

ORIGINAL ARTICLE

Develop assessment framework inspiring-Saudi Arabia's Vision 2030 for health program in higher education: an experience from Al Maarefa University, Riyadh, Saudi Arabia

Ebtesam. A. M. Jibreel^{1*}, Nazik M. A. Zakari¹, Jamel A. S. Smida²

ABSTRACT

Background: There are indeed several types of assessment used in measuring the achievements of the program learning outcomes (PLOs). To mention some, one can talk about direct, indirect, subjective, and objective assessment. It is necessary to have a clear framework to assess the PLOs and to indicate the strengths and weaknesses of the program for early detections and improvements. The purpose of this study is to develop an applicable assessment framework that combines both direct and indirect methods through performance index and performance indicators (PIs) of PLOs inspiring by Saudi Arabia's Vision 2030 for health program in higher education.

Methodology: The online databases were interpreted using a literature review, to produce a few articles outlining and examining the implementation and evaluation of assessment framework relating to health programs. This search was conducted through the support of Google keywords: learning outcome assessment plan, learning outcome direct assessment method, learning outcome indirect assessment method, learning outcome PIs, and learning outcome performance index.

Results: An assessment framework was presented using both the direct and indirect methods of assessment learning outcome with a view to reach a definitive method of assessing learning outcome achievements.

Conclusion: The study recommends the development of standardizing examinations to simulate the national and international standardized examination that all examination questions need to be mapped with the PLOs.

Keywords: Saudi Arabia's Vision 2030, program learning outcomes, loop of quality cycle, direct method, indirect method, performance index, performance indicators.

Introduction

The Saudi Arabia's Vision 2030 and related programs set the general directions, policies, goals, and objectives of the Kingdom. It sets out an ambitious roadmap for education reform in the Kingdom of Saudi Arabia [1]. Several strategic objectives of the National Transformation Program were stated to reflect higher education strengths such as "improving curricula and teaching methods, improving students' values and core skills, educating students to address national development requirements and labor market demands, and increasing private sector participation in the education sector" [2]. Human capital development is another Saudi Arabia's Vision 2030 program which aims to improve the level of education in Saudi Arabia to reach the international level [3] Accordingly,

the Ministry of Education has undergone a restructuring process to accommodate this phase to accomplish its tasks and increase its capabilities. Al Maarefa University being a private one is aligned to the Ministry of Education in the Kingdom of Saudi Arabia. It operates to assist in the realization of these strategic goals that aim to attain the Kingdom's Vision 2030. We started working on improving

Correspondence to: Ebtesam. A. M. Jibreel

*Quality Unit College of Applied Sciences, Al Maarefa University, Al Khalidiyah, Riyadh, Saudi Arabia.

Email: ijibreel@mcst.edu.sa

Full list of author information is available at the end of the article.

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educational curricula, teaching, and assessment methods used in the university by assessing learning outcomes for the health specialty programs through this framework. The assessment of learning outcomes plays an increasingly important role in health specialty programs. In addition, the ability of students to perform at the end of the learning period is a major accomplishment for the learners and intuit. The movement of learning toward being learning focused with an emphasis on student outcomes, as opposed to being teaching-focused, is crucial to establish a predictable method of assessment [4]. Therefore, the learning outcomes and its method of assessment play an increasingly important role in any program, especially for health specialty programs [5]. The assessment of student learning is one way for a program to receive feedback regarding the effectiveness of its core educational mission and success in accomplishing the core tasks.

One of the major difficulties regarding learning outcomes is how to assess as there is no better method to assess learning outcomes than other; rather assessment should be suitable and aligned with the attributes of an institution, program, and student [6]. The literature illustrates that learning outcome assessment is practiced worldwide. A study conducted at Saudi University proposes a framework to assess the program learning outcome (PLOs). The study combines two direct methods of assessment by using course learning outcome (CLO) assessment and performance indicator (PI) assessment to increase the validity and minimize the subjectivity in the assessment process [7]. Another trial to develop a comprehensive framework of assessment at the level of college was conducted at Gulf University. It covered three domains: programmatic assessment, academics, and engagement/satisfaction. The PLO assessment is well illustrated in the academic domain as an integral part of the assessment framework at the level of college [8]. The standardized examinations were also one of the instruments used for learning outcome assessment study at an international university. The study set a standardized examination for the purpose of student learning outcome assessment. It came to the conclusion that using standardized examinations in learning outcome assessment can be helpful in reaching the learning outcomes target and program evaluation [9].

