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ABSTRACT

In response to that fact that, since 1991, almost 60% of students had received failing grades on midterm exams in a general psychology course, the instructor undertook a project to apply principles of total quality management (TQM) to identify the causes of poor achievement. Efforts ware made to help students discover their mistakes, and thus correct them, by suggesting that they take make up tests and set up individual conferences with the instructor regarding the exams. In the conferences, which were held with over 100 students, the instructor noted students' improvement on the makeup exams, but asked students to consider why they had done so poorly on the original midterm. Student responses included failure to study course materials, poor comprehension of course topics, lack of motivation, poor writing and organizational skills, and preferences for multiple choice exams over essay tests. The instructor also sought to implement collective decision-making techniques by encouraging students to participate in the development of essay exam questions for the final exam. Students worked in groups to develop questions, worked with the instructor to polish the best 10 to 15 questions, and then took the final exam that they had collaboratively prepared. The use of group activities and collective decision-making helped promote a strong sense of shared identity and allowed students to take responsibility for their own learning. Contains 10 references. (BCY)

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TQM in Class: From Disaster to Success in Essay Exams in Introductory Psychology

by

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1. A Japanese Teacher in America:An Introduction

In early October of 1991, about two months after I was hired, I gave my first midterm exam to one hundred-seventeen students in four sections of my introductory psychology course, namely, General Psychology. The exam consisted of four short-essay type questions (for example, "Explain fixed interval schedule of reinforcement with one concrete example from your daily living."). Totally unexpectedly, seventy students(60%) received an F, scoring below a 60 percentage on the 20-point four-question exam.

As soon as I returned the exam papers with very low scores to the students, each of the four classes was filled with shocked, confused, disappointed faces and those of even angers and a few curse words. A couple of the students left the classroom by smashing the door, one student crumpled the exam paper and threw it on the floor, and several students complained that some questions were vague and ambiguous, that it was unfair to give only four questions although five chapters had been covered(i.e., implying that the exam did not cover topics they studied hard), and that they did not like essay exams, insisting multiple-choice questions should have been given, not the essay-type ones.

It should be reported, however, that during the entire exam period no students asked any questions regarding the vagueness or ambiguity of the test items, that 111 students(95%) left the classrooms within 30 minutes after they started taking the 50 minute exam, and that I observed no faces or attitudes indicating the

questions were too difficult, confusing, or otherwise ambiguous; instead, the contrary was in their faces(i.e., satisfaction, confidence, relief, and expectation of high grades). I also had explicitly predicted the four questions for the exam more than a few times before the exam date. And in the very first class in the semester had I reported that no multiple-choice but only essay exams would be given.

More unexpectedly, however, it appeared that it was I the professor who was to blame for their failure, not the students themselves. No question or discussion concerning the contents of the exam questions was made or heard in class at all: the students' concern was obviously nothing but their grades. Moreover, by a Department policy, I had to do lots of paperwork to explain why so many students(nearly 70% of them with a D and an F) "failed" on the course, a rather easy, basic General Psychology, to each of their advisors as well as the Department Chair. It seemed that the very problem of the failure of many students was rooted in me as a Japanese teacher to American students(!?):there was no other reasons except their teacher's problem. As far as public records were concerned, there was no such a report on campus that many students were failing in many courses, virtually most courses taught by American professors:if there had been similar cases like mine, there would have been campus-wide scandals in other words. There was no such a scandal on campus, at least publicly. I knew some foreign teachers who faced the similar problems in the U.S. where students' poor performance is almost always attributed to their professor's problem(see Toom, 1993, for example).

That was my awful experience in the first couple of months in the teaching of psychology at a two-year college of technology where I had a full-time position for the first time in American higher education.

2. Doing Bad and Feeling Good

I do not believe that the disaster happened only to me as a foreigner teaching in America. Rather, almost every professor here and everywhere across America, regardless of being Japanese, Russian, German, Mexican, or American, experienced the similar, maybe except those in nation's top colleges and universities. Since the 1983 Nation at Risk study, the U.S. and its educators witnessed the nation's schools deteriorating. And, needless to say, several years later had many universities and colleges received those students with poor performance in primary and secondary education. At the same time the American economy faced the tough challenge from abroad in the globally competitive market (e.g., Japan and Germany).

