

INOVEX Digital Training

CV9030CH

Learning to Diagnose

Domain Knowledge

- Foundation Principles
 - Electrics
 - Hydraulics
 - Mechanics

System/Device Knowledge

- