A Process Improvement Assignment in an Integrated EMBA Program

A Case Study

By

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Introduction

I am part of a mixed disciplinary team that teaches the executive format MBA for Experienced Professionals (EMBA) at Kennesaw State University. The average age of these students’ is 37. This program is taught in three and four-hour long modules at weekends. Four of these modules in the second semester are Operation Management units. These modules are Process Improvement, Quality Excellence, Project Management, and Supply Chain Management. As teaching effectiveness is greater with doing than listening, I use a Process Improvement Assignment to tie together these modules and other concepts taught in the program. This paper details how I run this assignment and the student’s feedback on this assignment.

History

My belief is that assignments wherever possible should be on real life problems. Dr. Woolsey (1998) of Colorado School of Mines insisted that his students improve a real process before graduation. When teaching undergraduates at other universities, I had used a team approach. Each team had to go out and work with a real business or organization to improve a process. I used teams because the undergraduates had a lack of experience, a lack of real world contacts and a lack of time. However, this assignment gave mixed results because of the free rider problem. Usually one student in a team had the real world contacts and did most of the work. Some teams did great work that assisted local firms; some did not.
When I came to Kennesaw I tried a team based PIA with an evening MBA class. It did not work well as the students had too many other teams going, did not know each other and were tempted to free load. Therefore, one student in each team ended up doing most of the work. Also there was a tendency for students to start this assignment too late in the term and so not finish or produce bad work.

I then joined the EMBA program. In this two-year program, students are placed in permanent teams for the length of the program and 35% of the program involves team activities. Also nearly all the students have permanent jobs. I was made course manager for the second major semester of four in the program. My semester is called Business Excellence. In this course I teach the strategy, operations, quality, MIS, and quantitative methods part of the course. The course consists of five 3-day weekends at monthly intervals.

In addition, KSU’s program uses IBM’s LearningSpace (LS). This means all communication is electronic except at weekends. LS consists of an electronic schedule where all reading reminders, presentation reminders, and assignments are located with their due dates; a media center with the electronic readings, cases, presentations, etc.; a chat room that I monitor daily, an assessment center where assignments are graded and feedback is done, and a profiles section.

Objective of Assignment

The objective of the assignment is that students improve a real process at their place of work. This is an individual assignment but I encourage students to use co-workers at their place of work to assist. I concur with Dr. Woolsey that one has to master a process to improve it. (Dr Woolsey’s quote (1998) is “I believe that before offering any ideas for
improvement, you must know what the present process IS!”). However, my students are working full time and cannot go into a new work situation and master it as Dr. Woolsey’s students did. Therefore using a process where they are already working overcomes this problem. The academic aim of the assignment is that the use skills taught in teaming, personal development, communication, quality improvement, operations, quantitative techniques, finance, and accounting during their program on a real process with real people. The personal aim of the assignment is that my students improve their place of work and thus show their bosses and co-workers what they are learning in our program.

**Structure**

The PIA was designed to fit into this framework. The PIA is an individual assignment that counts for 20% of total course (11 credit) grade. At KSU, a “C” in this course is a failing (out of the program) grade. Thus all students have to take this assignment seriously. As there are five weekends, I split the assignment into five stages. Each stage is due two weeks after the weekend. Each student sends their work to me electronically, requesting a review. I review that stage and return it electronically with comments. After stage five, the students submit their total assignment for grading and I then grade it. At earlier stages I do not grade it but if students do not do it by due date then I chase them up electronically. The final due date for grading is a hard due date. If they are tardy without valid excuse then they are penalized.

In the first weekend during the “Business Strategy” module that I teach, I introduce the assignment and ask them to do Stage One. In Stage One, they must choose any process that they can study well to improve. This can be a simple or complicated process. I remind students that they will need co-worker help for large processes. I ask
them to write an introduction that sets the scene for the process for someone like myself that does not know their place of work, give a very brief description of the process (one sentence is enough), state the business objectives that the process supports and set the objectives and rationale for the process. My main job at this stage is to ensure that students do not chose a process improvement that they cannot complete in the five-month time frame.

