VISUALIZING IMPROVEMENT PROJECTS: ALSO USEFUL IN HIGHER EDUCATION?

Emiel Billiet & Erwin Smet

Abstract: *The faculty of Industrial Sciences and Technology of the Karel de Grote-Hogeschool in Antwerp has ten years experience in the visualisation of improvement projects by means of posters. Based on the experience we had in industry and higher education, we developed that poster. The backbone of it was based on the different steps of a good problem solving process, structured as the Deming-wheel. Because of several reasons the expected results didn't come. Recent evolution in European higher education (e.g. accreditation), a better support in our organisation and a redesign of the visualisation tool, gave the necessary impulse for a breakthrough in the successful use of this tool.*

Key words: *visualisation of improvement projects, Deming cycle, accreditation in European higher education.*

INTRODUCTION

Not only in industry but also in (higher) education total quality management (TQM) is nowadays a fundamental part of the job. Everybody in the organisation is involved and has "quality" as a basic part of his job. But, it is of course not enough to work in such a way, it must be visible and traceable.

Since September 2003 we started in Flanders, as in other parts of Europe, introducing an accreditation system. Every institute of higher education has to describe for every field of study (department) the way it is organised. Based on a so called "self evaluation report" a team of experts get an idea of the strengths and weaknesses of a department and the study it organizes. After a visit "on site" (audit) the team produces an official and public report. This report is an important element for the "Nederlands/Vlaamse Accreditatie Organisatie - NVAO" (accreditation body for Flanders and the Netherlands) to decide weather the department fulfils the basic qualities necessary to go on in organising studies in higher education. An important part of Internal Quality Assurance in our department is, linked to our weaknesses, working out improvement projects in a systematic and visual way.

SUGGESTIONS FOR IMPROVEMENTS

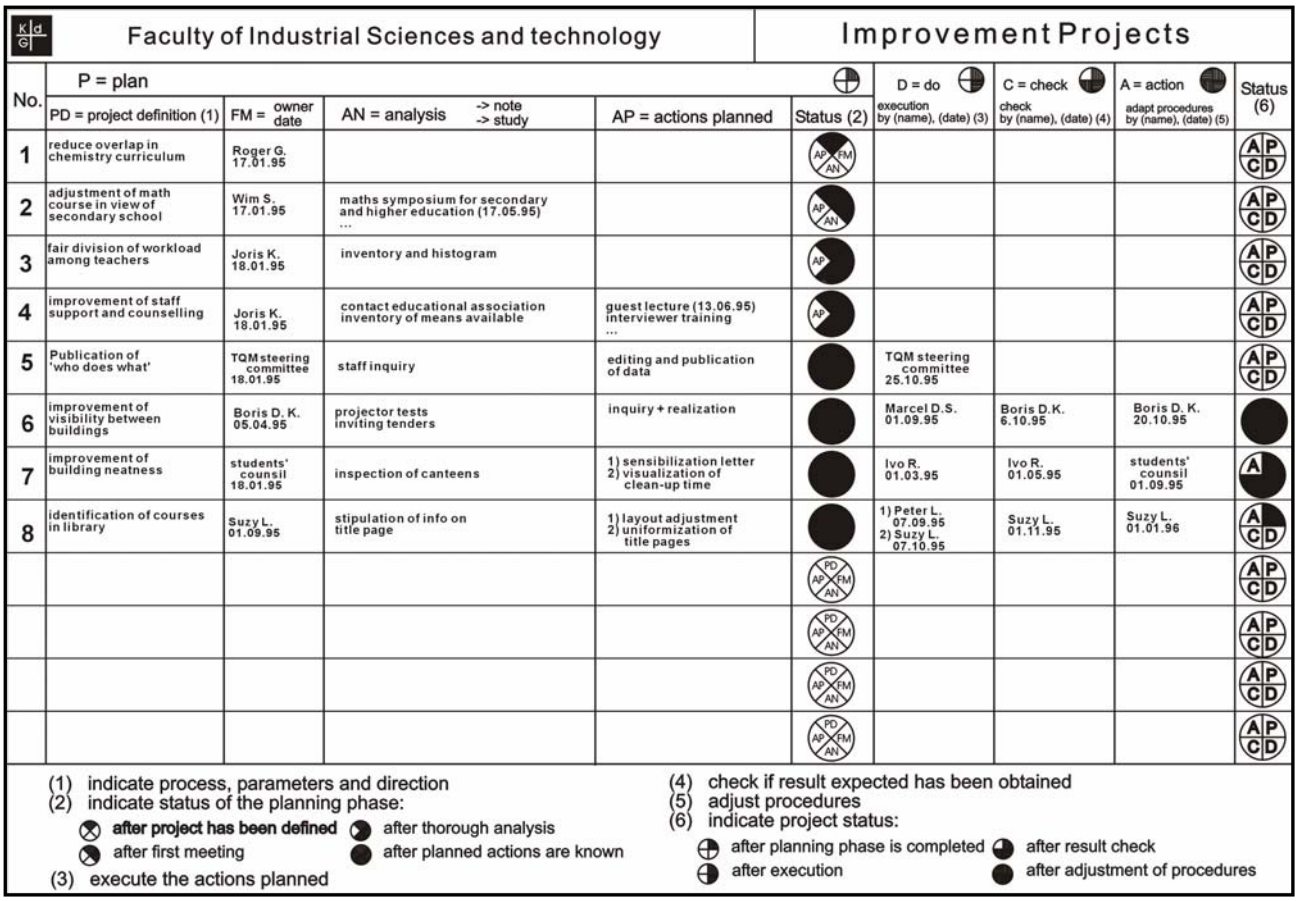
Suggestions for improvements, solutions for problems ... we all know them in our working situation. Everybody is confronted daily with situations in which problems occur or improvements can be made. In a traditional 'non-TQM' organization such situations are reported to the manager, the head of department or foreman. He or she is supposed to take care of a solution. As the number of problems is important, it is not surprising that lots of ideas only get a chance after a long while. The one who has suggested the problem or improvement usually doesn't know about the state of affairs. It must be clear that such a situation is not very stimulating. Why bother about suggesting an improvement if nothing has changed after years? As a result staff members resent not only the problem, but also the fact that their boss doesn't seem to take any action.

