Assessment Methodologies for Abet Accreditation: Success Factors and Challenges

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Abstract – This paper presents the importance of a well-established assessment and evaluation process in leading to an improved program delivery. It details a University experience in employing a combination of direct and indirect assessment methods to determine the Program Educational Objectives (PEO) and Students Outcomes (SO) attainment for its Bachelor of Science in Computer Program. In its 3-year cycle of PEO and SO assessment and evaluation, various success factors were identified and at the same time challenges were uncovered. The success factors, as detailed in this paper, include appropriateness and coherence of the course – SO – PEO mapping and the nature of the assessment process, careful design of the assessment tools and instruments, involvement of stakeholders in the assessment process, availability of resources, periodicity and effective documentation of the assessment process, and utilization of assessment information and dissemination of evaluation results. While these factors led to a successful program delivery, the College identified an opportunity to further improve its assessment and evaluation process by using a set of courses to assess a set of specific student outcomes that may lead to an improved collection of assessment information and generation of meaningful information.

Keywords: Outcome Based Education, Learning Outcome, Direct and Indirect Assessment, Measurement and Evaluation, Accreditation.

(*) The paper presented an experience in a University having an Abet accredited program and does not refer to UoB experience.

1 Introduction

The traditional education system which is primarily focused on determining student performance and achievement based on what is taught was shifted to outcomes-based education (OBE) in early 1990s. This shift paved way to the value of assessment in colleges and universities as OBE focused more on student achievement of goals or outcomes, and the attainment of these outcomes are determined through a set of assessments. Assessment includes a variety of methods that are used to determine the readiness, progress, and skills acquired by a learner. The techniques and strategies that are utilized by any educator vary depending on the goal of assessment. Often, assessments are done to determine the weaknesses of the learner and provide the necessary intervention; and generally, assessments are done to determine the performance of the learner in a specific activity or learning process. There are 3 phases of assessment - planning, implementation, and improvement and sustenance of the process. Various stakeholders should be involved in assessment and the purposes of assessment should also be identified. Assessments can be done in various levels: program, student and course level and many are involved [1]. The assessment process is guided by an assessment plan for a successful implementation. During the entire assessment process, collection, organization and analysis of assessment information should be done to arrive at findings that need to be examined; disseminated and necessary actions should be done when needed. Assessment approaches include summative and formative assessments. Summative assessments provide judgments about the manner and value of the assessment based on a certain performance standards set, and when these are done repeatedly, the results can be utilized to improve the program. Formative assessments provide feedback that can be used to modify, form and improve the program. However, both are useful not only for overall program performance but also for student performance [2].

Various studies [2, 3, 7] reveal that learning outcomes are assessed using a combination of both direct and indirect assessments. A certain study presented easy and effective methods of assessments which are (1) the Assessment day concept; (2) Personal class assessment; (3) sampled student work; (4) faculty interview groups; and (5) student focus groups. The study in [3] revealed that the faculty takes a greater role in assessing learning outcomes and that the methods considered both the direct performance of the students and indirect assessments, considering the perception of the faculty and the students in the attainment of learning outcomes using interviews and focused group discussions. In another study of learning outcome assessment [1], the assessment which was done in 3 levels, program level, student level and course level, involved faculty members in the development of course-level assessments. The same study specifically mentioned that course level assessments utilize a certain number of courses, whereby a set of questions were formulated per topic to assess a certain learning outcome. The types of questions asked focused on skills which represent the basic knowledge obtained by the students at the end of the course. Further, the same study also mentioned that faculty members meet and make decisions at the end of each year to identify areas to improve. The feedback loop allowed them to determine the assessment methods that also need to be improved. The study [4] presented how an assessment tool which considers peer assessment and individualized
assessment is used in a capstone project. It aimed to introduce a tool that assists the instructor in evaluating student performance in capstone projects. The assessment tool was used by a sample set of students and following it, the students were asked regarding their perception on the use of the assessment tool. It turned out that generally, the students are satisfied with the assessment tool. However, the constraint is that friendship is found to have an effect on the assessment result. The tool is used to mark the performance of the students based on the group output, considering their individual effort and contribution to the group.

