

DEVELOPING THE TOTAL LEARNER: THE DUNMAN HIGH SCHOOL EXPERIENCE

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ABSTRACT

Educators have always been interested in crafting activities that result in greater learner understanding. Inspired by Howard Gardner's views on authentic learning that "people do learn and represent knowledge in different ways" (Multiple Intelligences: The Theory in Practice), the Inter-Disciplinary Multiple Intelligences (IDMI) project was introduced schoolwide at Dunman High School (DHS) in 2006. This is in line with the school objective of turning out life-long learners who are both critical and creative thinkers. The authors used a combination of three approaches: Understanding by Design (McTighe & Wiggins), Multiple Intelligences (Gardner) and Problem-based Learning (Barrows et al) to design a performance task-based curriculum unit based on the theme "Sustainability". To enhance student understanding and promote active learning, the authors adopted "backward design" to plan the unit and designed learning activities that focus on the students' varied intelligences. In 2007, the students explored the viability of ageing malls in Singapore. In 2008, students embarked on a learning trip to Szechuan (China) and explored the idea of sustainability in four areas: urban development, tea and food culture and

indigenous groups. Students presented their findings at a formal presentation and the assessment took into account the nature and quality of their understanding of their performance tasks.

INTRODUCTION / RATIONALE:

Dunman High School (DHS) introduced its Integrated Programme in 2004. Students now follow a 6-year programme and do not take the GCE “O” Levels Examination. We can now plan a curriculum that does not have as its final outcome the national examinations but one that can have the learner as the outcome and which can take into account the varied needs and interests of our learners so that learning is maximized and in tandem with our school mission and goals.

The idea of developing a total learner also stems from the authors’ interest and study of key educational literature of how learners learn and effective curriculum and assessment designed to ensure real understanding and, consequently, learning takes place.

HOW LEARNERS LEARN

In Howard Gardner’s seminal work, *Frames of Mind: The Theory of Multiple Intelligences*,

Gardner challenged traditional views of intelligence and argued for the existence of eight discrete “intelligences” in human beings. These eight intelligences can be combined in different ways to form an intellectual repertoire of different intelligences. According to Gardner, the eight intelligences are: verbal linguistic, logical-mathematical, spatial-visual, musical, bodily-kinesthetic, interpersonal, intrapersonal and naturalistic. “People do learn, represent and utilize knowledge in many different ways” (Gardner, 1991 pp 12). He also added that some

intelligences are more “dominant” and a learner learns and retains information better when he uses his dominant intelligences.

HOW SHOULD SCHOOLS TEACH FOR UNDERSTANDING?

The answer, according to leading educators lies in the implementation of a broad and deep school curriculum. The curriculum should be broad. For Gardner, a broad curriculum focuses on **the teaching of disciplines**, so that students learn enough about the existing bodies of knowledge in for example, mathematics, the sciences, literature, etc, to then *build upon* and contribute to the world of knowledge. The curriculum must also be deep enough in the sense that the learner understands what is being taught; there is a real transfer of knowledge learnt.

The idea of a strong relationship between dominant intelligences and learning has key implications on how schools should teach for understanding. This idea is explored by Gardner in his book *The Unschooled Mind: How Children Think and How Schools Should Teach*. Gardner emphasized that to ensure students understand in a learning process, the teacher’s role is not just to cover the syllabus, but to teach with the students’ intelligences in mind and to craft learning activities that cater to every learner’s dominant intelligences. There must be a platform for children to uncover the learning. Otherwise, Gardner warned, many people remain “unschooled”, akin to using the mind of a pre-schooler to examine any intellectual

question. Unless schools teach for understanding, students continue to learn based on their initial misconceptions, stereotypes and “scripts”.

The idea of a broad and deep curriculum should not be viewed as one that is just chock full of activities and /or content. Teaching must always be centred on student understanding and this idea is covered extensively by Grant Wiggins & Jay McTighe (1998) in their introductory work *Understanding by Design*. They advised against the familiar coverage and activity-based approaches to curriculum design which do not, in any way, result in any real understanding.

Instead, they advocate a results-based curriculum which will ensure deep student understanding and proficiency. This proficiency is akin to what Bloom (1956) noted in his Taxonomy of Intelligences in discussing application and synthesis. “To understand is to be able to apply knowledge and skill effectively in realistic tasks and settings” (Wiggins & McTighe 2005, p. 7). In essence, real understanding points towards some kind of “performance ability”.

DESIGN FRAMEWORK

Curriculum design

The design of the DHS IDMI Project Week utilizes the Understanding by Design (UbD) framework (Wiggins & McTighe, 1997). This method of curriculum design is targeted at achieving deeper understanding among students. It adopts a “backward design”. Stage One

involves identifying enduring understandings which we would like students to take away at the end of the learning experience. Stage Two involves determining acceptable evidence, such as a performance task or other assignments or forms of feedback about the learning that has taken place. Stage Three is to plan the learning experiences and instruction.

Performance tasks and rubrics are the preferred method of assessment. Teachers craft the performance tasks and decide on rubrics that will best assess the students. The tasks are made authentic so that students will find the learning useful and meaningful.

STAGE 1: GOALS & UNDERSTANDINGS

Established Goals	G
<ul style="list-style-type: none"> • Student will be able to develop their potential to the fullest in order to enable them to Lead, to Care and to Serve. <i>(School mission)</i> • Student will gain experience as an active citizen with global outlook through understanding, observing and exploring the unique Chinese culture diversity in Sichuan. <i>(School vision and KSP/BSP action plan)</i> • Student will develop attitudes, values and build character for self directed lifelong learning. <i>(Strategic Thrust (ST)2 and KSP action plan)</i> • Student will develop creative and critical thinking skills from working on the interdisciplinary performance tasks designed by collaborating teachers of different disciplines. <i>(KSP and BSP action plan)</i> • Students will learn and use inquiry-based learning, creative and critical thinking skills through enriching learning beyond the classroom • Student will use their Multiple Intelligences to approach and investigate problem- based scenario. • Student will take on the role of stakeholders and examine the issues from the problem-based scenario from a distinct and, by nature, biased perspective. <i>(Robin Fogarty 1997, Problem based learning & other curriculum models, 8-9)</i> • Student will experience differentiated learning by engaging in authentic performance tasks designed to suit their learning potential. 	

Understandings :	Essential Questions:
<p style="text-align: center;">U</p> <p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> • The rapid development of a society has multiple effects on its traditional culture, society and environment. • Changes are unavoidable in a society and people need to adapt to the changes by finding the best solutions to meet the challenges they face. • Sustainability is essential to enhance urban development. • Sustainable urban development requires the efficient utilization and management of resources and enhancing people's attitude. • People face challenges in retaining their traditional cultures and values in the process of adapting to changes in a society. • A strong foundation and loyalty to one's culture is essential to the conservation of traditional culture. • Traditional businesses face challenges and need to adapt in order to retain its original culture in the face of modernization and exposure to western culture. • The introduction of new ideas or items into a culture-rich society requires understanding and adaptation into the original culture/society. 	<p style="text-align: center;">Q</p> <ul style="list-style-type: none"> • What are the effects of rapid development of a society? How do you know if the effects influence the traditional cultures of the society? • What is sustainability? Why is it important to have sustainability in a society when changes are unavoidable? • How do people in a society find solutions to the problems faced when they try to adapt to the changes? • How can we use the eco-city indicators to measure the potential of a city in achieving the status of a 21st century eco-city? • How do we assess sustainability? How do the different units of the society sustain its original form? • Why is sustainability required to enhance urban development? • Are the traditional and unique cultures of the minority groups affected by tourism? • What are the challenges faced by the minority groups when they are exposed to other cultures? • What are the changes to the culture of the minority groups when they adapt to the changes faced? How do they sustain their own culture while adapting to the changes? • How do values guide the people's attitude in safe-guarding their traditional culture? • How do traditional businesses adapt to the challenges of modernization and the introduction of western culture? • How could new ideas be introduced into a society which is culture-rich? • How do the locals react when new ideas are introduced into their society? • What can be done to influence the people of the culture-rich society to

