

Continuous Evaluation of Course Outcomes (CO) in the Outcome-Based Education (OBE) Using Portfolios

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Abstract

There are various types of approaches found suitable to encourage enough continuous evaluation of a course or subject being taught. Usually, a portfolio presents a student's projects or major presentations and saved as exemplars in the courses being taught. Throughout a subject being taught, a portfolio of accomplishments shows the growth of students over time and reflects the different stages or periods of learning. This portfolio is a collection of the best work done by the student during a semester either in paper or online form. The portfolios are subject to ongoing revision and improvement. This type of assessment has been carried out in teaching a fourth-year subject and can be well suited in encouraging continuous review to achieving a subject's Course Outcomes (CO) in an Outcome-Based Education (OBE) environment. The portfolio, seemingly behaves like a 'journal' writing or diary, promotes writing that occurs over time which is the process and not simply the product. Not only the portfolio gives input or feedbacks to teaching a particular curriculum being adopted but it also serves as an impressive display of a student's performance for potential employers. This paper outlines the adoption of portfolios in continuous evaluation of a student's learning phases in a networking subject taught in Universiti Tenaga Nasional and shows how it helps in attaining the Course Outcome (CO) that was introduced in the engineering program.

Keywords: Portfolio; Outcome-Based Education (OBE); continuous assessment

1. Introduction

Portfolio assessment is dynamic if compared to other conventional assessment methods. Often standardized tests results in dissatisfaction as the students can be inconsistent in the learning process. Moreover, standardized tests can be taxing with the final awarded letter grade when the students are not showing their true potential ability but only demonstrate their limited set of skills. Accountability sometimes comes in when the teachers are teaching to the tests rather than letting students to effectively demonstrate the knowledge and skills they have acquired [1].

The portfolio assessment can support an ongoing quality improvement of a given subject as of a true collection of a student's learning process. Subsequently, portfolios serve as an enhancement of a continuous evaluation tool that clings to a set of instructions. The fact that adoption of portfolios in various levels, inclusive of graduate schools, proves that it is a well accepted form of assessment.

The portfolios present an ongoing assessment to reflect the learning growth and improvement. Students are allowed to show, to evaluate and to determine future learning objectives by striving to demonstrate their best capabilities. As portfolios contain more than test results, assignments and journal entries, the systematically organized feature promotes a better tool for teachers to evaluate their students by observing the attained knowledge, skills and attitudes towards the subject. The portfolios should be a platform which conveys a subject's standards as well as a student's initiatives to meet the requirements.

These criteria are seen to further motivate the use of aligned goals and instructions that can be adopted as a type of assessment in evaluating a subject in an Outcome-Based Education (OBE) [2]. Portfolios can provide both summative and formative insight for monitoring progress towards reaching the identified outcomes [3]. The content and quality of performance in specific curriculum can be conveyed in a portfolio. The content and

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2. Course Outcomes in Outcome-Based Education (OBE)

2.1. Meeting the Course Outcomes (CO)

The Outcome-Based Education (OBE) is focusing and organizing everything in an education system around what is important for all students to be able to do successfully at the end of their learning experience [4]. OBE clearly states both the Program Outcome (PO) and the Course Outcome (CO) of a subject taught in a program offered. The outcomes act as a measurement tool to list the targeted objectives and the results expected to be met by students at the end of the semester. Prior to OBE implementation, the subject may vary in the teaching standards and resulting in inconsistencies of students' performances. The objectives of a given course or subject are abstract as to no form of measured capabilities is used. As the OBE system is implemented, clearer and more focused outcomes permit the passing of subjects by fulfilling the learning outcomes. Moreover, OBE considers records and reports management on the actual substance of what a student can do in a specific time frame. Therefore, portfolio assessment has a strong correlation with the requirement of the OBE implementation.

2.2. The Key Identifiers of Meeting the Course Outcomes (CO)

The OBE system allows prompt feedbacks to meeting the required outcomes on a regular basis. In [4], the strength or points are shown in the following table.

