

An Integrated Pattern for Engineering Exams in Developing Countries to Raise the General Graduation Quality

Sara Nada^{1,*}, Mohamed Hamed²

¹Department of Economics, Faculty of Economy & Political Sciences, Cairo University, Cairo, Egypt

²Department of Electrical Engineering, Faculty of Engineering, Port Said University, Port Said, Egypt

Abstract

This article tests a new concept for the assessment in engineering education. Its philosophy is based on the new target for exam. It should be a teaching test (not only a collecting). Also, the ruling content must elevate the level of examined student (not only testing but also an aptitude addition). A real model is chosen for a faculty of engineering in Egypt based on low student density in either lecture or practice classroom, or laboratory. The topics are classified into three groups as basic sciences, special engineering and general engineering courses. The students are grouped into three groups as high-score, middle-mark, and low-grade levels. The percentage graduation distribution of students (and the mean level) is deduced and provided for different arenas of study towards the high level only within the period of study. It is included that the concept of assessment should be modified. The article provided an analysis for the quality of appraisal from work of the year to the written test through the oral judgment as well as the laboratory and even the conference (deliberation) as the projects of students in engineering colleges to optimally evaluate the students and their actual abilities (not only the achievement processes). The COVID-19 pandemic leads the educational process towards the online activation not only in lecturing but also for the test applications as significant part of valuation. The paper provides a simplified study for the engineering situation in terms of the recent tremendous development to reach the global progress as seen in the major developed or advanced industrial countries. The study is exposed to the importance of Arabic language to deal with for quickly adapted globally. The study also emphasizes the demand to establish the thinking pillars through engineering education.

Keywords

Assessment Diversity, Balanced Exam Pattern, COVID-19, Developing Countries, Graduation Quality, Grouping Strategy

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1. Introduction

Globally, engineering education is a base for a country building while technical education is the engineering applications in an integrated system. This target can be fulfilled if the proposed system of judgment is considered. Therefore, an analytical study of ruling quality has been tested for an Egyptian model (faculty of engineering and technology). Universally, education in human (investment) is a valuable factor because economic growth depends on workforce size

and quality as a productive efficiency. Education and training are the way for human development to provide information and skills [1-4].

Economically, appraisal quality is the real energetic source of society development although unsubstantiated assessment may be purely theoretical because of the lack of qualified test system, especially after the appearance of COVID-19 pandemic and the labour market change, globally. The prevail pattern of education may be adapted if the current appraisal system is developed. Only educated world societies can

* Corresponding author

E-mail address: sara_nada14@hotmail.com (S. Nada)

challenge the future. Universally, economists verify education as a key factor for national income (as an indicator of economic development) while education raises the social level [5-7].

2. Problem Formulation

Generally, as engineering work is precious for a country growth, the renaissance burden has shifted evocatively to the engineers' level, i.e., engineering education. So, developing countries demand essentially a real engineering renaissance, addressing either technical or political with leadership support. The standing point is the technical level of graduated engineer so that their educational system should be modified to produce a better engineer to higher the human resource level. This is necessary to be exposed to developing countries including Arab engineering education internationally to raising the value and efficiency of graduated engineers. Then, engineering education is major weapon to maximize the output efficiency [8-11].

Consequently, the modification of evaluation concepts is a vigorous with the implementation of online works, especially, after the visiting of COVID-19 pandemic universally. Truthy, both dose quantity and quality of themes has a positive impact not only at the student level but also on the ability to understand. This is the core of engineering thinking even if the study themes are limited. It should feed a full exclusively topic for each regulation after the preparatory band [12-14].

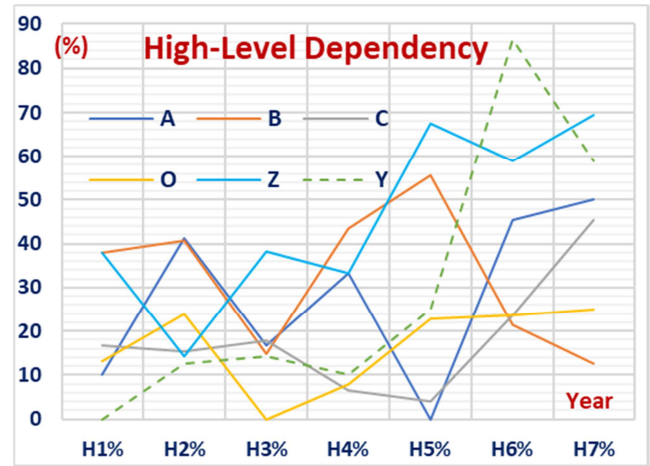
3. Modelling

Specifically, the current research copied a model (students to members of 2.83) for 11 years period from Egypt (developing country) where the original data may be printed in Figure A1 in the Appendix [15]. Low student density in stands, classrooms, lecture, or laboratories, (compatible with the restrictions of COVID-19 pandemic), to increase the perception efficiency. It is satisfied with the scientifically defined rules as [15]:

Whatever, the levels of graduated students are given into 3 levels {High (H), Medium (M), and Low (L)} as listed in Table A1 in the Appendix [15]. The model is considered for a continuous duration of 7 years for graduation, but it is 11 years long for calculations. Otherwise, the compositions are sectionalized into three groups as listed Table A2 in the Appendix [15].

