DESIGNING QUALITY AUTHENTIC ASSESSMENTS

Tay Hui Yong

WITH CONTRIBUTIONS FROM PAM HOOK, BEN JENKINSON,
ERIC CHONG KING MAN AND OTHERS

Chapter 1

WHAT IS "AUTHENTICITY" IN AUTHENTIC ASSESSMENT?

1

WHAT IS "AUTHENTICITY" IN AUTHENTIC ASSESSMENT?

Introduction

This chapter intends to clarify the concept of "authentic assessments" (AA). It begins by examining it against other assessment terms. The examples will also serve to illustrate the concepts being discussed, particularly the concept of "authenticity" (to what? and to whom? and for what?) with reference to prominent writers in the field.

- As part of show-and-tell during an English language class, seven-year-old students are asked to bring their favourite fruit. They take turns to make an oral presentation in front of their classmates, describing the fruit and explaining why they love it.
- After lessons on physical properties of materials, students work in groups to create a boat with a given list of suggested materials. They will present their boat, justifying their choice of materials. They will also be required to test out their boat: to travel 1.5 m with the aid of a battery-operated fan, in the shortest time.
- At the end of a series of lessons on the four stages of statistical studies: Collection, organisation, display (pictogram, bar graph, pie chart, line graph) and interpretation of data, students conduct a survey to find out how often schoolmates eat fast food, and display results in a statistical diagram, justifying their choice.

Clarifying types versus purposes of assessments

These are examples of assessment tasks that teachers have designed (see previous page). Do you consider these examples to be one or some of the following?

- Alternative assessments?
- Performance assessments?
- Authentic assessments?

SOME WORKING DEFINITIONS

Alternative assessments
Meaningful assessments that are not "traditional" (which is typically paper-and-pen).

Performance assessments
Tasks that require learners to produce product or behaviours that directly reflect the range of knowledge and skills they have learnt.

It is understandable that teachers find these terms confusing because oftentimes, they are used interchangeably. "Alternative assessment" is a broad term to refer to assessments that differ from conventional ones which are often associated with paper-and-pen tests. As such, one type of alternative assessment in the language class is performance assessment (e.g., choral reading of a poem) especially if the conventional assessment involves a paper-and-pen essay. However, it is not to be taken for granted that the conventional is always of the paper-and-pen mode, e.g., in physical education classes where the conventional involves performance and the alternative may involve a paper-and-pen quiz. Hence, it is always helpful to define clearly at the start of the discussion what constitutes "conventional" and, hence, as a corollary, what constitutes "alternative".

For example: Until recently in Singapore, Primary 1 students (seven-year-olds) had to sit for written examinations. These paper-and-pen assessments have since been replaced with assessments like show-and-tell. Now, show-and-tell is a common assessment mode found in primary schools. So, is it considered *alternative* assessment?

Also, consider the example of portfolios and project work, which are considered alternative assessment in schools but are, in fact, common place in vocational institutions. In short, assessments are not, by default, either alternative or not but are defined by what is conventional in the particular context.

Another step towards greater clarity is to differentiate between mode (alternative, authentic, performance assessments) and purpose of assessment (formative or summative).

SOME WORKING DEFINITIONS

Summative purposes
Concerned with summing up or summarising the achievement status of a student, and is geared towards reporting at the end of a course of study especially for certification.

Formative purposes
Concerned with gathering assessment information from dialogue, demonstration and observation in ways that enhance on-going learning.

Different modes of assessments can serve either formative or summative purposes. However, because the conventional paper–and–pen test is often summative in nature, alternative assessments are often associated with formative purposes. Nonetheless, it is obvious that high–stakes examinations can serve formative purposes (e.g., when examiners give quality feedback to the candidate) and alternative assessments can be used to report on student achievement.

In short, the assessments shown on page 1 can be viewed as

- alternative if they are not part of the conventional assessments; or
- formative if the assessment information is used to enhance on–going learning.