As mentioned in the earlier paragraphs, assessments are conducted to obtain data and be able to establish the performance of the program and the students/learners. Any University seeking accreditation or interested to obtain program confidence rely on the attainment of student outcomes as basis for program improvement. Hence it takes a serious look in the entire assessment process. One of the criteria for Abet accreditation is a documented and effective periodic review of program educational objectives (PEOs) and student outcomes (SOs) [5]. This is achieved through a well-established implementation of assessment process, which is set and designed by the University itself. This study relates the assessment experiences of one of the Universities which obtained Abet accreditation for its Bachelor of Science in Computer Science Program. It describes the various assessments implemented in the University - program level, student level and course level. In addition, it discusses the success factors and challenges encountered in the assessment process, and provides recommendations and actions to address the challenges.

2 Abet Accreditation Requirements

The Abet criteria for accrediting computing programs have two sections – general and program criteria. The general criteria apply to all computing programs accredited by an Abet commission, and include students, program educational objectives, student outcomes, continuous improvement, curriculum, faculty, facilities and institutional support. On the other hand, the program criteria include additional requirements specific to the Computer Science Program under student outcomes, curriculum and faculty. Each of the mentioned criteria specifies a certain set of requirements that must be satisfied by the program in order to obtain accreditation [5].

3 Assessment and Abet

There are two important elements that apply to the mentioned criteria for accrediting computing programs. These are assessment and evaluation, and they are both applied to Program Educational Objectives (PEOs) and Student Outcomes (SOs).

Programs that seek or undergo accreditation by Abet have a certain set of program educational objectives (PEOs) and student outcomes (SOs), which are assessed and evaluated based on the policies and procedures of the University. The policies and procedures which are implemented university- or college-level include the 2 components for both the PEOs and SOs; namely: (1) Method of Assessment; and (2) Method of Evaluation. These are specifically discussed in the paragraphs that follow.

3.1 Program Educational Objectives (PEOs)

The PEOs are based on the needs of the program’s constituencies, which include both the alumni and employers as the primary constituencies and the faculty and students as the secondary constituencies. The Assessment and Evaluation of the PEOs are discussed below:

3.1.1 PEOs Method of Assessment

Indirect Assessment is employed for the PEO, where a questionnaire is used as the instrument to obtain data.

Procedure: PEO Assessment is administered towards the end of each year for each batch of alumni after 3-5 years of graduation, based on the policy and procedures of the University. The policy and considering the local market and corporate environment as well as the best international practices in that regard, set 3 as the minimum years based on the Alumni Tracer Study Report, where the graduates are able to land on a job at an average of 1-2 years. As a matter of fact, there is no ideal duration to consider after the graduation, however factors of market understanding, corporate requirements and accommodation phases are considered. Hence we believe that the number of years after graduation, required to have an adequate measurement of the alumni efficiency that reflect a true measurement of their capabilities is obtained after a period of years that is somehow equal to a normal study duration which is in our case 3-5 years. Specific assigned office conducts the assessment through a questionnaire upon the request of the college offering the program. The office identifies the respondents and the sample size. Standard statistics requirements and best practices are to be observed here. The sample size should be big enough and is in general not less than 1/3 of the total considered batch of alumni. Common sampling techniques [6] are being implemented. In addition special care is given to assure that the sample is significant of all alumni categories as per their GPA (high, average and low)

Assessment Instruments: The PEO Assessment uses a questionnaire for the alumni and the employers. Considering that the PEOs reflect what the graduates have to attain after years of graduation and that they should be based on the needs of the constituencies, the alumni and the employers being the primary constituencies are identified as the respondents. The alumni, as the product of the program, reflect and represent the success of the program. The employers of the graduates provide input regarding the performance of the alumni and where the industry will be in the future. The questionnaire
includes a set of items that allow the respondents to determine the attainment of the PEOs through a set of indicators. The indicators reflect how the alumni are able to demonstrate success in the program. The alumni- and employers-respondents provide their perception on the attainment of the PEOs using a scale of 1 to 5, with 5 as the highest.