Statistically, Figure 1 presents the high-level presence in the model is illustrated for each department individually as a characteristic curve. All curves have an oscillatory inside a narrow band for each. The limits of variation may be recorded

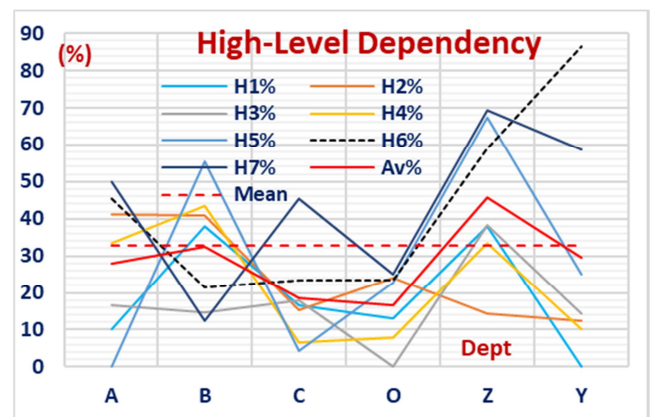
as very narrow as (16.667, 17.949)% and (0, 14.286)% for C and Y, respectively. A wider fluctuation as (10, 41.176)%, (14.706, 40.741)%, (0, 23.913)%, (14.286, 38.182)%, for the departments A, B, C, O, Z, respectively. The general variation has been averaged as (19.271, 25)% for the model.



(Source: Port Said University)

Figure 1. The historical High-Level graduation.

In the recent four years, the dependency becomes more wider higher, but values grow up. This may be referred to the stability of the educational system and higher experience since the values reach 86.667% for Y in the 6th year and 69.444% for Z in the last year.



(Source: Port Said University)

Figure 2. The dependency of High-Level ceremony on Dept.

Otherwise, the yearly distributions of high-level presence on the different departments are inserted in Figure 2 where department A has a maximum of 50% in the 7th year when B and C have the presence of 55.556% in the 5th year and 45.455% in the last year. Additionally, a maximum of 23.913% in the second year, 67.442% in the 5th year and 86.667% in the 6th year for O, Z and Y, respectively. These readings prove that the maximum is occurred in each specialty although the highest level (Z) may contain several

students as high as a group unit (not individually). This last remark is the target of the current paper to propose a new integrated appraisal system.

Accordingly, Figure 2 expresses the composition of high-level graduation in general for the inserted departments. The distribution of marks for a course (C) may be formulated according to the scientific material content (M) and the new addition of extracting a scientific conclusion (Con) from the content besides the degree of training (T). the trainer (coach) is the lecturer, but the trained person is the student. This may be written mathematically by the Equation (1):

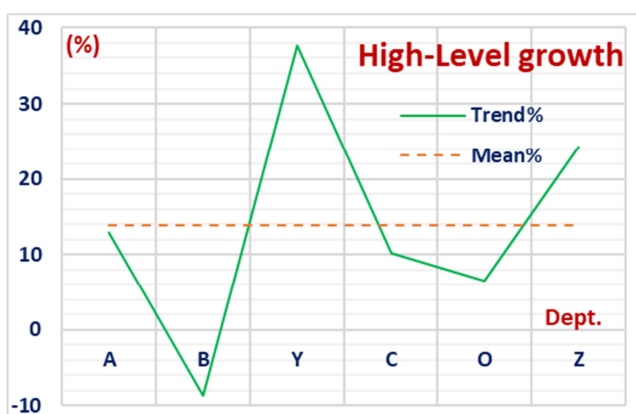
$$C (100\%) = M (80\%) + \text{Con} (10\%) + T (10\%) \quad (1)$$

Technically, the material content is the overall content of the syllabuses instead the current value of 100% while the meaning of content and the conclusion that may be derived takes 10%. The remainder 10% should be directed to the student training on the material of the topic and the deliberation about its use or benefit, etc. This pattern will change the face of education totally.

Ultimately, the percentage of high-level students distributed on each department is plotted in Figure 2 where all graduated students are inserted. The maximum number is appeared of 86.67% in the 6th year only for the department Y because it has the lowest number of students. Lastly, this marine section is raised up in the last two years.

4. Growth Rate

Nowadays, the overall world is developing in a way that would disturb the specialist in his specified arenas according to his skill, only.



(Source: Port Said University)

Figure 3. The high-level growth in the duration.

Economically, the growth for the increased ratio of the high-level students is appeared for all departments except the traditional specialty B which is going down at the rate of

(-8.602%) because of the development of the labour market. the maximum increase of (37.634%) is referred to Y due to the low number of students belonged although a high growth is accounted as (24.194%) for the new specialty Z. Also, the trend characteristics for the model may be processed to find the quality of advancement through the initial data.