Example 1.1

Example of how alternative assessments can serve both formative and summa–tive purposes

Subject: English language and information and communications technology
Contributed by Diana Chua May Ling
Topic: Cyber wellness
Target Group: 15–year–olds (Secondary 3)
Standards: Plan and present information and ideas for a variety of purposes

Planning and organisation
- Identify purpose and audience of speaking and representing, and set goals in the context of assigned or self-selected topics.
- Generate ideas and details appropriate to the purpose, audience, context and culture.
- Gather, evaluate, select and synthesise facts and ideas from a variety of print and/or non-print sources, appropriate to the purpose, audience, context and culture.

Presentation

- Pronounce clearly and accurately consonants, vowels, consonant clusters and vowel combinations
- Speak clearly and eloquently using the appropriate voice qualities

Task

This is an EL/ICT collaborative project that all Secondary 3 students participate in annually. The project aims to first allow students to find out for themselves through research and collaborative efforts what cyber wellness is all about, why it is important and how it can be preserved in cyberspace to ensure the safety of online users; second, apply what they have learnt in visual comprehension and construct posters to succinctly capture the essence of cyber wellness; and third, do an oral presentation of their cyber wellness posters in a succinct and convincing manner to raise awareness of the topic among their peers. This is both a summative assessment task but it is also formative through the many opportunities for peer and teacher feedback to help students improve their posters and oral presentation.

But is it AA? That is the topic of the next section.

What is "authentic assessment"?

Having discussed alternative and formative assessment, let us examine more closely the other two terms, *performance-based assessment* and *AA*. Performance assessments require the student to make a product or demonstrate some behaviour that the assessor desires to measure. Examples that teachers are familiar with are the show–and–tell or portfolios mentioned earlier. AAs can be thought of as a "more realistic subset of performance assessments" (Messick, 1994, p. 5) because they require performances that parallel those in the real world. In short, every AA is performance assessment, but not vice versa (Meyer, 1992).

In Singapore language class, it is common for students to write narrative essays. However, such a performance assessment task can become an AA as well. For example, Secondary 2 students (14-year-olds) were asked to apply their narrative writing skills to write stories for pre-school children. Prior to the writing process, the students were supported with a talk by a writer who gave them tips and they borrowed children's story books from the library as reference. The project culminated with the students reading their stories to children at kindergartens.

Contributed by Rasidah Bte Mohd Rasit

Teachers sometimes ask, "How much 'real life' does one need to put into an assessment before it is considered 'authentic'?" I suggest that rather than thinking of AA as binary (either it is authentic or it is not), it may be more fruitful to ask three questions:

1. What is "authentic" about the assessment?
2. What is it "authentic" to?
3. What is the purpose of such "authenticity"?

Generally, teachers' answers to (1) are clearer than to (2) and to (3). They cite including some real-life elements in their assessments, believing that this will make learning more meaningful for their students. However, there is little elaboration on how and why these aspects make the assessments more relevant to the child. It is thus instructive to look at what the literature has to say about questions (2) and (3). Generally, writers make references to three types of contexts for "authenticity": the working world outside school, the world of the student and the world of the discipline. I will present each of them separately, supported by examples.

"Authentic" to the working world outside school

One writer often quoted in AA literature is Wiggins. In one of his earlier articles, he argued that since schools "teach to the test", we should design tests worth teaching to. He called these "authentic tests" (1989, p. 44) that will "test those capacities and habits we think are essential, and test them in context" (p. 41). In contrast, assessments that are decontextualized are, by definition, invalid and dysfunctional (Wiggins, 1993a) because the students' success tells us little of their performance in contexts outside of school.

What Wiggins considers as authentic was revised over the years. The first version involved four criteria: work that is truly representative of performance in the field involving teaching and learning of the criteria to be used in the assessment, much greater self-assessment than in conventional testing, students presenting and publicly defending their work (1989). A few years later, he elaborated on the qualities of the assessment task (1993b, p. 229):

- Engaging, worthy problems in which students must use knowledge to fashion performances effectively and creatively. The tasks are either replicas of or analogous to the kinds of problems faced by adult citizens and consumers or professionals in the field.
- Faithful representation of the contexts facing workers in a field of study or in the real-life "tests" of adult life, including that of options, constraints, and access to resources.
- Non-routine and multi-stage tasks that require a repertoire of procedural knowledge and planning skills.
- Tasks that require students to produce a quality product and/or performance.

Wiggins' rationale for exposing students to the real-life contexts faced by adults is to introduce the students to criterion performances that they will face later in life. So, if we expect working adults to communicate and collaborate, then they should be expected to exhibit these skills at school. It is also argued that since assessments closely simulate real life applications, students will be better able to transfer the learning from the classroom to beyond the school walls. At the very least, assessors can have greater confidence in inferring the students' present competency because it is revealed directly through their performance. For example, in contrast to the various AAs described in the following pages, a timed written examination with several unconnected essay questions will yield less valid inferences about how the learners harness their knowledge and skills to negotiate a complex task.

These examples show how teachers designed assessments to relate to the real–life contexts of the working world.

Example 1.2

Subject: Maths
Contributed by Jeffrey Lee Tze Wei
Target Group: 10-year-olds (Primary 4)
Topic: Area and perimeter

- Determine one dimension of a rectangle given the other dimension and its area/perimeter.
- Determine the length of one side of a square given its area/perimeter.
- Determine the area and perimeter of figures made up of rectangles and squares.

Task

Instructions to students: As a building contractor, you have been asked by your client, Fresh Meat Farm, for a plan to build fences around the farm to hold the chickens. Fresh Meat Farm has stated the following requirements:

- The length of each piece of fence is 1 m.
- The cost of each piece of fence is $29.
- The fences are to be built to cover an area of exactly 36 m^2.

Work as a group of four to propose to Fresh Meat Farm the best solution to the problem.

Example 1.3

Subject: Food and consumer education
Target Group: 13 years old (Secondary 1)
Contributed by Jocelyn Tay
Topic: Food management – methods of cooking and culinary skills

- Compare and contrast the effects of using different methods of cooking on food properties (taste, texture, appearance).
- Distinguish, compare and analyse the differences in the results of the sensory properties in food products:
  - Appearance (colour, size, crumb, shape).
  - Flavour (salty, sweet, bitter, acidic, sour).
  - Texture (grainy, smooth).

Task

Instructions to students: You have recently started your own muffin shop and one of your customers gave feedback that your muffins have little dome (i.e. the top is flat). You decide to find out the cause by investigating the effect of using different types of flour (plain and self-raising flour) on muffins in terms of its appeal (e.g., height, texture, internal appearance).

In this project work, you are required to do planning, research, problem-solving and evaluation in order to meet the requirements. It is designed to allow you to show your ability to apply your knowledge and skills in food management – methods of cooking and culinary skills.

Wiggins' accent on posing complex performance tasks in realistic settings or close simulations is the definition generally quoted or elaborated on in later writing (e.g., Darling-Hammond, Ancess and Falk, 1995; Maclellan, 2004; Tanner, 2001). However, there was debate on the referent for the real-life context. Gulikers, Bastiaens and Kirschner (2004) argue that in the case of evaluating competency, the assessment should require students to demonstrate the same competencies as experts would use in a real-life situation. Authenticity is operationalised using a five-dimensional framework (5DF) in terms of these five dimensions:

- the resemblance of the task (to the complexity and ownership levels of real-life criterion situation);
- physical context;
- social context;
- assessment form (a quality product or performance that students can be asked to produce in real life);
- and criteria to the professional practice situation.

Example 1.4

This is an example of AA designed using the 5DF approach. Figure 1.1 explains how the task adheres to the approach.

Subject: Maths
Contributed by Tan Chih Yuan
Level: 16-year-olds (Secondary 4)
Topic: Optimisation

Resemblance of task to real life situation: This task requires students to apply Mathematical Modelling (MM) to use their understanding of optimization to solve a real-world problem. However, to make the task more manageable for students, some guidelines have been provided on initial research area, and consultations with teacher are available.

Physical context: Students are given substitute materials and four weeks to construct their prototype. (It is noted that design engineers working on this full-time may not have the luxury of so many days.)