In the second weekend during the “Process Improvement” module, I go into far more detail of the process and teach how to use Process Flow diagrams. In Stage Two I ask students to fully describe the existing as-is process, using a Process Flow Diagram and writing. I emphasize that at this stage they are not to think about problems or improvements. My feedback at this stage is to ensure that they have collected all needed data about existing process, including occasional flows, recycle loops, exceptions, etc.

In the third weekend during the “Quality Excellence” unit, I cover tools for discovering problems, and finding and choosing solutions. In Stage Three, I ask students to list all the problems with the process, rate their importance, chose a problem to solve, list all possible solutions for that problem with their pros and cons, and logically chose a solution. They are encouraged to use tools like brainstorming, histograms, NPV and payback, etc., which have been covered in class or they find out themselves about. My feedback here is mainly concerned that there reasoning is logical, and that they have considered more than one solution to their selected problem. Many students tend to want to go to an obvious solution without really considering alternatives.

In the fourth weekend during the “Project Management” module, I cover project management tools. In Stage Four, I ask students to produce an action plan to implement
their solution using tools such as Gantt charts, CPM/PERT, etc. and an evaluation plan to check whether their implemented solution has worked, by using tools like Statistical Process Control, etc. My feedback at this stage is to ensure that all the needed content is present.

In the fifth weekend I ask for the final report or Stage Five. In Stage Five, students must gather all the content of the previous four stages and produce an integrated report that sells their proposal to their bosses. This report includes a one page Executive Summary to interest the reader in the report. I also say that the report should answer logically any query that the decision maker at their organization could ask with a logical answer, backed by data, not an opinion. I base the final grade on both content and presentation.

**Results**

I surveyed six past classes for the effect of this assignment. I received feedback from 55 out of a possible 212 students. The feedback occurred from one month to one year after the completion of this assignment.

**Question 1: Has the PIA been helpful in progressing your career?**

(67%) Very helpful

(24%) Somewhat helpful

(9%) Not helpful

**Question 2: How well was the PIA executed?**

(49%) Well executed

(46%) Somewhat well executed

(5%) Somewhat badly executed
(0) Badly executed

**Question 3: Was the PIA improvement plan implemented?**

(62%) Was implemented

(34%) Maybe in the future

(4%) Not implemented

**Question 4: If implemented, was the process improvement successful?**

(61%) Yes

(2%) No

(37%) Not implemented

**Question 5: Was the PIA a success from the point of view of improving your organization?**

(51%) Yes - a lot

(41%) Yes - a little

(8%) No

**Question 6: Was the PLA a success in teaching you how to improve processes?**

(78%) Yes - a lot

(22%) Yes - a little

(0) No

The next three questions were opinion-elucidating questions and I will summarize and give examples of comments.
Question 7: Please comment on how successful the PIA was as a teaching tool?

The answers were generally favorable. Though some associates pointed out that they did this at work already and it was nothing new. Some quotes are:

1) I think that the key to the PIA is that it teaches you to get to the root cause of a problem. Many times we are trying to fix a symptom and not the real cause of the problem. The PIA teaching tool was a highlight of my MBA experience.

2) I have used many of the project planning and problem solving techniques in my work. Recently, I used the brain storming and fish bone devices to get to the root of inefficiencies in my company's commission payment process. The approach proved quite successful. I think the PIA was one of the more significant aspects of the MBA-EP curriculum.

3) Would have liked to have visual and information on actual PIA used and implemented. Also would like to see the results for realistic point of view.

4) The way the assignment was structured was excellent. Having the ability to turn in the first four stages over time and receive feedback was an excellent idea. By the time the final project was due, it was basically done except for compilation and touch up. It would have been a monumental feat to prepare the entire project at the last minute (what many people would have done had there not been review dates along the way).

5) I've been involved in many process improvement activities and have received a plethora of tools and training throughout my 10-year career. The base concepts that were taught in class I already knew but were in line with what I had been previously taught. Having said that, I would have to believe the PIA was a very useful module for those without previous exposure.
6) Unfortunately, project management and process improvement is a major part of my training and background. Subsequently, I garnered very little from this assignment. For first-timers, however, I suspect this would be a worthwhile venture.