Best symbolized by the education summit in 1989 when then President Bush called all the Governors to discuss American educational problems and goals for the 21st century, it was very urgent and imperative to improve the school performance of the American youth, the future of the nation. Despite a national consensus for the educational improvement in such movements as establishing national standardized curricula, tough graduation requirements, teacher retraining, even "back-to-the-basics," namely, three R's and vicious attempts of abolishment of tenureship(i.e., an assumption

that once tenured, the teacher stops his/her vigorous work), distinctive outcomes for the improvement has to be made yet.

Without much improvement, however, students are successful as far as grades are concerned: they do bad actually , but feel good because most students never fail and their grades are good enough to pass courses. Despite the poorest math scores among six countries(the U.S., Korea, Spain, Britain, Ireland, and Canada), a majority(68%) of the American 13-year-olds think that "I am good at mathematics," reported Charles Krauthammer in his Time(Feb. 5, 1990) article. The University of Minnesota Psychologist Howard Stevenson(1987) was intrigued with his finding that over 80% of American students and their parents believe they are good at math while less than 20% of Chinese(Republic of China) and Japanese students and their parents think them to be good at math although American students are incompatibly much behind their Asian counterparts. According to the College Board's study, 28% of college-bound seniors taking the test said they had A or B averages in high school in 1972. In 1993, 21 years later, it was 83% while SAT scores were failing to the current 902 from 937(Leo, 1993). My local newspaper The Buffalo News(March 3, 1994, B1) informed that 58 percent of 498 local teachers' union presidents reported that their members had been pushed to inflate grades primarily by administrators and parents. With all reasons, "in America, everybody is above average"(Leo, 1993, p. 22). As recent as early this year, however, Alfred University's newspaper, Fiat Lux(Jan. 31, 1996, p. 1 and 4), reported that 19% of its freshmen were given academic probation and The Buffalo News(Feb. 19, 1996, p. B1 & B4)

informed another bad news that 28% of University of Buffalo's full-time undergraduates were on academic probation.

Because of a nation's consensus about the importance of education in the global economy and the age of technology, nation's colleges and universities have a record of over 14 million students now. This means seven times more students in American colleges and universities than those in Japan. How are they doing? Are they doing good?

3. Total Quality Management in Class:Participation and Collective Decision-Making

The disastrous results of the midterm exam in my first teaching career in the fall of 1991 at the current college of technology continued every semester until now and I expect they will happen continually unless some fundamental educational reforms take place. For the last nine semesters I taught a total of 1017 students in four sections of General Psychology course. The results were almost identically bad(see Figure 1). Nearly sixty percent of the students earned an F each semester while only about ten percent of them received an A and other 30% of the students were between the two grades.

In order to identify real problems/causes of their poor achievement and improve(and subsequently their grades), I decided to apply some of the Total Quality Management(TQM) principles (Seymour, 1991):participation and collective decision-making, which are quite "popular" in the business community(Harvard Business Review, November/December, 1991, pp. 94-95, for example). Although TQM in the U.S. may be different from that in Japan(see Yatani,

