

**TOTAL QUALITY APPROACH IN ASSESSING STUDENT PERFORMANCE
IN HIGHER EDUCATION**

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ABSTRACT

Among other elements, implementing total quality in education requires continuous improvement of processes, i.e. teaching, learning and assessment. Student assessment is one of the critical processes in an educational system that provides critical data for the interpretation of performance outcome. However, despite of its importance student performance assessment process is implemented with less attention to the question ‘how to assess and why?’ In this paper, it is suggested that policy deployment concept introduced in Total Quality Management literature can be utilized in improving performance assessment process. Assessment can be more meaningful and effectively managed whenever institutional, departmental and individual goals are aligned with methods of assessment. Applying Total Quality approach in education necessitates abandoning traditional approach in evaluation practices although instructors may feel more comfortable, and adopt new ways of thinking, planning, acting, and evaluating.

Total Quality in education

Total Quality Management is described along different dimensions. Most common are the customer focus, continuous improvement, processes and people. The customers in an educational institution can be defined at two levels: ultimate customers being the employers, funders, graduate schools, community and internally the customers

would include students as well as any employee of the institution. *Customer focus* implies that institutions should serve customers by exceeding their requirements. This also necessitates talking with the people one is serving to and learning their needs. *Continuous improvement* is the imperative that calls for an ethic of continuous search for excellence in what one does. Managing and working with a *process* focus help the academics to better acknowledge what they are really involved in and provide the skeleton for improvement activities. The continuous improvement and process approaches inevitably calls for gathering data and use of tools to track the performance. *People* dimension focuses upon training and empowerment of people that are involved in education to better serve customers and make best use of their own potential.

Total Quality in education requires consideration of the needs of basic stakeholders; namely student, instructor, employers, university and the community. Curriculum design is one of the major processes academics are involved in whose output is the list of course titles that should satisfy the needs of the relevant parties. In designing the curriculum these expectations should be considered and incorporated to the goals and objectives. Among those expectations are to equip learners with up-to-date knowledge and appropriate skills. The learning process is initiated with transfer of knowledge and proceeds with improvement of student's learning capacity. The learning loop is complete whenever knowledge acquired helps to develop set of skills that will provide guidance in transferring it to actual behavior. Therefore, the goal in teaching should be both facilitating knowledge transfer as well as practicing what is learned. The clarity of goals will enhance the performance as well as improve student/instructor behavior.

Deployment of goals

The macro level goals set by the leaders of educational institutions may not necessarily lead to desired goals unless they are deployed to be part of daily activities.

Juran and Gryna have defined deployment of goals as;

- Division and subdivision of the goals until specific deeds to be done are identified
- Allocation of responsibility for doing these deeds
- Provision of the needed resources (Juran and Gryna, 1993, pp. 127-128).

Insert Figure I about here

Application of deployment of goals, performance assessment should be linked to institutional policy. The policies of educational institutions by way of clarifying what kind of graduates they aim to raise and what skills they want to develop in students in addition to the acquisition of knowledge give direction to the subsequent activities. As a result, total quality in curriculum development process is initiated with a quest of new management roles and personal competencies that will be used as an input. The ultimate aim of 'graduating the engineers, scientists and managers for the next millenium' is firstly set by leaders and then communicated to the departments and academics so that they will find out the appropriate actions (means) which will meet this aim (end). As the ultimate goals are deployed downward, they help to specify the knowledge and skills to be thought in each course, how performance evaluation is to be designed to support the goals and objectives, what qualifications should the instructors have to perform these

deeds, what information will be collected and how information will be analyzed to evaluate student performance. In short, deployment is the operationalization of the macro level policies that necessitate translation of the policies into practical actions.

During the process of deployment, relevant areas to be taught and particular teaching methods to be utilized are identified using departmental goals as an input. As a result, alignment of goals with daily practices in classrooms is achieved. Each single activity serves to an intended purpose and no non-value added effort remains. At this point, what kind of qualifications the methods to be utilized require on the part of the instructors, how these will be provided (through training or recruitment of new staff) what new responsibilities they lead to, what tools and equipment are needed to initiate the new practice and how they will be provided are also considered as part of deployment process. Taken from this perspective, the decision about classroom activities requires well thought and planned activities in alignment with the overall goals and objectives which can never be designed randomly with intuitive insights and independent from the institution's goals. In line with the continuous improvement philosophy, each step in the process should further be revised for improvement.