Furthermore, enhancing PLOs will promote health provider advancement in education and practice, especially with effective leadership, education strategies, and a safe learning environment. Zakari et al. [10] recently evaluated that factors support the faculty as leaders to advance education by examining learning outcomes in the simulation environment. This study concluded that "clearly communicate the objective and expected outcomes" is a significant variable in the evaluation process. PLOs might be achieved through repeated and continuous practice, rigorous evaluation, and feedback mechanisms.

Similarly, to the best of authors' knowledge, none of the literature retrieved related to the framework of

learning outcome assessment for health programs in higher education in Saudi Arabia. The importance of the study came from the significance of learning and teaching in Saudi Arabia that is clearly stated in Saudi Arabia's Vision 2030. Having well-trained manpower coming from higher institutions will profoundly help in realizing the vision 2030 and requirements of labor market demands throughout improving programs and teaching methods. This paper by assessing the learning outcomes of the higher program is trying to close the loop of the quality cycle and, in the end, improve the quality of learner performance. Moreover, this process indeed will encourage program graduates to meet the competitive labor market needs. The triangulated assessment measurements will promote in attaining of the strategic goals of the Ministry of Education and program enhancement. The objective of this paper is to establish an applicable framework of learning outcome assessment for health programs in higher education.

Materials and Methods

By emptying the literature review, the first draft of the assessment learning outcome framework was formed. An online database was interpreted using a literature review, to produce a few articles outlining and examining the implementation and evaluation of assessment framework relating to health programs. Hence, this search was conducted throughout the support of Google keywords: learning outcome assessment plan, learning outcome direct assessment method, learning outcome indirect assessment method, learning outcome PIs, and learning outcome performance index, where all assist in the identification of publically available assessment plans. All pinpointed articles and documents were thoroughly reviewed, focusing on the framework structure. The literature and online search were expanded throughout reviewing the accreditation standards, in addition to the extraction of key points or indicators, to aid in formulating the assessment framework. The first version of the assessment framework was drafted by the Head of Quality Unit in the College of Applied Sciences at Al Maarefa University and reviewed by the Manager of Quality Center at the university.

Indirect learning outcome assessment method

Perceptions and viewpoints that can be obtained through focus groups or surveys of students, alumni, and employers serve as indirect evidence. Graduation and job placement statistics, as well as data on participation in programs that can link to program goals (e.g., internships and undergraduate research participation rates), are also considered as indirect evidence.

Measuring the degree of perception for program learning outcome achievement

We are required to assess the perception of how effective the program outcomes were achieved. The

degree program prepares graduates for the health profession. It is carried out by asking students, alumni, and faculty in health programs to fill out the survey forms that consist of the PLOs. Each participant needs to rate the perception of achievement out of five according to the following: PLO 1-demonstrate the knowledge of nursing, basic sciences (e.g., biology, physics, biostatistics, and chemistry), Islamic, Arabic, English, and social sciences appropriate to the nursing: 1-strongly agree, 2-agree, 3-neutral, 4-disagree, and 5-strongly disagree.

Direct learning outcome assessment method

It consists of accumulating the CLO achievements of the selected courses to measure the PLO achievements. The use of an embedded method needs to go through the following steps.

Course learning outcome assessment method

Step 1- planning for assessment

All classroom activity items (written examinations, quizzes, assignment, objective structured clinical

examination (OSCE), and portfolio) are mapped to CLOs as shown in Table 1.

Step 2-gathering results from assessment tools for each CLOs

Based on the average marks of students (S) in each classroom activity item, the performance level is calculated as shown in Table 2.

The weight of proportionate marks for each CLO is calculated using the weight of the proportionate marks of the classroom activity items. Based on the classroom activity-mapping matrix in Table 1, the value is distributed as shown in Table 3.

Step 3-gathering summary of the results

The performance level of students for each classroom activity item in Table 2 is used to calculate the performance index for each CLO. Based on the classroom activity-mapping matrix (Table 1), the values are distributed as shown in Table 4.

The last column in Table 4 represents the performance index for particular CLO based on the percentage of CLO achievement out of proportionate weight for CLO.

Table 1. Classroom activity item mapping matrix.

CLOs	Written Exam 1	Written Exam 2	Quiz	Assignment	OSCE	Portfolio
CLO 1	*		*			
CLO 2				*		*
CLO 3	*				*	

Table 2. Students' performance level in classroom activity items.