Social context: Like typical company project teams, students need to work collaboratively in groups to accomplish the task.

Assessment result: The AA requires submission of both a report and prototype which is typically expected in real life.

Criteria: The elements of the MM process, which are the actual processes that engineers go through, are used as evaluation criteria.

FIGURE 1.1   How task adheres to the 5DF approach.

Relevant standards

- Apply mathematics concepts and skills to solve problems in a variety of contexts within or outside mathematics, including:
  - identifying the appropriate mathematical representations or standard models for a problem; and
  - using appropriate mathematical concepts, skills (including tools and algorithm) to solve a problem.

- Understand the nature of the mathematical modelling process, including:
  - formulating a real-world problem into a mathematical model by making suitable assumptions and simplification and identifying suitable mathematical representations;
  - applying mathematics to solve the problem;
  - interpreting the mathematical solution in the context of the problem; and
  - refining and improving the model.

Task

Instructions to students: Students work in teams to research on milk packaging in the market with the goal of designing one that is modern looking and with good cost savings. A written report on the findings and a prototype of the proposed milk packaging is expected for submission.

"Authentic" to the student's world

However, one notes that the work of Gulikers and associates revolves round a vocational institution. As such, they rightly place more emphasis on designing assessments that resemble situations that professionals starting out are confronted with in their working life. Assessments at this stage, designed to resemble the professional real world,

can be the bridge between learning in schools and working life; or, as Havnes (2008) puts it, assessments serve as *boundary objects* (p. 111) to facilitate student learning across the boundaries of education and work. In addition, the consumers of the assessment results from a tertiary institution, the prospective employers, would be concerned about the predictive validity of the assessment results. Predictive validity is the degree to which future performance can be predicted by current assessment performance (Gulikers et al., 2008). It is a reasonable argument that the closer the tertiary institution's assessment resembles professional practice, the greater the predictive validity of the assessment results. But younger students cannot, and, arguably, should not have to, deal with the authenticity of a real complex professional situation. It may be more meaningful for authenticity to be interpreted in terms of resemblance to their everyday lives. For example, these students will find comparing income tax rates across different countries harder to relate to than evaluating mobile phone plans of telcos to decide which they should personally subscribe to.

In other words, a real-life setting may be more meaningful if it offers something of personal interest or relevance to the learners (Tay, 2015). This is perhaps Dewey's message (1938, p. 77) when he argues:

> Just as the individual has to draw in memory upon his own past to understand the conditions in which he individually finds himself … students cannot be prepared to understand either problems (of present) or the best way of dealing with them without delving into their roots in the past.

This focus on the learner's prior knowledge is echoed in more contemporary writers. They propose that if learning is "an active process of mental construction and sense making" (Shepard, 2000, p. 6), then assessment should facilitate this "sense making" by engaging the learners in purposeful tasks designed to elicit their background knowledge (Wolf, Bixby, Glenn & Gardner, 1991; James & Lewis, 2012). Chapter 2 will elaborate further on this link between learning and assessment.

Example 1.5

Subject: Physics
Contributed by Traven Loh Wei Chuen
Target Group: 14-year-olds (Secondary 2)
Topic: Household electricity

- Set up circuits containing electrical sources, switches, lamps

Task

Instructions to students: Students work in groups to design and construct a table lamp based on the concepts of electricity that they have learned over the past three weeks. They are given instructions on the criteria needed for the lamp and a table lamp kit that consists of the wiring, bulbs, battery holders and switches. They will then submit their table lamps about a week after the lesson ends and the teacher will use a checklist to grade their table lamps.

Example 1.6

In another school, Secondary 4 students (16-year-olds) are encouraged to use language in real world settings by submitting letters to the local daily newspaper, *The Straits Times*, to express their views on current affairs.