From the above description you will have understood that within a TQM organization there is a need to establish a system to stimulate formulating and elaborating suggestions for improvement. It is essential to quit the reflex of telling problems to senior staff and then waiting. The one who comes out with the improvement is its full owner: he or she will be its stimulus throughout the project. In addition, the evolution of an idea, from the beginning, during its realisation and into its evaluation and normalization phase, should be made quite clear to all staff members. Proper communication not only creates opportunities for others to take part in the improvement, but also contributes to acceptance and support. Excellent suggestions and inventive ideas indeed often come from colleagues they were not readily

expected from. That is only possible if we are sufficiently informed on what they are doing. Colleagues may very well improve our ideas out of their different interests or disciplines.

DEVELOPING A COMMUNICATION TOOL

In the nineties the TQM steering committee of the department of Industrial Sciences and Technology at the Karel de Grote-Hogeschool in Antwerp has worked out a means of easy communication on improvement suggestions, viz. with the help of a poster. This idea has originated from both authors' experience with such posters in several industrial companies. In making aware and training staff in continuous improvement techniques, the need for a clear communication appeared. A customer tailored poster was then worked out, on which improvement ideas from staff members can be written (see figure 1). The poster also shows the whole route of an idea, up to the implementation of the improvement. It is displayed at an apparent place (mess, control room, ...) so that interaction with other ideas is promoted. As such a poster must be tailor-made, the steering committee adapted the industrial model to a convenient instrument.