Scientifically, Figure 3 proves the need for the dose of basic sciences where it highly influences in the rise of the high-level students, especially with the specialty Z in the model [15]. The results also point to the importance of specialty themes to get higher ratio of high-level students [15]. Thus, target of increasing the high-level by transforming some students from the low level can be achieved [15].

Mathematically, the distribution of courses groups as basic sciences (Bas) and the group of general engineering sciences (Gen) as well as the group of specialty (S) while the added new group of general life sciences (L). Thus, the distribution of percentage marks can be given through the expression:

$$C (100\%) = \text{Bas} (20\%) + \text{Gen} (20\%) + S (50\%) + L (10\%) \quad (2)$$

Chiefly, the last term of Equation 2 is cut from the original syllabuses for the preparing of each graduate student for the practical field not only in specialty but also in the community because the modern life is based on new items which everyone should know well. This small part of each theme may be collected for each semester which has about 5 compositions approximately. This means the 50% can be a small theme (half topic) each semester so that it presents one of the modern life sciences. Each semester should have a certain specified one of these sciences where the 5 years of engineering study can take about 9 compositions of life distributed on 9 semesters or less. The themes of life may be: (environment, human rights, relative's and colleague's performance, language, information and internet, law, disasters, pollution, sport, political, etc.).

Conclusively, the model indicates a rise of (49.958%) in the high level of ceremony although the model final gives a drop ($\leq 0.084\%$) which demonstrates the model dynamic stability. It has been obtained that the students in low level are transferred equally to the two levels of high and middle [15].

5. Assessment Analysis

Internationally, the current research studies two axes for increasing the supposed higher level of advancement which reflected on the general level of society. The first one is student appraisal through ruling in universities so that this concept may identify them as the progress sequence of implementation.

Secondly, student preparation for the assessment performance besides the test quality. The 1st axis dealt with curriculum

study content but the second goes to the process of preparations (like the trained player under the supervision of the coach) before the ruling performance as supposed in the last term of Equation 1. Additionally, the preparation of equipment, tools and amenities to be available during the test processing and ensuring the presence of all obligations to success the appraisal form. The current article also treats the correction, control processes besides relying on integrity and conscience in achieving justice for specific declared technical standards if the appraisal balance enables each student to verify his actual standard level.

5.1. Assessment Pattern

Principally, the current test systems work for collecting and partially absorption, but this concept must be changed totally in the today moment due to the accelerated advance in engineering education, universally. A function should be done to expand student's awareness to grow self-thinking, self-reliance and self-confidence, which maximizes the outcome of education procedure as reflected in national economic growth.

Always, the exam (E) is a balance tool for evaluation so that it should be tailored as proposed here into three terms. The first term is the level of collection of the studied material (Col) but the second is the new inserted item which is the student thinking (Think). The last term becomes the talent factorizing (Tal) and sequentially the exam formula will be addressed as:

$$E (100\%) = Col (70\%) + Think (20\%) + Tal (10\%) \quad (3)$$

Significantly, the establishment of a new system for the ruling procedure would face some problems with the ability, but the new international variables push the society towards the acceptance of any new tendency to be applied even in parallel to the proposed system of appraisal.

5.2. Student Judgment

Practically, the target of engineering is the good thinking to solve any sudden problem in familiar systems or not either it is difficult or complicated. Generally, engineering education presents an explanation using various tools of illustrations (books, films, etc.) with the modern amenities of internet. This follows the normal statistical systems since the superiors are fewer than others (scientifically retarded or mentally).

Basically, the article topic is directed to the exact evaluation since education aims the best products to serve the community. The method of assessment in universities differs from that of schools in all respects although many stages are involved with them to measure the efficiency of educational dose in terms of how or quantity as defined in two axes:

a) Progress Sequence

Universally, university valuations are formulated in successive steps to complete the student appraisal procedures while the official processing of announce for results can be tailored into a cup of stages as:

1. Preparation Stage
2. This stage is limited to the obligations (tools, equipment, sheets, etc.) or the schedule of (human, place, time, etc.) for test applications because it is the most important step in the process of judgment.

3. Comfortable Circumference

The student should not be disrupted during answering.

b) Location

Usually, it is important to cover all possible necessities for the student during the appraisal with some fundamental points as:

1. Overlap between persons, teams or specialties.
2. Disappearance or lack of question / answer paper or sheet for any reason including the diversity of assessment.
3. Errors of manual opening envelopes which is likely inadvertently to other such cases as review negligence.
4. Mistakes due to scattered locations or committees (unarranged mixing or heterogeneous).
5. Increased likelihood of errors.

This phenomenon can be eliminated completely if the test is done singular location to reduce errors. Nowadays, the communications and internet can cover without mistakes.

5.3. Appraisal Duration

Technically, the test time is measured for the duration required for solving a ruling by the normal student. Practically, this takes the reverse direction because the time is calculated firstly and then the test content would be the second step. It means that the examiner must take care about. There are various periods attached to the ruling time in the form:

1. First Type

Regularly, individual synchronized appraisal (underdevelopment) of lagged courses (for retarded students in one or two subjects according to the official regulations of the system) before the traditional standardized ruling for the regular themes to prevent the overlapping of different tests at the same time for the same student. Thus, a justice principle among students in the academic year (or equal opportunities) would be maintained.