Relevant standards:

- Produce a variety of texts for creative, personal, academic and functional purposes, using an appropriate register and tone
- Provide information, explain an issue/situation, and/or express and justify a point of view/proposed action, so as to persuade the reader to accept the point of view/proposed action
- Present, explain and justify the writer's position on an issue/situation or proposed action, so as to persuade the reader to accept the position/proposed action

The letter reproduced below is one example. More examples can be found at: https://nyghcti.wordpress.com/category/muse/

Nurture a generation that learns differently, bravely

In the recent Budget debate, the words "enterprise" and "innovation" were often mentioned, with regard to improving Singapore's economy. As a highly globalised country, Singapore is well equipped with opportunities and assets for start-ups and entrepreneurship. Yet, fresh entrants to the workforce do not seem to be making full use of these resources. While the cause of this seeming lack of entrepreneurship and originality may lie in prevalent "kiasu" mindsets, which have deterred many budding entrepreneurs from taking a bold leap of faith ("'Kiasu' culture is stifling originality in business: NMP"; April 6), it is my contention that deeper roots lie in our education system.

Singapore's education system receives world acclaim for its successes in standardised and international test scores. But I wonder if enough is really being done to nurture 21st century competencies and skills, such as creativity and innovation. Even though many new initiatives, such as the Applied Learning Programme, have been launched, students are still assessed primarily with summative examinations, which, in many ways, determine their next steps in life. Much as we say that we want to depart from a streaming culture, an ethos of risk aversion and a focus on paper qualifications, the structures that exist within our education system invariably reinforce "kiasuism" and a climate of risk aversion. Very few students bother leaving their comfort zones, given that the stakes are perceivably high, and this runs antithetical to the spirit of adventure required for entrepreneurship.

If we genuinely want young Singaporeans to depart from the "safe route" of studying hard, getting good grades, graduating with a degree and then securing a stable job, structures that privilege and advantage conservative learners must be relooked to allay the anxiety that comes with departing from traditional routes to success. This might,

in many ways, also change how students learn, which is a key grouse of many parents, educators and students themselves – that students are learning for the test.

We have made significant headway in assessing students holistically, for example, by assessing critical thinking and application skills, and oral presentation and communication skills. But the reality is that current assessment modes still fall short in measuring how well students deal with uncertainty and novel problems that require higher levels of critical, creative and inventive thinking.

The future is an unknown entity and the demands of tomorrow will always change. How should we prepare youth for uncertainty and flux? The key is to nurture a generation that learns differently, bravely and with a genuine sense of curiosity.

Contributed by Zhu Hongyue (Miss)

Published 23 April 2016[1]

(http://www.straitstimes.com/forum/letters-in-print/

nurture-a-generation-that-learns-differently-bravely)

"Authentic" to the discipline

Like Wiggins, Archibald and Newmann (1988) were critical of the type of learning often found in school, which they described as "trivial, meaningless, and contrived by students and adult authorities" and proposed that achievement should be measured through tasks that are "worthwhile, significant, and meaningful – in short, *authentic*" (p. 1). But unlike Wiggins, they considered it insufficient for "authenticity" to be simple participation in real world experiences. Instead, "If intellectual work is to be authentic, it must be based on rigorous thinking and grounded in substantive knowledge of the disciplines" (Newmann, 2000, p. 2). After all, each discipline has its own way of viewing and thinking about the world (McArthur, 2012). Thus, for students to experience the discipline (or subject) in an authentic way, they need to be inducted into the behaviour and discourse found in that discipline (McConachie et al., 2006).

This approach of taking reference not from the real-world dimension but from the perspective of the discipline, offers some advantages. At the very least, it guards against wasting resources on simulating a superficial "real world" setting not relevant to the construct, for example, asking students to dress up like lawyers to debate historical perspectives.

Examples of AA that simulate the behaviour of experts in the field are discussed below.

Example 1.7

Subject: Geography
Contributed by Jacqueline Lee Wui Lin

Level: 15-year-olds (Secondary 3)
Topic: Coastal environments

Relevant standards

- Explain how coastal areas can be managed in a sustainable manner.
- Assess the impact of tourism on an area and explain how tourism can be made sustainable.

