

Original article

Practical tips and Stepwise guide to create and implement Rubric Based Assessment in Competency Based Medical Education: No need to google, create your own Rubric!

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Abstract:

In a technology –driven society, it is very essential to have effective communication skills as medical graduate with patients and peer members. Assessments are vital in the process of teaching and learning. Assessing oral presentation skills is considered as assessing the behavioural skills in Millers' prism of Clinical competence in Medical Education. In alignment with the Saudi Med competency Framework, the rubric was designed keeping the core competency at the centre like Communication & Collaboration and arranging the other auxiliary competencies around, then the parameters like dimensions were derived. An evaluation rubric for grading the presentations was designed to allow faculty evaluators to objectively score student performances in the dimensions of presentation like speech elocution, eye contact along with subject content. Rubrics create clarity for students and rubric dimensions represent various outcomes for students, giving them a realistic destination for their assignment. The students are informed about plagiarism malpractices and are instructed to maintain academic integrity. In response to the COVID-19 pandemic, the rubric scoring assessment for oral presentation was used for online assessment on Zoom webinar. This assessment tool along with online conferencing tools has provided a framework for integrated and interactive evaluation that can be used to facilitate the modification of traditional assessment methods.

Keywords: Rubric scoring; Plagiarism; Oral presentation; Dimensions; Saudi Med competency Framework; Self- Directed Learning

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Introduction

Assessments are conducted for many reasons, but the final goal is always to improve learning outcomes for each student. In medical education, assessment of performance is essential for student's evaluation to progress to the next level. Students need to experience a variety of assessment methods that take account of their various learning styles and that allow them to demonstrate their abilities in multiple ways and oral

presentation is one of them^{1,2}.

Within medical education framework, Miller's pyramid is used for measuring learner outcomes, which consists of cognitive level "knows" placed at the base of the pyramid, followed by "knows how," then behaviour level "shows how," and finally, "does" is placed at the top³. Competencies will need to be articulated and mapped in order to perform directed, competency-based assessments. The design of these learning strategies

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should define expectations with respect to skills that can be measured specifically for each task⁴.

Faculty members frequently support the use of rubrics, as rubric use assists in timely, just evaluation as well as appropriate feedback⁵. The use of rubrics can help avoid inter-observer variability and prevent grade inflation phenomenon⁶.

Rubric are explicit than Rating Scale and has 4 parts:-

1. Description of the task- Check List
2. The scale to be used – Rating Scale
3. The dimensions of the task
4. The description of each dimension on the scale⁷.

Steps to develop Rubrics for Oral Presentation within the Saudi- MEDs Competency Framework:-

1. Determine the core competency that is going to be assessed

For example the question to be answered; Which core competency is needed to be assessed in the rubrics if the program has six competencies?

Let us take six competencies of Saudi -Med as follows:-

1. Scientific approach to practice
2. Patients care
3. Community oriented practice
4. Communication & collaboration
5. Professionalism
6. Research & Scholarship⁸.

Identification of the core competency intended to be assessed by rubric for Oral Presentation i.e.;

1. Communication & Collaboration

So the auxiliary competencies intended to be assessed by Rubric are:-

1. Scientific Approach to practice
2. Patients care
3. Community oriented practice
4. Professionalism
5. Research & Scholarship

Note:- It is not advisable to take not more than two auxiliary competencies.

Keep the core competency in centre and as in given Figure 1.

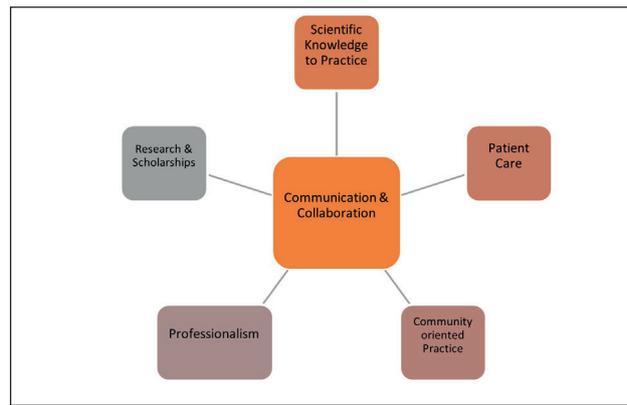


Figure 1 shows arrangement of Core competency at the centre and auxiliary competencies around it.