This means that one topic must have two sequential tests (one for retarded and another for regular) for each class academic year, attaining three benefits:

- 1) Equal justice at the time during the assessment period

between students whether a student is lagging in a subject, or two, from a previous band.

- 2) Equal justice between all students in one band and those who are retarded in the same subject.
- 3) No-disturb justice among students in a previous band with non-interfering with the retarded.

2. Second Type

Manually, the time delay (the regularity lack of bad preparing process for an evaluation) means the delay in the distribution of either question sheets or answers papers. This may occur in a supervision committee without others or even in the same committee because of the lack of papers quantity to be distributed in time. Also, the total delay of all students may appear because there is no questions sheet (appraisal source) in its basis. Negatively, this affects the student either psychologically or scientifically, which should be previously avoided by the management process. Timing of the assessment start, and the inter- assessment periods may also result in each committee in the same place or day in the case of multi place for the same assessment.

3. Third Type

Specifically, the distribution of compositions through the test schedule and its time-holding must be simply arranged since compositions quality would be considered for the corresponding time necessary to answer and review by students. Students have the full opportunity in terms of review and recall, so that difficult compositions must be distributed scientifically in exchange with the simple one. Easy themes are relatively significance to those difficult ones that demand a huge effort which gives the equal opportunity for all students to converge fairly in the ruling performance (Table A3 in the Appendix).

4. Fourth Type

Mainly, this is the qualitative axis, which in turn reflects on the quality. It is expanded as:

1. Integration by the levels of questions and issues within a ruling.
2. Competition method is considered where the policy of long-time test, which does not help the student to answer all in full despite the reliance of some professors on this as a method of distinguishing between students and their levels. This may negatively induce incorrect judgment of smart students and what is reflected in turn on the level of graduates as well.
3. This should follow the standard systems for the development of assessment and in accordance with the correct criteria for each composition quality. Generally, some courses depend on actual activity and information

collection in research and study. This seems as ceremony projects in the final year in engineering colleges, including what depends on good practice thought such as practical assessment in engineering colleges etc. (See Table A4 in the Appendix).

Since the project (P) is the actual engineering work for a student, the high attention has been directed towards its level and how to raise its level. The given paper assumed absolute free term (complete semester) for the study and implementation of the project although its activity depends mainly on visiting (V) the industrial sites besides the insertion of industry experts in the project program to share the supervision (SV) process. Usually, the evaluation depends finally on the testing (D) and consequentially the project marks can be tailored according to the mathematical formulation as:

$$P (100\%) = \text{Absolute Term} (100\%)$$

$$P (100\%) = V (30\%) + SV (30\%) + D (40\%) \quad (4)$$

The deliberation term consists of two items as the discussion mark in addition to the scientific training for students as a final for the scholar state.

4. The collection of all above concept to be applied in one test.

This may be illustrated as listed in Table A5 in the Appendix.

5.4. Assessment Equipment

The ruling equipment consists of tools and instruments or accessories of implementation during the judgment (if needed). These things are varied in a wide range between different departments, but some vital arts may be explained as:

1. The quality of student seat. For example, if it is for writing or drawing, or machinery, or answering (Y/N).
2. The method of handling test envelopes, which require issuing for the actual receipt of envelopes to review the exact number copied by the appraisal office (it is often neglected).

5.5. Exam Content

Totally, the compositions should be tested for all levels of students in their respective classes as well as in the correct subject contents to keep up the continuous adjustments in topics depending on the specialization up dating. Usually, the overlap of topics content of underdevelopment with basic courses of the band may cause many mistakes. Some organized colleges tend to rely on the method of separating the assessment of underdevelopment to precede the basic assessment with an independent schedule for the retarded to perform the ruling without fear. This is characterized by:

1. Equal opportunities among students in basic themes.

2. ii - Sufficient opportunity to the underdeveloped student.
3. Psychological calm for students who have been retarded in compositions from previous years.

This is the role of faculty since the administrative responsibility lies on college shoulders.

6. Valuation Stages

Scientifically, the test should be performed in a healthy atmosphere, for example, the student will not be exposed to illness if his seat within air current during winter or in a sunny location when summer. Additionally, a silence place must be confirmed without a harmful to health or a loud external noise. Also, the arrival of cheating materials should be prevented since it is important to make sure that:

1. Protecting students from abuse during assessment.
2. Establishing the basic rules to prevent any opportunity to distinguish an answer sheet only from the student, examiner or observer of the committee.