7) The project exposed me to new tools to use in process evaluation and improvement. I thought it was one of the more useful projects we've done.

8) I believe this was an excellent assignment. I work day in and day out with my team and we don't really have time to think about the process. It was good to take a step back and really look at what is not working as well as it could.

9) This assignment was most helpful in focusing my new project activities. I previously engaged in several fairly non-directed brainstorming processes when starting a new project. I now use the process flow from brainstorming, through grouping the ideas, checking the pros and cons of each group and selecting one of the issues to concentrate on. I save a lot of time and use my energy more effectively.

10) This activity also helped me to share my ideas and thoughts in a way that lets others engage more easily with me in the formative stages of a project. I very much appreciate the great contribution that this assignment made to my capacity to share my ideas visually.

11) I like the way the assignment was applied. Each step was separated from the next. This was very effective in keeping confusion down and concentrating on completing the problem analysis, rather then rushing to implement the first ideas for a solution.

12) This was an excellent teaching tool!!! I understand the fundamentals and how I will need to go about further process improvement projects in my career in the future. This is something I will DEFINITELY use again and again in the future. I really liked how each
step was broken down and then the instructor gave me very constructive feedback. I think breaking each section down made the project not seem so overwhelming. Again this was a GREAT learning experience for me!

**Question 8: Please comment on how successful the PIA was at improving your organization?**

The comments were mainly saying how they had improved their organization. However, some comments were about how resistant to change their organization was.

1) It will save several thousand dollars this year. I was going to institute the changes anyway, without the formality of the PIA (a lot of it was common sense changes that didn't need in-depth analysis for identification or process initiation). Going through the PIA process wasn't as important for this problem, as much as it gives me the tools to tackle bigger things in the future.

2) Not very. The organization is resistant to change. They accepted some of the suggestions, others are still under consideration but my impression is that that consideration will be a long time coming.

3) 18 months ago, we had a deficit with Interim Managers being available to run our Units without Operators. As of this month, we now have a surplus and are able to take it to the next level and find even more qualified individuals.

4) The PIA I prepared began dialogue within my company concerning improvement of the bills of lading processing. The company's Logistics Department accepted ownership of the project and used several of the ideas developed in my PIA as guidelines for improvement. Although not implemented in every detail, my PIA was very beneficial to my company.
5) The process has only been implemented for a few days, but I have already noticed a difference in how communications are flowing from departments to the rest of the organization.

6) This PIA could not have come at a better time. The time this assignment came out was a critical time for my organization because of job cuts. Believe it or not, The PIA assignment help alleviated some individuals from a possible job cut.

7) My organization lives and breathes process improvement. We implemented Six Sigma in 1995 and currently 5% of the exempt salary positions are 100% dedicated to process improvement (Black Belt or Master Black Belt positions). The savings we reap from process improvement as a company is in the billions. The PIA I completed for the class assignment will save our company over $4 million by year end.

8) During the examination of my department's process, my supervisor was very defensive. They thought I wanted to make large changes and be disruptive. After reviewing the document, they were able to understand that the suggestions to improve the process would really work.

9) It brings some collaboration into the business, and an understanding for each department role toward a common goal.

10) We have found that our communication is much better, but we need to evaluate it later (say a year from now) to see just how successful it has been.

11) The results of the process are very well spoken of in my company.

12) We implemented the new process throughout the region. It is one of the few processes we ever implemented where the workforce embraced the change.
Question 9: Please give suggestions on how the PIA could be improved in future?

Four main improvements were made. The first was to spend more time in class on how to use quality tools. The second was to give everyone a model past assignment. The third was to give other tool sets other than Memory Jogger. The fourth was for more detailed feedback from myself at each stage. The point was also made that some students got little learning from this assignment, as their job was or that they had already been trained in process improvement.

1) It would have been helpful for those of us that do not prepare Gantt charts, fish-bone diagrams, flow charts, etc. on a regular basis to know which software applications were more "user friendly" for creating these tools. It would have made the chart/diagram formation less frustrating.