Prepare the learning outcomes targeting the core competency:

1. Organize oral presentation skills in order to effectively communicate within a group.
2. Communicate the subject matter by using PowerPoint presentations.

Outcomes targeting the auxiliary competencies:

1. Explain the subject matter in order to practice with scientific knowledge.
2. Develop professional skills in order to practice with ethics.

Now design the parameters according to the dimensions mentioned in Figure 2.

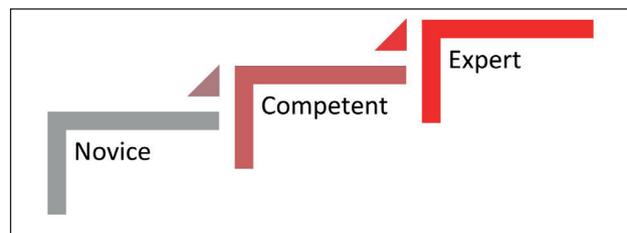


Figure 2 showing the step up process of the dimensions.

Explain in a measurable way the expectation of behaviour in each dimensions as shown in Figure 3.

Once the rubric is designed, it has to be well- oriented to the faculties by faculty development programs. Faculty who are using rubrics for the first time will need to be trained in a hands-on setting with mock assignments⁹.Faculty should orient, supervise and mentor the focus group students. During implementation any valuable feedback is encouraged to improve the rubrics. It is important to design the rubrics according to the requirements for the course

1. Team Work	Communication
2. Negotiation Skills	Communication
3. Leadership Skills	Communication
4. Subject Knowledge	Scientific Approach to Practice
5. Rural Engagement	Community Oriented Practice
6. Multidisciplinary	Professionalism
7. Originality of Work	Research & Scholarship

Figure 3 shows expectation of behaviour in each dimension.

outcomes.

Components of Oral presentation Rubric

It is important that evaluation criteria are established and needed to ensure that students understand the criteria. The following strategies were considered to make for each dimension the assessment effective for the students.

1. The outcome of the presentation

When the students were allowed to choose their own sub-topic, it produces greater comprehension and lowers their anxiety¹⁰.

2. The criteria for presentation

Students also need to be made aware of the criteria used for assessing their oral performances in order to help them prepare well¹⁰.

3. The dimensions of each task –Refer to Attachment

There are 5 dimensions namely Content & Organization, Subject Knowledge, Screen design, Speech elocution & eye contact and References. The maximum score for each dimension is given for arrangement of the content accurately for the given outcome in relevant sequence, students able to receive and answer the questions asked by the faculty, follows rules for screen design, maintains eye contact and pronounces all terms precisely and follows the rules of referencing format.

4. Sample for Screen design & Reference format

Details of screen design and Vancouver style of referencing is given in the rubric template with examples.

5. The scoring points and how to interpret them on rating scale

Each dimension has 4 points (1 point is lowest & 4 points is the highest). So, in total 5 dimensions *4 = 20 points. Points to marks conversion scale should be used to convert the points into marks.

6. Supervisor feedback & reflection

Supervisor should guide, mentor and encourage the students. Students prefer to see a peer's presentation modeled and hear supervisor feedback before they give their own¹⁰.

7. Self & peer assessment encouraged

Reflective Feedback and assessment play an important role in teaching and learning. Peer assessment is necessary to strengthen this central role of rubric scoring assessment¹¹. Students' positive attitude towards peer assessment helps them to develop their soft skills and acts as an appropriate source of external feedback¹².