7. Evaluation Phase

Universally, the correction process and judgment of answers is one of the most important works where the test must be a qualification part of graduate students. This may be expressed in the form:

Globally, the exam (as inserted in the previous Equation of the project exam) contains a part for training (Train) the tested student if it is generalized for all exams. This may be formulated as:

$$E(100\%) = E(90\%) \text{ Train}(10\%) \quad (5)$$

Generally, the judgment is based on:

1. Conscience of the corrector (correctors).
2. Psychological, social and mental state of the corrector (correctors).
3. The existence of fixed criteria as indicators for determining student levels (not codified in situation).
4. The method (and quality) of appraisal because the valuations vary from educational to intelligent abilities to others. In some assessment, it is allowed to open books because in this case the test is independent on books content directly. Usually, it depends on creative possibilities of the student. These assessments occur in colleges that demand design such as faculties of engineering or applied and beautiful arts to lay the specific foundations, maintaining equal opportunities. Sometimes, an administrative power utilizes position to verify the 1st degree of ruling committee

while This may occur in advance with knowledge as a scientific method.

Meaningfully, the appraisal must be corrected through a unified committee either in the horizontal way: (distributing papers between the examiners) or in the vertical way: (requiring each examiner to correct a specific question within the answer sheet for all students) despite the possibility of correction by one person. Contrary, it is the principle of equal opportunities among students to declare one of the current disadvantages facing the means of ruling not only for B Sc students but also for post graduate students. Rarely, the system may be reflected to evaluate teachers when promoting in cases of challenge or conflict of interest.

Statistically, the correction results may be limited to a few situations as:

1. Student ratings are very high.
2. Equal student estimates.
3. Student ratings are low.
4. The success rate is high, almost 100%.
5. The success rate is very low $\leq 20\%$.

All these paradoxes occur without a rule, but the law has established a system of determining the outcome of the article professors and others known as the division committee to take these observations into account. The intervention must be far from personal interests.

7.1. Control Stage

Fundamentally, this stage concerns monitoring and implementation of the clemency rules based on the tolerance performance (It is permissible for any manufacturing or production of an item). This must be characterized by integrity and justice besides complete accuracy with zero error.

Especially, since the means of activity work in the control system vary between control and another, it can be varied between some teams in a control or between some topics for the same band. This must be verified by law on how to work within the counter to:

1. Write down the exact names of students of a band to avoid changes, adding or lack of disclosure.
2. Using a specified software application in control processes to avoid human errors. The control is just counting and collecting grades (as input data) without answer papers and correcting in the traditional method.
3. Code numbers and other mistakes that may occur accidentally or intentionally.
4. Allowing the removal of papers from the college and the subsequent manipulation in some cases since it is easy

process with the available software.

5. The system of displacement prefers to carry out the work of controls at one university or faculty.

7.2. The Announcement Phase

Generally, this phase includes procedures and work followed monitoring and the application of clemency rules:

1. Re-shortening the result to estimate slips without grades.
2. Review the process of statements preparing to be presented for students.
3. The adoption of statements from college administration for the years except the final and its announcement to students on the bulletin board, or through internet (or both). The scientific degrees must be issued by the university council that grants the degree (bachelor's degree - bachelor's degree - other) for students grades of the final year. The university is offered accreditation and the result is announced in the student bulletin board (or through internet) or both.

8. Appraisal Quality

Referring to the general form of exams (E), according to the assumed analysis of the current paper, the marks of an exam (E) may be tailored into different types of exams as written exam (W) and year work (YW) marks as well as the oral test (Oral) or the laboratory one (Lab). Also, the added exams as conference (Conf) and online deliberation (Online) where these suggested types would be clarified in the following paragraphs. Then, the final form an exam can be specified as:

$$E = W + YW + \text{Oral} + \text{Lab} + \text{Conf} + \text{Online} \quad (6)$$

It should be noted that the Exam has the full mark of 100% while the written marks are supposed as 50% instead the old of 70% almost. Each of other terms consumes only 10% since the strategy of distribution would be printed next.

8.1. Year Works

Technically, practical colleges are subjected to this type of assessment and sometimes it may become a powerful weapon in hands of the assistances or rarely with the lecturer. It is one of the current disadvantages that need to be studied and developed, including:

1. The challenge of faculty member against a student instead of caring, guiding to the right path (an inappropriate approach).
2. Favouring the faculty member to other relatives, friends, or colleagues to demonstrate a certain student.
3. Inequality among students if marks are given without a specific rule. This may be through estimates in various

ways, which demands a clear legalization to protect students. It is essential to prevent opportunities for exploitation and limit assessment, if any, to many means, including attendance and absence. Some rely on verifying the marks of the year's work through attendance/absence statements, whether in lectures or exercises. Sometimes, a doctor signs a degree for activity for a student who has not entered the college because of an incorrect absence sheet, rarely. The present investigation assumed 10% for the year works.

8.2. Oral Valuation

Importantly, it is a common rule for placing year's work grades or determining oral marks for a certain topic in some colleges or away from the work of the year (absence/presence). In both cases, it is a mark while it is independent assessment usually represents 30-70% of the total degree but the current paper supposes value is 10%.

The current high value is a danger, and this must be verified through committees by law. Rarely, challenge and persecution may take the student to the street although student is competent (only in developing countries). Therefore, oral assessment need criteria that could be codified and adhered to all such as student, lecturer and management in all its marks, including the work of control and others.

Therefore, it must set a declared criteria so that a student can organize himself to face such test according to his personal abilities. Moreover, most students in the face of oral speaking are good but a few cannot talk even without the test. So, more closeness between a student and lecturer is essential so that the professor can know the characteristics of students' recipes. Thus, developing the scores for judgment of the year activity would be processed in an optimal way. The current paper suggested 10% for the oral judgment.

8.3. Practical Assessment

Theoretically, a practical degree may (or not) be a part of the year's activity when it is a composition in the model. The tendency of student's protection is a target to raise their competence as:

1. Workable laboratories and workshops for engineering colleges or clinics of medical schools are important to perform the assessment at full capacity since this is not oral and not practical. Otherwise, this type of assessment will fall into the previous type, which is oral.
2. If the equipment, or machines are in place to take the test, skilled and specialized technical manpower must be available to supervise this work. This is the usual performance of students for test.
3. Pre-ruling schedules should be provided to students for

training and laboratory trials, including the reservation system, so that each student can review the previous studies and face laboratory experiments steadily without awe. This mark may be supposed as a part of Lab degree (10%) if it not defined previously.

8.4. Interactive Dynamic Test

During practical and oral processes, a professor is supervising students to interact and evaluate effort and activity. So, the student activity during an academic year can be obtained. This corresponds to the purpose of appraisals, which make the degree of student interest to reassure the work under supervision giving the advantages:

1. Increasing the performance efficiency.
2. Raising the student level and sequentially the graduation level.
3. Increasing economic growth rates.
4. Maintaining laboratory equipment and tools.
5. Extending equipment and the life of equipment.
6. Protecting the students against mistakes and dangers.

Thus, the educational process, in higher education in general and for engineering colleges, specifically, becomes successful in activating laboratory tools and making their best use, educationally. This activity should be the base for the year works besides any other degrees.

8.5. Written Evaluation

Nationally, the editorial assessment in Egyptian education systems represents the strategic focus of student judgment and in fact with modern changes, a society has, in a few cases, deviated from origin. Always, the system expresses an urgent demand to a serious devise for an effective method to keep pace with the updated components of era when the feasibility of editorial test has deviated from the framework set. Furthermore, this leads to the modification of standards in the graduate scientifically and technically when editorial appraisal must be subjected to certain criteria such as:

1. The confidentiality of ruling for multiplicity of examiners requires a single closed envelope for each examiner, individually, to ensure confidentiality. This can be effortlessly applied through the internet facility, simply.
2. The distribution of test marks is equally between all parts of the theme.
3. The level of appraisal must determine the actual level of each student.
4. The diversity method within the single ruling may be essential for exercises, problems or theoretical parts,

Yes/No, negative/positive, questions with a short or extensive explanation as well as issues that depend on achievement and intelligence. The current paper recommends a value of 50% instead the applied systems now (70%).

8.6. Discussion Exam

Principally, engineering colleges may be subjected to standardized committee assessment systems and addressed them as:

1. Appraisal Committee

Sequentially, In the way to a balanced educational system for all universities without exception, a generalized concept should be installed in parallel with the stationary style of examination in each faculty. Sequentially, this should be an enforced permanent system for all in a suitable available concept. Therefore, the proposed deliberation test is held for the bachelor's and bachelor's degree, it is held only in a few final teams in some closed colleges for bachelor's project in engineering colleges to interact between students at different schools.

2. Legalization (Unified Committees)

Scientifically, this item is a new addition to exclude the talent students for the country advancement. The absolute pattern should be the base either for the committee members or for the students tested. This is a competition system although it must not be really like sporting or games. This means that the committee must extract the brilliant one or some according to the situation on the land. The annual implementation may be installed but there is no need to obtain every year the same number of talent students. This condition for the searching for the talent not the best because the best can be a normal person (not talent). Globally, this is the first step for the country advancement.

3. Alternative Judgment

Hence, the oral alternative (discussion) assessment with a professor of general national committees for a specified topic is a good tendency where this method allows students to write their ideas and answering immediately before the examination specifying some positive advantages:

1. Unifying the ceremony level in all universities.
2. Independence of the test on lecturers to intimidate students at times.
3. Evaluation by specialist only, but sometimes this may become a disadvantage point in the applied systems.
4. Far from courtesies that appear in old systems, the probability is low. If this happens, it will be emergency and strange. Moreover, the audacity attack to right demands is overridden.

5. Reducing the strenuous effort in control work and turning it into the simplest form to collect marks only.
6. The disappearance of trading papers between correctors that may occur in some locations in the formation of committees depending on nepotism or other reasons.
7. Ensuring that teaching has been done satisfactorily in all universities.