2) I think the staggered due date format is ABSOLUTELY the way to go for this type of assignment. I CAN NOT imagine trying to have one due date!

3) My only recommendation is to spend more time in class on process improvement tools and make the use of more tools a mandatory element of the PIA. The power of process improvement lies in the tools.

4) Allow a longer time frame to allow for potential implementation in larger companies with longer change cycles.

5) The only improvement to this exercise is for critique of the verbiage/content of the actual paper.

6) My only suggestion would be to share one of the better final projects with the team and share the techniques used and learning.
Discussion and Conclusions

In general, I believe that the assignment has met its aim. It has made my students learn about process improvement and how to implement it in the real world. The PIA has apply their leadership and teaming skills as well as their operational and analysis tools to good effect in their workplace. The conduct process improvement successfully they have to work well with their co-workers and bosses. This assignment has also shown some of the more retiring students that they can take the initiative at work. It has also demonstrated to the outside world that what a student learns in our program can be of immediate use to an organization.

However, there are still some major problems. First, for some students, process improvement is what they do at work anyway, so they are learning nothing new. Second, some students cannot actually implement their action plans and so the PIA is more of a theoretical assignment.

There are also opportunities for improvement. Students are asking for more feedback at each stage. As an instructor who does not know their place of work I can only advise on the tools and methods student use not the content of their finding. Students, who are new to process improvement, want more in-class instruction in the use of tool, software, etc. Unfortunately, I do not have time to do so.

Students would like a model assignment. I am working to get a model assignment that I can give to students. This has been a problem because most assignments involve information private to the student’s organization, which I agree not to divulge to others. Also I am not sure that I want students to approach this assignment in a fill-in-the-blanks attitude that can happen with model assignments. Some students did not like using the
CD version of the Memory Jogger booklets. In the past, I had used the paper version of
the Memory Jogger booklets successfully. Our program has a policy of handling
readings, etc in an electronic not paper format. I may have to reconsider that decision.

In conclusion, I recommend this sort of process improvement assignment when
teaching part-time students who are in full time jobs. For full time students, a Dr.
Woolsey approach of the faculty going out and finding processes for students to work on
would be needed.

References

Woolsey, R. E. D., How to have a successful operations management program: a final
editorial, Production and Inventory Management Journal, Third Quarter, 1998, v 39, n 3,
pages 68 – 71.

The Memory Jogger: E-Book Series on CD-ROM, produced by Goal/QPC, # 6100E

Appendix One - Instructions to Students

The ultimate assignment will include all 5 stages as an integrated report not as a
collection of stages. I encourage you to read the requirements of all five stages before you
start stage one.

You will complete as an individual this total assignment for marking by the end of the
term. However, you are encouraged to use colleagues at work to assist you, especially in
the brainstorming stages. The assignment will consist of 5 stages. All five stages will be
done on the same assignment document in the CourseRoom. Note there are different due
dates for each stage. You are strongly encouraged to meet these due dates and finish stages before their individual due dates.

You may request a review from me at any time in the process not just at stage due dates.

The ultimate assignment will include all five stages as an integrated report not as a collection of stages.

The 5 stages are;

1 - Choose the process
2 - Describe the existing process
3 - Find the process problems, chose a problem, find the possible solutions, chose a solution
4 - Solution implementation action plan, Evaluation plan, Justification, Executive Summary
5 - Edit whole report.

**Stage 1**

1) Choose any process that you can study well (probably at work). This can be a simple or complicated process.

2) Write an introduction that sets the scene for the process for someone like myself that does not know your place of work.

3) Give a very brief description of the process (one sentence is enough).

4) State the business objectives that the process supports.

5) Set the objectives and rationale for the process.

Note: the Memory Jogger CD outlines the process that you will follow.
Remember this report is designed to get people to change something - so it must be a SALES effort.

**Stage 2**

*Description of Existing Process*

Describe fully your process as it is actually done not as it is supposed to happen, using a Process Flow Diagram to help. Use the Memory Jogger CD to help. Show all flows of material, people, and information, including abnormal paths as they actually occur not as they are supposed to occur. Show all decision points and recycle loops. If who-does-what is important, then you may want to consider using a swimming pool PFD. If flows occur only occasionally still put them in.

Consider the following tactical operational dimensions and state as they apply to your process (some or many of these may not apply to your process) and what the associated challenges are; product/service type, process type and capacity, quality, location, layout, humans, supply chain, inventory, scheduling, and maintenance.

**Stage 3**

State what all the problems are, what their relative importance is, and their root causes.

Chose a problem(s) to solve.

Consider all alternative solutions to the problem, and their pros and cons.

Chose a solution to implement.

Use the Memory Jogger CD as a help.

You will probably do the following:

1) Brainstorm for all the problems with the process, use a Fishbone Diagram or similar to organize the problems.
2) Choose a problem(s) to solve using tools like Pareto Diagram, Check sheets, etc., and state why you chose this problem(s).

3) Collect detailed data on the problem using tools like Control Charts, Histograms, etc. to find its root causes.

4) Brainstorm for all solutions for problem. State the pros and cons of each solution (including those later rejected), which will probably involve finding costs and paybacks involved.

5) Choose a solution(s) and state why you chose that problem.

**Stage 4**

1) **Implementation of Solution**

Describe your project action plan for implementing your solution(s) to the problem(s) in your process. Please include the following: all activities with their due dates, costs (may be estimated), and responsible people, using at least a Gantt chart with activity related arrows connecting all activities. You need to at a minimum state who will do what by when.

   Use the Memory Jogger Project Manager CD to help.

Please put in targets (in numbers) that you hope your improvement to achieve.

2) **Evaluation Plan**

State how you will check that your implemented solution has solved your process problem(s) and not created new problems. This should say who measures what when.

3) **Cost/Benefit Analysis and Capital Investment Justification**

If you have the information do a cost/benefit capital investment justification, which you will summarize in the executive summary.
4) **Executive Summary**

When you have produced the rest of the assignment report, produce a less than one page executive summary. This should state the process, the selected problem(s), the recommended solution(s), and your justification and will be at the front of report. This summary should be written as one narrative in a way that "sells" the proposal to the decision makers. It should be a stand alone document that "promotes" your ideas and thus should not refer to rest of report.

**Stage 5**

Produce an integrated, well written report that flows well and includes the contents of all four previous stages (you do not have to use stage numbers as headings).

The final written presentation should be as follows (on paper or in electronic format):

1) Please present report as an integrated whole not as a collection of the four stages.

2) Executive Summary on own page at front.

3) Please refer to charts, figures, attachments, appendices, etc by name in the main text so that readers can look at them at the right point in the narrative (unless you embed charts in wordage - then say "see below" or "see above").

4) Please state where in master document the attachments are placed if submitted separately.

5) I will accept paper copies of final report if you wish.

6) Please use page numbers and an Agenda or Contents page after the Executive Summary.

7) Please ensure that your spelling and grammar is correct - spellcheckers do not correct all spelling mistakes.
I strongly advise you to get fellow team members or others not familiar with the process to read and comment on your completed assignment before you submit it for a grade.

**Appendix Two - Marking Schedule for Process Improvement Assignment**

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<thead>
<tr>
<th>CONTENT</th>
<th>MARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Summary</td>
<td>15</td>
</tr>
<tr>
<td>Introduction with Business and Process Objectives</td>
<td>10</td>
</tr>
<tr>
<td>Existing Process and Process Flow Description (incl. flowchart)</td>
<td>25</td>
</tr>
<tr>
<td>Problems, their Relative Importance, and Root Causes</td>
<td>20</td>
</tr>
<tr>
<td>Alternate Solutions to Chosen Problem(s) and their Pros and Cons</td>
<td>20</td>
</tr>
<tr>
<td>Chosen Solution(s) Implementation Action Plan</td>
<td>20</td>
</tr>
<tr>
<td>Evaluation Plan</td>
<td>10</td>
</tr>
<tr>
<td><strong>PRESENTATION</strong></td>
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<tr>
<td>Visual Appeal</td>
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<tr>
<td>Ease of Understanding Report and English</td>
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<tr>
<td>Use of Diagrams</td>
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