Table 1. The Key Identifiers of Meeting the Course Outcomes (CO)

Key identifiers	Details
1	What the system's key culminating and enabling outcomes are for all its students
2	What the substantive criteria are for each level of performance on those outcomes
3	Where a particular student falls on the range of levels for each outcome on a given reporting date
4	Where the student fell

in the range of student's progress and performance levels on improvement in the some previous outcome over time. reporting date

5	Where other similar students fall on the range of performance levels for each outcome	This provides data on the student's performance relative to that of the other students.
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Thus, the table above shows that the portfolio assessment can be adopted to meet the Course Outcomes (CO) effectively by documenting and constantly reviewing the student's performance.

3. Continuous Evaluation of Course Outcomes (CO) Using Portfolios

3.1. Aligning the Course Outcomes (CO) with the Portfolio Checklist

The Data Communication and Network subject requires a broad spectrum of knowledge on basic data communication and networking. Usually, a 15-week regular semester demands a well-distributed content of a syllabus to be taught. As of the OBE implementation, the Course Outcomes (CO) provides and reinforces a student's expectation and attitude towards learning the subject systematically. The COs of the subject can be seen in Fig. 1. The COs would be transformed into a checklist to assess the students' performance towards the end of the semester.

Table 2. The EECB423 Data Communication and Network Course Outcomes (CO) [5]

Item	Course Outcome (CO)
1	Identify components, media, interconnecting devices and applications of computer network
2	Create codeword from data bits stream
3	Translate codeword to encoded digital waveform
4	Identify functional fields in each OSI layer header
5	Translate sniffed trace to network activities
6	Describe mechanisms of forwarding packets between two networks
7	Describe end-to-end communication mechanisms for data integrity and congestion management
8	Differentiate protocol choice based on network application
9	Compare and contrast emerging technologies with technologies covered in the course
10	Synthesize and sketch a logical network diagram based on needs and requirements

3.2. The Portfolio Preparation

Though there are many types of portfolio representations, there are two major types of portfolios namely the process portfolio and the product portfolio [6]. A process or progress portfolio [3] compiles documents of the growing stages of learning and keeps a record of the student's improvement [6][7]. On the other hand, a product portfolio demonstrates mastery of a learning task and contains the best work. To help achieve the COs of a subject, the process portfolio is the ideal assessment type to look at how the students are progressing and learning the subject.

The steps in the portfolio assessment process must be defined prior to the portfolio preparation: both teachers and students need to identify the contents including the student work, journal entries, teacher's observations and meeting records. Subsequently, evaluation procedures will be developed to keep track of the contents and for grading purposes. Thirdly, both parties can hold meetings or provide written feedback to help review the students' progress [6].

The portfolio preparation process can be made generalized or detailed. As extra time is necessary to plan and to conduct the assessment, developing a systematic management system is rather difficult, and occasionally ends up in unnecessary data and work samples. The preparation process is better to suit the capacity of the classroom, only to be manageable without hassles. A smaller class can opt for a detailed approach where else, a bigger one may need to have a generalized process. In [2], the portfolio preparation for the EECB423 has been detailed. In general, based on the EECB423 assessment in [2], the vital process or steps to be included in preparing a portfolio can be summarized in an organized manner to help assist the students as in Figs. 1-2.