Additionally, some pivotal steps to complete this assessment type properly present:

1. Identifying the exact specialties within each regulation in each college.
2. All professors specializing in this delicate are arranged.
3. Courses are verified in all Egyptian universities that enter this discipline.
4. Compositions are distributed equally to specialized professors in the form of tripartite or quadruple committees at the level of all enriched universities.
5. Issue a ministerial decision on these committees and notify them, personally, of their membership and the colleges concerned.
6. Each college coordinates the test dates with the colleges that rely on the same committee if there is overlap in the names of professors. It is preferable for each professor to enter a single subject judgment committee only. There is no room for coordination so that the work is available, keeping it free of error.
7. The committee performs the ruling on time based on the college's official notification of the deadline (long enough in advance) and in presence of the actual lecturer with a written statement of grades to the counter.

This system has some advantages:

1. The immediate release of result.
2. Preventing the exploitation of power and tightening the noose to limits.
3. Reducing the control burden.
4. Minimizing the error likelihood although it exists, but significantly lower than the traditional system.
5. Stay away from financial linkage or the formation of committees, the correction bonus must become like the teaching bonus.
6. Appraisal Language

It is important to use the mother language when Arab world can be dependent on Arabic language. In some fields, the international language is favourite. So, Arab balance and cooperation in the levels of assessment must reach Arab

education in the arenas of engineering. It may be based on the rules that were put forward in four stages:

1. An experimental transition system where some colleges are selected from each Arab country to participate together in the assessment (deliberation) as 1st stage.
2. Expanding the circle of cooperation gradually by increasing the number of joint colleges as a 2nd stage.
3. Inserting new topics progressively to the system of joint judgment with Arab committees as a 3rd stage.
4. Adding written ruling to that oral assessment as a 4th stage.

After the COVID-19 pandemic, the ruling through internet becomes more valuable so that the internet ruling may be added to any written one. It can be replaced totally.

Finally, the applied process of evaluating students' performance and setting their levels may be exposed to some risks that harm the outstanding student due to the dynamic movement in the level of general ethics in the world. Sometimes, this may be reflected with weak souls and bring negative to the distinguished student if there is injustice condition. This is a failure, if happened, because the university lost the care role for distinguished student to put him on the right track.

Thus, the examiner overthrown, is wasting the precious national capabilities where the role of the faculty members shines in caring for students, guiding, and serving them instead sitting in a high palace away from students. Contrary, this is an undesirable case for the distinguished. Hence, the foundations of promoting positives and avoiding negatives through clear provisions in the law of universities or its executive regulations must protect students. Generally, 10% is assumed for this item.

8.7. Conference Test

Significantly, it is a new addition, too, to get the student familiar to the conference presentation as a simple practical way for presentation. Since this new insertion is valuable, it is recommended to have 10% of the total degree of the theme.

9. Discussion

The current paper has a fundamental goal which is the transformation of the normal graduate students into good and the good into an excellent.

9.1. Analysis

The target is the rise of higher level for the graduation yearly since it is possible through the three major channels:

1. Curriculum

The courses as a content and aim should be directed towards the production of better students. In other words, the syllabus of each course must have a target plus knowledge. The target should be the concept of extraction of conclusion from the course contents. This is the first target of the present investigation. Moreover, the matter studied as some new knowledge as before, but the new is the finding out any possible conclusions from this material. The meaning is that a student can work individually to extract the conclusions without pushing or help but a good supervision.

The concentration would be for all levels of students (not the best only) so that a manufacturing of intelligence from some of the good student to become excellent with self-force under a good supervision, trained for that. Simultaneously, the normal students can raise their levels to be either excellence or good so that the total output of the year generation become more better and smarter. This is a national duty to be reflected on the national income with an economic growth. The said concept is a type of war against the dependence on others because current time has new innovations every moment.

2. Supervision

Generally, the supervision is vigorous tool for the national advancement although it is simple in action. The supervision may be directed towards the core of opening the mind to deep thinking and stopping the surface look. The supervisor may be trained on the ways to implement the national target either by simulators or practically with experts.

The scientist is logged to science, but the explained concept is another vision where the pattern may be formed or reformed within a specified frame practically as the player during training. This is simulation as actor systems for work.

3. Exam

Principally, the exam (E) item in the assumed processing means a lot where any part of exam (even oral) must be sectionalized into two parts (not exam evaluation only but also pushing the student towards talent) according to the expression:

$$E = \text{Evaluation} + \text{Enforcing Talent} \quad (7)$$

This Equation explains the strategy of exam where it contains two parts. The first is the normal known exam for the evaluation of examined person. Secondly, the appeared new part is the target of a country since it is not evaluation at all. It is a feedback process that depends on the materials studied but a positive utilization should be added by the examiner. It is the way to advancement, especially for engineers in developing countries.

Enforcing talent, as a medical dose, must be activated to transfer the student from the moment state into another higher

with deep thinking.

Thus, the current investigation aims to find the suitable concept (parameters or tools) for raising the level of public numbers of students for graduation in all arenas. This proves the importance of studied model. Otherwise, the deduced results point to the necessity for investigation of the overall mean value of high-quality level of students (calculated above in Figure 1 and Figure 2). This enforces to review the concept of assessment and the type of grades.

