

WHITHER SCHOOL-BASED COURSEWORK ASSESSMENT IN SINGAPORE?

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For several years, the Singapore education system has been broadening the focus on one-off examinations to include school-based coursework assessment. This is intended as a way forward in developing creativity and inquiry-based skills that are considered necessary for success in the globally competitive environment. Educational views on assessment to be not just 'of learning' but 'for learning' have advanced interest towards school-based coursework assessment. While there has been extensive discussion on the positive outcomes of student learning that is defined by school-based coursework assessment, much less has been said about its associated limitations and drawbacks. This paper shares about Singapore's experiences with school-based coursework assessment with reference to a subject at the national GCE A-Level examination. Key challenges that would have to be addressed to further benefit from school-based coursework assessment in Singapore are also identified and discussed in the paper.

BACKGROUND

Prior to the 1990s, national examinations in the Singapore education system were traditionally based on one-off timed summative assessments which were set and assessed externally by the Ministry of Education (MOE) and in collaboration with the University of Cambridge International Examinations (CIE). The centrally coordinated and common external examinations served to set uniform standards of achievement for all school leaving pupils at the primary, secondary and pre-university levels (Tan et al., 2008). The assessment was focused largely on academic domains defined by subject disciplines and the target of assessment is the product of the students rather than the process that students go through in producing the product. A key concern was that this type of assessment inevitably led to undesirable "backwash" effects such as teaching to the examinations, with drilling and cramming of compartmentalized knowledge into students. The one-off pen-and-paper approach may not be adequate for assessing constructs that are best exemplified by tasks that involve performance or producing a product over an extended period of time.

With the thrusts of increasing globalization and rapid technological advancements in the mid-1990s, there were demands from businesses and industries for workers to possess certain competencies such as information technology skills, interpersonal skills, problem-solving and critical thinking skills. The future needs of the employers called for curriculum and

assessment reviews to prepare students for a dynamic and fast changing world. It propelled a resurgence of interest amongst the education communities on performance assessments which are deemed to better serve the needs of the knowledge economy of the 21st century.

At the turn of the century, the Singapore education system was fundamentally reviewed and many initiatives under the Thinking Schools, Learning Nation (TSLN) vision were introduced to develop students' creative thinking and learning skills for the future, to utilize information technology more widely and to develop communication skills and habits of independent learning. As Tan et al. (2008) puts it: "To ensure that pupils are 'future-ready', it was no longer sufficient for them to be armed with factual knowledge. The ability to apply knowledge and to be creative and innovative became increasingly the more important facets of education."

Along with curriculum reviews, changes were also made to assessment towards realizing the TSLN vision. There was a conscious effort to achieve a better balance between assessing recall of factual information and high order thinking skills such as application and evaluation. An important development in the national examinations was the introduction of non-traditional modes of assessment. Recognizing the limitations of the traditional pen-and-paper assessment, examinations in Singapore were broadened to include additional modes which are more suited to the learning outcomes of various subjects. The move towards authentic assessment also saw the inclusion of performance assessments for coursework in subjects such as Design and Technology, Art and Computer Applications. Assessment of the coursework components of these subjects is school-based and spread over a period of time, as opposed to a one-off, time-based examination. As MOE gained more confidence in coursework and school-based assessment, more innovations on a larger scale were introduced.

PROJECT WORK AS COURSEWORK

2003 marks a key milestone for the Singapore national examination history with the implementation of the first wholly school-based assessment of the Singapore-Cambridge GCE A-Level Project Work. Project Work was conceptualised as an interdisciplinary coursework subject in the Singapore's pre-university curriculum.

The introduction of Project Work was considered a bold and innovative initiative for the Singapore education system (Tan et al., 2008) as it is very different from the traditional content subjects with one-off examinations which the public is very familiar with. At that time, there were concerns that our students were too used to learning in silos and did not have the necessary skills to integrate and apply knowledge that they had learnt. Project Work was therefore envisioned as a subject that affords a meaningful and engaging learning experience to students by providing them with the opportunity to work in groups, synthesize knowledge from various areas of learning and critically and creatively apply it to real life situations. In carrying out the Project Work

assessment task, students would acquire self-directed inquiry skills as they propose their own topic, plan their timelines, allocate individual areas of work, interact with teammates of different abilities and personalities, gather and evaluate primary and secondary research material. These Project Work processes reflect important life skills and competencies such as knowledge application, collaboration, communication and independent learning¹, which would prepare students for the workplace of the future.