1987), my conviction was clear, as the American founders of TQM

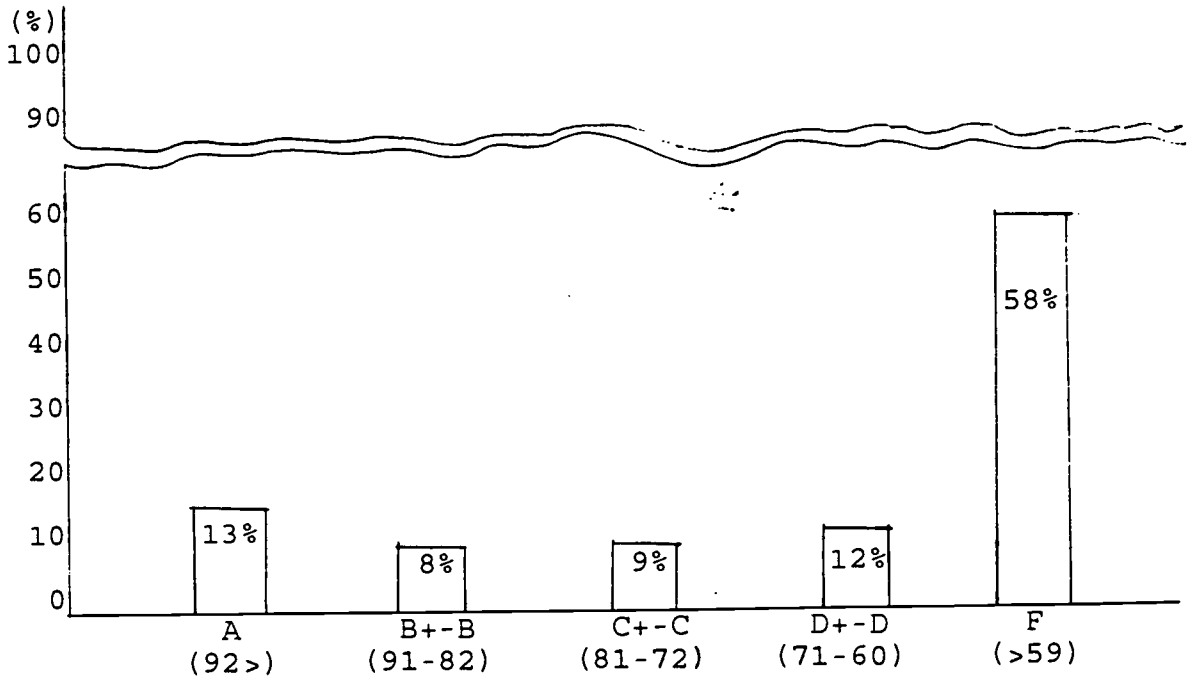

Fig. 1. Percentages of the student population(N=1017) earned midterm grades(A - F) on the 20 pts.-first exam between Fall 1991 and Fall 1995. The parentheses indicate exam scores(%).

(i.e., Charles Protzman from the Hawthorne Plant, Homer Sarasohn, and W. Edwards Deming) taught to Japanese immediately after the World War II and were considered to be responsible for the recovery of the Japanese economy and its miraculous growth toward the world second economic power:everybody can improve if she/he works hard; and, workers(i.e., students in this case) know best what to do to improve[productivity, efficiency, and their well-being](see Bradley and Hill, 1983, for example).

It was my very concern to find out why many students failed on the exam. It also should have been their very concerns. With many reasons stated before, I did not believe those students with

an F did study "hard." Any type of essay exams which require students to write and organize their ideas and subject matters before writing have one most important, essential advantage over multiple-choice exams:written answers are the proof and undeniable evidence that shows why they failed. You must know why you failed and what mistakes you made before you correct them:without finding out the mistakes, none can correct them, in other words. Immediately after returning their exam papers, I made three suggestions to find out their mistakes and make themselves aware of their own errors before responding to their complaints:

(1) those students who want to improve their grades take a makeup exam;
(2) each student must have an individual conference with the instructor to discuss the first exam and the makeup after doing the latter; and,
(3) if their makeup exams were satisfactory, each students would get as many as 10 points, a 50% of the first exam (20-point midterm exam).

No one complained about my suggestions except a few who earned an A on the exam. While the few complained to me outside class, insisting that those with an F deserved their Fs because they did not study hard, but were fooling around, most of them looked very pleased with my proposals. I gave them a 5-day Academic Mini-Break to do the makeup, a take-home exam, and the exam questions were exactly the same as those of the first exam. None could be more pleased.

a. Identifying the problems and causes of the students' failure

Over one hundred students came to my office next three weeks to discuss their exam papers, the original one with an F or below

B or C, otherwise and the makeup. As soon as they came in, I found each of them quite happy and relaxed, probably expecting a big improvement of her/his grade. It was obvious that they did correct their mistakes by checking the textbook, their notebooks, or even working with other students for correcting them during the break or any time when they found convenient after having the exam back from me. From the Kurt Lewin's teaching, fact-finding itself was the solution-finding.

Based on my previous three suggestions, it appeared my office was a sort of "non-threatening environment," one of the 14 TQM principles, where each student presented corrected or revised answers freely to me. In almost all cases my response to the students was very simple:"Very good. I like your new, good answers. But, what happened to your first exam? Why was that so bad?" Since all the questions and their appropriate answers could be easily found both in the textbook and notebook as well as in my lectures, the process of doing the makeup was a sort of self-realization that she/he had hardly spent enough time studying for the test, to begin with. Here are a couple of the exam questions and their typical failing answers to them:

Q: Explain fixed interval schedule of reinforcement with one concrete example from your daily living.

A: When you work hard everytime, you get something good.

[Obviously, this student has no concrete idea on "interval schedule" or/and "example from daily living." He was one of many who left classroom within 30 minutes after starting the exam.]

Q: When you were shopping in a local mall, you suddenly heard a little boy screaming. Clinging to his mother's shoulder,

he was crying fiercely while his mother was talking to an old woman. From their conversations, you realized the woman was a dentist and that the boy had had his tooth pulled a couple of days before. Explain why the boy started crying when he and his mother met the old woman in the mall **by applying classical conditioning(NOTE:you must use the technical terms in your answer)**.