Classroom activities	Proportionate marks weight for classroom activity items	Students' marks			Performance level
		S 1	S 2	S 3	
Written examination 1	30%	20	25	30	$(20+25+30/3) = 25$
Quiz	10%	9	8	10	$(9+8+10/3) = 9$
Assignment	10%	7	8	9	$(7+8+9/3) = 8$
Portfolio	10%	8	6	7	$(8+6+7/3) = 7$
Written examination 2	30%	22	27	29	$(22+27+29/3) = 26$
OSCE	10%	4	6	5	$(4+6+5/3) = 5$

Table 3. CLOs' proportionate marks' weight.

Classroom activity items	Proportionate weight for classroom activity items	CLOs	Weight of proportionate marks for CLO
Written exam 1	30%	CLO 1	30+10 = 40%
Quiz	10%		
Assignment	10%	CLO 2	10+10 = 20%
Portfolio	10%		
Written exam 2	30%	CLO 3	30+10 = 40%
OSCE	10%		

Program learning outcome assessment method

Step 1- planning for assessment

The assessment of individual PLOs need for two mapping matrices as follows: selected courses mapped to the PLO as shown in Table 5

All the selected course learning outcomes mapped to PLOs as shown in Table 6.

Step 2-gathering the result from CLOs for each PLO

The performance index of CLOs shown in Table 4 used to calculate the performance index of PLOs. Based on the mapping matrix of the CLOs with PLOs in Table 6, the values are distributed as shown in Table 7.

The last column in Table 7 represents the performance index for a particular PLO based on the average performance index of CLOs that mapped it in course number 1.

Step 3-gathering summary of results

The average course performance index shown in Table 7 used to calculate the performance index for each PLO as shown in Table 8. Based on the mapping matrix of the courses with the PLOs in Table 5, the values are distributed.

The average value of each row represents the performance index of particular PLOs.

Step 4-benchmarking and performance indicators

The program needs to define PIs for each PLO. These are based on the benchmarking programs of their choice.

For instance, if the PI for a particular PLO in the selected benchmarking program is 80%, the program can set PIs for similar PLO at 70% at the initial stage. If this is achieved, then set a new higher PI.

Results

The final learning outcome assessment framework is shown in Figure 1. The framework was divided into two methods of assessment: indirect and direct. The indirect method assesses the perception of teaching staff, alumni, and students regarding the PLO achievements. On the other hand, the direct method measures the accumulation of the CLO achievements of selected courses to measure PLO achievements.

Discussion

Going by the results of the study, one can discern that the concept of this framework was recommended by the National Center for Academic Accreditation and Evaluation [11]. By using the indirect and direct methods of assessment, one could state here that the indirect method uses surveys to measure the perception of students, alumni, and faculty for PLO achievement. On the other hand, the direct method measures learning outcomes for each course in the program and mapped all through program outcomes. Here, we lay an emphasis on the assessment of PLOs for the purposes of continuous quality improvement. If the assessment conducted ended by closing the loop of the quality cycle, the student learning outcomes will be greatly enhanced [6].

Table 4. Performance index of CLOs.

CLOs	Classroom activity items						Performance level for CLO	Weight of proportionate marks for CLO	Performance index
	Written examination 1	Written examination 2	Quiz	Assignment	OSCE	Portfolio			
CLO1	25		9				$25+9 = 34$	40%	$34/40*100 = 85\%$
CLO2				7		8	$7+8 = 15$	20%	$15/20*100 = 75\%$
CLO3	26				5		$26+5 = 31$	40%	$31/40*100 = 76\%$

Table 5. Mapping matrix of the courses with the PLOs.

PLOs	Course 1	Course 2	Course 3
PLO 1	*		*
PLO 2		*	*
PLO 3	*	*	

Table 6. Mapping matrix of the CLOs with PLOs.

PLOs	Course 1	Course 2	Course 3
PLO 1	CLO 1, CLO3	CLO 2, CLO4	CLO 2, CLO4
PLO 2		CLO 1, CLO3	
PLO 3	CLO 2, CLO3		

Table 7. Sample of PLO performance index.

PLOs	Course 1	PLO performance index
PLO 1	$85+76 = 81\%$	81%
PLO 3	$75+76 = 76\%$	76%

Table 8. PLO performance index.