Project Work is unique on several fronts:

- It is an interdisciplinary coursework subject.
There is dedicated curriculum time for students to carry out their project tasks over an extended period. As a distinct interdisciplinary-based subject, it breaks away from the compartmentalization of knowledge and skills to focusing on the interdisciplinary outcomes by requiring students to draw knowledge and apply skills from across different subject areas.
- It fosters collaborative learning through group work.
Together as a group which is randomly formed by the teacher, students brainstorm and evaluate each others' ideas, agree on the project that the group would undertake and decide on how the work should be allocated amongst themselves.
- It requires every student to make an oral presentation.
Individually and together as a group, each student will make an oral presentation of their group project in the presence of an audience.
- Both product and process are assessed.
There are three components for assessment: one product component is the Written Report which shows evidence of the group's ability to generate, analyse and evaluate ideas for the project. The other product component is Oral Presentation in which each individual group member is assessed on his/her fluency and clarity of speech, awareness of audience as well as response to questions. The group is also assessed in terms of the effectiveness of the overall presentation. The third component is the Group Project File in which each individual group member submits three documents related to 'snapshots' of the processes involved in carrying out the project. These documents show the individual student's ability to generate, analyse and evaluate (i) preliminary ideas for a project, (ii) a piece of research material gathered for the chosen project and (iii) insights and reflections on the project.
- Assessment is school-based and criterion-referenced.
The Project Work assessment tasks are centrally set by the Singapore Examinations and Assessment Board (SEAB) and the Cambridge International Examinations (CIE). However, unlike most other subjects which are externally assessed, the assessment of all three components of

¹ Project Work Syllabus (2005)

Project Work are carried out by the students' own teachers, using a generic set of assessment criteria developed jointly by SEAB and CIE.

- Project Work is both formative and summative assessment². Project Work teachers provide both formative (ongoing) and summative (final) feedback to students in order to help students develop the skills that they need to carry out their projects. Providing qualitative and regular feedback is a pivotal part of the supervision process as the teacher gives students information on their progress to date and advises them on what actions they need to take in order to move forward in their project. Summative feedback is an important final element in the school-based assessment process of Project Work. For this reason, the qualitative remarks made based on the given assessment criteria by the teacher assessors of each component are captured in the Student Feedback Forms, which are then disseminated to students following the release of results.

The Project Work assessment task provides students with the opportunity to carry out a project of their own choice based on broad task requirements set by SEAB/CIE. The coursework seeks to provide authentic learning by giving students working as a group, time to think, research and discuss the project topic and then to demonstrate their learning in both the written and oral mode of presentation.

Project Work was designed as performance coursework rather than a time-based written paper in response to new perspectives such as the behaviourist, cognitive, constructivist and social-cultural theories of learning (James, 2006). According to Messick (1995), performance assessments “typically invoke constructs that are higher order and complex in the sense of subsuming or organizing multiple processes”. Performance assessment emphasises higher order thinking skills such as problem solving, comprehension, critical thinking and reasoning, and metacognitive processes (Linn et al., 1991). Messick (1994) also noted that with performance assessments, there is “a coordinated need to move beyond traditional professional judgement of content to accrue construct-related evidence that the ostensibly sampled processes are actually engaged by respondents in task performance. Thus, the issue of domain coverage in performance assessment refers not just to the content representativeness of the construct measure but also to the process representation of the construct and the degree to which those processes are reflected in construct measurement”. The Project Work construct is aligned to these perspectives as it focuses on cognitive complexity that is demonstrated through the process rather than content. The process skills of knowledge application, communication, collaboration and independent learning can be displayed in more complex processes that can be evidenced over a longer period of time.

² Project Work Handbook, 2005.

SCHOOL-BASED ASSESSMENT FOR PROJECT WORK

At the heart of the decision to adopt school-based assessment for all components (Written Report, Oral Presentation and Group Project File) of Project Work is construct validity. In supervising and guiding students during the course of their project in the classroom, teachers would be able to make formative and summative judgements of their students' performance. They can gather assessment evidence and provide qualitative feedback as the students carry out investigation/research/enquiry, analyse and evaluate sources of information/evidence, and work as a group over an extended period of time. Black (1998) argues that teacher assessed summative components are essential to securing adequate validity in respect of performance assessment such as project work involving literature research or collection of data. The same could be said of the validity dimension for teacher assessed formative components.