A: When the dentist works on people teeth usually it hurts. When the boy went to the dentist she probably drilled a cavity or pulled a tooth. Now the boy sees the dentist and affiliate her with pain. Even though she is not hurting him every time she sees her he thinks she is going to hurt him and gets scared and cries.

[Despite the underlined boldfaced direction to use the technical terms of classical conditioning, this student either ignored the direction or did not read it carefully. Over 50% of the students made the same "error." She did not consider using such technical terms as NS, UCS, UCR, CS, and CR to be essential as a college-educated person. This is a serious problem considering the answer by a 9-year-old to the same question. See below.]

A1: The boy thought that the dentist hurt him, and when he saw her again he remembered the pain and clung on to the mother's shoulder for safety.

(Note: It is obvious that there is no substantial difference between the two answers and therefore between this college student and the elementary student in their intellectual level. By not using the classical conditioning terms, this college student did not demonstrate her college level work, at least, which is a very serious problem we teaching faculty must be concerned. What kind college graduates are we producing to the world where much more problems are waiting for their solutions!)

As seen in these answers, the problems and causes for the many Fs in my General Psychology short-essay type exam were rooted in:

* lack of or no study about the course materials(see also Yatani, 1994, regarding the poor school performance of many students in secondary education);
* poor comprehension of course topics;
* lack of study/work motivation;
* extremely poor writing as well as organizing skills;
* poor preparedness or unpreparedness for higher education;
* lack of seriousness for course work; and
* preference of multiple-choice to essay exams.

These are what I got from my students during the individual conferences. Surprisingly enough, most of the students visiting to my office with the two exam papers were quite open, easy, honest, and even "talkative" about their failure as their own problems, not something else to blame(instructor, the nature of the exam, etc.). And most of them were appreciating very much for the chance and opportunity to talk about their bad exam with me. What was most important for me was to prove my strong conviction to be right: finding and admitting the problems, often quite painful though, is almost finding the solutions. I did expect much changes, good changes in the students' study behavior and attitudes toward their work in college.

b. Implementation of the Solutions:Participation and Collective Decision-Making

According to the three underlying assumptions of why TQM works(cf. Bradley & Hill, 1983), (1) not only managers(teachers) but workers(students) can also improve, (2) the workers(students) know best what to do(they are a reservoir of relevant knowledge, in other words), and (3) quality(i.e., good work) is not just in one division(i.e., one course) but in the entire production process (i.e., the students' entire college life).

For their total improvement in not just psychology test scores but their worklife improvement, all the students in my General Psychology course were encouraged to participate in "making essay exam questions for the next tests, two of the three to be given in each semester. They usually came up with over 250 questions

and then they collectively chose the "best 10" or "best 15" from them. With the instructor's help they revised, modified, and "polished" those best questions. About one week after the students received the finalized exam questions, they took the test "they made by themselves."

As an old proverb states that "teaching is learning," through these processes, participation in decision-making, the students did know what to study, how to study, and studied "hard" to answer all the questions available or to meet the challenge, in other words. The entire processes were set in such ways that the students were not allowed to make excuses not to work hard and that their work/study behavior was not controlled from outside(i.e., instructor) but from within, the students themselves.

It was often observed that the students exchanged their ideas, "answers," notes, discussions, and other work/study behavior in class. Such news came to me in office that they worked hard in their dormitories, library, or elsewhere. I also had many student visitors to my office to ask questions and even their career goals or other personal matters. The results of their tests were quite impressive:not just scores but well written answers were found everywhere in their exam papers. Some students "showed off" by writing the answers extensively and quite thoroughly to "impress their instructor," which was very rewarding to me and I really appreciated. The overall results in the last nine semesters are shown below: the second exam scores(Fig. 2); the third exam scores (Fig. 3); and, the overall final grades(Fig. 4).

