

Analysis on the implementation of authentic assessment in Singapore classrooms

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Abstract: In order to promote students' ability to accomplish real-world tasks, Singapore education adopts authentic assessment to develop students' 'high-order thinking. Unlike traditional assessment, authentic assessment verifies students' learning by looking at how they apply knowledge. The educational context in Singapore that is undergoing a transformation toward promoting students' competency is supportive of authentic assessment's development. The implementation model of the portfolio and the representative authentic assessment method are discussed to give a more detailed introduction of how authentic assessment runs in real talk. The encounter of chances and challenges in Singapore's experience of embracing authentic assessment offers an instructive example for the worldwide prospect of the wider use of authentic assessment in the future.

1. Introduction

Recent years have witnessed that the current higher education is facing many challenges as the social expectation of the talents trained by education changes. The way it gives priority to students' ability of rote memorization of factual and procedural knowledge increasingly fails to prepare students for real-world tasks and fulfill the need of employment [1-2]. Too much pursuit of accurate responses has inevitably resulted in the students' limited engagement in class. Consequently, it will become common for students to passively absorb knowledge. These challenges call for a shift from this kind of passive learning to a more complex, comprehensive, and engaged leaning. It is noted that the field of education is actively seeking changes, so does assessment, the elemental component of the education process. Assessment offers an insight of how students master skills and knowledge. In 1997, Brown, Bull, and Pendlebury proposed that 'if you want to change student learning, then change the methods of assessment', which reveals the importance of assessment to education [3]. A variety of alternative assessments have emerged from this need, among which authentic assessment gradually becomes common and popular in the education domain. In this respect, many school systems started to respond to the expectation of finding alternative assessment.

Singapore classrooms took an active part in this change, thoroughly reviewing its curriculum and assessment system to generate the most suitable plan. In 1997, the Ministry of Education in Singapore launched the 'Thinking Schools, Learning Nation' (TSLN) vision to nurture thoughtful and committed citizens to keep Singapore vibrant and successful in future. It is believed that the initiative that Singapore intentionally adopts is to achieve the shift from conventional assessment to authentic

assessment [4]. It has been more than one decade since the introduction of TSLN policy. There are inevitable significant challenges and corresponding strategies applied during the implementation. It is acknowledged that the sufficient conceptualization the principles of authenticity and the characteristics of authentic assessment are indispensable to guide and form a model of task design and assessment. Apart from that, there are two other essential factors concluded from Singapore's past experience with respect to alternation to authentic assessment. First of all, without the strong support from educational environment, the change will be much more difficult. Next, teachers' conception of authentic assessment, to some extent, are imperative. Their acceptance and even professional capability of conducting authentic assessment is the focus.

This paper begins with the urgent challenge in the educational domain and the necessity of the transformation from conventional assessment to authentic assessment in Singapore's context. It also presents the launch of TSLN policy and some thinking from the implementation progress. Next, it provides a systematic review of authentic assessment and Singapore's educational context. In the discussion part, this paper introduces portfolio as the representative methods of authentic assessment and emphasized teachers' role in terms of the smooth carrying out of authentic assessment, in the meantime, the challenge of how Singapore could implement authentic assessment is mentioned. Using Singapore as an illustrative case, this paper believes that its experience is of great reference value for other Asian countries with exam-oriented educational contexts.

2. Literature Review

The authentic assessment and Singapore's educational context are introduced to illustrate that the Singapore's adoption of authentic assessment is the most suitable for its students.

2.1. Authentic Assessment

The review of authentic assessment provides ground for the analysis of its properties. Through continuous in-depth research, the definition and understanding of authentic assessment become clearer and clearer.

2.1.1. The Definition of Authentic Assessment

Wiggins firstly proposed the concept of authentic assessment when the public was increasingly questioning the role of traditional assessment [5]. Wiggins defined authentic assessment as an evaluation method to verify students' learning, which requires students to apply the necessary knowledge and skills to complete a certain task in a real situation or simulated real situation. Wiggins described authentic assessment as engaging students in applying knowledge effectively and creatively to the specific tasks which "are either replicas of or analogous to the kinds of problems faced by adult citizens and consumers or professionals in the field". After Wiggins, educators commenced to explore more possibilities of the application of authentic assessment through a number of practices and research. In 1994, Hart published *Authentic Assessment: A Handbook for Education*, which elaborated on the definition, characteristics, and significance of authentic assessment on the basis of criticizing traditional assessments [6]. Diane described a large number of specific cases to present three typical methods of authentic assessment, namely observation-based assessment, portfolio assessment, and performance assessment, which greatly enriched the content of authentic assessment. Pierce familiarized English teachers with the idea of considering alternatives to traditional assessments and prepared them to apply authentic assessment in classroom from four fundamental aspects of language: listening, speaking, reading and writing [7]. In 2001, based on the analysis of the background and trends of the evolutionary reform in the United States, Montgomery stated the importance of planning and implementing authentic assessment and provided information on how

primary school teachers can carry out authentic assessment in classroom practices [8]. Kathleen also gave some specific and meticulous guidance regarding how to design and develop authentic tasks, how to make and revise authentic assessment rubrics, and how to create and use the portfolio as one important method of authentic assessment, etc. Jon described authentic assessment as asking students to perform real-world tasks which requires students to display their ability of the application of essential knowledge and skills. Jon also emphasized that “authentic assessments are direct measures” as they can provide the most direct evidence to prove that learners are able to internalize the content of the disciplines. Compared with traditional assessments, generally taking closed-ended questions and showing limited encourage for learners’ generating demonstration, the authentic assessment model attaches great attention to students’ various thoughts and give students more freedom in deciding the most appropriate way to present what they have learnt.

According to Ashford-Rowe, Herrington, and Brown, thirteen characteristics of authentic assessment were identified and could be categorized into four dimensions, namely, realism, cognitive challenge, evaluative judgement, and the generation of outcome[9]. (1) Realism: Tanner asserted that there should be consistency between the assessment and the real-world application for which the learner was being prepared, which was referred to as ‘Realism’ [10]. (2) Cognitive challenge: authentic assessment’s target of developing higher-order thinking can be attainable as in the progress contexts of problem-solving and decision-making which correspond to the development of cognitive, and meta cognitive skills are provide [11-12]. (3) Evaluative judgement: fostering students’ ability to judge their own performance and regulate their own learning through informing them of the criteria and standards about an excellent performance [13]. (4) Generation of outcome: authentic assessment embraces the idea that students will be asked to achieve one conclusion when accomplishing a specific task, whether in the form of an acceptable performance or a functional product.

The research above inherited Wiggins’ theory and further elaborated and explained the meaning of authentic assessment, summarizing the characteristics and value of authentic assessment, and additionally supplementing and perfecting the theory. In addition, a number of in-class cases where authentic assessment has been used were recoded. Through the study of these classroom examples, some specific methods have been put forward: observing students’ class behavior, recording their learning and growth process, etc. Gradually, the research progress on authentic assessment has been moved from theoretical research to practical research.

2.1.2. The Application of Authentic Assessment

Existing studies have explored the effectiveness of authentic assessment’s implementation methods in teaching. Shavelson used the comparison method between the experimental group and the control group and found that compared with the summative assessment, the authentic assessment in which curriculum is embedded can better stimulate children’s learning enthusiasm and directly affect children’s final learning effect, thus demonstrate the effectiveness of authentic assessment at the practical level [14]. SherAzim conducted an empirical study on the application of authentic assessment in middle school science curriculum. Article collected data through class observations, interviews, analysis of relevant literature, and reflection records [15]. The survey results showed that teachers’ and students’ concept and practice have changed: the traditional questions-and-answers test is replaced by real-world tasks, which makes teachers and students take a more positive role in the teaching process, and students’ active learning ability has been greatly improved. They actively participate in planning and collecting information and apply it to real life, and the evaluation scale is very useful for helping teachers and students determine learning goals and put them into action. Noor discussed how to use authentic assessments to improve writing in English classrooms [16]. Through observation and collection of data in the English classroom, it is found that authentic assessment can cultivate students’ writing skills and form a writing process of “brainstorming-drafting-peer-editing-

revising-sharing”. The beginning part – brainstorming – aims at raising the topic in the real context and encourages students to think from real life experience.

When scholars introduced the concept of authentic assessment, each of them explained the impact of authentic assessment on teaching from different aspects. Lombardi believed that authentic assessment could help students have a better understanding of their learning and inspire them to explore a deeper level of themselves and the unknown world [17]. From a social and cultural perspective, authentic assessment provides opportunity to exercise their ability to collaborate and cooperate. It encourages students to actively participate in in-depth study of all aspects of society. Swaffield declared that authentic assessment enables students to participate in the evaluation process [18]. The role of students transforms from consumers of knowledge to creators of knowledge, and at the same time, this kind of assessment place students in the context of real-world tasks, which can put students in thinking and encourage them to reflect on themselves. Keeling proposed that authentic assessment can bring students a closely real-life experience where some quality like critical thinking and interpersonal skills can be developed [19].