Task: A geographical inquiry performance task that involves field investigation at real world sites

Instructions to students: In the first three quarters of 2014, international visitor arrivals to Singapore dipped 4% while tourism receipts rose by 0.1% to $17.8 billion (Singapore Tourism Board, 2014). To retain Singapore's economic competitiveness amidst regional competition, there is a need to enhance Singapore's tourist attractions to ensure sustained growth in the tourism sector. You are a group of researchers tasked to study the feasibility of building a tourist resort at East Coast Park. You will be required to study the influence of coastal processes and assess the suitability of the site for a coastal resort.

Example 1.8

Subject: Mathematics
Contributed by Lok Jia Ming
Level: 13-year-olds (Secondary 1)
Topic: Statistics (data collection and analysis)

Relevant standards

- Using mean, mode and median as measures of central tendency for a set of data.
- Using the mean and standard deviation to compare two sets of data.

Task

Instructions to students: You are an entrepreneur looking to open a stall in the school. But before that, you need to find out more information. Work with your team to decide what sort of data to collect on the existing stalls. You must present your informed decision based on findings from the analysis of your data.

"Authenticity" as a permutation of the three

So, which of the three – working world, student's world and discipline – should AA designers refer to for authenticity? Perhaps these three referent contexts are not mutually exclusive; they can be thought of as overlapping subsets of the real world as shown in Figure 1.2.

Each circle may be of a bigger or smaller size to reflect its dominance relative to the other two, depending on the learner (e.g., age, profile). For the younger learners, like those in primary school, the predominant focus will be that of relating the task to their real-life experience, e.g., show-and-tell about their favourite fruit.
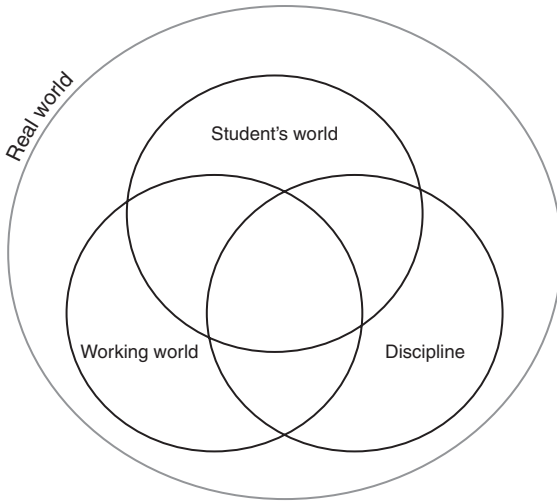
FIGURE 1.2   Different referent contexts for authenticity.

Reproduced with permission from Tan Kelvin, Koh Kim Hong and Tay Hui Yong; Authentic Assessment in Schools 2e; figure 1 (p. 328); Pearson Education South Asia Pte. Ltd.

The area of the working world will thus be less significant (thus smaller) as a reference for teachers designing AA for this cohort of students. In contrast, this referent of professional work will feature more prominently (i.e., larger) in the case of older students about to enter the working world, e.g., writing business proposals at the secondary school.

There are, conceivably, situations that will satisfy two or all three different considerations at the same time, as illustrated by the overlapping subsets of the real world. For example, an AA asking students to trace their school's history can be designed to reflect

- the students' life (i.e. the school they are currently in);
- the professional work of an historian handling primary sources material; and
- the discipline through the required tasks (e.g., defining essential questions, sorting through source material, drawing conclusions and presenting persuasively).

These two examples show how assessments on the same topic, "Man's impact on the environment", can be designed with a different emphasis to suit the learners and the level of disciplinary and professional knowledge expected of them at their age.

Example 1.9

Subject: Science
ontributed by Noorfaezah Binte Sadon
Level: 12-year-olds (Primary 6)
Topic: Terrarium-making

Relevant standards

- Show an understanding of the roles of evaporation and condensation in the water cycle.
- Recognise the importance of the water cycle.
- Observe, collect and record information regarding the interacting factors within an environment.
- Give examples of man's impact (both positive and negative) on the environment.
- Discuss the effect on organisms when the environment becomes unfavourable.

