same time increase the interest to help learners be flexible and adaptive at work [6][7].

2. Tools and directions for applying digital technology in examining and assessing students

2.1. Examining and assessing tool

Tools to assess student learning outcomes are understood as means or techniques used in the assessment process. Assessing tools are intended to collect information to provide to teachers and students during assessment and self-assessment process. Depending on the purpose, goal, object and time, teachers can use different assessment tools accordingly. In assessing the competence of high school students, teachers can use the following assessment tools:

- **Question:** Question is one of the quite common tools used in examining and assessing. Questions can be used in oral and written tests with the following forms: essay, objective test, question and answer, short questionnaire, test card...When designing questions to develop students' competence, teachers should pay attention to questions related to real-life situations; application question. With this tool, teachers can use different information technology software to design questions. For example: Quizizz, Kahoot, Edulive,...

- **Exercises:** Exercises in the assessment of developing student's competence are situations that arise in life, which contain problems that students need to pay attention to, learn, solve and they have meaning for education. Types of problem detection exercises; analysis and assessment exercises; survey exercises, research, they are all effective tools for assessing students' competence.

- **Checklist:** Checklist is a list of recorded criteria (about behaviors, expected characteristics) are expressed or implemented or not. Checklists often show clearly the presence or absence of certain expected behaviors or characteristics, but it has the limitation of not helping the assessor to know the varying level of occurrence of those criteria. Teachers use this tool to assess practical exercises in subjects, and at the same time assess students' attitudes and behaviors when participating in and implementing topics.

- **Rating scale:** A rating scale is a tool to measure level which students achieve each characteristics, behavior in a particular aspect/field. The rating scale has 3 basic types: numerical scale, graphical scale and descriptive scale. Rating scales are very valuable in monitoring student's progress. If a teacher keeps a copy of the scale across a number of different assignments/tasks at different times, there will be a record to help monitor and assess each student's progress.

- **Rubrics:** Rubric is a specific description of the assessment criteria and the levels of achievement of each of those criteria about the student's learning process or product. With this tool, teachers can assess student activities/products on a certain task in each subject. Rubric is used for both qualitative and quantitative assessments. Teachers need to provide criteria that will be used to assess students immediately after assigning subject tasks to students, so that students can clearly visualize the work to be done.

- **Learning products:** Learning products are evidence of the application of knowledge and skills that students already have. Through learning products, teachers assess the progress of students, assess the process of creating products and assess the level of achievement of students' competences. In each subject, students'

learning products are very diverse, teachers need to observe and monitor the progress of students to properly assess students' products and students' competence. In order to assess the product to be unified in terms of criteria and assessment levels, teachers can design a scale or teachers can design Quantitative Rubric and Qualitative Rubric to assess students' learning products.

- **Academic records:** Academic records are usually of two types: process records provide the best learning material to demonstrate the progress of learners over semesters, school years or periods; Product records demonstrate the performance of a specific task. Products that can be stored in learning records include: assignments, tests, reports, short notes, study sheets, diagrams, inventions...of individual students; reports, exercises, comments, plans, journals, models, experimental results...are made in groups; images and sounds such as photos, audio tapes, videos, drawings, computer programs/software,...With records of student progress assessment, they will be used regularly. After each selection of products to include in the records, teachers can organize students to assess each of those products. At the end of the semester or at the end of the year, the entire contents of the academic record will be assessed as a whole [1][2].

2.2. Orienting the application of digital technology in examining and assessing the competence of high school students

The application of digital technology in examining and assessing in the direction of developing student's competence is an inevitable and necessary trend of modern education, however, to apply effectively digital technology to this activity, it is necessary to follow the following basic orientations:

- The application of digital technology in examining and assessing needs to provide accurate, fast and timely results and information to help teachers properly assess students' competence, students also see their competence in what level they are in order to have a direction to foster and develop, to meet the goals of education. Different from examining and assessing with traditional tools, the application of digital technology in this activity needs to give quick and accurate results, moreover with algorithms, tools or functions of the applications and software that allow teachers to synthesize, statistics, analyze, and classify students...with many different purposes and requirements, thereby helping to improve the effectiveness of examination and assessment.