Insert Figure II about here

Evaluation of learner performance : New frontiers in assessment

Evaluation of student performance is the final activity in the design of the instruction process. Reliable evaluation of performance is a major expectation of learners

when its impact on outcomes such as improvement of learning with value adding feedback as to their performance is acknowledged. It can be said that, the meaning of performance evaluation is beyond mere techniques used in different types of assessment. Poorly designed and implemented evaluation may harm educational institutions' reputation for leading to unfairness that leads to legal disputes, let alone meeting student expectations. To avoid such unwanted consequences and maintain integrity of performance assessment, well designed and implemented assessment systems need to be developed (Yorke, 1998).

The approach under the traditional educational system requires keeping performance scores for maintaining standards and comparability, and serves to identify the passing and failing students based on the data generated. The traditional system relies on a pass/fail philosophy emphasizing compliance to basic grade categories. Adopting quality philosophy in education necessitates a change in the main purpose of evaluation towards guidance and assistance to the learner. Evaluation of the impact of instruction serves to identify the knowledge gap and follows with further instruction as required. The pass/fail philosophy is replaced by 'learn and improve' ruling out 'compliance with grade categories' and emphasize 'achievement realized' (Kaufman and Zahn, 1993).

Assessment can be considered a micro-level process, where the focus is on quality of operations, or efficiency of instructors' activities. From a total quality perspective, the grading of tests, projects, or learner performance becomes feedback for continuous growth of the learner's potential. The aim of grade assignment is utilization of the learner's potential at the highest level, rather than providing a decision-making tool for passing or failing courses. The implications of the shift in perspective on instructor roles

are crucial. The emerging role of the instructor is defined as developing a range of feedback and assessment procedures in alignment with the goals and objectives that would generally serve as a high-quality input to grading as well as student feedback in particular.

On the other hand, the higher education institutions have their own managerial hierarchies and they are generally characterized as faculty highly autonomous with regard to the development of methods utilized in teaching. Moreover, any intervention to the autonomy of instructor is likely to be perceived as restraining the freedom that is taken for granted in academic life. However, it is argued that assessment needs to be managed in a way that it brings a systematized whole containing a mix of various methods serving the same end, but still meeting different aspects of intended aim. Such a systematic and planned assessment structure will avoid from choosing methods randomly while assessment becomes a strategic issue to be considered by departments as a whole (Yorke,1998).

Two approaches in student evaluation

In general, participation, tests and field projects are the basic components of student evaluation. In this study, the main focus will be on improving the assessment of participation and project work drawing from total quality philosophies.

Student involvement in assessment of participation

Student participation becomes a major feature of quality management since the instructor is no longer the sole source of information. Quality management in education

requires a different philosophy whereas learning occurs through a process of information-sharing. Total quality in education is a transition from ‘teaching’ to ‘facilitating active learning’ which implies learner-centered design of courses rather than teacher-centered, (Falchikov, 1986) to enable student participation and involvement.

Just like any other category of grading, the instructor traditionally performs assessment of student involvement and participation in class discussions unilaterally. This practice has the potential for subjectivity if it is arbitrarily done. Without any clear criteria, the instructor has to make assessment basing mostly on his/her judgments which to a great extend relies on impressions left of the student by the end of the semester. The suggestion made in this paper is that the criteria of assessment can be developed for serving at the same time departmental goals and objectives. Given clearly defined criteria for assessment, empowerment of the learner to assess his/her performance becomes easier.

Empowerment is described as subordinates’ right to take initiative, make decisions and implement the decisions in Total Quality Management literature (Vroman and Luchsinger, 1994). Empowerment of students in an educational setting leads to the development of new roles for learners, like that of involving in information generation and grading to become a more autonomous learner. Partnership with students in assessment is an exemplary practice for empowering students towards creating more sense of ownership through development of greater student autonomy in learning (Boud, 1989) that influences student performance (Wood & Locke, 1987). Additionally, self-assessment motivates the student to involve in class discussions and recognize what is considered as meritorious (Stefani, 1998) in line with course objectives and encourages

students to be more prepared for life-long learning through developing an independence in controlling the learning process.

In related literature, the problems related with the involvement of students in assessment mostly focus on reliability of self-assessment. Brown and Fendlebury (1992, p.94) based on their research stated that ‘students, as a group, tended to overestimate their performance as estimated by others, but only few were wildly out’. Additionally, it is argued that high achiever students tend to underestimate their grades, performance and low achieving students to overestimate their performance (Boud and Falchikov,1989; Leach *et al*, 1996).