Manageability in terms of cost and efficiency of the assessment of oral presentation is also another consideration for adopting school-based assessment for Project Work which is a large-scale examination. To Linn et al., (1991), cost and efficiency is also a validity criterion for performance assessment for they acknowledged that "to be practical, especially for large-scale assessments, ways must be found to keep the costs of performance-based assessments at acceptable levels." The assessment of oral presentation being resource intensive in terms of time and personnel, it is more pragmatic and cost efficient for assessment of this performance component to be carried out by the teachers within the school.

Due to the fact that Project Work is a compulsory subject in the Singapore-Cambridge GCE A-Level examination and is counted as a criterion for entry into local universities, the school-based assessment has to be rigorous and highly defined. For this reason, Project Work teachers are only involved in formative and summative assessment of their own students' performance in the classroom. They are not involved in other aspects of assessment such as task setting, conditions for the performance assessment, assessment criteria, achievement standards and marking processes which are externally specified by SEAB/CIE. The rigorous process that has been put in place on the schools' internal assessment of Project Work is to ensure validity, reliability, fairness and manageability of the high stakes large-scale national examination.

QUALITY ASSURANCE ON SCHOOL-BASED ASSESSMENT

Various measures were put in place in order that the new assessment system is robust enough to stand up to public scrutiny. In preparation for the first examination, extensive lead-in time with two trials and a dry-run were provided to give both teachers and students sufficient time to adjust to this new coursework school-based assessment. Regular training on coursework pedagogies and performance assessment were conducted to familiarize Project Work teachers with their roles as facilitator and assessor. For the

purpose of ensuring reliability in the school-based assessment, all schools were provided with exemplar material that illustrates the expected marking standards. Training was conducted for teachers serving as assessors and internal moderators to familiarize them with the common marking standards and moderation procedures. Within each school, the trained Project Work key personnel would carry out trainings and internal standardizations with their Project Work teachers prior to the examination, to ensure that they are equipped with the Project Work assessment processes and marking standards.

An important part of quality assurance of the school-based assessment of Project Work is the provision of common assessment tasks and assessment criteria developed by SEAB/CIE. Internally at the school level, all assessors' work on all components of the assessment is sampled, and, if necessary moderated by a school-appointed internal moderation panel. Consistency of internal assessment across schools is checked rigorously by an external team of trained moderators appointed by SEAB/CIE, through sampling the work of internal moderators and assessors on all Project Work components from all schools. For schools where teacher assessment is deemed too lenient or strict, the external moderation aims to bring the marks back in line with the national standards.

RESPONSE TO PROJECT WORK

It has been six years since the first national examination of Project Work in 2003. In the initial years, teachers, students and parents had considerable reservations and apprehension about the coursework nature and school-based assessment of Project Work. The teachers who were accustomed to the didactic approach to teaching were initially uncomfortable with the approach of coursework performance assessment and student-directed learning. Students who were used to being passive receivers of knowledge were also uneasy with taking on a more active and independent role in their own learning in the coursework. The adoption of school-based assessment for Project Work also generated anxiety amongst teachers, students and parents. Being accustomed to having the examination papers externally assessed by CIE-appointed examiners in the U.K., the Project Work stakeholders had to change their mindset to having the subject assessed by the students' own teachers despite external moderation by SEAB/CIE.

In the original Project Work syllabus, there were complaints from teachers and students about excessive documentary evidence required for assessment purposes and concerns over the unreliability of assessment, especially of Collaboration. In response to the feedback, the original PW syllabus was revised in 2005 particularly with respect to the assessment scheme and nature of evidence for assessment (Bryer, 2006).

The revisions to the Project Work syllabus have made the present assessment more focused and manageable for teachers. Teachers and students have largely eased into the once unfamiliar mode of assessment of

Project Work coursework in so far as the establishment of the infrastructure and processes for supporting the Project Work assessment is concerned. Assessment evidence from students' work and oral presentation also suggests that the quality of student performance has improved quite markedly over the years. In comparison with earlier years, there are many more written products that showed creative ideas, good research skills and thoughtful analysis and convincing evaluation. There are also many more students who demonstrated strong confidence and ease in the delivery of the oral presentation.