		accept new ideas from foreign land?	
		<ul style="list-style-type: none"> • How does adaption help in the introduction of new ideas into a culture-rich society? 	
Students will know...	K	Students will be able to...	S
<ul style="list-style-type: none"> • Key terms- sustainability & adaptation • Positive and negative effects of rapid development of a society. • The indicators for achieving an Eco-city. • Factors influencing the sustainability of the indigenous (unique) culture. • General features of a unique culture. • General features of a culture-rich society 		<ul style="list-style-type: none"> • Design meaningful survey questions to assess the attitude of the people towards the issues at hand. • Use creative and critical thinking skills to approach and investigate problem based scenarios. • Collate and analyze data collected from the surveys • Use collated data to explain present situations. • Suggest new ideas to improve the present situation. • Develop attitudes and values which build character for self-directed lifelong learning. 	

In stage 1 UbD, we considered our goals, examined established content standards and reviewed curriculum expectations. We then determined what enduring understanding we wanted the students to have after completing the project. We based the goals on our school’s mission, vision, core values and strategic thrusts. We also aligned our project goals with the Knowledge Skills Programme (KSP) and Bicultural Studies Programme (BSP).

Our School Mission aims to develop our students’ potential to the fullest to enable them to care, to serve and to lead. In this project, we aimed to develop the BSP Scholars’ potential by exposing them to real life scenario in Sichuan through Problem-based Learning (PBL) so that they will be able to learn more about the socio-cultural aspects of Sichuan. This is aligned to the KSP and BSP action plans, which are derived from the school mission, i.e., *Students will gain*

experience as an active citizen with global outlook through understanding, observing and exploring the unique cultural diversity in Sichuan. The PBL tasks will enable them to be exposed to the real problems facing the different areas in Sichuan society. They will learn the values of empathy and service, thus nurturing them into leaders who are able to care and to serve.

One of our core values, and also Strategic Thrust 2, is to promote holistic education, with character development and values inculcation as our goals. Thus, our Sichuan IDMI project aims to provide students with an all rounded education experience, in which not only will they be able to experience the unique culture of a culture-rich society, they will also be able to learn core values like loyalty, courage, trustworthiness in the process of completing the project. They will be able to embark on real on site learning to work on real life scenarios beyond the classrooms. This is in line with our Strategic Thrust 2 and KSP action plan: *Students will develop attitudes, values and build character for self directed lifelong learning.*

As part of our efforts to promote holistic education, the Sichuan IDMI team of teachers used various strategies. As mentioned earlier, PBL is one of the main strategies to expose the students to real life situations. The tasks are interdisciplinary in nature (Geography and Chinese) and the learning activities are designed to promote active learning by focusing on the students' multiple intelligences. These activities also aim to develop creative and critical thinking skills. Exposing students to real life scenarios will enable them to take on the roles of stakeholders and examine the problem based scenarios from a distinct and biased perspective. *(Robin Fogarty 1997, 8-9)*

We selected 4 areas to design our performance tasks: eco-city, tea culture, food culture and the minority culture. Compared to the Year 3 IDMI project performance tasks in 2007, the Sichuan

IDMI project is pitched at a higher level and thus targeted at students of higher intellectual abilities. The tasks are thus designed with less scaffolding to further enhance the students' creative and critical thinking skills.

STAGE 2: ASSESSMENT EVIDENCE

PBL Performance Tasks:

2007 Performance Task: Local IDMI Project Week

Retail Trade in Singapore

You have been assigned to explore the idea of sustainability of retail trade in a shopping mall of your choice.

Your presentation should include:

- Present situation: How has your mall managed to sustain itself all these years? Any effective retail measures and plans (if any) that have already been implemented by the managing corporation to revitalize their shopping mall?
- Evaluation: How successful are these measures?
- Improvement: Can anything else be done? – how your chosen mall can reinvent and differentiate itself to stay viable. Your committee should identify some measures. Be creative but measures must be relevant and feasible. Your list can include any measures that have been suggested by shoppers and retailers that you find useful and appropriate.
- Future: the likely future of your chosen mall and that of ageing shopping malls in general and implications of this on the retail scene of Singapore.

