*Chapter 5*

# PORTFOLIO-BASED ASSESSMENT

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# DEFINITION OF PORTFOLIO-BASED ASSESSMENT

**PORTFOLIO–BASED ASSESSMENT**

- A portfolio is "a purposeful collection of student work that exhibits the student's efforts, progress and achievements in one or more areas. The collection must include student participation in selecting contents, the criteria for judging merit and evidence of student self-reflection" (Paulson, Paulson, & Meyer, 1991, p. 60).
- A portfolio can be viewed from two perspectives: as product and as process. "As a product, it holds the work records and documents a learner has produced during a course or program, and represents an edited collection of their learning achievements. As a process-oriented tool, it enables learners to monitor their own learning systematically, by reflecting upon their learning experience" (Teaching @UNSW, 2017).

# OPERATIONALIZED DEFINITION

**PORTFOLIO–BASED ASSESSMENT**

A collection of purposeful, cumulative and progressive learner's work: digital or non-digital, over a period of time through flexible learning (formal, informal and non-formal learning) by reflecting and ensuring that learning has taken place.

# PRINCIPLES OF PORTFOLIO-BASED ASSESSMENT

**Principle #1: Learning Outcomes**

Students are guided by clearly articulated individual, course, programmatic, or institutional outcomes in their collection, selection, reflection upon, and presentation of "artefacts" (various electronic documents) in the e-portfolio.

**Principle #2: Digital Environments**

Students develop digital literacies in composing, collaborating, and record-keeping, and consider the rhetorical implications of circulating e-portfolios to both public and private audiences.

**Principle #3: Virtual Identities**

Students represent themselves through personalised information that conveys a web-savvy and deliberately constructed ethos for various uses of the e-portfolio. Students manage those identities by having control over artifacts and who sees them through privacy and access tools.

**Principle #4: Authentic Audiences**

Students engage in audience analysis of whom intend to read their portfolio/e-portfolios, not only to accommodate faculty, but also employers, issuers of credentials, family, friends, and other readers. Students coordinate access to their e-portfolios with faculty, programs, the institution, and other readers.

**Principle #5: Reflection and E-portfolio Pedagogy**

Students create "reflective artefacts" in which they identify and evaluate the different kinds of learning that their e-portfolios represent. In particular, students may explain how various forms of instructive feedback (from faculty, Writing Centers, peers, and other readers) have influenced the composition and revision of their various e-portfolio artefacts, making teaching methods and learning contexts more transparent to their readers.

**Principle #6: Integration and Curriculum Connections**

Students link artefacts in a flexible structure that synthesises diverse evidence and ideas, invites linear or non-linear ways to read and evaluate e-portfolios, and makes connections to portfolio-related evidences and relationships distributed across the Internet. Students may therefore use linking to represent how e-portfolio artefacts inter-relate with other courses in the larger context of whole-curriculum learning.

**Principle #7: Stakeholders' Responsibilities**

Students receive the necessary support from faculty, program directors, and university administrators who not only use e-portfolios for assessment purposes and program improvement, but also keep informed about what resources are essential for implementing, maintaining, and accessing e-portfolios.

**Principle # 8: Lifelong Learning**

Students are able to adapt their e-portfolios for various purposes/uses beyond their academic careers, enabling their various readers, in turn, to track their learning longitudinally.

# CASE STUDY

An Alternative Way in Assessing Portfolios-based on Saaty's Analytic Hierarchy Process (AHP)

**SUBJECT AREA**

Management Sciences


**RESEARCHERS**

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*Asia e University*

**ISSUE**

This study proposes a qualitative approach in assessing experiential portfolios.

**INNOVATIVE APPROACH / INTERVENTION**

- An alternative way of assessing the portfolio, modelling the pairwise comparison matrix from Thomas L. Saaty's (1980 & 1990) Analytic Hierarchy Process (AHP).
- AHP is a systematic tool to analyse decision-making problems based on Mathematics and Psychology. It provides a rational framework, relates elements to overall goals, and helps decision makers find the best decision that suits their goals.