Samples: The respondents of the PEO Assessment are the constituencies of the program – the alumni and the employers of the alumni-respondents. Ideally, the University targets to have a total enumeration for its respondents. However, since it is still building its database and locating/tracing the alumni is a hurdle, it adopted a convenient sampling method, where all the available alumni and employers for the specific batch are considered as respondents. Common sampling techniques [6] are being implemented. In addition special care is given to assure that the sample is significant of all alumni categories as per their GPA (high, average and low).

Communication: The collated data by the concerned office are submitted to the college for further analysis and interpretation.

3.1.2 PEOs Method of Evaluation

Analysis and Interpretation: A committee composed of senior faculty members selected by the college is in-charge of analyzing the data and interpreting the results. The committee members are in general chosen considering a set of criteria including years of experience in the college, previous experience in quality assurance related aspects and critical thinking capabilities. Most importantly, all committee members should be participating actively into the program delivery from various levels (year one to year four) and with various curriculum components (core courses, general education courses and elective components). Having a mixture of all those, delivery participants in the committee make sure that the analysis is as comprehensive as possible and consider various curriculum properties. The committee decides on the expected level of satisfactory attainment and the weight allocated for each of the surveys in order to determine the combined contribution of the surveys in the attainment of the PEOs. With the rating scale for the survey instruments from 1 to 5, where 5 is the highest, the committee set the expected level of satisfactory attainment to 3.0/5. Moreover, the committee also set equal percentages, 50% each for the alumni and the employer survey, considering that both are primary constituencies. Based on the combined results of the alumni (50%) and employer (50%) survey, the committee compares the result to the expected level of satisfactory attainment and concludes the attainment of the PEOs. The analysis and interpretation of the data are expressed in a form of a comprehensive report. The report includes suggestions and recommendations to be considered part of the continuous quality improvement process.

Communication: The PEO Evaluation Report is submitted by the committee to the College for Approval. The result is disseminated to the stakeholders in different ways, such as through consultative meeting with the Program External Advisory Panel, alumni general assembly, or sent through mail and published in the University Website. The College addresses any identified deficiency or weakness through the improvement plan and its implementation is also monitored by a specific committee for continuous quality improvement college level. The PEO Evaluation Report is utilized for the continuous improvement of the program. While changes in the program take place within a 3-year cycle, the findings and recommendations based on the result of the PEOs are collated and considered in the next program revision cycle (as per university rules and regulations).

3.2 Student Outcomes (SOs)

The attainment of the SOs is based on a set of data which are obtained through direct and indirect methods from various stakeholders. The assessment and evaluation of the SOs are discussed below.

3.2.1 SOs Method of Assessment

SO Assessment is done through direct and indirect methods. As Abet does not prescribe a specific method of assessment, the University decides on the method to implement. The University set a certain percentage to each type of assessment method, 60% for direct and 40% for indirect. More weight is given to direct assessment method, as it obtains data using various course assessment instruments (test/ exam/ course projects) and specific rubrics are used to evaluate if a student outcome is achieved or not as compared to the indirect assessment method that uses survey instruments where the respondents provide answers to the specific questions included in the survey as a base of the indirect assessment.

The direct assessment of SOs through Courses is done through the analysis of the Course Intended Learning Outcomes (CILOs). All the courses offered for the concerned semester which are mapped to the specific SOs are considered in the assessment and evaluation. A case on the direct assessment of SOs is discussed in Section 4 and the procedure is discussed below:

The direct assessment through courses is done by the faculty member through the assessment of the CILOs. The assessment of the CILOs utilizes 4 course elements; namely: (1) Course Assessment Plan, (2) Table of Specifications (TOS), (3) Student Summative Assessment (test/ exam and course project) and (4) Course Evaluation Report.