Incorporating process approach to project assessment

Applying total quality philosophy to project assessment implies that the instructor recognize and consider the process through which project was developed, rather than looking at output alone. This approach emphasizes that well-designed processes generate successful outcomes, and thus necessitate serious effort in the planning of the process. The learning process and how it is designed to release the desired outcome becomes equally important.

Under the traditional approach, acquisition of knowledge is assessed through grading technical content of the project work. This generally involves material content, understanding of concepts, making decisions as to what to include and exclude without recognition of the skills to be acquired throughout project work. Such an approach may be demotivating in the sense that the skills necessary to organize, plan, and implement a project exhibited by the students are not taken into consideration in assessment. Lack of alignment between the course objectives and the performance assessment criteria would

particularly create cynicism in a quality related course and lead to alienation to the course content because what was taught throughout the course is not practiced by the instructor him/herself. Making practice of skills promoted in courses (Total Quality and Business Ethics courses are the examples in this study) part of the grading will reinforce the acquisition and acceptance of these skills and roles with an *intrinsic* motive where the desire to learn the subject matter for its own sake becomes dominant (Ryan *et al*, 1992). Therefore, assessment has to be seriously developed to contribute student learning rather than remaining as a tool for certification alone (Yorke, 1998).

The importance of project management and teamwork skills is highly emphasized in the literature on new managerial roles (Bartlett and Ghoshal, 1997). Launching Total Quality Management in a firm requires ability to manage projects performed by teams. Project work assigned in courses may be a greater opportunity in equipping students with such skills, in case ‘learning about the process of preparing a project’ is incorporated in evaluation. Otherwise, ignoring the adoption and use of such skills by students will be de-motivating and does not reinforce learning as it will weaken the trust in the importance of knowledge being taught. Additionally, the aim of management education is to equip students with certain skills that they will need to be effective managers in addition to giving knowledge and expertise on some concepts. Therefore, consistency between what is taught/promoted and what is measured will reinforce learning through practice of such skills before work-life.

Similarly, project assessment can be improved if learning objectives are well-defined to cover the learning process (Tariq *et al*, 1998). The instructor can control the learning process more effectively through more close mentorship leaving least chance for

failure. In doing this, the instructor may use the idea of process vs. results utilized in Total Quality Management (TQM) approach (Easton, 1993). A results oriented approach in grading is primarily based on the assumption that the results belong to the students and the role of the instructor (or school) is to create incentives (grading system) to obtain the desired results. This assumes that the student knows and is able to achieve the goals (i.e. prepare the project) if left to his/her own. Throughout the project work, the student is expected to recognize the skills needed and acquire them. In contrast to this, process approach in assessment implicitly assumes that the results belong to processes. As poorly designed processes yield low quality output, the role of the instructor is expanded to cover helping student in designing the learning process (i.e. planning and organizing for project assignment). This understanding can be incorporated in the project assessment system which can be reinforced through effective mentorship. Explicit criteria also enables easiness and reliability in grading teamwork and generates positive outcomes in case of assessment by a team of academics (Ewell, 1993). Moreover, adopting a criterion based approach shifts subjective assessment of projects to more objective and student-centered practices (Tariq *et al*, 1998).

Two examples of assessment

The examples in this paper are the performance assessment practice used in Quality Management and Business Ethics courses of Middle East Technical University, Ankara. The mission and guiding principles are developed with the aim of providing guidance to instructors. The mission statement of the university is;

“The Middle East Technical University is devoted to the pursuit and application of

knowledge for the social, cultural, economic, scientific and technological development of our society and mankind through achievements in teaching, research and community service that are of highest international standards”,

and the guiding principles are;

“The University is dedicated to instill in students an appreciation for human and ethical values, vision and training that will prepare them for lifetime learning and leadership.

The University is dedicated to the fundamental concept of academic freedom, which is essential to ensure high standards of teaching and research; is necessary to counter fear of heterodox thought and ideas in the continuous search for truth; accepts as vital the right to determine, on academic grounds, who may teach, who may be taught, *what may be taught and how it should be taught*; thrives best in a society which encourages frank questioning and inquiry as well as legitimate protest; a society where those who exercise these rights are protected by the rule of law.”

