

Teaching, Learning & Assessment: Towards a New Approach

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Abstract - The paper proposes a reverse gear model of teaching, learning and assessment, where the student assessment is kept at the center of the circle and all other activities rotate around it. Borrowing the idea from Sangray (2014), the article makes an endeavor to redress the gaps between the teaching and assessment. The proposed reverse gear model is showing 12-sequential steps of teaching, learning and assessment. The model was presented and tested before 50-academicians (Focus Group) during the Staff Development session of the British University in Egypt. Questionnaires addressing some unknown issues of medical science were supplied. After the lecture, the audience could answer all the questions correctly, which was exciting and impressive. Future researcher may test the model with the students or with a different context.

Keywords-Assessment, examination, learning & teaching.

1. Introduction

“Justified True Belief in a Context”- is identified as knowledge by Gettier [1]. Knowledge is acquired in numerous ways. Experiences, observation and research may be the ways of gaining knowledge. Face-to-face teaching where the mentor delivers the knowledge to the protégé, is one of the ancient mechanisms of teaching and learning [2]. In present

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days, lecturing is also primarily the main method of teaching and learning between the tutors and the students. The assessment is the formal barometer of measuring the knowledge in students in the education institutes. Usually, in the modern academic settings, course works (projects, essays and research papers) and the unseen examinations are the assessment tools used for the students. The course work briefs explain in detail the requirements and the expectation of the tutors. For unseen examinations, syllabuses are supplied to the students before starting the academic semesters/sessions. The unseen examination remains a cause of concern for the students. In many cases, the question papers and the teachings do not correspond with each other and thus a complex situation is created for the students [3]. The situation may turn into more complexity for the students as “examination stress is highly correlated with level of anxiety in ...students” [4] and they may encounter psychological problems like anger, low self-esteem, low satisfactions, depression etc. [5]. Hence, borrowing the idea from Sangray [6], a reverse order model of assessment and teaching is proposed as, unfortunately, Sangray [6] could not provide a detailed and in-depth discussion on his teaching, learning and assessment model. In this proposed reverse model, the assessment is kept at the center of the circle and all other activities rotate around it. The model redresses the gaps between what we teach and what we assess. So, assessment comes first and teaching comes later. Whatever the case may be, as tutors we should always keep in mind, “the teacher has to help the learners to learn”. This does not mean that the teacher ‘spoonfeeds’ the students, as if they were babies” [7]. For ease of understanding and assimilation, the paper first reveals the necessity of the model. Secondly, it discusses the internal mechanisms of human brain. Thirdly, a detailed discussion on the proposed reverse gear model with 12-chronological steps is illustrated. A brief test results along with methodology are exhibited in section four. Section five presents a discussion. Section six concludes the paper with some suggestions for the future researchers.

Human-brain and Interplay between the Left and Right Hemispheres:

The human brain is a complex organ of the human body [8]. It is the warehouse of knowledge where billions of neurons are working. These are the vital parts of the brain and carrying the electric impulse. Neurons are connected with each other. They carry information to the central nervous system. Some neurons carry signals to the brain and the spinal cord. The human brain is divided into the right hemisphere and the left hemisphere. The right one coordinates with the left side of the body and vice versa [8]. The right side of the brain sees the things comprehensively, while the left side of the brain goes in parts and in detail. The right brain works on intuition while the left one operates in logical and analytical manner [9]. Science, mathematics and statistics are the subjects of the left brain while music, art [and fashions] are the topics of the right brain [10]. So generally speaking, the right brain sees the world in a qualitative way, while the left brain finds the world a place of quantitative occurrences. The right and the left brain communicate with each through Corpus Callosum (a band of fibers) and it plays an important role in integrating the information/knowledge of the two hemispheres [11]. It may be reasoned, the right brain processes the module under examination holistically, while the left brain looks for the questions of the forthcoming examination. At this point, "Stress associated with anxiety"-becomes a common problem for the students. "Stress levels may escalate to significant proportions in some students, to present with symptoms of anxiety especially during tests and examination periods." [12], and higher anxiety is one of the vital causes of poor academic performance [18]. The proposed model may reduce the exam stress manifolds in students.