The Course Assessment Plan is a table showing the method of assessment of each CILO, the performance rating, the rubrics used, and the contribution weight assigned to the
specific CILO in the entire course. As mentioned by Banta and Palomba (2015), an assessment plan is needed to carry out successfully an assessment process [2]. Also, rubrics should be there to provide objective marking [7, 8].

The Table of Specification (TOS) is a table that shows the mapping between the questions, the learning domains based on Bloom’s taxonomy, the course topics, assessed CILOs and assigned marks. This leads to a well-designed student course assessment instrument that considers both the comprehensiveness of the exam and the appropriateness of the exam to the level of the students as per the identified assessed ILOs and covered topics.

Based on the TOS, the student course assessment instrument, (test / exam) is designed. The exam sheet and/or the TOS include a clear breakdown of the marks by question to rubrics or marking criteria. The use of clear rubrics helps improve the performance of the students [7, 8]; and allows the course coordinator to fairly mark student outputs, and ease the moderation process.

The data for the preparation of the Course Evaluation Report are taken from samples of student assessed work. Based on the University guidelines, 15 is set as the minimum size of the sample for classes with more than 15 students and full cohort is considered for classes having fewer students. The declared size is an acceptable representation as it already provides a probability that there is at least 1 student in the sample who has not met the requirement [3]. The sample indicates how a CILO is attained and does not assure that all the CILOs are attained by the students. The Course Evaluation Report takes its inputs from the CILO worksheet considering the marks of students in the sample. The CILO worksheet is used to obtain the percentage of attainment of each of the CILOs by the students by entering the marks of all students who has not met the requirement [3]. The sample indicates how a CILO is attained and does not assure that all the CILOs are attained by the students. The Course Evaluation Report takes its inputs from the CILO worksheet considering the marks of students in the sample. The CILO worksheet is used to obtain the percentage of attainment of each of the CILOs by the students by entering the marks of all students included in the sample for each of the assessments as specified in the Course Assessment Plan. The weight point average of each CILO is used to obtain the SO value for which the CILO is mapped. This value, ranging from 1 to 5, with 5 as the highest is considered as input in the analysis of SO attainment by direct assessment method through the courses. The use of the direct assessment, through mean of student performance, where all scores of the student in the courses. The use of clear rubrics helps improve the performance of the students [7, 8]; and allows the course coordinator to fairly mark student outputs, and ease the moderation process.

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The indirect assessment of SOs obtains data using a questionnaire administered to specific respondents. It has 3 components; namely: (1) senior exit survey; (2) self-assessment of SOs by students enrolled in research projects; and (3) SO Evaluation by Practicum Supervisors. Each component is assigned a percentage of contribution to the attainment of SOs. As mentioned above, the indirect assessment method contributes 40% to the SO attainment; and this is distributed as 10% each for the senior exit survey and self-assessment of SOs by students enrolled in research projects and 20% for the SO Evaluation by Practicum Supervisors. Greater weight is assigned to the SO Evaluation by Practicum Supervisors since the perception is coming from an external body, eligible to give an assessment about the students’ performance. The chosen percentage reflects the university estimation of each factor and might be adjusted from one implementation case to the other. Those percentages have been agreed on after consultation with the college members and by looking to other institution experiences. The university considered also the program and course external examiners who confirmed the validity of the chosen percentages and advised the college to evaluate the obtained results of couple of cycle of implementation in order to determine if any elements require revision. Below, we include a detailed description on the procedure for each type of assessment:

The senior exit survey is administered by the Guidance Office to all the graduating students of the program every semester. The graduating students accomplish a questionnaire, which has 4 subsections, namely: General Information; Experience in the College; Advising Services, Curriculum and Instruction; and Facilities and Academic Infrastructure. The subsection – Experience in the College contains the data on the attainment of the SOs, hence, this specific sub-section is considered only for the SO assessment. The cited sub-section contains statements on how the students’ education contributed to the achievement of the student outcomes. The graduating student-respondent specifies the extent of attaining the SO using a value from 1.0 to 5.0 with 5.0 as the highest. The senior exit survey, as mentioned in the previous paragraphs contributes 10% to the over-all attainment of SO evaluation.

The self-assessment of SOs by students enrolled in research projects is administered by the faculty handling the Research Project course. The research project can only be enrolled by students who have taken the required pre-requisite courses and is registered in a senior year (third or fourth year) of the program. The research project (or capstone) is considered as one of the major requirements for graduation. The course allows the students to integrate all the theories learned with practical skills by requiring them to work on designing, implementing (realizing) and documenting a project. Hence, through this course, it is expected that all the student outcomes are attained by the students. Through the questionnaire, the student enrolled in the research project course determines his extent of the attainment for the SOs using a value from 1.0 to 5.0 with 5.0 as the highest. The faculty provides the collated data to the college for further processing and analysis. Same as the Exit Survey, the self-assessment of SOs by students enrolled in research projects contributes 10% to the over-all attainment of the SOs.
The SO Evaluation by Practicum Supervisors is administered by the Practicum Instructor (university faculty taking care of the face to face sessions with the students) to the Practicum Supervisors (company side) every semester. The practicum course exposes the students to a practical work experience along their field of specialization towards the end of the completion of the Bachelor of Science in Computer Science Program. The student undergoes a practical/on-site training in the company for 240 hours. The survey questionnaire which is accomplished by the Practicum Supervisor contains items related to the SOs. Through the questionnaire, the Practicum Supervisor indicates the extent of SO attainment for the student using a value from 1.0 to 5.0 with 5.0 as the highest. The SO Evaluation by Practicum Supervisors contributes 20% to the over-all attainment of the SOs.

3.2.2 SOs Method of Evaluation

A committee composed of faculty members selected by the college is in-charge of analyzing the data and interpreting the SO attainment results. It is the committee which decides the expected level of satisfactory attainment and based on the percentage assigned to each of the method of assessment, the committee determines the combined contribution of the assessment methods in the attainment of the SOs. With the rating scale for the survey instruments of 1 to 5, where 5 is the highest, the committee set the expected level of satisfactory attainment to 3.0/5. The committee obtains the SO Assessment results and makes an analysis of the results every semester. The SO Evaluation Report is submitted to the college for approval. Based on the findings and recommendations, the college prepares an improvement plan. Any deficiency or weakness, such as adding more student assessments in the course; identified in the report that necessitates immediate action is carried out by the college. At the end of the School Year, the committee makes an annual analysis of the SO assessment results and submits a report to the college. The SO Evaluation result is disseminated to the stakeholders in different ways, such as through consultative meeting with the Program External Advisory Panel (PEAP), alumni general assembly, or sent through mail and published in the University Websites.

4 Success Factors and Challenges

The University’s experience in obtaining Abet accreditation brought a lot of improvements in terms of program delivery. With a focus on attaining student outcomes, in the program, student and course levels, the University ensured that all methods of assessment and evaluation for both the PEOs and SOs are in-place and properly implemented. The College, in its interest to obtain Abet accreditation tailored all its academic processes and procedures to Abet requirements. It is worthy to note that several factors contributed to the successful assessment process. Among these are the following:

4.1 Appropriateness and Coherence of the Course – SO – PEO Mapping and the Nature of the Assessment Process

The correctness of the mapping greatly affects the attainment of the outcomes. When the course, through its CILO is not correctly mapped to the SO, the SO may not be attained. In the same manner, when the SOs are not properly aligned to the PEOs, the successful assessment of PEOs cannot be guaranteed. Within the 3-year implementation of the assessment, changes in the mapping of the Course to SOs took place during the second cycle based on the CILO analysis. It could be noted that during the first cycle of implementation of the SO Assessment and Evaluation, the program implemented the direct assessment of SOs through a selected set of computing courses. Using the established University policy and procedures for SO Assessment and Evaluation, 3 courses were identified to be used to determine the attainment of each SO. The CILOs mapped to the specific SO were assessed and the assessment methods vary from one course to another. Considering all the computing courses is the enhancement adopted during the 3rd cycle of SO assessment. The previous 2 cycles assessed the SOs considering only 3 computing courses for the direct assessment. The enhancement aimed to have a more accurate evaluation as it includes more relevant curriculum component covering various computing areas. In addition, program external examiner advised the College to consider a larger scale of courses to be included for the SO Assessment. Based on the previously mentioned element, and based on the recommendation of the Faculty Committee for SO Assessment and Evaluation, the College Council approved the inclusion of all the Computing courses in the Direct Assessment of the SOs. As a result, of the total number of SOs, 64% of the SOs have a better attainment during the 3rd cycle of evaluation, as manifested in the increase of values during the 3rd cycle. At an average, the increase in the SO result from one cycle to another is about 20%. On the other hand, there are 36% SOs which decreased its values at an average of 30% during the 3rd cycle evaluation. The comparative analysis of the 2 cycles where only 3 computing courses were included in the first cycle and all computing courses for the 3rd cycle shows globally a stability in the SO attainment (through direct assessment, with an average of 3.70 and 3.85 for cycle 1 and 2 respectively) with a clear trend of increase. This is a manifestation of adequate SO direct assessment tools as well as an indicator that the implemented changes whether in the exam scheme, course material or teaching methodologies are appropriate. The increase of 64% in SOs dealing with the students’ abilities to apply and use current techniques efficiently in answering professional requirements, with the recognition of the need to engage in a life-long learning is an achievement that the college is proud.
to note and will consider as a motivation for further improvement.

4.2 Careful design of the assessment tools and instruments

All the documents and reports used from the collection of assessment information to the dissemination of the evaluation results should be appropriately designed. All instruments that were used in direct and indirect assessment method went through a 3-step design-verification process. This ensured the validity of the assessment instruments. One of the important features of the assessment instrument is the presence of clear rubrics, which as discussed in the earlier section, served as a tool to improve performance.

4.3 Involvement of Stakeholders in the Assessment Process

The University recalls its experience from the formulation of the PEOs, SOs and CILOs to the utilization of evaluation results, where many stakeholders are involved. The responsibilities of stakeholders vary from one phase to another considering the 3 phases of assessment – planning, implementation, and improvement and sustenance of the process [2]. In the planning phase, the faculty members are directly involved as they designed the assessment plan for the course-level assessment; and a committee composed of faculty members are also involved in collecting PEO and SO assessment information and analyzing the results. During the implementation phase, faculty, students, alumni, employers, and practicum supervisors are involved, either as respondents, as source of direct data or in-charge of gathering the assessment information. The same stakeholders are involved in the improvement and sustenance phase, along with the Program External Advisory Panel (PEAP) who serves as the representatives of the primary program constituencies. The PEAP consists of five (6) members, three (3) employers, one (1) representative of the BSCS alumni and two (2) representative from professional organization. The PEAP members have been selected based on their qualifications and prospective contributions to the growth and development of the program.

4.4 Availability of Resources

One of the most important aspects of assessment is the availability of assessment experts and the presence of an automated learning outcome calculation. The use of an automated system ensured the accurate calculation of assessment data, and at the same time reduced the efforts of the faculty [9]. The college developed a semi-automated tool based on the usage of embedded excel computation formula in order to both assure coherence and consistency of the obtained results and also to facilitate and support teachers and various participants to the evaluation process.

4.5 Periodicity and Effective Documentation of the Assessment Process

The assessment process is one of the established academic activities in the University. The assessment and evaluation of the PEOs are done every year. The assessment and evaluation of the SOs and CILOs are done every semester and the results are summarized annually. In every process, a committee is involved and tasked for a responsibility starting from the collection of data to the analysis and dissemination of results as well as in addressing findings.

4.6 Utilization of Assessment Information and Dissemination of Evaluation Results

The primary purpose of assessment is to evaluate student performance and improve program delivery. As a result of the first cycle of evaluation, significant changes in the program, which include, adding Mathematics and Computer Courses in the curriculum to improve the problem solving skills of the students, updating textbooks, revising lecture notes and improving assessments took place. The results of the second cycle of evaluation were used to enhance the Bachelor of Science in Computer Science courses and served as basis in the integration of embedded assessments in most of the computing courses. The key indicators for assessing these courses have been improved to match the outcomes being assessed and make the process more consistent and effective. In fact, the following recommendations were made based on the result of the SO evaluation for the second cycle:

- Review the ILOs of the courses, specifically those which are mapped to SOs a, g and k, as some may not have addressed properly the specific SO to which they are mapped;
- Review the teaching and assessment methods of the courses. Use rubrics and include in the exams more questions that develop critical thinking. Strengthen problem-based learning by having a project as major component of advanced courses; and
- Include more than 3 courses in the evaluation of SO by direct assessment.

The various factors that contributed to the success of the assessment process led to the improvement of program delivery as mentioned above. However, the early stages of implementation brought also some challenges as well, starting from the awareness of the faculty about student outcomes, formulation of student outcomes and methods of assessments and evaluation, to the design of the assessment instruments, utilization of results and to the sustenance of the processes and procedures. One among the major challenges when dealing with outcome assessment is to find the adequate equilibrium between the number of assessment and the assessed ILOs as well as the adequate periodicity, time frame and level. In fact, some practices focus on a relatively high
number of assessments (mainly in first and second year) as a way to ensure assessing targeted basic concepts in separate way. Such - even defendable - will lead to a lack of a global overview on the learner capability to integrate and combine knowledge and will present an additional challenge of sustainability considering the required efforts and time by the faculty to achieve such. Moreover designing a well equilibrated assessment that allows to track students level and allow to identify various level of achievement is a major concern and we have seen often time a need for specific capacity building session in that regard. The assessment as presented here is now far from being an isolated action for measuring a single or unique performance. It has to be seen in a more complete vision of ILOs achievement. Such ‘snapshot’ of efficiency measured by one assessment has to be included in a full evaluation process. Hence nowadays, educators are having more challenging task in doing such and their – relationship- with one evaluation or assessment will be for a longer period than just designing and conducting the assessment. Educational, Contextual, Organizational and Time constraints factors have so to be considered when designing assessments, deciding on assessment components tools and methodology in order to ensure correctness, fairness, sustainability and adaptability in a dynamic environment. The dilemma of choosing adequately the number and category of assessments will be usually of a major interest as increasing the number and frequency of assessment does not indicate nor assure that student outcomes are attained. In fact, Abet does not recommend that the program assesses student outcome every year to know how well it is able to attain student outcomes. Rather, it suggests cycles of assessments using performance indicators using 2-3 core upper-level courses mapped to the outcomes, on a rotation basis [10].

5 Conclusions and Recommendations

The University’s established assessment methodologies led to the collection of meaningful data which were utilized to improve program delivery. While the assessment methods employed improved the Bachelor of Science in Computer Science program, this does not mean that the existing assessment methods employed are efficient enough, considering that there are excessive assessments done every period and that assessment is part of the responsibilities of the faculty. Hence, the college should explore the use of a set of courses for a specific set of SOs by semester, within a 3-year cycle. This should be done to identify a better assessment methodology with the objective to simplify the assessment processes without compromising the quality of results. The experience of rethinking the assessments and the assessment process within the global Abet framework and requirements definitely has a positive impact on the program delivery improvement. The set of choices, components and process of ILOs assessment as presented in this paper have to be considered as – contextual – and subject to continual evaluation and improvement. As a matter of fact we do believe that this is a very intermediate step before reaching a more equilibrated, sustainable and efficient assessment methods and processes.

6 References


