HHPA Consulting
Program Evaluation Case Study #3
College of Engineering Program Assessment

Year work completed: 2005
Name of References: Available upon request
Company: Large semi conductor manufacturing plant (Available upon request)
Target Population: 300 process and equipment engineers

Describe the scope of the project

A needs assessment project was conducted during the second quarter of 2005. The objective was to start a new division of the corporate university that would be fully funded to focus on closing job knowledge and skill gaps of process and equipment engineers. The "College of Engineering" needed to have a curriculum based on true customer needs and it had to work within the fast-paced and results-oriented culture of a high performance manufacturing environment. If successful, at the pilot site, the curriculum would be proliferated to seven other large manufacturing sites in the Southwest U.S. and then offered globally.

Conducting a detailed needs assessment was the crux of establishing a viable curriculum. The project included developing and conducting a computer-based self-assessment of the engineering workforce. Over 300 engineers and 25 engineering managers were surveyed. Focus groups from this target population were conducted to validate the survey results and provide insight on potential barriers and success factors for the new college. The data collected from the survey and focus groups was categorized and grouped into major trends. Several executive summary presentations were given, and key decision makers used the information to determine the first set of courses to pilot and to prioritize the identified environmental barriers to success.

What was the Goal of the Program?

The performance gap was a lack of quality decision-making information for the COE.

- The assessment report was to recommend two pilot courses for the COE to launch its curriculum.
- The assessment was to deliver a full list of technical courses that the COE Core Team could prioritize for curriculum development and offerings.
- The survey was sent to 100 percent of the engineers with a goal for a 60% return rate.
- The focus groups data was to provide information to assist the COE Core team in finalizing its plans for a successful launch by understanding and negotiating the potential barriers environmental.

What business outcome was the solution intended to improve or accomplish?

The data summary report would be used to address environmental gaps that would impact the launch and sustaining success of the College of Engineering. The assessment needed to be comprehensive because many of the program leaders would use the output information to make critical business decisions.

What HPT Standard will be described in this case study?

Systematic Program Evaluation is about measuring the efficiency and effectiveness of what was done, how it was done, and the degree to which the solution produced the desired results so that the cost incurred and the benefits gained can be compared. This Standard is about identifying and acting on opportunities throughout the systematic process to identify measures and capture data that helps to identify needs, adoption, and results.

What was the HHPA Consultant's role in accomplishing this Standard for this project?

The HHPA Consultant was invited, as an internal performance consultant, to collaborate with the one instructional designer (ID) from the COE Core Team. We proposed and conducted the needs assessment using the HPT systematic methodology. Because of the broad scope of the needs assessment, the HHPA consultant designed the needs assessment as a complete HPT project itself. This included drafting a detailed project plan and getting the Project Leader to buy-in. Although the ID had many years of ADDIE model experience, the HHPA consultant guided the ID through framing the request into a human performance request to consider all the system factors that could impact the success of the curriculum delivery portion of the COE project (establishing a new college in the corporate university system).

We presented the HPT methodology to the COE Core Team. They liked the structured approach to getting a list of technical courses, which the end users were interested in, as well as obtaining the engineers views of potential barriers to success.

The HHPA consultant assisted with designing, developing, and deployed two surveys to collect the engineers' needs for additional technical courses, as well as their managers' views of what was needed. We drafted the design for the focus groups and worked closely with the ID to refine the development. We conducted 6 focus group designed to validate the survey data and collect barrier analysis data. We analyzed, categorize and grouped the data into major trends, and then reported out to the Core Team and higher level engineering staff members.

During bi-weekly meetings, we reported our progress and routinely asked for input and feedback on whether we were on track for providing the kind of information the Team needed.

How was the solution evaluated after it was implemented?

The needs assessment provide the intended information. The focus group revealed 12 clear trends in what the engineering population thought could be barriers to success. The results of the survey revealed two curriculum subjects that were conclusively needed by a large majority of the engineers. These two subjects were recommended for the pilot course development.

The feedback after the report out presentations were very positive. The ID and HHPA Consultant were publicly recognized and rewarded for their timely accomplishments.

The two surveys (one for eng and one for mgr) had 41 questions each and we received 194/300 engineer responses and 19/22 Group Leader responses. We held 4 engineer focus groups and 1 manager focus group, with a total of 28 participants. The focus groups were asked 10 questions and each participant had a opportunity to respond or ask follow up questions. We documented over 450 comments. Total data that we sorted and categorized from the survey and focus groups was over 9,000 data points.

▪ The assessment report was to recommend at least two pilot courses for the COE to launch its curriculum.	• Four Pilot Courses 1. Database Analysis and use of PCS (signals vs noise) 2. Sort Bin to Layer interrelationships 3. Customized Design of Experiments 4. Manufacturing for Engineers
▪ The assessment was to deliver a full list of technical courses that the COE Core Team could prioritize for curriculum development and offerings.	▪ Completed. 68 courses identified in 6 curriculum areas. Additionally, research was completed to indicate how much development was required for each.
▪ The survey was sent to 100 percent of the engineers with a goal for a 60% return rate.	▪ Return rate for engineers was 65% and for the managers was 86%
▪ The focus groups data was to provide information to assist the COE Core team in finalizing its plans for a successful launch by understanding and negotiating the potential barriers environmental.	<u>Focus groups 12 recommendations for success</u> ▪ Enhance "learning culture" similar to the level of safety ▪ Improve engineer training plans to target personal needs ▪ Provide courses with direct job application ▪ Provide end user-oriented curriculum ▪ Provide impact to the bottom line ▪ Communicate how COE will make engineer's job easier ▪ Capitalize on momentum--engineers are excited about COE ▪ Provide interactive and fun courses--instructor led not WBT ▪ Provide a robust automated self-assessment tool ▪ Provide off-site learning environment--avoid factory distractions ▪ Provide professional high quality instructors ▪ Implement pass/ fail credit with voluntary participation ▪ *Bonus:* Use formal instructional design, incorporate soft skills throughout, and ensure interdisciplinary focus

What impact did the intervention have on individual or team performance (Level 3) and organizational performance (Level 4)?

The needs assessment methodology and resulting information was rolled into a final business plan submission for starting the new COE Branch (level three - application of the solution to real work). The plan was approved and funded. The information provide was immediately used to establish the implementation plan in which the project sponsors and leaders got underway to staff the new business unit and begin the curriculum development process for each course offering (level four – contributing to actual business results). Other factory locations were directed to using the same survey and model for conducting the focus groups as a guide to identify their own engineering and educational needs.

How did this project or your work add value for the organization?

The product of this project was an informative report to provide the answers the COE Core Team needed to move forward with the rest of their business plan with confidence. They wanted to know in what subjects did the engineers and their manager feel their technical competency gaps existed and what was the priority for closing those gaps. The COE Core Team would then triangulate this data with the corporate strategic vision for engineering development programs, and their research on resources available in the local area to begin the curriculum development to deliver a program to close the gaps.

We were able to provide the data we contracted to provide regarding the specific courses the engineer population wanted. We were also able to make clear recommendations on which two courses should be piloted first based on frequency indicated on the survey. The information collected from the focus groups regarding barriers was critical for long term decision.

The COE Core Team requested additional information after the process was underway. This information was requested by high-level managers after they became aware of our initiative. We were flexible enough to expand our questioning in the focus groups and summarize a separate set of data for the COE Core Team regarding what engineers going on business assignments needed, what newly hired engineers needed, and what experienced engineered needed for new product development. The type of information provided is summarized below.