2.2. Singapore Education Context

At the turn of the new century, Singapore’s educational system was undergoing a comprehensive and profound reform. Singapore’s Ministry of Education pointed out that it is the lifelong learners, thinking innovators, and effective communicators that Singapore education system is committed to cultivating and shaping. External Review Team (ERM) emphasized that education should develop students’ competency from the three aspects: (1) high-level communication skills, (2) teamwork ability, (3) how to search, evaluate, process, and apply new knowledge and information. Under this background, Singapore posed its vision on school reform in its new educational policy ‘Thinking schools, Learning nation’ (TSLN) at the beginning of the 21st century. Singapore made some corresponding changes on education evaluation to be in line with the progress of education reform. The shift of Singapore assessments mainly focuses on three areas: emphasizing the course task (coursework), emphasizing oral communication, and the transformation of project types.

2.2.1. Emphasis on the Course Task

Compared with traditional pen-and-paper exams, course tasks provide students with opportunities to demonstrate applied knowledge and skills to tackle problems. From the course tasks, teachers can evaluate students from both the process of the operation and the results achieved by the students. Recent years have witnessed that Singapore’s General Certificate of Education (GCE) attached great importance to two assessment methods of coursework: Project Work and Scientific Practical Assessment. The project work requires students to choose one of the given topics and generate a written or oral report within eight months under the guidance of the instructor. The written report gives priority to students’ data while the oral report underlines the fluency and clarity of individual presentation, the acceptance of listeners. In the process of completing project tasks, students have to be team players and integrate knowledge from different learning fields. It is expected that students’ cognitive level, teamwork ability and communication skills can be developed when completing the project work. The result and completion progress of tasks, as well as individual contributions and teamwork are particular aspects in the evaluation that are particularly favored. Science Practical Assessment is another course work recently introduced by the Singapore National Education Examination. Through completing scientific practice, students’ scientific exploration skills, to be more specific, the ability of planning, implementation, and analysis of course work can be assessed. In addition, some support is given to present the new development of science in class, which enables students to be more aware of the advanced progress in the science field.

2.2.2. Attention to Oral Communication

Singapore education sector emphasized more on oral communication, hence the proportion of oral tests has greatly increased in main exams, such as GCE and Primary School Leaving Examination (PSLE), etc. The fact that PLSE increased the percentage of oral tests from 10% to 15% in the past few years proves that. A notable feature is that dialogue has gradually become the composition of oral tests, which requires students to take a conversation with the tester from the given topics. The intention of observing and assessing students' performance in the particular context shows that Singapore gives priority to language application ability.

2.2.3. Transformation of Project Types

In the Singapore National Education Examination, the following three project types are being highlighted and widely used: resource-based projects, case study projects, and contextual writing projects. Resource-based projects test favors students to give their own opinions based on the given materials. It is noted that the coherence and consistency of their arguments would also be the focus. Reproducing textbook knowledge is the least expected answer. At the same time, it gives necessary support to students so they can use background knowledge to verify their interpretation, evaluation, and analysis of resource materials. In order to make the subject learning more real and interesting, case study gradually becomes the preferred choice. In the case study, students are guided to concentrate on one real-life case and discussion will be sparked to make teaching more interactive. It is believed that students' ability to form, develop, and evaluate their own views can be cultivated in the process of investigating real cases. Contextual writing emphasizes how students can better analyze relevant issues in a given situation. The writing time has increased, which allows students more time to read and reflect on the given material in the relevant context, or to polish their argument.

3. Discussion

3.1. Implementation of Authentic Assessment in Singapore

With the continuous introduction of concepts of authentic assessment throughout the world, educators get more familiar and clearer with its concepts and usage, then developed numbers of practical methods from the concept. Portfolio is the most widely used and recognized method in Singapore, the introduction of which owns much to Singapore's mature file management experience in other fields. Taking portfolio as the representative method of authentic assessment in Singapore as an example, the implementation picture can be portrayed roughly.

3.1.1. Classification of Portfolio

According to the purpose of use, student portfolios can be classified into different categories: ideal portfolio, presentation portfolio, document portfolio, assessment portfolio, and class portfolio. Ideal portfolio means the description of producing and selecting the ideal work and students' analyzing and evaluating their own works. Presentation portfolio refers to a collection of the best and favorite works of the students, mainly selected by the themselves, which embraces the educational concept that self-reflection and self-selection are more important than standardization. Document portfolio focuses on the systematic and continuous record of students' progress based on some students' feedback and teachers' evaluations, observations, examinations, etc. Assessment portfolio is mainly established by teachers, administrators, and school districts. The evaluation criteria are predetermined. Class portfolio consists of three parts: (1) Summary of all students' achievements according to the

description of the course objectives; (2) Teacher's description and observation of each student in detail; (3) Teachers' teaching plan and revision instructions.

3.1.2. Characters of Portfolio

The reason why portfolio can become the most representative option is that it presents the key elements of authentic assessment and has many different characteristics from other methods: (1) Throughout the learning process: The portfolio is established on the basis of the growth and learning process of students. The materials collected in the portfolio can reflect the degree of hard work and progress students make over the teaching period. (2) Various forms of content: The portfolio contains many forms of learning and feedback information, including student assignment, assessment records, self-evaluation, peer evaluation, and teacher evaluation, etc., showing the process of students' learning, thinking, and improvement. It enables students to be more aware of their own learning situation and allow teachers and parents to provide more reliable and true feedback information. (3) Students' different performances: The portfolio acts like a container that can accommodate various aspects of student performance that is not limited to academic study, such as personal skills, thoughts and interests, achievement evidence, etc., which belong to each student personally. (4) The role of students as producers: It is the students but not teachers that are in charge of managing all kinds of materials which consists of the portfolio, hence students' awareness of what they have and have not achieved and conscious reflection on themselves can be enhanced.

3.1.3. Singapore Portfolio Assessment Model

There is no standard way to implement portfolios that each classroom will adopt a unique approach to reflect authentic assessment, and that each child's collection of documents will differ. However, experience can sum up the commonalities, hence when it comes to the Singapore ESL classroom, six interconnecting implementation steps of portfolio assessment activities are summarized. First, teachers need to clarify the purpose of using the portfolio, so corresponding type can be finalized. Second, teachers are supposed to develop the appropriate plan of collecting and sorting students' information, decide assessment procedures, and identify the needed materials to be collected at different stages, and the way they present based on the teaching plan of the subject. Next is about the design of portfolio criteria. Related staff should be aware of their responsibilities for analysis. Then instructional use should be prepared. Students ought to be aware of the portfolio implementation guideline and strategy, and teachers will correspondingly provide feedback to students, parents and school. Last, auditors identify procedures to verify the accuracy of the information. Reliability and validity of the assessment should be confirmed by an established system.

3.2. The Suitability and Challenge to Apply the Authentic Assessment in Singapore

In authentic assessment, teachers are believed to play the role of designer, guider, and controller. In other words, teachers are indispensable in the creation and flourishing of thinking. At first, some teachers are reluctant to alter conventional assessment for being long accustomed to its mode [20]. After all, altering to a new assessment generally means spending a large amount of time, energy, and intellectual resources. Sometimes, teachers also have to take risks of facing parents' even students' rejection. In addition, while many teachers are willing to embrace authentic assessment, the lack of conceptualization of authenticity prevents them from designing course incorporated in it. How to design and implement high-quality classroom authentic assessment and how to be a judge of the quality of students' tasks still need to be figured out for them. Last, at initial stage, some teachers are not adequately trained to guide learners in authentic assessment. Teachers who are ill-prepared tend

to perceive traditional paper-and-pencil tests easier. Consequently, the class activities designed by these teachers are highly likely to not be consistent with their instructional goals [21].