8. Embedding assessment into the instructional process

Instead of viewing assessment as a final judgement, work to make assessment, teaching,

and learning all part of a continuous cycle. Encourage students to revise, expand, and rewrite at all points in the cycle and for reasons other than receiving a score or a grade¹³.

9. Instructions about Plagiarism & Dishonesty

Plagiarism is a specific form of academic dishonesty involving the presentation of work of another as one’s own¹⁴. Collusion means the presentation by a student as his own work which is in whole or part of unauthorized collaboration with another person or persons. The supervisors explain to their group students about plagiarism and collusion in regards to upholding values of academic integrity. The students are also briefed about how plagiarism can be checked online.

10. Student acknowledgement of not involving in Plagiarism or collusion

The students self-declare that they are submitting their assessment as part of their own work and will not involve themselves in plagiarism or collusion.

Case Study

An integrated assignment was held for 3rd-year male and female medical students. Regarding the oral presentation outcomes, the students created the subject content according to the topic allotted to them. The topic was congenital anomalies of

Cardiovascular system given to two groups of 15 students each. Each student identified a specific sub-topic congenital anomaly and presented a case report with signs, symptoms, investigations, diagnosis, treatment and embryological basis of the particular anomaly. The focus was on interpretation of embryological concepts to clinical presentation. All (100%) students prepared and presented the case scenarios relevant to the congenital anomalies.

Results of student reflection on the assessment during the pandemic

Forty-five percent of the total students responded to the questionnaire. Ten questions were required responses on a 5-point Likert scale, two final open-ended questions were included. [Table 1]

As shown, overall student feedback was positive and asked for more effective mentorship. As the students were well oriented with Oral presentation for Self-Directed Learning (SDL) before the pandemic, they had to adapt to the opportunity of online oral presentation.

Increased student support and improved faculty-student relationships have been reported after implementing these strategies such as Self-Directed Learning (SDL), Seminars, writing assignments and portfolios. Students’ competence in English

Table 1: Questionnaire with Likert scale rating

Question	Average rating on Likert Scale
1. After giving an oral presentation, how do you describe the presentation experience?	4.2
2. Did this assessment help you to integrate your knowledge of basic sciences with clinical practise?	4
3. Do you think students are competent to find or formulate new case scenarios relevant to their topic?	3.8
4. While preparing your presentation, did you find it necessary to do a review of literature?	3.6
5. Were you exposed to new information helping you to increase medical knowledge?	3.8
6. Did you find your instructor responsive to your queries or were you properly oriented about your tasks?	3.5
7. Did you learn about the Vancouver style of referencing?	4
8. Did you understand about academic integrity and refrain from plagiarism?	4.2
9. Did you learn from self-reflection and peer assessment?	3.8
10. Do you recommend this method of assessment?	3.8
11. What were the benefits of this assessment method during pandemic?	Saves time, more focus on topic, can interact with peer group well
12. What were the challenges of this assessment method during pandemic?	Internet issues, web camera not clear, voice not clear at times

is the most important factor that affects academic performance^{15,16}.

Continuous Review and monitoring of the Oral Rubrics should be conducted by the Quality Assurance Committee (QAC) and the Medical Education Unit (MEU). They should check whether the rubric is effective, specific, whether it can be used for numerous assignments, whether students are struggling with their assignment and whether faculties are interpreting the criteria differently.

Conclusion

The need to respond to COVID-19 pandemic provided us with a unique prospect to assess the feasibility of changes in methods of student assessment and to promote the use of integrated and interactive online tools.