Task

Instruction to students: Students are to work in groups to construct a terrarium using guidelines provided. They observe the water cycle (evaporation, condensation, rain) occurring in the terrarium and set up a simple scientific experiment using the scientific process to find out the effect of global warming on plant growth. Students are to collate their findings and present them to the class.

Example 1.10

Subject: Science
Contributed by Chow Ban Hoe
Level: 16-year-olds (Secondary 4)
Topic: Environmental science

Man and his environment

- Demonstrate knowledge and understanding in relation to scientific and technological applications with their social, economic and environmental implications.

Task

Instruction to students: As a team of environmental science experts, your group of four has been approached by the governor of Bandar Awang to do an environmental assessment and review of the feasibility of the plans proposed by SamCorp (see further information following this instruction). Your team needs to examine major *arguments for* and *against* the proposal, identifying key factors and views from different stakeholder groups (e.g., citizens, government, farmers, nature groups, workers, SamCorp) in the following aspects:

a. *Social* (e.g., human and vehicle traffic, urban development, appreciation of nature);
b. *Economic* (e.g., infrastructure, livelihood of people, revenue for government, income for investing company); and
c. *Environmental* domains (e.g., air and water pollution, effects on human health, public hygiene, deterioration of land).

In the report, your team should make explicit reference to the information presented in the scenario, as well as other relevant knowledge in science and technology to be used as support for your recommendation. Also state clearly any assumption(s) you have made regarding the scenario.

Read the following scenario

A waste-management company, SamCorp has purchased land to the north-east of a coastal tropical city, Bandar Awang with the intention of building a major waste treatment and recycling facility. The land is currently covered by an extensive mangrove wetland. Most people from the city of 600,000 citizens have little to do with the area and some complain that it is "just a mosquito-infested swamp". Minimal environmental investigation has been conducted at the site. However, preliminary research has identified the wetland as a possible habitat for the threatened great-billed heron and estuarine crocodile.

This new waste treatment and recycling plant will replace the current landfill system, where for the last 50 years; waste has been dumped and buried in an old quarry to the west of the city. Some types of waste amounting to 60% are also incinerated at this location. The landfill site has enough space to last for another five years. Fifty workers will lose their jobs when this site is closed down. It is also believed that the run-offs after heavy rains have been polluting waters in Sungei Awang.

The construction of the proposed facility will cost approximately $56 million and the facility will require 60 to 100 employees on-site when it becomes fully operational. The sale of recycled materials, such as glass, steel, paper, aluminium, other metals and organic garden compost, is predicted to result in an overall profit of $8.5 million per year. The facility will require an upgrade of roads, water services, the sewerage system and electricity in the region. Approximately 60% of Awang wetland will be cleared on-site and the water will be drained.

The SamCorp proposal includes the planting of a screening belt of non-indigenous trees, designed to hide the facility from the view of residents in the newly built housing estate. It is also planned that many trucks will transport material to and from the site, 16 hours a day. People in the new estate have started to express concerns about the pollution that may be produced by the new facility.

Summary

This chapter seeks to clarify what AA are. It is suggested that they are:

- performance assessments that are set in a real-world context;
- possibly alternative assessments (if the conventional involves paper-and-pen); and
- either formative or summative depending on how the assessment information is used.

It is helpful to also consider what the assessment is "authentic" to:

- the working world;
- the student's world; or
- the discipline.

Each of these referents serves a purpose and has a theoretical basis that will be elaborated upon in the following two chapters.

Quick quiz

1. Are paper-and-pen assessments "inauthentic"?
   Answer: Not necessarily. They can be crafted to include elements that allude to the real world and/or the students' world.
2. What is one advantage of having assessments that reflect the problems faced in real life?
   Answer: It introduces students to the kinds of challenges they will face in the future; facilitates transfer of learning; gives us greater confidence in inferring students' competency.
3. Why is it important to include considerations of the discipline in designing AA?
   Answer: In a way it is corollary to "authenticity" residing in the working world: if learners are to engage in the discipline or subject in the way that the professionals in the field do, they need to show their capacity in the processes used by these professionals– though at a level suitable to them.