2008 Performance Tasks: Overseas IDMI Project Week in Sichuan

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- Eco-city- You have been assigned to study the sustainability of urban development in Chengdu. The focus will be on Chengdu's potential as a future eco-city.
- Introduction of Singapore food to Sichuan- You have been assigned to study the sustainability of Sichuan traditional food culture against the invasion of modern food culture.
- Tea culture- You have been assigned to study the sustainability of the tea culture in Sichuan. The focus will be on the survival of traditional tea houses in the face of competition, especially from well-known international brands like StarBucks.
- Sustainability of the minority groups culture- You have been assigned to study the sustainability of the cultures of the minority groups in Sichuan. The focus will be on the sustainability of their indigenous culture in the face of changes like tourism.

Other Evidence:

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- Skill check (Survey questions)- Design suitable survey questions for gathering of information
- 30 min oral presentation of the project findings including a Q & A session- assessment by teacher assessors
- Self assessment- Reflections/journals on their experience and learning in Sichuan

TASK DESIGN

McTighe and Wiggins emphasized the importance of “*teachers and curriculum planners need(ing) to first ‘think like an assessor’ before designing a curriculum*” (McTighe & Wiggins, p. 18). In Stage 2 of the UbD framework, in order to determine whether students have achieved the desired results through assessment evidence, we designed performance tasks to obtain evidence of this understanding.

Performance learning requires depth of knowledge and deep understanding that is evident through the performance itself. As Gardner (1983) suggests, in any holistic learning experience, the intelligences seldom work in isolation. For example, students will use their logical/mathematical intelligence to think through a situation; their visual spatial intelligence to visualize it; their interpersonal intelligence to empathize with people; their intrapersonal intelligence to reflect on a similar personal situation; and their bodily kinesthetic intelligence to learn through an experiential learning process; musical/rhythmic and verbal/linguistic intelligences will be used when students use music to describe the mood of the problem and discuss, write, listen, and read about related issue. In addition, students use their naturalist intelligence to organize objects in their natural surroundings.

We used PBL as our design model. PBL is a curriculum model that uses an authentic problem as the focus of learning. It begins with an open ended problem which will allow students to learn by immersing themselves in the actual learning task. From this initial structure, students will use their multiple intelligences (Gardner 1983) through discussion and research to determine the real issue at hand. They then work to define the problem, gather known facts, generate questions, hypothesize, rephrase the problem and eventually suggest solution and justify recommendation. In essence, the student determines the path, the investigation to follow.

Using the UbD framework as a guide, we derived our essential questions from the key essential understandings of sustainability and adaptation to guide us in designing the performance tasks. We decided to look into 4 areas of the Sichuan society, namely: eco-city, tea culture, food culture and the culture of the minority (indigenous) groups.

In addition, we used **GRASPS** to guide us when we constructed the performance tasks. We first considered the **G**oal of our tasks. Then we decided on the **R**oles the students will take in the PBL authentic performance tasks. Next, we decided on the target **A**udience and the **S**ituation we want to put the students into. We then decided on the final **P**roduct and used the five facets of understanding to set the **S**tandard and criteria for assessment.

Students are assigned their IDMI groupings according to their respective MI profiles. In this way, we ensure the nature of the tasks is compatible with the needs, interest and learning styles of each student.

RUBRICS DESIGN

According to Wiggins and McTighe (2005), real understanding is multidimensional and complicated. There are different types of understanding and methods of understanding. Wiggins and McTighe (2005) developed a multi-faceted view of what constitutes a mature understanding and this includes the following facets: explanation, interpretation, application, perspective and empathy and self knowledge. These facets are manifestations of a student's ability to transfer knowledge: to apply what has been learnt.

In our assessment, we used 2 sets of rubrics. The first set of rubrics is an analytical rubrics based on the facets of understanding to assess the students when they are in the process of carrying out the performance task. The second rubric is a holistic rubric to evaluate students' understanding as well as their performance. This rubric is intended to provide an overall impression of the quality and performance levels in the students' work. This is used during their presentation of the project.