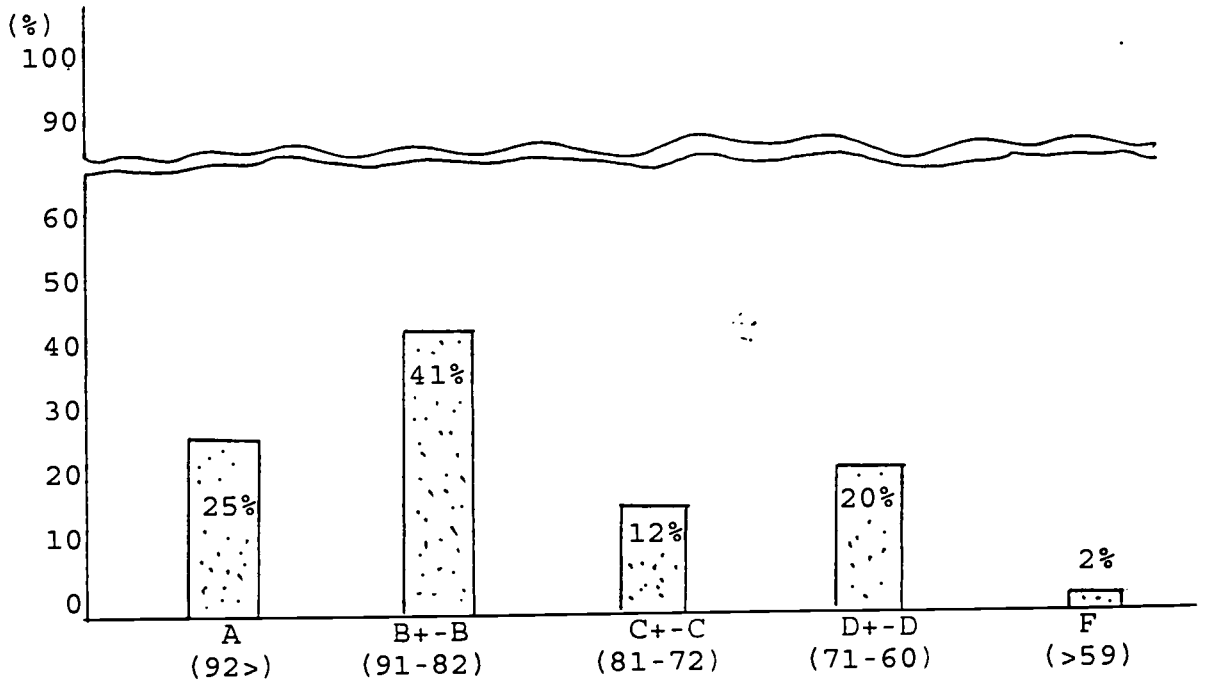

Fig. 2. Percentages of the student population(N=1017) earned grades A through F on the 30 pts.-second exam between Fall 1991 and Fall 1995. The parentheses indicate exam scores(%).

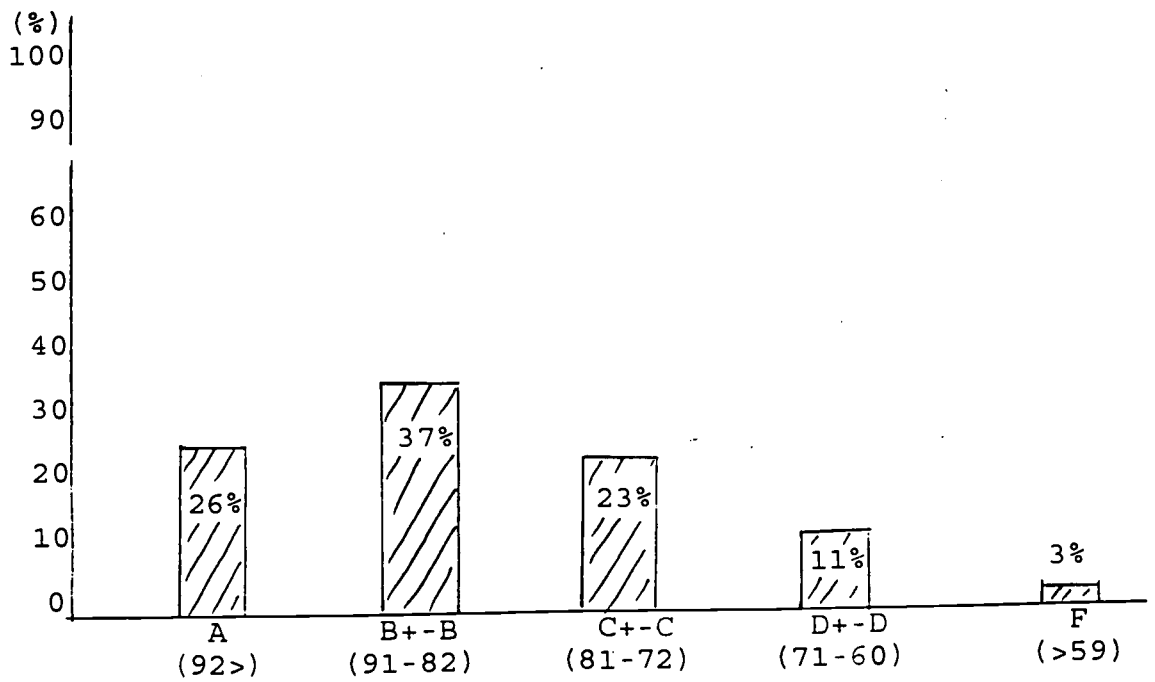

Fig. 3. Percentages of the students population(N=1017) earned grades A through F in the 40 pts-endterm exam between Fall 1991 and Fall 1995. The parentheses indicate exam scores(%).

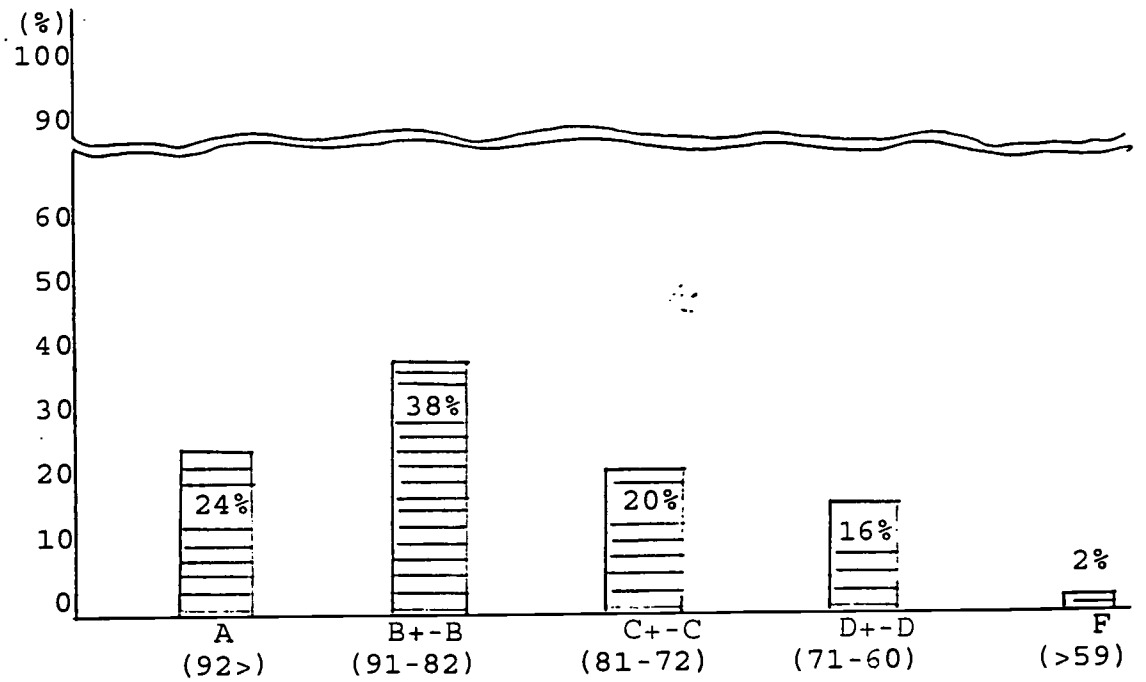

Fig. 4. Percentages of the student population(N=1017) earned overall final grades(A - F) between Fall 1991 and Fall 1995. The parentheses indicate total scores in the three exams plus 10 points either from class participation or homework assignments.

4. Students' Work Motivation as the Key for their academic Success:Conclusion

From very scientific methodological point of views, these results shown may bring some criticisms or reservation in their evaluation, but the instructor observed and experienced the students overall improvement and high achievement in his 4 year-teaching career. If our college students, many of whom are unprepared and self-complacent with low achievement though, should be successful, it is their professors' work to motivate them that is perhaps the most important(Shanker, 1989; see also Yatani, 1994, on a cross cultural comparison about teachers' roles). For that goal of motivating the students, I used group activities(e.g., collective decision in making exam questions) and promoted a strong

sense of shared identity, individual opportunity not only to improve their poor grades but also to influence group goals and activities(e.g., individual conferences and participation in making questions and making the "best" ones). If TQM is "taking responsibility for workers by the managers" not "executing of their power over their subordinates," to my correct understanding, it is teachers, not necessarily students, who are encouraged to apply its principles to the academic community.

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