That said, there continues to be concerns from the teachers, students and parents over the group work nature of the coursework and school-based assessment.

Issues with Group Work

A recurrent feedback from students pertains to the nature of group work. As a group, students have to evaluate each member's proposed topic and preliminary ideas, from which they are to decide on one as the group's project. Some students were unhappy that their proposed topic was not chosen as they felt that they could have performed better had their own idea been chosen for the project. These students failed to realize that in a team, each member is given the opportunity to convince their members that his/her own idea is worth adopting but only one idea can eventually be adopted and it must be a group decision. Such learning opportunities simulate the real world and provide valuable life skills lessons that could stay relevant for the students in the future.

Another common feedback is about 'free riders' in the group. For groups with students who did not contribute their allocated share of work, other members in the group felt that it was unfair for these 'free riders' to get credit for work that they did not contribute to. Again, such a scenario reflects the real world and provides some teachable moments for the students to learn to function in the future world.

Perceptions of School-based Assessment

Despite the highly defined nature of the school-based assessment of Project Work, parents, students and teachers have the perception that this approach to assessment is more subjective compared to traditional timed, pencil-and-paper external examinations, and as such are perceived to be less reliable. Being a high stakes examination, there were concerns that some schools may provide more guidance for their students such as providing them with structured templates and requiring multiple submissions of draft work. These perceptions led to questions about the rigour of the quality assurance process. Another reaction to school-based assessment was that teachers perceived their workload to have increased as it puts the onus of assessing

student performance on them compared to other subjects which are externally assessed.

REASONS FOR THE RESPONSE

High Stakes Examination

One underlying reason for the concerns over Project Work is the high stakes nature and accountability purpose of the national examination which has resulted in fierce competition amongst students and schools. The prevailing culture of the Singapore society places strong emphasis on academic excellence and parents want their children to achieve good grades in the national examinations. Besides parental pressures, student achievement in national examinations is still a key performance indicator for schools and teachers even though public ranking of schools based on academic results is now a thing of the past. There is therefore immense accountability pressure on schools and students to produce good results.

Dual Roles of Teacher

Another key reason for stakeholders' lack of confidence in the school-based coursework assessment of Project Work is the dual and somewhat conflicting roles of teachers as facilitator and assessor. On the one hand, the Project Work teacher, wearing the hat of facilitator, is expected to provide formative feedback to guide students along in their generation of ideas and writing of reports, and check that their projects are manageable and on course. Teachers might, in their zealously to help their students do well, go overboard and end up doing much of the thinking for their students. Some students might feel compelled to submit multiple drafts of their written work to their teachers for comments in order to achieve a 'perfect' version for the examination. Some teachers might also overly prepare their students for the Oral Presentation (Bryer, 2006).

On the other hand, wearing the hat of an assessor, the Project Work teacher has to draw conclusions and make a summative judgement about their students' achievement based on evidence of work submitted at the end of the course. In making a fair assessment of their student's achievement, the teachers have to take into account the degree of guidance given to each student. The reliability of school-based coursework assessment will be an issue if there are stark differences across classes and schools due to strong teacher effect.

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Singapore's move to adopt school-based coursework assessment for the GCE A-Level Project Work examination is grounded on the consideration of construct validity. It is in alignment with the resurgence of interests in assessment *for* learning defined as "the process of seeking and interpreting

evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there” (ARG, 2002).

The international assessment scene in recent years is evolving towards balancing assessment *of* learning (summative assessment) for progression and accountability purposes, with assessment *for* learning (also known as formative assessment) which has the power to motivate and improve student learning (Stiggins, 2008). Stiggins recognizes the power of assessment *for* learning and advocates a balanced assessment system that provides rich descriptions of student performance beyond single scores or grades. In his view, assessment must be seen as an instructional tool for use while learning is occurring in the classroom, and as an accountability tool to determine if learning has occurred.

In Singapore’s journey towards a balanced assessment system, there are some key challenges that will have to be addressed.