In answer to these challenges, Singapore urges schools to build teachers' capability by equipping them with sustained professional training on authentic assessment, which aims at promoting teachers' understanding of the concept of authentic assessment. Only then can the goal be fulfilled, ensuring teachers' understanding of the principle of design assessment tasks and rubrics. At the same time, educational experts give feedback regarding the implementation of authentic assessment in daily classroom so the recommendations for improvement can be given. Singapore schools call on teachers to cooperate with each other in order to better prepare themselves for the implementation of authentic assessment, which specifically encourages teachers to co-design the most suitable authentic tasks for students, co-address problems arising from the exercise, etc. The criteria which are generally used to assess the quality of authentic tasks and students' performance are delivered in the training, which entails five aspects: (1) depth of knowledge, (2) knowledge criticism, (3) knowledge manipulation, (4) sustained writing, and (5) connections to the real world beyond the classroom. Depth of knowledge refers to factual knowledge (established facts, decontextualised information), procedural knowledge (methods, rules, skills), and conceptual knowledge (organized information). Knowledge criticism means whether students are able to independently review and criticise different sources of the information and tend not to accept all presented information blindly. Knowledge manipulation intends to measure students' organizational ability. The good-quality authentic assessment task should provide more chances for students, so they can make hypotheses and reach their own conclusion. Sustained writing asks students to generate sustained written reports, which incorporate their thoughts. Connections to the real world beyond the classroom is the core principle of the authentic assessment. Students' capability of transferring the mastery gained in school to life beyond school is definitely the intention of the authentic tasks.

Therefore, teachers can be more aware the core connotation of authentic assessment, which is the premise of enhancing the quality of the course integrated with authenticity. Additionally, in order to make sure teachers' assessment literacy in both task design and rubric development, Singapore follow-up policies focus on how to help teachers clearly identify the operating system of authentic assessment, which has a demand not only on developing high-quality scoring rubrics but also on providing timely and formative feedback. At the same time, educators in Singapore are gradually aware of that the realization of higher-order thinking should not be achieved through fixed steps or specific exercises. Otherwise, students will be stuck into the conventional assessment mode again where test grades decide the mastery of higher-order thinking. The function of teachers experiences a huge change and the creation of the learning environment where students can work on authentic tasks together and express their full views on the oral questions is their duty.

Even if Singapore has posed TSLN for more than a decade and implemented a number of actions to deepen the educational reform, the acceptance and effective use of updated assessment mode still remains to be a challenge. The deep-rooted belief that the drill and practice of 'thinking skills' can be developed through the 'thinking worksheet' and other paraphernalia taken from various 'thinking programs' lead to the tendency for many Singapore teachers to deliver specific algorithmic strategies in class to guide students how to think creatively [22], which leads to students' conception that there is an established formula to develop their thinking as long as they obey it. Consequently, the design of assessment where there is a correct answer to test students' identification of specific steps was believed to test students' ability. The policy-maker is aware that the shift of traditional assessment which focuses less on questioning and investigating assumes and demands support from school and teachers. The introduction of educational policy alone cannot tackle the challenge but requires the fundamental change from the teacher-centered educational context to students' taking ownership of

their learning. To achieve this, Singapore realizes the importance of building teachers' capacity in authentic assessment through sustained professional training.

4. Conclusion

The practice of authentic assessment aligns well with Singapore's urgent need of shifting from passive learning to engaged learning. In Singapore, the exam-oriented culture once determines that teachers' responsibility is to prepare students to perform better in the exam, which gradually is not in line with the development of society. However, the challenge encountered in the implementation suggests that only releasing policy is far from enough and the fundamental change of teachers' and students' identity and disposition is the key. Based on Singapore's case, this paper has tried to figure out some indispensable factors in term of the successful application of authentic assessment. It is concluded that it is the support from educational environment and transformation of teacher's belief that make it possible to foster active-learning students. It's admitted that as the object of assessment, the student group is an important consideration, the responding from whom reflects the reliability and validity of authentic assessment. Current study is still lacking more in-depth research on reflecting students' attitude toward authentic assessment.

Besides, compared with the conventional one, it is acknowledged that what authentic assessment abandons is the reliance on textbook answers, didactic teaching, and standardized tests. While authentic assessment focuses on the improvement of higher-order cognitive skills, it also underlines the substantive content domain. Another concern is placed on the potential significance of the assessment. As the basic component of the education process, assessment provides the way for students to present what they have achieved. The focus of assessment tasks for student's performance can strongly shape the focus of student's learning. The frequent review of assessment therefore serves as a reminder that pedagogy and curriculum in school need a mediation. Furthermore, the case study of Singapore's implementation of thinking school offers valuable and useful experience for other societies where conventional assessment dominates. After all, there are still a lot of countries like China, Japan, and South Korea that are deeply affected by the exam-oriented culture. The efforts Singapore made and the challenges Singapore met has high reference value for them. In order to nurture innovative thinkers and problem solvers in the future, it is urgent for other countries to evaluate the feasibility of authentic assessment in their educational context.

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