9.2. Recommendation

From the above work, it can be recommended that:

1. The participation of industry experts in test system with professors is important.
2. Expanding the exam locations to be in factories too if possible.
3. Updating of test sheets to be more flexible.
4. Supervision and discussion of student graduation projects should be linked to industry and support cooperation between scientific bodies and industry experts to engage with. The conference online facilitates the ruling processes. It is the benefit due to the COVID-19 pandemic.

10. Conclusion

From the current analysis, it can be concluded that:

1. The balanced distribution of written assessment is vigorous to verify the exact levels of students.
2. The sincerity and conscience serenity in the correction process are importance.
3. The unified committees for each theme significantly contribute to justice among graduates' levels of all universities.
4. The obligation to provide all tools, equipment, sheets, laboratories and workshops must be performed for appraisal in ease and smoothness.
5. The developing student judgment systems in universities to raise the output efficiency are a vital target for the national economic growth.
6. Achieving and providing justice to students, whether at the time, timing, synchronization or quality of the ruling is a fundamental base for the continuous assessment development.
7. The importance of Arab cooperation in scientific committees to deliberate students whether in postgraduate studies or bachelor's degrees (B Sc projects) to raise and standardize the ceremony level.

8. The privation target to compile the appraisal in Arabic.
9. Different pressures on students and assessing their potential through follow-up during study should be accounted.
10. The assumed distribution of marks within the proposed exams ensures the raising of students in general as a unit.
11. The proposed exam system is valid for all types of university educations and so it is recommended to be applied for all similar practical colleges.

Appendix

Table A1. Symbols of different graduate estimates.

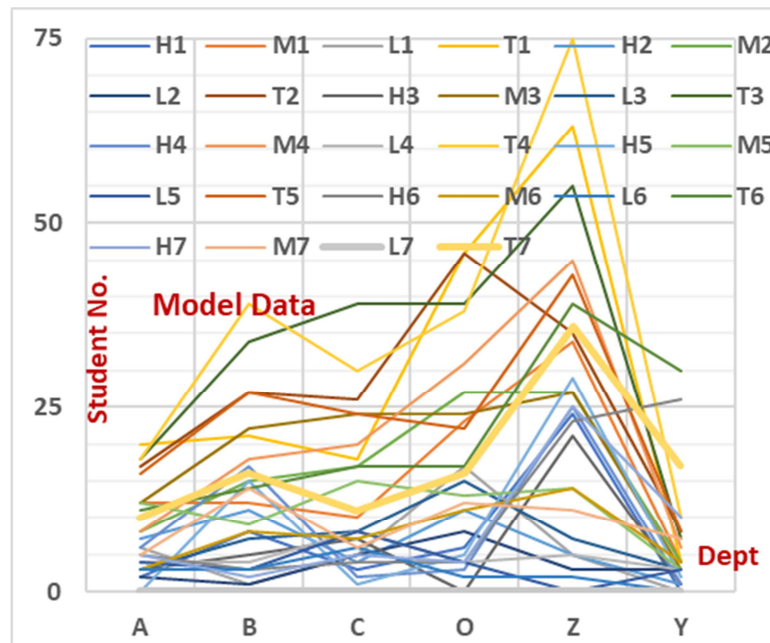
Level	symbol	mark	Value%
High	H	Honour (H)	\geq (VG) in all years except preparatory
		Excellent (Ex)	85 - 100
		Very Good (VG)	75 - 85
Medium	M	Good (G)	65 - 75
Low	L	Acceptable (L)	50 - 65

(Source: Port Said University, Egypt)

Table A2. The classification of themes on fields of study.

Group	Study Courses	Group	Study Courses	Group	Study Courses
Basic _A	5	General _A	7	Field _A	20
Basic _B	4	General _B	7	Field _B	27
Basic _C	5	General _C	8	Field _C	23
Basic _D	5	General _D	9	Field _D	20
Basic _E	5	General _E	4	Field _E	30
Basic _F	8	General _F	0	Field _F	27

(Source: Port Said University, Egypt)



(Source: Port Said University)

Figure A1. The original data of the model.

Table A3. The comfort schedule.

Day	Topic Density	Day	Topic Density
Interval Days	5	Third	Complex
First	hard	Interval Days	2
Interval Days	2	Fourth	Easy
Second	simple	Interval Days	3
Interval Days	3	Fifth	difficult

Table A4. The valuation levelling.

Day	Marks%	level	Standard Time%?
First	10	Simple	10
Second	10	Simple	10
Third	10	Simple	10
Fourth	10	Simple	10
Fifth	10	Simple	10
6 th	10	Simple	10
7 th	10	Simple	10
8 th	10	Simple	10
9 th	10	Simple	10
10 th	10	Simple	10
11 th	10	Simple	10
12 th	10	Simple	10
13 th	10	Simple	10
14 th	10	Simple	10
Revision	00	00	10
Total	100	Final	140

Table A5. The test levelling.

Day	Marks%	level	Standard Time%?
First	10	Direct	10
Second	20	Simple	10
Third	20	easy	10
Fourth	20	Good	20
Fifth	20	Very Good	30
6 th	10	Talent	10
Revision	00	00	10
Total	100	Final	100

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