



Ministry of Education
SINGAPORE

Assessment in Singapore:

Assessing creativity, critical thinking and other skills for innovation

Presentation at OECD-CCE-MOE “Educating for Innovation” Workshop

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Assessment Philosophy

- Contains three key messages:

Assessment is integral to the learning process

Assessment begins with clarity of purpose

Assessment should gather information to inform practice



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The 21st Century Competencies (21CC) Framework



Project Work (PW)

- PW is a learning experience which aims to provide students with the opportunity to **synthesize knowledge** from various areas of learning, and **critically and creatively apply it to real-life situations**.
- This process, which enhances students' knowledge and enables them to acquire skills like **collaboration**, **communication** and **independent learning**, prepares them for lifelong learning and the challenges ahead.

Project Work (PW)

- Primary & Secondary schools free to set their own project tasks
- Approach: Problem-Based Learning, Creative Problem Solving or other methods
- E.g. Identify a specific problem faced by the community in which the school is situated, research the problem, generate possible solutions
- PW results count



Project Work (PW)

Domains

Learning Outcomes

Knowledge Application

- Search for and access information from various sources (print, electronic, etc)
- Analyse and evaluate research material
- Apply and transfer knowledge and skills learnt across disciplines to authentic situation
- Generate ideas

Collaboration

- Collaborate with others

Communication

- Communicate ideas clearly and effectively

Independent Learning

- Monitor own learning
- Demonstrate a positive and responsible attitude towards learning and work



Performance Tasks

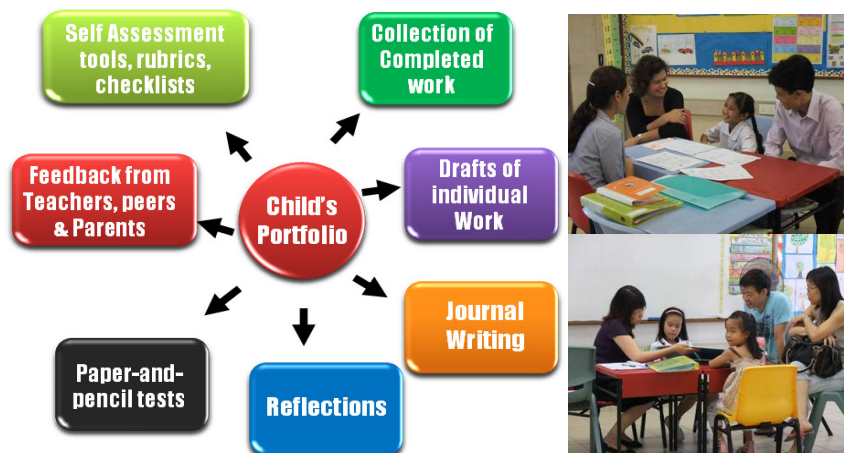
- Important part of how students carry out project work in some schools
- Individual subjects may also use performance tasks to develop and assess students' critical and inventive thinking skills



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Holistic Assessment in Primary Schools



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Standards and Benchmarks for the Emerging 21st Century Competencies (as at 29 Apr 2011)
Critical and Inventive Thinking

Learning Outcome Generates novel ideas; exercises sound reasoning and reflective thinking to make good decisions; and manages complexities and ambiguities.