Reflection questions

Now refer back to the 5 examples given at the beginning of the chapter.

- In what way(s) would you consider them to be AA?
- What reference for authenticity did each assessment take: the working world, the students' world and the world of the discipline involved? Discuss this with your colleagues/course mates.

Note

1 http://www.straitstimes.com/forum/letters-in-print/nurture-a-generation-that-learns-differently-bravely

References

Archibald, D. A., & Newmann, F. M. (1988). *Beyond Standardized Testing: Assessing Authentic Academic Achievement in the Secondary School.* Reston, VA: National Association of School Principals.

Darling-Hammond, L., Ancess, J., & Ort, S. W. (2002). Reinventing high school: Outcomes of the Coalition Campus Schools Project. *American Educational Research Journal*, *39*(3), 639–673.

Dewey, J. (1938). *Experience and Education*. New York: Touchstone.

Gulikers, J., Bastiaens, T., & Kirschner, P. (2004). A five-dimensional framework for authentic assessment. *Educational Technology, Research and Development*, *52*(3), 67–87.

Havnes, A. (2008). Assessment: A boundary object linking professional education and work. In A. Havnes & L. McDowell (Eds.), *Balancing Dilemmas in Assessment and Learning in Contemporary Education* (pp. 101–114). New York: Routledge.

James, M. & Lewis, J. (2012). Assessment in harmony with our understanding of learning: Problems and possibilities. In J. Gardner (Ed.), *Assessment and Learning.* (2nd ed., pp. 187–206). London: SAGE Publications.

Klenowski, V. (2009). Assessment for learning revisited: An Asia-Pacific perspective. *Assessment in Education: Principles, Policy and Practice*, *16*(3), 263–268.

Maclellan, E. (2004). Authenticity in assessment tasks: A heuristic exploration of academics' perceptions. *Higher Education Research & Development*, *23*(1), 19–31.

McArthur, K. G. (2012). The Metalinguistic Protocol: Making disciplinary literacies visible in secondary teaching and learning. *Reading Horizons*, *52*(1), 26–55.

McConachie, S. M., Hall, M., Resnick, L., Ravi, A. K., Bill, V. L., Bintz, J., & Taylor, J. A. (2006). Task, text, and talk: Literacy for all subjects. *Educational Leadership*, *64*(2), 8–14.

Messick, S. (25–26 October1994). Alternative modes of assessment: Uniform standards of validity. Paper presented at the Evaluating Alternatives to Traditional Testing for Selection, Bowling Green, OH.

Meyer, C. A. (1992). What's the difference between authentic and performance assessment? *Educational Leadership*, *49*(8), 39–40.

Newmann, F. M. (2000). Authentic intellectual work: What and why? [Electronic Version]. *Research/Practice*, *8*. Retrieved 24 September 2017, https://www.researchgate.net/publication/255607299_Authentic_Intellectual_Work_What_and_Why_1

Shepard, L. A. (2000). The role of assessment in a learning culture. *Educational Researcher*, *29*(7), 4–14.

Tanner, D. E. (2001). Authentic assessment: A solution, or part of the problem? *High School Journal*, *85*(1), 24–30.

Tay, H. Y. (2015). Setting formative assessments in real-world contexts to facilitate self-regulated learning. *Educational Research for Policy and Practice. 14*(2), 169–187.

Tan, K. H. K., Koh, K. H., & Tay, H.Y. (Ed.) (2015). *Authentic Assessment in Schools*. Singapore: Pearson.

Wiggins, G. (1989). Teaching to the (authentic) test. *Educational Leadership*, *46*(7), 41–47.

Wiggins, G. (1993a). Assessment: Authenticity, context and validity. *Phi Delta Kappan*, *75*(3), 210–214.

Wiggins, G. (1993b). *Assessing Student Performance*. San Francisco: Jossey-Bass Publishers.

Wolf, D., Bixby, J., Glenn, J., III & Gardner, H. (1991). To use their minds well: Investigating new forms of student assessment. *Review of Research in Education*, *17*, 31–74.