## DESCRIPTION OF APPROACH

- Adapting from the AHP's nine-point scale pairwise comparison matrix, the portfolio which may consist of only or combination of formal, informal and non-formal learning is considered as one factor while the benchmark against the CLOs, the other factor, a ten-point scale is developed to help the Assessor to evaluate the degree of similarity and accuracy of portfolio to the CLOs.

| Saaty's pairwise comparison matrix : | | Proposed Portfolio Assessment | | | |
|---|---|---|---|---|---|
| Scale value Sij relating i to j | Meaning | Scale value Sij relating i to j | Meaning | Quantum of similarity to CLOs | Grading |
| | | 0 | NONE | 0% | F |
| 1 | i is as important as j | 1 | CLOSE | 20% | E |
| 3 | i is moderately more important than j | 3 | SIMILAR | 40% | D |
| 5 | i is strongly more important than j | 5 | ALIKE | 60% | C |
| 7 | i is very strongly more important than j | 7 | SAME | 80% | B |
| 9 | i is extremely more important than j | 9 | EXACTLY | 100% | A |

Note: Where i and j are two different factors. E.g. two different job offers. Scale values 2, 4, 6 and 8 lie midway between the definitions for their nearest values given above.

## RELATED LEARNING OUTCOMES

PO1- Knowledge; PO2- Practical Skills; PO5 - Communication; PO6 – Problem Solving; PO7 – Information Management

# CASE STUDY

Implementation of Patchwork Assessment for Learning

**SUBJECT AREA**

Education & Social Sciences

SCAN ME!

**RESEARCHER**

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**ISSUE(S)**

- Student's ownership of their own learning.
- The need to redefine the nature of assessments in higher education based on further realisation that the world is looking forward to future-ready graduates with rich employability skills.

**INNOVATIVE APPROACH**

The "patchwork", an assessment approach based on the four dimensions of productive pedagogy; "intellectual quality", "relevance", "social support", and recognition of "difference".

**DESCRIPTION OF APPROACH**

Winter (2003) stated, "the essence of a patchwork is that it consists of a variety of small sections, each of which is complete in itself, and that the overall unity of these component sections, planned in advance, is finalized retrospectively, when they are 'stitched together'." Refer to Figure 1.

- The patchwork assessment consists of three integrated parts; namely academic literacy, feedback, and reflection.
- In patchwork assessments, academic literacies are exercised and assessed through completion of a variety of small task segments, varied in style and genre.
- Feedback, on the other hand, serves as a conversation that tracks the process of improved comprehension over time.
- Reflection is a final retrospective commentary, written as a result of self-evaluation of the tasks and analysis of the peer feedback through critical reflexivity; in addition to the reviewed and edited assignments before submission.