Assessment of student participation

Given the ultimate aim of delivering students up-to-date and real world skills in the above mission and guiding principles of the university, the focus is directed toward development of assessment styles in alignment with this goal. The first example is developing assessment of student participation in Business Ethics course whose objectives are :

- to improve students’ ethical decision-making skills by focusing on ‘what to think’ rather than ‘what to decide’ when confronted with ethical problems, and thus develop

a critical thinking habit

- to develop in-depth thinking skills and eliminate the habit of ‘jumping to decision making’

In line with the above objectives, case study discussions are conducted for each topic. A search on the ways of enhancing student participation in assessment via internet provided alternative solutions. The mutual assessment of student participation developed by G. Donahue (<http://ursus.jun.alaska.edu/teach/>), is utilized for this purpose in Business Ethics course. In order to sensitize students to the process and the quality of their own thinking, levels of contribution identified and the rules of evaluation described are adapted with slight changes and discussed in class at the beginning of the semester. A form has been developed for this purpose (Figure III).

Insert Figure III about here

The above practice requires close contact with students since the instructor must know each student by name in order to evaluate them. This necessitates a class size of approximately 25 to make it manageable. Observations and interviews with students have revealed several facts. In addition to obtaining the participation of majority rather than few dominant personalities, participating in grading made students feel empowered and equal with their instructor. This is an important accomplishment given the high power distance culture in Turkish society (Hofstede, 1980) where inequalities are emphasized and subordinates are expected to behave submissively and refrain from reflecting their own thoughts. The instructor observed that unlike the ‘teaching’ approach where the

student plays a passive role that enables cover up of unprepared students, the participative environment encouraged students to be more active during class discussions. Plus, the tool may also be used proactively as a tool for assessing the adequacy of getting prepared for the course, i.e. to predict what level of participation the preparation for the course made beforehand will bring. The practice is not perceived as another way of monitoring attendance as stated by the learners during a feedback meeting organized by the end of the semester.

The problem of overestimation/underestimation of students' own performance is eliminated through mutual assessment and the rules set for merging the scores given by the instructor and the student (Figure III).

Improvement of project evaluation

The second example is an application in Total Quality Management course taught by the author, the objectives of which are developed in alignment with the university mission and guidance principles as;

- to learn how to diagnose an organization with regard to their quality related activities
- to learn how to apply total quality knowledge through project work
- to gain teamwork experience
- to build project planning skills.

The two major criteria that would form the basis for project assessment are identified as 'the assessment of the *output*' which emphasized more on the technical content and 'assessment of the *process* of managing the project in line with total quality philosophy.' Assessment of project work is transferred into a practice where results and processes are both taken into account. The next step is the identification of the

subcategories for each of the criteria. Team's comprehension of the project, team's understanding of the background literature, organization of material, reliability and punctuality, and handling of findings/analysis are identified as the main prerequisites of performance related with the *output*. All the variables are measured on a 5-point scale ranging between 5=excellent to 1=very poor. 'Reliability and punctuality' is assessed based on two follow-up meetings with the team members during the semester. These meetings mainly aim to provide support and close mentorship to team members. Meetings also aim to make timely interventions to the problems experienced by team members particularly on maintaining equal and meaningful participation and establishing contact with the firms.

Plan of action, tools utilized, teamwork, clarity of presentation, time management are identified as the items for *process* performance. Similarly, process related items are assessed along a 5-point scale. 'Plan of action' involve the performance related with the use of planning tools such as Gantt charts, responsibility matrix, and flowcharts in organizing the project. The follow-up meeting interviews and the assessment of team members on team members' participation and involvement in team activities comprised the basis for assessing 'teamwork'. The learners are given training on tools and techniques for teamwork and project management within the semester as part of Total Quality knowledge. The weights assigned to output and process related criteria are set 60% and 40%, respectively. The instructor discusses the assessment items and associated weights with the students prior to execution and gained their approval.

Insert Figure IV and V about here

Conclusion

The application of Total Quality principles in designing assessment of learner performance, above all, links assessment criteria to the course goals defined parallel to the institution's goals. Total Quality philosophy brings a strategic perspective to assessment and clarifies the method to be utilized and its rationale. Trying to understand the rationale helps the instructor to acknowledge the fact that assessment procedures should not be designed independent of the goals of the educational institution. High performance requires clear goals, therefore the explicitly identified criteria will facilitate learning by providing more meaningful feedback and at the same time will help to judge the learning process more exhaustively. Performance assessment may be designed in a way that it will lead to value-added results for the students - both behavioral contributions and technical knowledge gains. Moreover, two approaches described above offer a number of advantages for the instructors, such as increased objectivity through the use of clearly defined criteria, enhanced learning with the opportunity to provide learners with valuable feedback, equipping learners with skills necessary for life long learning and ease of evaluating teamwork.

