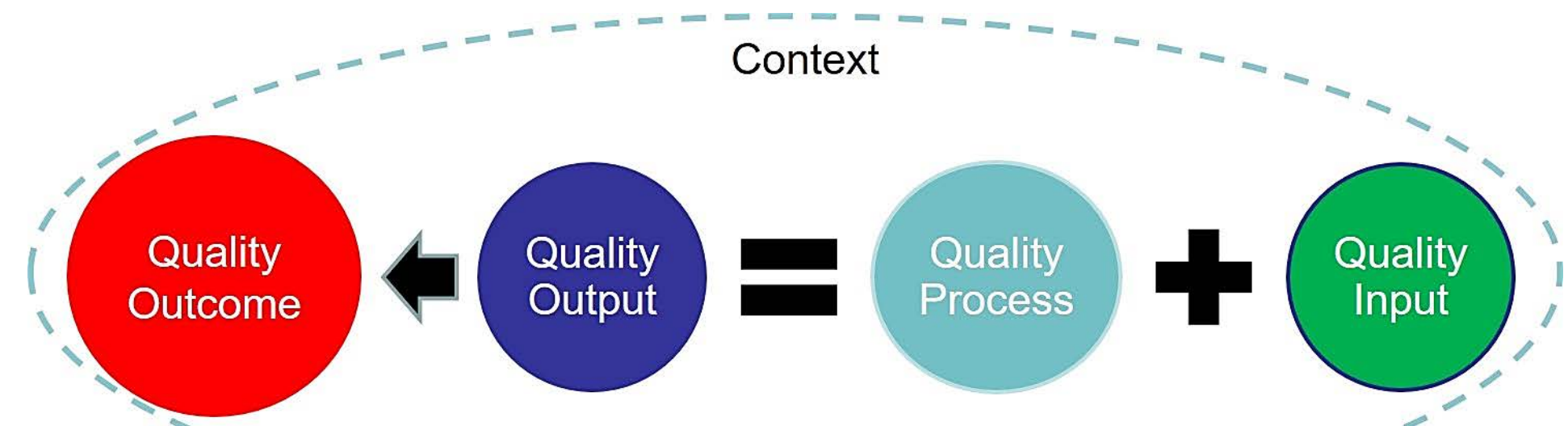


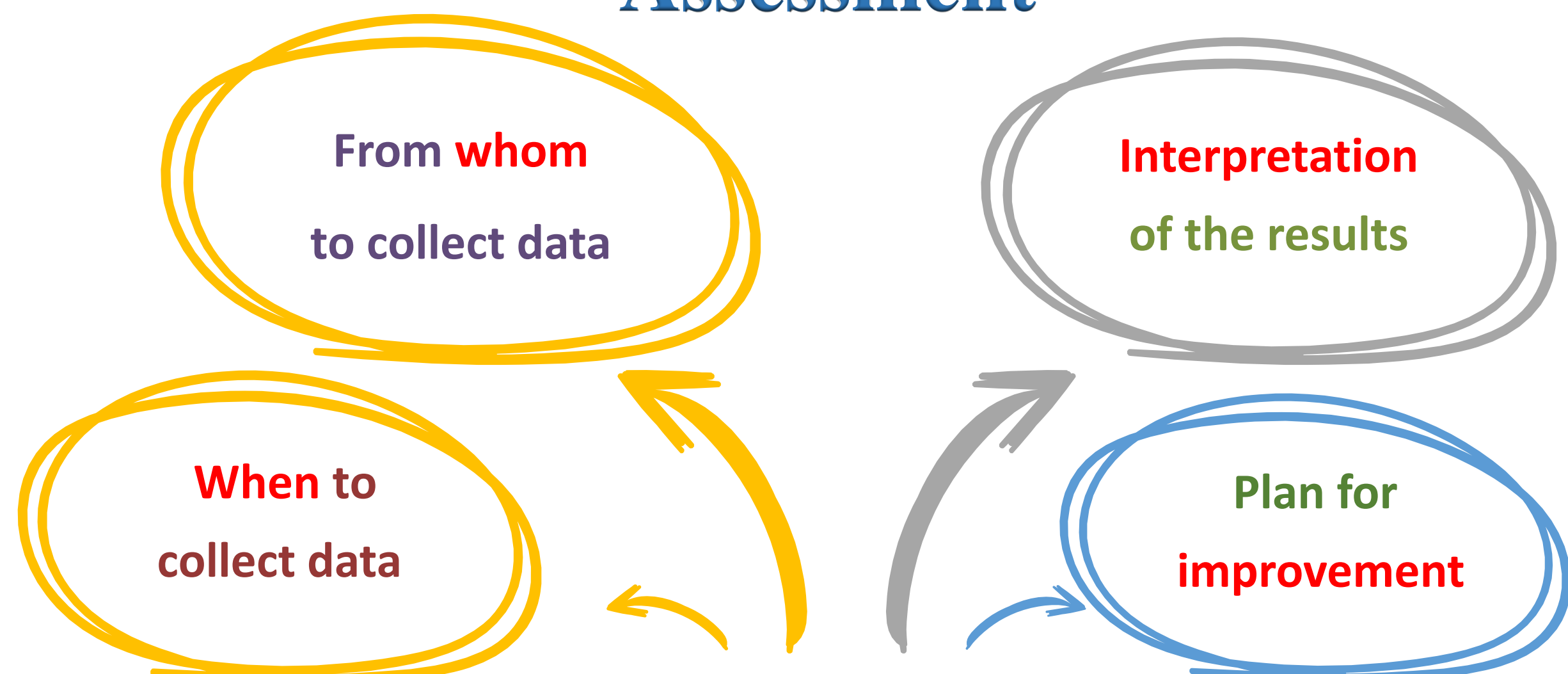
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Outcomes-Based Concept



Assessment



PRINCIPLES OF PROGRAM ASSESSMENT

Focus of providing evidence of program assessment is on the cumulative effect of student learning and influences

QUALITY ENHANCEMENT OF ELOS



Processes or Plan

	Cycle 1	Cycle 2	Cycle 3
Year	2017-2018	2018-2019	2019-2020
Uni. missions & Constituency needs	Program Education Objectives		
	Student Outcomes		
	Program Curriculum		
	Program Deployment		
Faculty	Course-embedded assessment	Course-embedded assessment	Course-embedded assessment
Employers	Post-internship assessment	Post-internship assessment	Post-internship assessment
QA	Pre-internship assessment	Pre-internship assessment	Pre-internship assessment
	SO evaluation	SO evaluation	SO evaluation
Program chair and Program scientific committee	Feedback	Feedback	Feedback

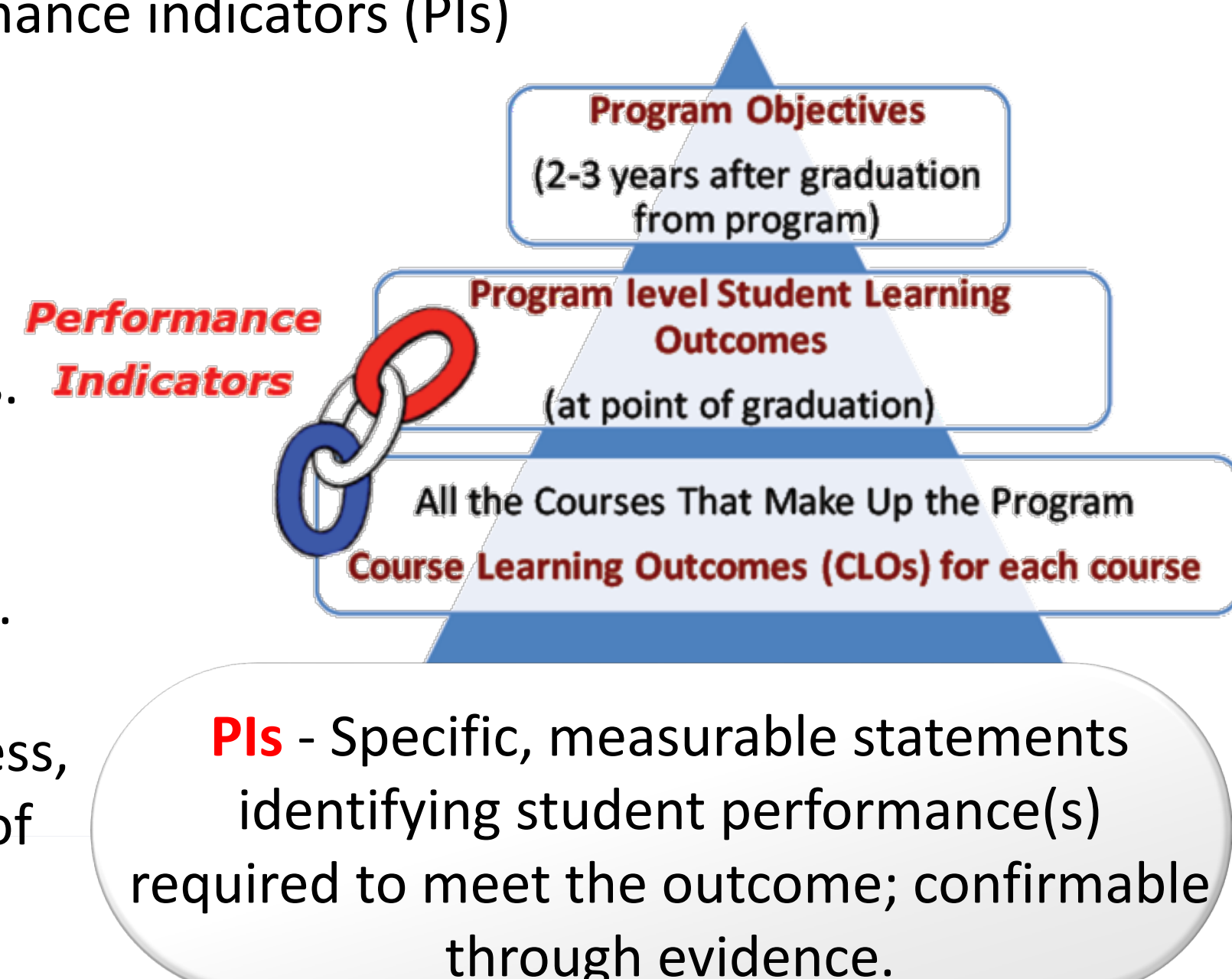
Figure describes a 1-year cycle program assessment and evaluation plan during three years from 2017 to 2020. The QA team processes data collected from lecturers through course-embedded assessments; from the enterprises through the post-internship assessment; and from pre-internship assessment of students. The assessment results of PIs in each cycle are reviewed and decided to improve on assessment methods, teaching methodology, curriculum,... by the program Scientific Committee and Program Chair. The improvement on the assessment tools is applied after the first cycle. The assessment results of the next cycle will be processed and used to improve the curriculum, teaching methods and assessment.

Assessment Metrics and Methods

ELOs are evaluated based on their performance indicators (PIs)

ELO c: To conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes.

- PI1: Test/Verify the operation of the machine based on simulation software.
- PI2: Use the measuring instruments to measure the sizes/ dimensions, hardness, roughness and mechanical properties of the parts/ elements