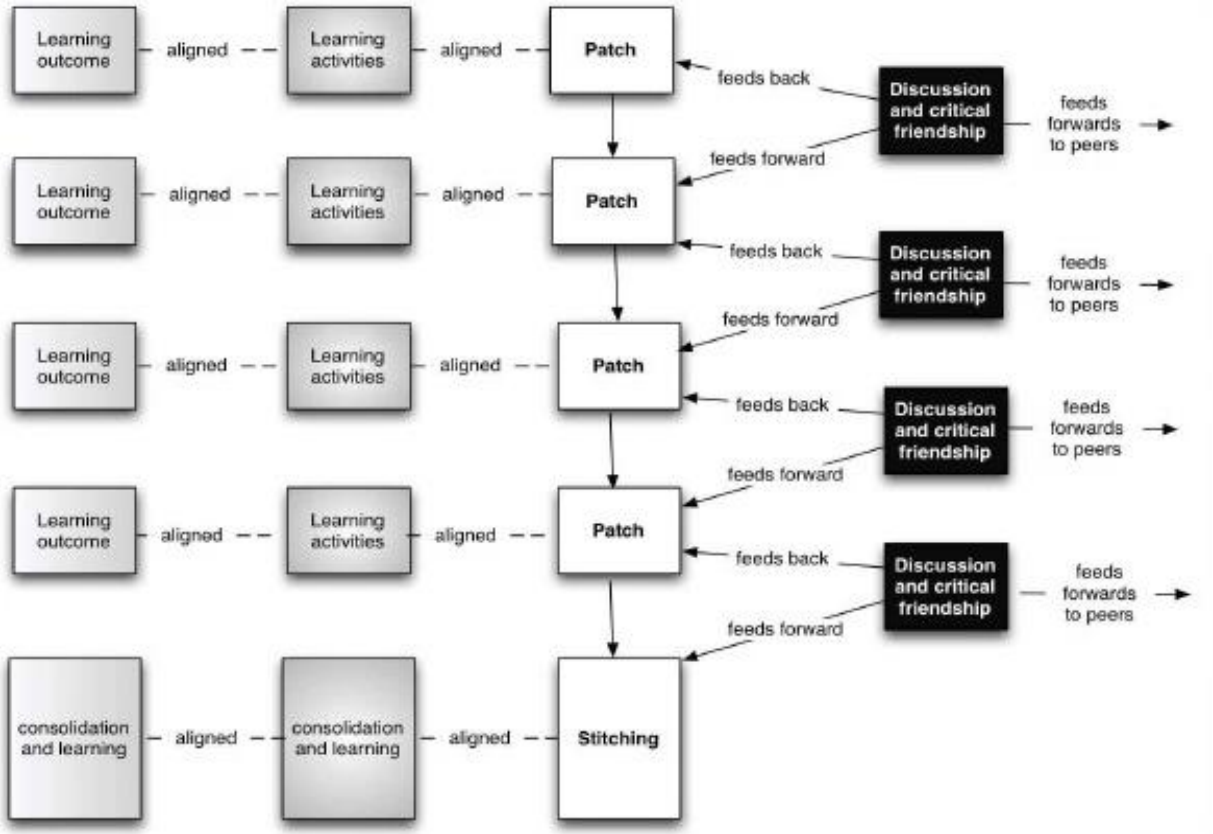


Figure 1: Social & Reflective Layer of Patchwork.

**RELATED LEARNING OUTCOMES**

PO2 – Practical Skills; PO3 – Social Skills and Responsibility; PO5 – Communication; PO6 – Problem Solving; PO7 – Information Management.

# CASE STUDY

Multi-dimensional Assessment Design for Undergraduate Building Pathology Course

**SUBJECT AREA**

Building Pathology

**RESEARCHER**

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**ISSUE**

- Challenges in getting the students to connect prior knowledge from previous courses with the current module.
- Building students' portfolio beyond the text-based output into video presentation that best demonstrate the aspects of knowledge the students need to build.

**INNOVATIVE APPROACH / INTERVENTION**

- Designing learning experience for students to build up communication skills alongside the cognitive and psychomotor aspect of the course using various assessment methods.
- The use of video portfolio to capture different angles of defect manifestation in the built environment.

**DESCRIPTION OF APPROACH**

- Students are informed and introduced to the educational principles behind learning activities new to them. This is to reduce their anxiety level and assure students that the activities were designed to achieve the specific course outcomes.
- One of the assessment activities is the defect portfolio video presentation. The purpose of using video for this assessment is because building defect and degradation often manifest itself through a multitude of different causes, and the effects are sometimes different depending on the context or situation.
- A 3-dimensional analysis is always needed, i.e. appreciation of the design, the construction method and the context of the degradation mechanism.
- The analysis is to be presented by the students using the format of a video. The advantage of using videos is that students can show the defects from different angles and tell a history of the defects being presented.
- The information gathered and interpreted from a visual inspection is the main skill a professional building surveyor possesses. It is crucial that students can develop this skill very early on.
- Video also allows the student to practice their communication skills and the video portfolio is a ready-made e-Portfolio item through which the student can market themselves to potential employers.

**RELATED LEARNING OUTCOMES**

PO1- Knowledge; PO2- Practical Skills; PO5 - Communication; PO6 – Problem Solving; PO7 – Information Management

# RELATED LEARNING OUTCOMES (LOs)


http://jpt.mohe.gov.my/images/yootheme/icgpa.png

| NO. | Case Studies | PO1 Knowledge | PO2 Practical skills | PO3 Social skills and responsibility | PO4 Ethics & values | PO5 Communication | PO6 Problem-solving | PO7 Information management | PO8 Entrepreneurship |
|---|---|---|---|---|---|---|---|---|---|
| 1. | An Alternative Way in Assessing Portfolios Based on Saaty's Analytic Hierarchy Process (AHP) | | | | | / | / | / | |
| 2. | Implementation of Patchwork Assessment; for Learning | | | / | | / | / | / | |
| 3. | Multi-dimensional Assessment Design for Undergraduate Building Pathology Course | | | | | / | / | / | |

# ADVANTAGES OF PORTFOLIO-BASED ASSESSMENTS

1. It is generic and structured in nature and could be applied to any specialisation of disciplines.
2. By utilising a collection of evidence in learning, portfolios assist learners to self-evaluate while stimulating their meanings and experiences.
3. The individual portfolio may be presented as proof of learning and as reference for future employment. With evidence of recognitions and achievements carried along by graduates, these would facilitate stakeholders in hiring potential employees.
4. e-Portfolio assessment encourages active and formative as well as summative learning as it is also adapted to online modes of interaction and collaboration.
5. Students become not only engaged builders of new knowledge but also involve in becoming active lifelong learners, thus taking control of their own learning.