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FIGURE I

ELEMENTS IN DEPLOYMENT PROCESS

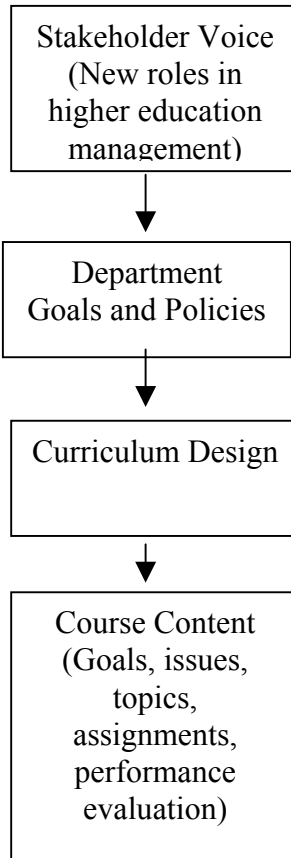
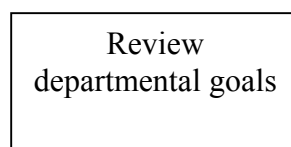
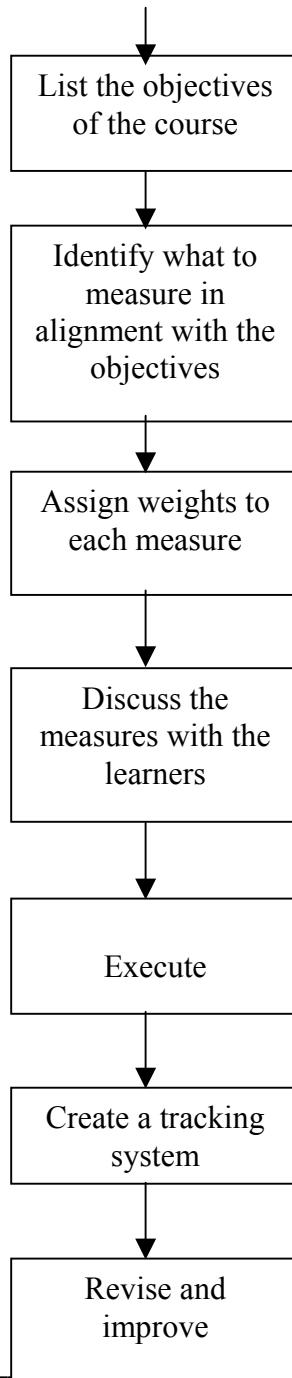


FIGURE II

PROCESS FOR DECIDING ON WHAT TO MEASURE





Name /Signature/Date

0 0.5 1 2

Instructor's Evaluation

Overall Evaluation

PLEASE CIRCLE THE GRADE WHICH YOU **FEEL INDICATES YOUR PARTICIPATION IN TODAY'S CASE DISCUSSION**

Students will receive the higher grade (their own or the teacher's) except under the following conditions:

If the student's own grade is more than one point above the teacher's, the student will receive a 0 for that day. If this situation occurs more than twice each semester, then the teacher will privately discuss this variation with the student. If the evaluations continue to be unrealistically high, then the problem will be brought up in class.

THE SCALE

0 pts. (not present)

0.5 pts. (student is present but the student says nothing or participates discussions through reading from the book)

1 pts. (student relates the text to the case)

2 pts. (student relates text to the case and contributes by offering a critical perspective or comparison in discussion)

FIGURE IV

ASSESSMENT OF RESULTS

Weight excellent good fair need m. improvement poor

1. Team's comprehension of the project .15

2. Team's understanding of the background literature	.20
3. Organization of material	.05
4. Reliability and punctuality	.10
5. Handling of findings/analysis	.50
TOTAL	1.00

excellent=5, good=4, fair=3, need major improvement=2, poor=1, very poor=0

FIGURE V

ASSESSMENT OF THE LEARNING PROCESS

	<u>Weight</u>	<u>excellent</u>	<u>good</u>	<u>fair</u>	<u>need m.i.</u>	<u>poor</u>
1. Plan of action	.30					
2. Tools utilized	.20					
3. Teamwork	.30					
4. Clarity of presentation	.10					
5. Time management	.10					
TOTAL	1.00					

Note : excellent: 5 good: 4 fair: 3 need major improvement=2, poor: 1 very poor:0