- Digital technology application must ensure diversification of assessment forms, combining regular assessment with periodical assessment with students in different forms; combine teacher assessment with student self-assessment and mutual assessment.

- The application of digital technology not only tests knowledge but also needs to assess students' skills associated with each subject, assess the ability to apply knowledge in specific situations.

- The application of digital technology in examining and assessing students' competence can be held at many different times and places during the learning process in order to create conditions for students to have a flexible learning environment while still ensuring quality and effectiveness, especially in online training or implementing E-learning lectures.

- Applying digital technology to organize many contents of examining and assessing such as: designing tools for examination and assessment; building question banks, matrix of exam questions/test questions; mix exam papers; organize exams and tests to assess students' competence; handling student's exam/test results; manage student's competency profile from test results, assess student's competence.

- Applying digital technology to design diverse and rich tools for different purposes in examining and assessing student's competence such as questions, exercises, test questions, check list, learning products or student records.

- Education results are assessed in qualitative and quantitative forms through regular and periodic evaluation thanks to the application of digital technology as the basis for synthesizing the general assessment results on quality, competence and student progress [3][4][5].

IV. Discussion

Examination and assessment is an activity that plays a very important role in the teaching process in order to assess the results and students' competence, from which there are specific orientations and measures to help develop student's competence. The strong development of digital technology has led to the birth of applications, software, websites to serve and support teaching activities including examination and assessment. Thanks to digital technology, examination and assessment activities can take place easily, conveniently and effectively, especially online learning, examination and assessment is designed, organized and implemented in a variety and rich manner. However, each application, software has certain advantages and limitations, only being able to design one or a few tools for examination and assessment. Thus, to be able to apply digital technology in examining and assessing effectively, teachers need to be able to apply information technology and digital technology in teaching; regularly update information, innovate in methods, be flexible and adapt to changes in technology; understand clearly the features of applications and software applied to design appropriate tools to meet the purposes and requirements of

examination and assessment; Combining a variety of applications and software to design different tools, ensuring a comprehensive assessment of developing students' competence. Moreover, in the application of digital technology in teaching activities in general, examining and assessing in particular, teachers need to consider the actual conditions of themselves, students, schools and localities to ensure effective exploitation of advantages of digital technology, implementation in practice. There should be specific orientations to help teachers effectively apply digital technology in examination and assessment; at the same time, managers need to provide appropriate orientations and solutions to reduce the disparity between localities in terms of conditions for accessing digital technology, ensuring equity in education, so that the application of technology in examination and assessment are popular and effective.

V. Conclusion

The application of digital technology in examining and assessing is an important content in educational innovation in Vietnam today, in order to exploit the strengths of digital technology, improve the quality and efficiency of examination and assessment towards the development of students' competence. In examining and assessing, teachers can use a combination of many different tools, along with many supporting applications and software. Each application, software will have its own advantages and limitations, capable of designing one or a few certain tools for examining and assessing activities. This requires teachers to be competent in information technology, regularly self-improve and improve their computer skills, update information, adapt to the rapid change of digital technology and especially, teachers need to know how to exploit the features of applications and software, and use them in accordance with the purposes, requirements and actual conditions of learners, schools and localities to ensure quality and effectiveness of examining and assessing activities.

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Acknowledgment

The article is a part of the project: "Application of digital technology in examining and assessing geography subject in high school following orientation of developing students' competence"; Project Code: CS.2021.06; Dr. Nghiem Van Long is the project manager; Host organization: Thai Nguyen University of Education, Viet Nam.

Nghiem Van Long, et. al. "Assessing student's competence in the digital age: tools and application orientation." *IOSR Journal of Research & Method in Education (IOSR-JRME)*, 12(02), (2022): pp. 28-31.