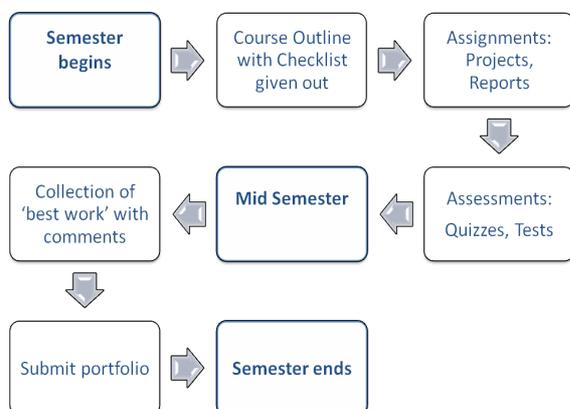


Fig.1. The general preparation of a subject's portfolio

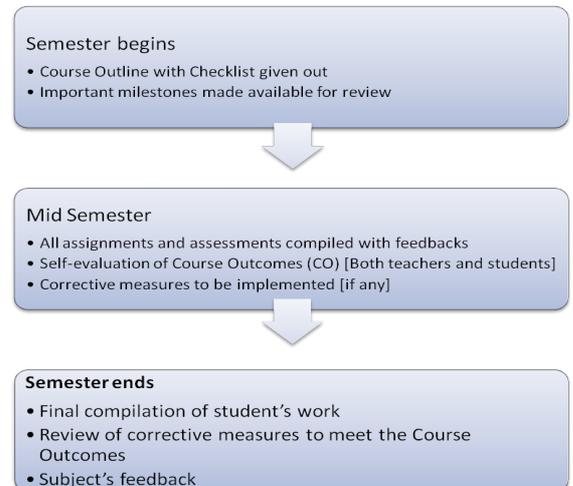


Fig. 2. Detailed preparation of a subject's portfolio

4. Results and Discussion

4.1. Results of Evaluation

The adoption of portfolio assessment in the EECB423 subject at Universiti Tenaga Nasional has shown promising results over semesters. As the OBE implementation has been focusing on attaining the Course Outcomes (CO), there are many downsides when a grading analysis turned up of not having met the required outcomes. Several approaches may come from the teachers' initiatives by providing extra course materials, past year's tests and tutorials. Portfolio assessment has not been carried out to aid in support a student's learning development in a subject. Two important results have been observed from the portfolio assessment conducted in the EECB423. Firstly, the class's performance increased dramatically from the mid semester evaluation. Secondly, the Course Outcomes (CO) of the subject has been met if compared to the semester without the portfolio assessment.

The results show that the portfolio assessment promotes a continuous review of a student's progress of understanding a subject's Course Outcomes (CO) periodically. With the checklist given at the beginning of the semester, a student can conduct a self review on what they have accomplished. The students are free to voice out their opinions and express their concerns over the weeks of learning the subject. The teacher will skim through their comments and check and respond to important student's concerns by providing appropriate feedbacks and alternatives. By implementing the mid semester review, the overall performance in class can be forecasted to

meet the conditions in the subjects taught. Therefore, both teacher and students can communicate throughout the semester and allow some time frame to improve teaching and learning experiences.

4.2. Advantages and Disadvantages

In [6], there are advantages and disadvantages of using portfolio assessment in almost any subject. The advantages of using the portfolios in an OBE environment as conducted in the EECB423 subject [2] are listed below:

- a) to verify whether the subject's course outcomes have been attained [2]
- b) to promote student self-evaluation, reflection and critical thinking
- c) to measure performance based on samples of student's work and progress
- d) to provide flexibility in accomplishing a student's learning growth
- e) to enhance teachers and students to improve teaching and learning
- f) to promote learning groups and peer evaluation by comparing improvement
- g) to provide an effective two-way communication between teachers and students
- h) to promote opportunities for both parties to discuss ways to learn and progress better

Though the advantages seemingly rewarding, there are still a few problems with the portfolio assessments as the following:

- a) To provide a considerable time for portfolio preparation [1]
- b) To properly prepare the portfolio to meet the standards
- c) To assess a large capacity of students in a given time to provide feedbacks [2]

Nevertheless, the portfolio assessment has shown several improvements in fulfilling the Course Outcomes (CO) in the selected subject as provided in this paper.

5. Conclusion

This paper has presented a dynamic assessment method using portfolios. It is shown that the portfolio-based assessment can be used to enhance better Course Outcomes (CO) in an Outcome-Based Education system. With ever further demands to create a quality education and diversity in student learning experience, portfolios provide advantages in becoming a flexible, yet not too strenuous exercise, to assess students' various skills, performance, knowledge and attitudes in meeting the Course Outcome (CO). Portfolios not

only promote growth and improvement, but also enable teachers and students to review the overall issues addressed in a subject.

6. References

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