In each cycle, the ELOs are evaluated based on the assessment tools, where F represents all PIs and P describes some PIs of the corresponding ELO that can be assessed by the corresponding tool. The results assessed on different instruments will be used for comparison and consideration when deciding on appropriate improvements.

ELOs \ Assessment Tools	a	b	c	d	e	f	g	h	i	j	k
Course-embedded assessment	F	F	F	F	F	F	F	F	F	F	F
Pre-internship assessment				P							
Post-internship assessment	F	P	F	P	F	P	P	P	P	F	P

+ Course-embedded assessment

This assessment method is used to measure the CLOs of courses that serve to assess to PIs of ELOs in the program. As CLOs support for PIs at different levels (I, R, E), PI will be mainly assessed on some courses whose CLOs are at level E. Some courses corresponding to I and R levels are also assessed in order to finding out the cause when the attainment of the corresponding performance indicator does not reach the expected degree.

+ Post-internship assessment

After students complete the internship attachment, we send a questionnaire to the enterprises hosting the internship. This questionnaire covers the rubrics of the corresponding performance indicators to ensure the reliability of the assessment tool. Unlike other assessment tools, this tool is conducted by external assessors who are the instructors supervising the student's internship in the enterprise. The results of this tool, therefore, are also used to verify those of the above tools.

To reduce the instructors' workload when assessing our students, we limit the number of questions in each questionnaire to just around 10 questions and apply different questionnaires to different enterprises as long as more than 30 students are assessed per questionnaire to ensure the statistical reliability.

+ Pre-internship assessment

Before students come to the enterprises for the internship attachment, these students must attend a test of some necessary knowledge and skills. Through this test, some PIs of SO will be assessed and evaluated objectively.

Assessment Schedule and Frequency

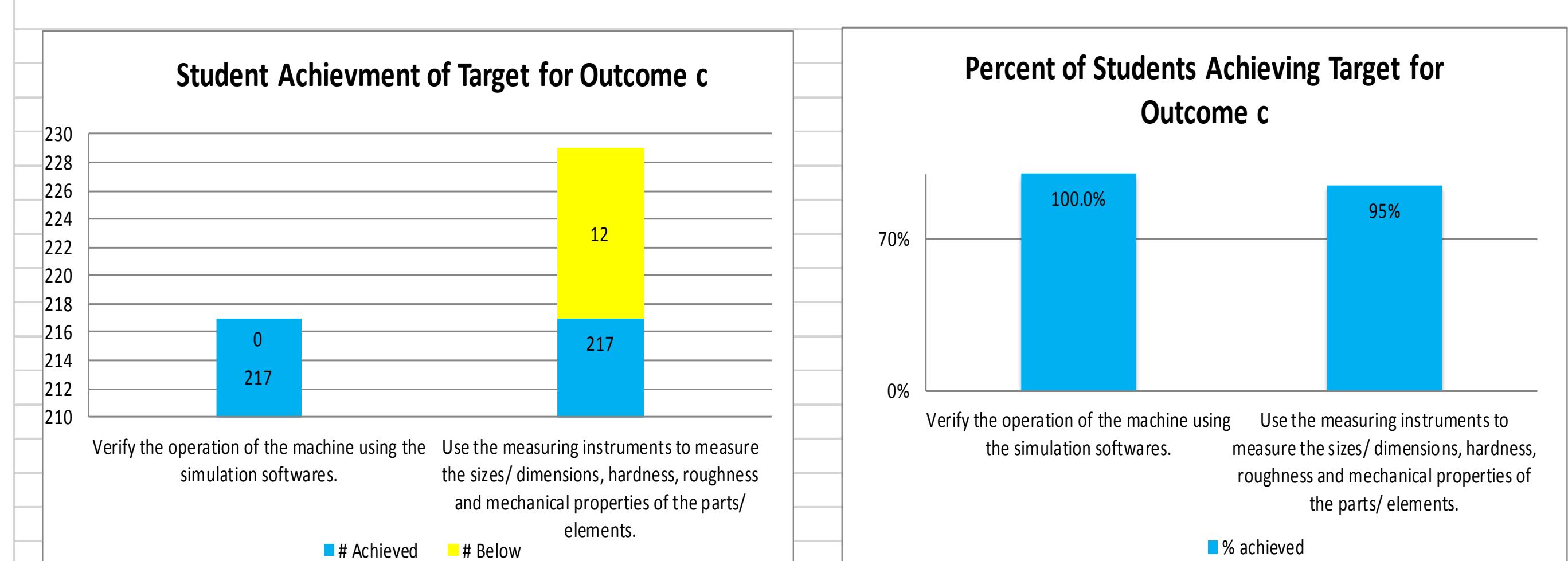
ELO c: To conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes.

PIs	Educational strategies	Method (s) of Assessment	Where E data are collected	Where I,R data are collected		Length of E assessment cycle (yrs)	Year of E data collection
				S1 of cycle	S2 of cycle		
PI1: Verify the operation of the machine using the simulation softwares.	03414;		03523(2)	03414		one year	2017, 2018, 2019
	03484				03484		
	03523						
PI2: Use the measuring instruments to measure the sizes/ dimensions, hardness, roughness and mechanical properties of the parts/ elements.	03507	Survey	Post-internship Assessment			June and December	2017, 2018, 2019
	03417		03417(1)			one year	2017, 2018, 2019
	03416		03416(1)				
	03507	Survey	Post-internship Assessment			June and December	2017, 2018, 2019

Evaluation for Improvement

SO(c). An ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes.

Performance Indicator	# Achieve	# Below	Total #	% achieve	Target %	Target Met
PI 1: Verify the operation of the machine using the simulation softwares.	217	0	217	100.0%	70%	Yes
PI 2: Use the measuring instruments to measure the sizes/ dimensions, hardness, roughness and mechanical properties of the parts/ elements.	217	12	229	95%	70%	Yes



- Students perform better when they get feedback on their performance to know their areas of strength and weakness and what they need to do to improve.
- Students perform better when they know the relevance of what they are learning to their future careers and personal lives.