Depending on the context, some of the appended steps below may be ignored or some new steps may be incorporated with the changes of the context. The examination questions must not be set beyond the supplied questions as taught/promised in the classes. It would be a disaster if the lecturers provide any suggestion(s)/select question (s) out of the supplied questions to the students. It should be kept in mind the supplied questions must cover all the chapters. It is clear that the examinees now know the set of questions out of which the examination questions would be set; hence, the examination invigilators must be extra vigilant in the examination halls so that the examinees cannot adopt any unfair means.

The Proposed Reverse -Gear Model of Assessment, Teaching and Learning:

The reverse gear model consists of 12-steps. These are as follows:

- (i) *Step-1:* The internal environmental analysis for knowledge needs of the students for the module. This is the knowledge of the local (the country where the training organization is situated) industries' knowledge requirements for that particular module. The collection of such knowledge would facilitate the graduated students in absorption in the local job markets.
- (ii) *Step-2:* The external environmental scanning for knowledge needs for the students would help in smooth operations of overseas companies. This would facilitate in understanding the international culture and international business.
- (iii) *Step-3:* Collection of information from the specialists (gurus) and consultants. The experts on the module/subject may be contacted for knowledge.
- (iv) *Step-4:* Collection of knowledge from the secondary sources. The content of any subject is constantly changing with the dynamic world. Hence, books, latest journal articles, reports, monographs, newspapers etc. may be important sources of explicit knowledge for the module.
- (v) *Step-5:* Collation and dissemination of information (step-1 to 4 above). Some information may be overlapping with each other. Some information may not be necessary for the level/stage of students for whom the lessons are set. However, the discarded information may be used for different level of students or future uses.
- (vi) *Step-6:* Preparing the module specification. This is the roadmap for teaching, learning and assessment. Preparing the module specification is a colossal job. The academics should remain extra careful so that the important issues and Learning Objectives are not missed out.
- (vii) *Step-7:* Prepare the questions covering each chapter of the module. Ensure that the questions are not leaving any part of the chapter. Do not forget to include a few questions on "critical and conceptual thinking".
- (viii) *Step-8:* Distribute the respective set of questions of the chapter to the students before/after each class.
- (ix) *Step-9:* Deliver the lecture to the students according to the circulated questions. Your deliberation must focus on answers to the circulated questions.
- (x) *Step-10:* Provide formative feed-backs of the answers to the questions (especially before the examinations).

- (xi) *Step-11:* Set examination question papers as per the circulated questions.
- (xii) *Step-12:* Feedbacks (Examination scored marks, find out the least marks and high marks scored answers to the questions. Take remedial measures, if necessary, for future).

2. Methods and Results

In Focus Group, it generates or responds to a number of ideas and possibilities to evaluate them and thus it helps the researcher exploring the concepts [13]. During the 3rd Staff Development day in September 2018 at The British University in Egypt, the model was presented before the audience (academics). A set of questionnaires were administrated among the 50-academics present in the session [19]. The topic, "Antibiotics and their Use" was selected from the National Health Services (NHS) of the UK. The topic was quite uncommon to the academics (as there are no Medicine and Medical Science departments at the University). At the outset of the presentation, the questionnaires (a set of questions on anti-biotics) were supplied to the academics. The respondents were given time to go through the questions. The answers were not known to them. The questions were set covering all the information of the forthcoming presentation. The next step was the presentation. Every academic could answer all the questions successfully after the presentation. The result was very impressive.

