

Problem-Solving in the Stockroom

Job: Material Handler

Background: Mickey is a material handler in the stockroom of an electronics factory. He is working on a job that is part of the routine for material handlers, known as "pulling" orders. This job entails locating, counting, and moving bins of component parts which eventually become assembled into a final product.

Action: Mickey needs 150 pieces of a certain part but discovers that the bin in which the parts are stored has only 100 pieces in it. He seems to be 50 pieces short. However, when he consults the "bin card" -- a form lying inside the bin which is a handwritten record of parts added or taken out -- it shows that 4,000 pieces should be in stock. Where are the other 3,900 pieces? Mickey searches the stockroom, looking for bins at other locations that might contain the same part. He finds two full bins, which together contain 5,000 pieces. Mickey can now complete his order and get on with his routine work. But a problem remains: there is a discrepancy between the number of parts physically in the bins (5,100) and the number recorded on the bin card (4,000) and Mickey knows that if this discrepancy is not straightened out now, there will be continuing problems with this part.

Mickey consults his supervisor, Bert, to discuss reasons for this mismatch. Bert is unsure of the reason, but encourages Mickey to pursue the problem. Mickey decides he can get to the bottom of it by consulting another inventory record located in the computer. According to the computer inventory file, 21,000 pieces are on hand. If the computer is accurate, then nearly 16,000 pieces are physically missing! Mickey has either a surplus of 1,100, if he believes the bin card, or a massive shortage of 15,900, if he believes the computer.

While he investigates the records, Mickey banters with co-workers in the stockroom, learning who had worked on this part and collecting information to help solve the problem. He deduces the computer record is wrong since it is so far off the physical count. In order to correct what he presumes is a computer error, Mickey needs access to a screen that displays the history of all transactions for that particular part. He asks Bert to enter his code into the computer (as a material handler, Mickey is not authorized to see all the screens). By comparing the transaction history on the computer screen with the handwritten bin card history, he discovers that the supervisor had neglected to enter into the computer the fact that 15,900 pieces were pulled out of stock two weeks ago.

This error is adjusted, so that the computer record matches the physical count. However, the physical count still does not match the bin card, so Mickey makes that correction as well. When these corrections are made and when the three sources of information about the number of parts in inventory -- physical, computer, bin card -- finally conform, Mickey at last pulls his order.

In a high performance workplace Mickey and the supervisor would work together to develop a process so that in the future such errors would no longer happen.

Commentary: The situation Mickey encountered occurs quite frequently in the stockroom and although it is "nonroutine" it may be considered part of the normal day's work for material handlers.

Skills Demonstrated

Information Management:

Mickey needed to understand that information about parts is of several kinds: quantity, location, receipts, and withdrawals; and that records for such information are stored simultaneously in several places (identify, find, and select necessary information). He had to assimilate and integrate information from multiple sources (physical bins, bin cards, computer screens, and humans) and, to act upon it he had to represent, convey, and communicate information to others (supervisor, co-workers) effectively.

Social Interactions:

Mickey operated in an existing relationship with co-workers, with established routines for communication. He knew his supervisor and fellow material handlers well enough to communicate the problem and seek advice and information (understands how the social/organization system works; participates as an effective member of a team).

Understanding Systems Behavior:

In the workplace, problems do not always announce themselves. Mickey might have simply pulled his order once he found the extra bins and never made the effort to resolve the discrepancy at the level of record keeping. To recognize that a serious problem existed (identifies anomalies), he needed to know a great deal about the relationship of the stockroom to the rest of the plant (understand how system components interact to achieve goals). For example, he needed to know that the company had a computerized system for keeping track of inventory; he needed to know how information was entered and processed in that system as well as in the stockroom itself. To recognize the significance of discrepancies in the records and to resolve them, he needed to link symbolic representations (on bin card and computer) to real world phenomena (parts in bins and past actions of co-workers) and he had to integrate information from multiple displays.

Human and Technology Integration:

Mickey used the computer system as a device for analyzing the nature of the problem and predicting sources of error (employing computers for input presentation and analysis).

Adapted from Scribner, S. and Sachs, P. (1990). A Study of On-the-Job Training. Technical Report #13. New York: National Center on Education and Employment, Columbia University.