PLOs	Courses performance index			PLO performance index
	Course 1	Course 2	Course 3	
PLO 1	81%	70%	81%	$81+70+81/3 = 77\%$
PLO 2		75%	90%	$75+90/2 = 83\%$
PLO 3	76%		85%	$76+85/2 = 81\%$

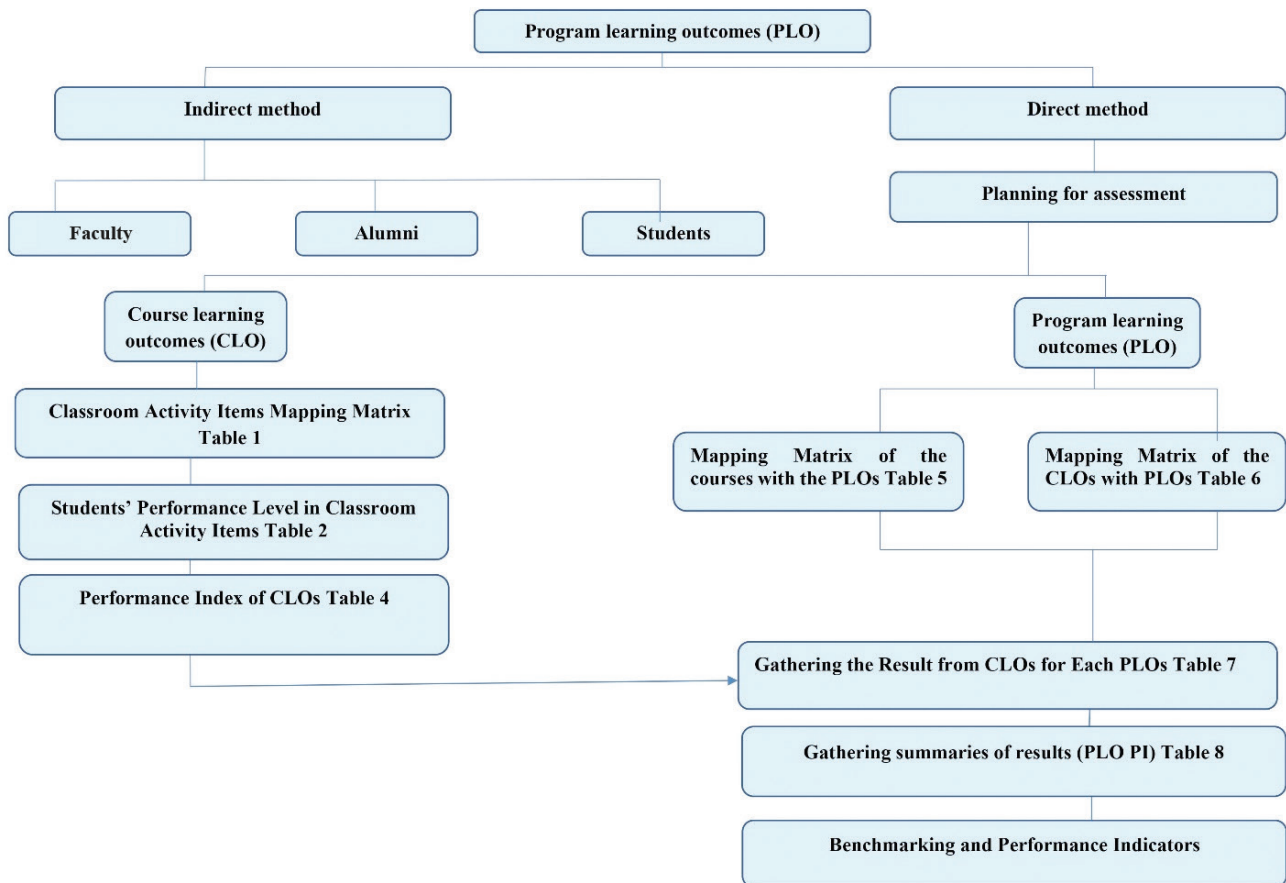


Figure 1. The final learning outcome assessment framework.

Conclusion

In this paper, an assessment framework was presented using both the direct and indirect methods of assessment learning outcome with a view to reach a definitive method of assessing learning outcomes achievements. The study recommends the development of standardizing examinations to simulate the national and international standardized examination that all examination questions need to be mapped with the PLOs. The framework can be deployed as a basis for continuous improvement in teaching and learning processes.

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List of Abbreviations

CLO	Course learning outcomes
OSCE	Objective structured clinical examination
PLO	Program learning outcomes
PI	Performance indicator

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

Consent for publication

Informed consent was obtained from all the participants.

Ethical approval

Al Maarefa University, Scientific Research Committee. Approving date : 12.02.2020; letter number: (UM)-COP 20-10/RC.

Author details

- Ebtesam. A. M. Jibreel¹, Nazik M. A. Zakari¹, Jamel A.S. Smida²
- Quality Unit College of Applied Sciences, Al Maarefa University, Ad Diriyah, Al Khalidiyah, Riyadh, Saudi Arabia
 - Quality Center, Al Maarefa University, Ad Diriyah, Al Khalidiyah, Riyadh, Saudi Arabia

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