# LIMITATIONS OF PORTFOLIO-BASED ASSESSMENTS

1. There is a need to have access to a computer with adequate software.
2. Before the implementation of e-portfolio, the students will need to be empowered with online skills to help them manage the resources.
3. Motivation has to be sustained despite distractions from the computing environment as well as the surrounding.
4. Readiness to engage in online conversation as a method of learning can be a challenge to students.
5. Awareness and realization of the students as to the importance of having an online portfolio; ensuring success have to be retained for a considerable amount of time.

# THINGS TO CONSIDER WHEN IMPLEMENTING PORTFOLIO-BASED ASSESSMENTS

**Learning Objective:**

Using the Bloom, Simpson, Krathwohl's Affective Domain Taxonomy as a guide to measure learning outcome, evaluators test the learners according to the set of objectives that can measure their knowledge and ability.

**Problem-Focused:**

Plan authentic questions based on real-world situations. Usually in project-based activities, the facilitator will design a question based on a problem in the real environment. Thus, some important aspects related to the outcome such as problem triggers, learning context, prior knowledge and skills that enable the learners to gain experience in project-based learning should be taken into consideration.

**Hands-on activities:**

Students are directly involved in the planning process and activities that comprises students' analytical skills, creativity, critical thinking, problem-solving and ICT skills due to prior task or assignment. These skills help learners to experience raised self-reflection, stimulated creativity, improved active learning, increased peer communication and improvised facilitator-student relations.

**Reflect and Assess:**

Allow students to communicate with peers to reflect on their learning. In addition, reflecting and assessing help learners improve the quality of the tasks, raising interaction and exchange among them, and further reflecting on their own learning. This learning effect is valuable for the academic growth and progress.

**Decision-Making:**

Allow students to apply decision-making based on findings. The tasks were formulated to test and evaluate the learners in decision making with several or numerous findings around them. The complexity of the activity allows the learners to produce different solutions and assumptions that restrict them to make a solid decision. This process involves active exploration to identify and construct new knowledge.

**Leadership and teamwork skill:**

Work as a unit and accomplish the task given by showing their capability as a leader and members. The best criterion for project-based activity is the adaptation of social learning concept that can encourage the learners to develop their roles as a leader and a teammate in a group. It requires an agreed upon decision and full support from all parties concerned; from the top management to the support staff. It needs to be made known to all relevant parties.

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Samples of E-Portfolio being used in the classroom:

https://pathbrite.com/drjoe/folio

https://pathbrite.com/course/PxgT-PMaPhgP/edp3501

https://pathbrite.com/course/PxgT-PMoPP6P/edp3501

https://pathbrite.com/course/PxgT-PMlPvRP/edp3501k

https://pathbrite.com/course/PxgT-PMlPLTP/edp4390k

https://pathbrite.com/course/PxgT-PMCPbTP/edp1101k

# SUMMARY

It is hoped that having a clear purpose and realisation of the importance and benefits of a portfolio; electronic or otherwise, institutions of higher learning in Malaysia may seriously adopt and use it for the betterment and improvement of student learning, impactful instructor instruction, and program effectiveness. E- Portfolio is considered performance based assessment while it falls under the scope of alternative assessment. And when 'real life' tasks are suitably incorporated in it, then this constitutes authentic assessment as well.

It is high time that Malaysian educators and academics alike embrace this challenging shift toward fulfilling MOE's aspiration to prepare today's graduates with the necessary 21st century skills. Once this kind of assessment is successfully introduced and practiced as part of the "assessment for learning" methodology, then our tertiary education will have ample evidence to assure that both 'assessment of learning' (AoL) and also 'assessment for learning' (AfL) is being practiced. This in turn would make it possible and easier to achieve "constructive alignment" at higher levels of cognitive achievement and standards.

The emphasis on producing more creatively, critically, and innovatively thinking graduates would be better realised, not just for the sake of all stakeholders, but also for potential employers who are demanding quality graduates. Thus this noble pursuit is the way forward to redesigning assessment for improved and holistic learning.