DRAFT

Standards	Benchmarks				
	By end of P3	By end of P6	By end of S2	By end of S4/S5	By end of JC2/PU3
CIT 4 Explores possibilities and generates ideas	1.1a The student is able to generate ideas to respond to an issue/ challenge.	1.1b The student is able to generate ideas and explore different pathways to respond to an issue/ challenge.	1.1c The student is able to generate ideas and explore different pathways that are appropriate for responding to an issue/ challenge.	1.1d The student is able to generate ideas and explore different pathways that lead to solutions.	
CIT 2 Exercises sound reasoning and decision making	2.1a The student is able to explain his/ her reasoning and decisions.	2.1b The student is able to use evidence to explain his/ her reasoning and decisions.	2.1c The student is able to use evidence and adopt different viewpoints to explain his/ her reasoning and decisions.	2.1d The student is able to use evidence and adopt different viewpoints to explain his/ her reasoning and decisions, having considered the implications of the relationship among different viewpoints.	
	2.2a The student is able to recount relevant experiences which he/ she has learnt from.	2.2b The student is able to reflect on his/ her thoughts, attitudes, behaviour and actions during the learning experiences and determine the modifications required.		2.2d The student is able to suspend judgement, reassess conclusions and consider alternatives to refine his/ her thoughts, attitudes, behaviour and actions.	
CIT 3 Manages complexities and ambiguities	3.1a The student is able to identify the expectations of the task/ role and stay focused on them.	3.1b The student is able to identify essential elements of multiple task/ roles, stay focused on them and persevere when he/ she encounters difficulties and unexpected challenges.		3.1d The student is able to identify essential elements of complex tasks, stay focused on them, take on diverse roles and persevere when they encounter difficulties and unexpected challenges.	
		3.2b The student is able to accept different perspectives, solutions and/ or methods, even in the face of uncertainty.		3.2d The student is able to manage uncertainty and adapt to diverse demands and challenges in new and unfamiliar contexts.	

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Standards & Benchmarks for 21C Competencies

- The Standards are aspirational statements that define what the students should know and be able to do
- The Benchmarks further clarify and specify the Standards, indicating developmentally appropriate targets for each stage – P3 and P6, S2 and S4/5, and JC2/PU3
- These provide a common point of reference for all teachers to plan, teach, and assess 21C competencies
 – Also a guide for systemic evaluation

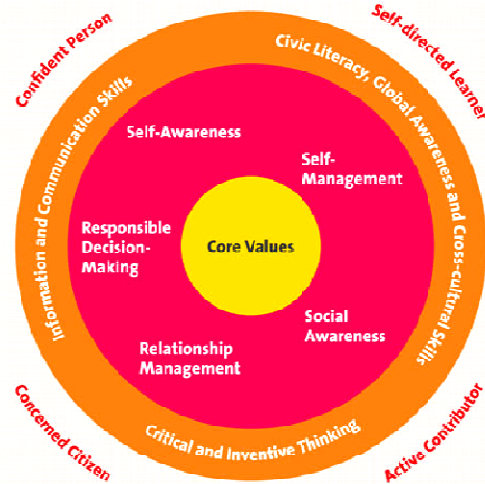


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The 21st Century Competencies (21CC) Framework



National Examination System

Singapore Examinations and Assessment Board (SEAB)

End of Grade 6	End of Grade 10			End of Grade 12
PSLE	GCE N(T)-Level	GCE N(A)-Level	GCE O-Level	GCE A-Level

National exams

- Designed in alignment with objectives of national curriculum
- Used for emplacement of students in next stage of their education
- Used to maintain standards and for benchmarking purposes

National Examination System – Revision for Greater Emphasis on Thinking Skills

- Thinking skills incorporated in subject syllabuses:
 - remembering, comparing and contrasting, classifying and categorising, inferring and predicting, analysing, interpreting, generating ideas, drawing conclusions, distinguishing between fact, opinion and judgement, evaluating, synthesising, making decisions, and solving problems
- MOE's increasing control over the 'O' and 'A' level examinations
- Examination format revised to factor in more thinking questions



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National Examination System – Different modes to assess range of skills

Variety of formats, e.g.:

- Multiple-choice questions
 - Structured questions
 - Open-ended questions
- Source-based questions
- Unseen text questions
 - Coursework
- Oral and listening



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Assessing Thinking Skills through National Examinations (examples)

A. Social Studies

Source Based Questions:

- Draw inferences
- Analyse and evaluate evidence
- Comparing viewpoints
- Distinguishing between facts, opinion and judgement
- Drawing conclusions based on reasoned consideration of evidence and arguments
- Recognise values and detect bias

Structured Essay Questions:

- Make judgements, recommendations and decisions



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Assessing Thinking Skills through National Examinations (examples)

B. Sciences

• Assessment objectives include:

- Applying knowledge with understanding
- Handling information and solving problems
- Level of experimental skills and investigations

• School-Based Science Practical Assessment (SPA)

- Assesses skills of performing and observing, analysing and planning for experiments



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Assessing Thinking Skills through National Examinations (examples)

C. Art

Coursework component

- Leveraging critical and creative thinking skills in the production of a finished art piece
- Thinking skills developed and assessed through the preparatory, exploratory and production phases
- Students need to decide on appropriate media and techniques to express their artistic intentions
- Preparatory studies submitted for evaluation together with final work



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Assessing Thinking Skills through National Examinations (examples)

D. Music

Coursework component

- Requires students to create music with a given text as stimulus
- Assessed on the quality and inventiveness of their musical ideas in response to the meaning of the text

E. Design & Technology

Coursework component

- Design Project where students identify design opportunity based on a given theme
- Work on their design concepts to product the artefact



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CRITERIA FOR THE ASSESSMENT OF PAPER 2 THE DESIGN PROJECT [Total 140 marks]					
Criteria	Max Mks	Level 1	Level 2	Level 3	Level 4
Part A – The Design Journal [60 marks]					
Planning and Monitoring	10	1–2 Need ongoing guidance to plan and ensure progress in work. Plan shows broad stages and is superficial.	3–5 Considerable guidance needed to plan and monitor progress in work. Plan shows broad stages with some details.	6–8 Some guidance needed to prepare a plan showing timed main stages and details that allows for monitoring of work progress.	9–10 Self-initiated plan that shows detailed realistic timed stages with time allocation for ongoing evaluation work and monitoring of work in progress.
Research	20	1–5 No or little use of information gathered for decision making.	6–10 Some research with relevant information used for decision making.	11–15 Adequate research on main aspects of design project for decision making.	16–20 Thorough research, discriminating in selection of information and its use to support decision making.
Idea Conceptualisation and Development	30	1–7 Little evidence of development of concept. <i>[Concept based on existing idea. No change in idea.]</i>	8–15 Aspects of concept explored with some evidence of refinement. <i>[Decisions made. Process not evident]</i>	16–23 Concept developed in some aspects key to the need identified through doodles, annotated sketches and mock ups via on-going evaluation.	24–30 Good concept thoroughly and thoughtfully developed in functionality, aesthetics, ergonomics, materials, production methods etc. through doodles, annotated sketches and mock ups via on-going evaluation.
Part B – Final Presentation: Presentation Boards and Artefact [80 marks]					
Need Definition, Design Brief and Specification	10	1–2 Unclear or general information on need, design brief and specifications.	3–5 A statement of need identified, design brief and some relevant factors established in response to the theme.	6–8 Clear definition of need identified, design brief and important factors established in response to the theme.	9–10 Clear definition of critical need identified, design brief and important factors established in response to the theme.
Presentation Drawing	15	1–3 Lacking on both quality and detail.	4–7 Competent graphic presentation but lacking detail.	8–11 Competent graphic presentation with sufficient detail on design solution.	12–15 Competent graphic presentation with all detail showing contextual use of design solution.
Working Drawing	15	1–3 Working drawing with materials list showing no or little details.	4–7 Working drawing with materials list showing main requirements.	8–11 Detailed working drawing with materials list.	12–15 Detailed working drawing with materials list. Drawing standards adhered to.
Artefact	30	1–7 Limited skill control with major inaccuracy and blemishes.	8–15 Average skill control with minor inaccuracy and blemishes.	16–23 Good skill control with good accuracy and some blemishes.	24–30 Excellent skill control with good accuracy and little blemishes.
Quality of Proposed Design Solution	10	1–2 Similar to existing idea with little attempt to value add.	3–5 A plausible solution.	6–8 An effective solution.	9–10 A desirable solution that simplifies or introduces new way of doing things and is likely to sustain user interest.

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National Examination System

- Examination format revised to factor in more thinking questions
- Influences what is taught in classrooms and how
- But there are limitations

School-based Assessments

- Flexibility to cover a broader range of competencies

Thank you

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