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EXPLORING QUALITY AND PRODUCTIVITY IMPROVEMENT: USING AN EXPERIENTIAL PROCESS

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ABSTRACT

This paper describes an experiential process for exploring the interactions of management and technology, with a focus on improving quality and productivity. Described is the training agenda and its' relationship to learning theory, the integration of the structured experience with the training agenda and the learning outcomes generated.

INTRODUCTION

A learning event focused on a managerial process effecting quality or productivity may lead to an improved understanding of that process. A production based structured experience with measured outcomes can provide the basis for exploring the integration of several managerial processes. Engineering students have used such an experiential process to develop an understanding of how quality and productivity may be improved. The ACME Basket structured experience (Pasmore & Sherwood, 1981) simulates a traditional production organization in the classroom. The experience mirrors the efforts, the successes and the frustrations of individuals and work groups as they attempt to produce a quality product in a productive manner. Generally, the total training experience explores management, product and process design, quality and productivity improvement, and group processes.

RATIONALE

Training experiences are more successful in changing an individual understands and behavior when the exercises resemble real life situations. Existing knowledge, coupled with new knowledge about management improvement strategies or methodologies, generates awareness of possible opportunities. Group activities, which produce a product, provide a training opportunity that closely emulates an actual job in a low risk setting. Discussion of the experience explores how individual feelings, group processes, engineered design and management methods interact. Applying the final step requires putting the principles to use as in the redesigned production run. Such application, and its discussion, increases the probability that the principles discussed will be fully understood, and appropriately applied by the students.

EXPERIENTIAL PROCESS

The process as applied consists of three stages: (1) an initial production run is made early in the semester; (2) a redesign phase provides a period of exploration during which specific managerial processes and techniques are presented and discussed; (3) a second production run is made near the end of the semester. The process utilizes the ACME Basket production process as an initiating experience. Acme Basket involves the construction of a paper basket. The basket is manufactured from paper and simple office tools are used in the production process. Basket production is set in a traditional organization, where work design principles include hierarchy of authority and work simplification. The students act as employees of the organization. The student employees are assigned to one of several positions: Supervisor (1 individual), Clerk (1), Material Handler (1), Maintenance Technician (1), Inspector (3), Cutter (10), or Stapler (10)

Each student is given time to read (1) a description of the organization and (2) their own job in the organization. The organizational description explains that the mission of ACME is to produce a special paper basket to be used by ACME for inter plant material handling. It also describes the organizations structure, a traditional one with a supervisor, two task based departments (cutting and stapling), inspectors for quality control and functional support departments.

The goals of being quality conscious and productive are presented, and the students are requested to be aware of personal reactions while acting naturally in their prescribed role. A job description explains their role in the organization and provides process instructions and product design information. The materials and equipment, required by each employee, are already positioned: paper, pencils, rulers, scissors, staplers, and record keeping forms. The organization is then given 20 minutes to produce as many quality paper baskets as possible.

This exercise has been repeated in seven classes over the last six years. The results of the initial stage are consistently the same. They include (1) production of a maximum of three baskets (all rejected for poor quality); (2) frustration (One group of inspectors went on strike, requesting more responsibility and improved working conditions.); (3) learning about the problems involved in operating even a simple organization. Out of this discussion, the impetus and

direction is set by the class for learning about methods of quality management and performance improvement.

The second stage challenges student teams to redesign the production process and efficiently produce a high quality product. The students are also assigned the responsibility of preparing three reports. The first report describes the product and process changes. The second report describes the group processes and changes in the group, which occurred during the teams redesign meetings. Each student is individually responsible for the third report, a diary of personal perceptions and feelings about the redesign meetings. Developing these reports provide the team members an opportunity to internalize through self-feedback the process knowledge and behavioral changes experienced during the redesign process.

At this point, discussions of issues focused on both quality and productivity management may be explored. Issues discussed in the past have included quality management, job satisfaction, motivation job design, product design, group process, and creativity. Methodologies which could be discussed include: value engineering, sociotechnical work design, work simplification, work measurement, human factors, leadership, job enrichment and training. The important consideration in the selection of topics is that the learning objectives dictate the issues and that student needs dictate the timing of the presentation.

During this period, the student teams redesign the ACME Basket processes, striving to achieve the stated goals. The redesign process culminates in a second 20 minute production run that is used by the team to demonstrate its' solution. The outcomes of this exercise include: (1) drastically improved performance (One team produced over 800 units.); (2) mixed levels of individual frustration and joy (depending on comparative group performance); (3) a sense of understanding about how performance can be improved.

The range and level of learning accomplished becomes apparent in the discussions and the reports that are presented after the second production periods. Many students described how they have used the knowledge in improving group work in other classes. Students also indicated an improved understanding of why specific procedures are used at their place of work and how those methods could be improved.

DISCUSSION

The first use of this experience included only the initial production run. Student inferences were expected to be built on only that one experience. Relatively poor results were achieved: little discussion and generalization occurred, and what did occur focused on problems. When the redesign process was added, the discussion began to focus on solutions. Additional discussion revolved around group process and behavioral issues as the class work focused on these issues.

A major improvement in production goal attainment and the learning process occurred when discussion of quality management and product and production process design methodologies was introduced. As in the production process, the learning process can benefit from the integration of a variety of methods in the discussion. Further improvement occurred by moving from a regimented learning agenda to involving the students in the selection of topics.

IMPLICATIONS FOR INDUSTRIAL MANAGEMENT TRAINING

The one step missing for most of the students in college is the ability to apply what they have learned in the real world. An improved setting for this method of instruction would be in an existing work group. The experiential process would allow the group to experiment with new techniques and behaviors in a low risk setting. The new knowledge and behaviors could then be then be utilized by the group on the job as appropriate applications arose.

Two major challenges exist: (1) structuring the experiential process to match the groups' on the job requirements; and (2) redesigning the experience to explore multifunctional issues simultaneously. Achievement of these goals would allow organizations to explore technological and social change management in a training setting for the future.