3. Discussions

Some of the academics present in the session argued that such model may create barriers to the creativity and critical thinking within the students. This contradicts with the opinion of the author [14] as "an assortment of questioning exists to promote critical thinking. Depending on how a question is asked, the student may use various critical thinking skills such as interpretation, analysis and recognition of assumptions to form a conclusion." (p. 264). He [14] further continues by highlighting the structure and techniques on setting the questions, "questions should be designed to promote evaluation and synthesis of facts and concepts...Higher-level thinking questions should start or end with words or phrases such as "explain", "compare", "why", "which is a solution to the problem", "what is the best and why", and "do you agree or disagree with the statement?" (p. 264-265). It may be noted, this model is not the panacea to all problems of teaching, learning and assessment techniques. Tact, imagination, context and module and its nature analysis are the vital factors to be considered before its application. The lecturers give formative feed-

backs on the project works of the students. Why we, the lecturers, cannot give formative feed-backs on the issues of the examinations? We should keep in mind that usually a module may have number of segments for assessment. Coursework may be one of them, where the students may take the opportunities exhibiting their innovativeness and creativity. Further, the answers to the aforementioned supplied questions may have room, where the students have enough chances of exhibiting their creativity, and they may take the informal feedbacks from the teachers. Informal formative assessment is crucial in teaching and learning, but it must be used in a masterful manner [15]. Students' creativity drops, where they are assessed with Coursework (assignments) alone without unseen examination, and vice versa. Really speaking, some certificate awarding bodies and universities assess the students on Coursework basis only. "Collusion and plagiarism are potential problems with coursework assessment..." [16]. Such assessment technique demands huge monitoring and the students must defend their works. Monitoring and defending each student's work in institutes where the enrolled student-number for a particular module is high -is almost an impossible job for an academic while he/she (the academic) has additional module (s) to teach, research obligations and other commitments. These busy schedules of the academics may be fully utilized by the students in ulterior evil motives of making course works by somebody else. Thus a door of unethical practice is shown to them (the students) as countless "coursework/assignment making informal organizations", which are turned into an industry in present modern era, are hungry to grab the opportunity of preparing their (students) coursework/assignments for money, whether we deny it or not. Creativity and critical thinking in students are totally lost there. The University of Bournemouth strategies of closer supervision/assessment, adding more written and oral examinations may be the counter mechanisms against coursework/projects purchasing and cheating [17]. Author [16] further continues by suggesting, "Assessment by coursework alone or by a mixture of coursework and examinations tends to lead to higher marks than assessment by examinations alone..." (p. 450). This a subject of research and the matter is context specific. About the coursework/project the tutors should be careful so that the students cannot adopt any unfair means.

4. Conclusions

Justified true belief in a context is knowledge. There are numerous mechanisms through which knowledge may be acquired. In the modern world, in spite of the dominance of electronics, lecturing face-to-face is not fading away as a crucial method of teaching and learning. In the academic settings, examination and course works are the main assessment tools. The examinees face huge stress before the unseen examinations. The reverse gear model is proposing the assessment at the center of teaching and learning. The proposed model is redressing the gaps between teaching and assessment.

The human brain consists of two parts. The left side of the brain controls the movements of the right-side of the body, and vice versa. The right brain sees the world as a whole, while the left brain goes for more detailed analysis. Science, mathematics and other quantitative analysis are carried out by left side brain, while the qualitative issues are managed by the right brain. Human anxiety, especially before the forthcoming examination, leads the brain's communication faster and frequent. The communication occurs through Corpus Callosum. The right brain sees the module comprehensively, while the left brain microscopes it and tries to find out the most likely questions for the examination. The proposed reverse gear model has 12-chronological steps. The model is tested with the academics. The result is impressive. There were queries from the audience about the creativity and critical thinking in students. In addition to the examinations, the students may be more critical in their course works and projects. They (students) may also exhibit their innovativeness while preparing the answers to the questions. It may be noted, the invigilators in the examination venues should be extra vigilant in order to prevent any attempt of adopting unfair means, as the examinees know the set of questions out of which the questions are selected for the examination. A blend technique (e.g. coursework +written examination) may be one of the best strategies for assessment. In parallel with author Shook [9], we also want to echo "Marvelous things will come out of neurological research. Perhaps one day will appear miraculous new techniques, techniques which can light up the classroom [and assessment which can open doors to the consciousness. But they will come slowly and they will come quietly. Be alert, be aware, be patient." The future researchers may empirically examine the model in a different context.

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