Faculty of Industrial Sciences and technology — Improvement Projects

No.	P = plan: PD = project definition (1)	FM = owner date	AN = analysis -> note -> study	AP = actions planned	Status (2)	D = do: execution by (name), (date) (3)	C = check: check by (name), (date) (4)	A = action: adapt procedures by (name), (date) (5)	Status (6)
1	reduce overlap in chemistry curriculum	Roger G. 17.01.95			AP FM AN				A P C D
2	adjustment of math course in view of secondary school	Wim S. 17.01.95	maths symposium for secondary and higher education (17.05.95) ...		AP AN				A P C D
3	fair division of workload among teachers	Joris K. 18.01.95	inventory and histogram		AP				A P C D
4	improvement of staff support and counselling	Joris K. 18.01.95	contact educational association inventory of means available	guest lecture (13.06.95) interviewer training ...	AP				A P C D
5	Publication of 'who does what'	TQM steering committee 18.01.95	staff inquiry	editing and publication of data		TQM steering committee 25.10.95			A P C D
6	improvement of visibility between buildings	Boris D. K. 05.04.95	projector tests inviting tenders	inquiry + realization		Marcel D.S. 01.09.95	Boris D.K. 6.10.95	Boris D. K. 20.10.95	
7	improvement of building neatness	students' counsil 18.01.95	inspection of canteens	1) sensibilization letter 2) visualization of clean-up time		Ivo R. 01.03.95	Ivo R. 01.05.95	students' counsil 01.09.95	A
8	identification of courses in library	Suzy L. 01.09.95	stipulation of info on title page	1) layout adjustment 2) uniformization of title pages		1) Peter L. 07.09.95 2) Suzy L. 07.10.95	Suzy L. 01.11.95	Suzy L. 01.01.96	A C D
					PD AP FM AN				A P C D
					PD AP FM AN				A P C D
					PD AP FM AN				A P C D
					PD AP FM AN				A P C D

(1) indicate process, parameters and direction
(2) indicate status of the planning phase:
after project has been defined — after thorough analysis
after first meeting — after planned actions are known
(3) execute the actions planned
(4) check if result expected has been obtained
(5) adjust procedures
(6) indicate project status:
after planning phase is completed — after result check
after execution — after adjustment of procedures

Figure 1: The "old" poster used to visualize improvement projects.

DEMING CYCLE

The poster is based on the Deming cycle (see table 1). It shows the four phases to be gone through in effective problem solving. Since the planning stage itself consists of several steps, you will notice that the poster has a number of columns (see figure 1). Before one is able to solve a problem, that is before an idea can be worked out into a feasible plan, the project should be well defined and thoroughly analysed.

Table 1: The Deming cycle.

PLAN	design a plan for improvement
DO	execute that plan

CHECK	check whether the suggested improvement has been realized
ACT	make sure that the problem cannot occur again, that the gains are hold by defining or adapting standards

We have opted for a status circle to visualize the evolution of the planning phase. A quadrant is coloured each time an important step is completed: project definition (PD), first meeting (FM), analysis (AN), actions planned (AP). When the planning of subsequent phases (D, C and A) is completed, the planning phase has come to an end. This is shown by colouring the first quadrant of the status circle in the last column. After the DO-phase is completed, the second quadrant is coloured etc.

TQM philosophy is based on two elements (figure 2). There is a TOP-DOWN approach for the implementation of continuous improvement. Every day problem solving and continuous improvement projects must be undertaken at all levels and fully supported by management. The implementation of TQM should start at the top and be passed on to all other organizational levels.

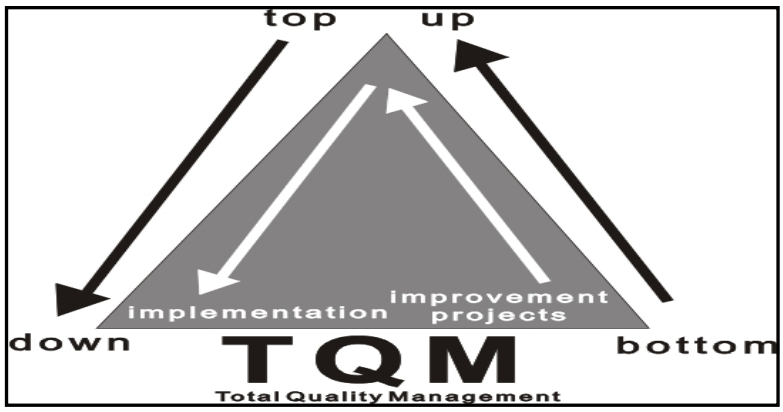


Figure 2: The TOP-DOWN and BOTTOM-UP approach.