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Authors contribution:-

Data gathering and idea owner of this study: Dr. Suban Mohammed Gouse

Study design: Dr. Helen Suban Mohammed Gouse

Data gathering: Dr. Helen Suban Mohammed Gouse

Writing and submitting manuscript: Dr. Helen Suban Mohammed Gouse, Dr. Suban Mohammed Gouse

Editing and approval of final draft: Dr. Helen Suban Mohammed Gouse, Dr. Suban Mohammed Gouse

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RUBRIC SCORING & MARKS CONVERSION TABLE /ASSESSMENT FOR INDIVIDUAL DEPENDENT LEARNING (IDL) PRESENTATION – Medicine Program

PLO4.3 CLO4.1 Use electronic platforms and information technology in learning		PLO6.1 CLO6.1 Demonstrate the skills of actively educating oneself and others by using appropriate educational methods.	
COURSE NAME		TOPIC NAME	
FACULTY NAME		PRESENTATION DATE & DURATION	
No	ID NO	Students Name	Total Marks
	01	01 02 03 04 01 02 03 04 01 02 03 04 01 02 03 04	01 02 03 04
	02	01 02 03 04 01 02 03 04 01 02 03 04 01 02 03 04	01 02 03 04
	03	01 02 03 04 01 02 03 04 01 02 03 04 01 02 03 04	01 02 03 04
	04	01 02 03 04 01 02 03 04 01 02 03 04 01 02 03 04	01 02 03 04
	05	01 02 03 04 01 02 03 04 01 02 03 04 01 02 03 04	01 02 03 04
	06	01 02 03 04 01 02 03 04 01 02 03 04 01 02 03 04	01 02 03 04
	07	01 02 03 04 01 02 03 04 01 02 03 04 01 02 03 04	01 02 03 04
	08	01 02 03 04 01 02 03 04 01 02 03 04 01 02 03 04	01 02 03 04
	09	01 02 03 04 01 02 03 04 01 02 03 04 01 02 03 04	01 02 03 04
	10	01 02 03 04 01 02 03 04 01 02 03 04 01 02 03 04	01 02 03 04

Dimensions	4 (Four)	3 (Three)	2 (Two)	1 (One)
Content & organization	Content is accurate for the given outcomes. Information presented in relevant sequence & reflects outcome. (See above for sequence & outcomes)	Content is accurate with the given outcomes. Information presented in irrelevant sequence for the outcomes.	Content is not matching with the given outcomes. Student jumps around the sequence.	Presentation is completely out of context, outcomes & sequences.
Subject Knowledge	Explain & describe the slides without seeing them and uses pointer to emphasize during explanation. Positively receiving questions (asking the assessor, is there any more questions) & answer all the questions providing information beyond the text book level.	Explain & describe the slides and not well aware of next slides, immediately view the slides and uses pointer not effectively (showing all the areas in the slide) during explanation. Receiving questions & answer all the questions within the limitation (not beyond the text book)	Explain & describe the slides completely seeing the monitor or projector. Not able to answer questions.	Does not explain and describe. Just reading the content with zero comprehension. Cannot answer questions related to subject.
Screen Design	As per below prescribed screen design. Creative use of navigation tool and buttons. Graphics, chart & animations should exhibit sense of wholeness.	As per below prescribed screen design. Creative use of navigation tool & buttons. Graphics, chart & animations used in meaningless manner. (Example: Chart + textual explanation)	As per below prescribed screen design. No use of graphics, chart or table in the area of necessity.	Not followed the prescribed screen design. Misaligned & crowded text and pictures. Out of context presentation.
Speech elocution & Eye contact	Maintains eye contact and pronounces all terms precisely. All audience can hear. (Audience audibility is judged by asking the audience to repeat the phrase or statement of presenter during any time of presentation)	Maintains eye contact, verbal stumbling & reads from the screen. Pronounces well. Audience can hear presentation.	Occasional eye contact (just see the audience while changing slides) but read from the screen. Difficulty in pronunciations. Audience can't hear.	Reads with no eye contact (contact with screen or monitor only) & incorrectly pronounces. Audiences can't hear.
References (Vancouver Style)	Uses references from authentic journals, text Books & organization websites in presenting the topic.	Uses references. Reference written in haphazard manner (wrong format)	Uses references. References are from nonprofessional resources such as wikipedia, blogs etc	Does not justify presentation with references.

Screen Design Format: Background color: White, Light blue, light green. Text Color: Black, Dark Red (MAROON). Title: Times New Roman – Font Size 60. Sub Title: Times New Roman – Font Size 40. Content: Times New Roman – Font size 30. Maximum SEVEN LINES for the content per slide. Alignment of text – USE JUSTIFY in power point. Maximum TWO IMAGES per slide with no text. Maximum TEN SLIDES per TOPIC. Graphics, animations, slide transition allowed.	
Sample Format for References: Article in medical journals: Halpern SD, Uebel PA, Caplan AL. Solid-organ transplantation in HIV-infected patients. N Engl J Med. 2002; 347 (4): 284-7. Chapter in a book: Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. In: Vogelstein B, Kinzler KW, editors. The genetic basis of human cancer. New York: McGraw-Hill; 2002. p. 93-113. Electronic material: www.nursingworld.org/AJN/2002/htmaArticle	

Plagiarism Warning: No student shall represent the presentation of another person on his or her own, even if the presentation constitutes only a part of the work submitted. If it is found, student shall receive no mark for the presentation	
Points	20 19 18 17 16 15 14 13 12 11 10 09 08 07 06 05 00
Marks	5.00 4.75 4.50 4.25 4.00 3.75 3.50 3.25 3.00 2.75 2.50 2.25 2.00 1.75 1.50 1.25 00
Absentees have to get permission letter from dean / vice dean / medical education for re appearing for IDL before the end block examination.	
Special Remarks	
Assessor Name	
Date	
Signature	
Department	

ABOUT PLAGIARISM AND DISHONESTY

- Plagiarism is a specific form of academic dishonesty involving the presentation of work of another as one's own. Examples of plagiarism are:
 - Direct copying from textbooks, journals etc without full acknowledgement of the true author
 - Paraphrasing someone's work without acknowledgement
 - Copying the work of another
- Academic dishonesty can take the form of fabrication of data or falsification of data. Cheating is also included, e.g. submitting work that has already been used in another course.
- No student shall represent the work of another person as his or her own in any academic presentations even if the material so represented constitutes only a part of the work submitted.
- No student shall contribute any work to another student if he or she knows or should know that the latter may submit the work in part or whole as his own.
- **Any student found to have committed or aided and abetted the offence of plagiarism may be subject to receive no mark for the relevant presentation**

How we check plagiarism or collusion in power point presentations?

- Look at the file's information for the creator list (Using a design template not count as plagiarism).
- Start with chunks of text, possibly putting it in quotes. Export the outline to a text file and scan that. Use www.plagtracker.com.
- For pictures or complete slide, use a tool <http://tineye.com/> to check the source of the pictures.

Adopted (modified) from:
 Dr. David Marcovitz
 Author of Powerful PowerPoint for Educators
<http://www.PowerfulPowerPoint.com/>
 Ref: http://answers.microsoft.com/en-us/office/forum/office_2010-powerpoint/can-i-check-a-ppt-project-for-plagiarism/2c687f9b-4a86-47f2-8a63-4ed4580ffe82

PLAGIARISM & COLLUSION DECLARATION

What we mean by Plagiarism?

Plagiarism is the presentation by a student of an assignment which has in fact been copied in whole or in part from another student's work, or from any other source (e.g. published books, periodicals, journals, including work available from websites), without due acknowledgment in the text.

What we mean by Collusion?

Collusion is the presentation by a student of an assignment as his or her own work which is in fact the result, in whole or part, of unauthorized collaboration with another person or persons.

DECLARATION

I declare that IDL PowerPoint presentations submit (presented individually) for assessment for the above module will be my own work and will not involve plagiarism or collusion.

No	ID NO	Students Name	Signature
01			
02			
03			
04			
05			
06			
07			
08			
09			
10			

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