Tradeoff between Validity and Reliability

The findings of a local internal study suggest that assessment practices in the classrooms are strongly shaped by national examinations which are high stakes and largely for summative purposes. Given that such characteristics of national examinations are here to stay, moving teachers towards assessment *for* learning will be an uphill task. Hence, situating school-based coursework assessment in national examinations will be a more effective way to engender wider adoption of assessment *for* learning practices in the classrooms. However, this may mean accepting some degree of tradeoff between validity and reliability of school-based coursework assessment. In response to this, Wiliam (1992) has proposed useful concepts of disclosure (‘the extent to which an assessment produces evidence of attainment from an individual in an area being assessed’) and fidelity (‘the extent to which evidence of attainment that has been disclosed is recorded faithfully’) as alternative ways of thinking about reliability in relation to formative assessment (see Stobart, 2006).

Role Conflict

Introducing school-based coursework assessment in national examinations poses a key challenge – the dual and conflicting roles of the teacher. Black (1998) noted that “in so far as teachers have to be involved in both formative and summative assessment, they are bound to experience some tension between their two roles”. The implication is that assessment *of* learning does not align well with assessment *for* learning in the examination of the same subject. The response of stakeholders towards Project Work seems to bear this out as the assessment seeks to serve both formative and summative purposes. Black (1998) said that one way out of the dilemma posed is to separate the two functions entirely on the theoretical grounds that separate

purposes require separate instruments and procedures. Perhaps there might be greater acceptance of school-based coursework assessment in national examinations if formative assessment and summative assessment are kept separate.

Mindset of Stakeholders

Parents, students and teachers in Singapore are still very accustomed to the traditional examination system which relies on one-off, time-based assessment and external marking. The challenge is to change stakeholders' mindset about the features of national examinations by helping them understand how school-based coursework assessment if carried out effectively, can motivate learning, improve student performance and raise achievement standards. This will involve greater publicity and better communications with the parents, students and teachers to enlighten them on the rationale and value of school-based coursework assessment. In addition, professional development will be required to help teachers understand the principles of assessment *of* and *for* learning, and how to translate them into good classroom practices. Teachers should also explain to students the meaningfulness and authenticity of learning through coursework that requires them to be active and independent learners, and clarify with them the assessment process and desired achievement outcomes.

Assessment Competency

Another challenge with introducing school-based coursework assessment is building the capacity and competency of teachers to carry out the assessment in the classroom effectively and consistently. If the assessment is for summative purpose, they must be able to interpret the assessment criteria correctly and apply them consistently so that the results are reliable. Teachers must understand their role as a judge of summative assessment and not go overboard in their teaching and guidance. The challenge is in spelling out clear and comprehensive guidelines for teacher supervision and guidance that will help teachers delineate their roles clearly. Teachers who serve as internal moderators of school-based assessment must also have a clear understanding of what constitutes 'moderation' and be familiar with their role in bringing the differences of teacher judgements within their schools in line with the national standards.

If the assessment is for formative purpose, the teachers must have thorough understanding of how to engage and interact with students in the classroom, know to how to question skillfully, and when to intervene and regulate learning in such a way that students learn to improve their work on their own. They must know how to observe learning, analyse and interpret evidence of learning, and give descriptive feedback to students on what they need to do to improve their learning. In other words, grounding on sound knowledge of assessment is a pre-requisite for the successful implementation of school-based assessment.

It is therefore important to raise the level of assessment literacy and competency of all teachers by providing initial and continuing professional development to support them in developing these knowledge and skills. The integrity of school-based assessment can then be preserved, and stakeholders will have greater acceptance of school-based assessment and have greater confidence in the fairness and reliability of the high stakes national examinations.

CONCLUSION

On the grounds of construct validity, school-based coursework assessment can provide students with a meaningful and authentic learning experience. School-based coursework assessment, if carried out effectively, can support assessment *for* learning though some degree of tradeoff between validity and reliability of assessment, and reconceptualisation of reliability may have to be recognized. For school-based coursework assessment to be introduced on a wider scale in Singapore, it has to be situated in national examinations as assessment practices in the classrooms here are driven by high stakes examinations. The key challenges to reckon with are the dual roles of the teacher as facilitator and assessor, mindset of stakeholders and teachers' assessment competency. Measures to deal with these challenges include keeping formative and summative assessment separate in the examination of a subject, improve communications with stakeholders about the rationale and value of school-based assessment and professional development to raise the assessment competency of teachers.

The introduction of school-based coursework assessment in high stakes national examinations has been a valuable learning journey for Singapore. It is hoped that in the longer term, with continuing professional discourse and training of teachers, and greater appreciation of the merits and validity of school-based coursework assessment, Singapore can evolve towards a more balanced assessment system.

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