Problem solving and improvement projects however should also be approached BOTTOM-UP. A training strategy must be worked out taking both elements of the TQM philosophy into account. A first important element of such a training strategy is teaching a basic instruction to all members of the organization, including top management, middle management and staff. A second element consists in applying the knowledge acquired to the working environment. To that purpose some case studies may be undertaken in mutual agreement. Multidisciplinary groups (management, teachers, administration staff, ...) must be set up.

The poster was introduced in a rather silent way, without serious training of our management or colleagues. As our polytechnic was involved in an intricate merger operation at that time, it appeared better to postpone such training for a few years. However after two years we had de feeling that we didn't succeed in an efficient use of the visualisation tool. We decided to stop using it.

NEW IMPULSE

There were two main reasons to start again using a kind of poster to visualise and support TQM at our faculty. The first reason was the new TQM structure we have implemented two years ago. Instead of having a lot of meetings with some TQM volunteers (members of departments, services, etc.), we wanted to invest their time in the real TQM work that has to be done "on the floor". The new structure is based on a TQM "anchor" in every department and service (e.g. library, safety, …). This person has to spend a part of his job to support his department or service in improvement projects, preparation of audits, etc. Only when necessary the TQM coordinators organise a meeting with the TQM anchors. The TQM coordinators (this job is divided over two persons) have

every month a meeting with the management of the department. To get a good overview of all the TQM activities, it was necessary to look for a simple but effective tool: a poster.

The second reason to use again a visualisation tool, was the need to be prepared for audits (and accreditation) in the future. For some departments the first audit will be in 2007. The poster can help us to collect evidence of our activities based on a TQM philosophy.

A NEW POSTER

In the new poster we added a time scale. At the end of every month the "anchor" of a department actualises the poster. The milestones (as planned at the beginning of a project or adapted during the project) are given by a code (see figure 3). The status of a project is expressed by the colour of the field. The "anchor" sends the poster to the TQM coordinator, who is responsible for dissemination and putting the poster in the archive.

	ELEKTROMECHANICS				IMPROVEMENT PROJECTS 2005/2006							Situation on : 2005-10-31	
	project description & coordinator	September 2005	October 2005	November 2005	December 2005	January 2006	February 2006	March 2006	April 2006	May 2006	June 2006	September 2006	October 2006
1	Modernise the lab of robotics. Erwin S.	C	D	D	D	D	D	E	F				
		Comment:											
2	Planning and follow-up of final project works. Eddy J.	A	B/C	D	D	D	D	E	F				
		Comment:											
3													
		Comment:											
4													
		Comment:											
5													
		Comment:											
6													
		Comment:											
7													
		Comment:											
8													
		Comment:											
9													
		Comment:											
10													
		Comment:											
	Milestones of a project:	A = project definition		B = analysis		C = actions planned			D = actions executed			E = evaluation	
		F = implementation				planned			executed			delayed	

Figure 3: The new poster used to visualize improvement projects.

The origin of improvement projects can be very different. A colleague is faced with a problem. He wants to solve it and starts the process. Because we have limited resources, it is important to make a selection of the most important problems to be solved. The mission and vision of the faculty and the department can help to do this. Regular alumni, students and industry are polled. The results of the inquiry are used to make a SWOT analysis (SWOT = strengths, weaknesses, opportunities, threats) and to start improvement projects.

CONCLUSION

It should not be overlooked that posters like these we have developed, are only a medium, a tool that can help people to put improvements into practice. If its introduction is not accompanied by an improved TQM-consciousness of all partners, its effectiveness

may be doubtful. A top-down approach seems of crucial importance for its success. During the academic year 2003-2004 the new poster was introduced step by step in the different departments and services. At the end of 2004-2005 more than 100 improvement projects were mentioned on the different posters of the faculty.

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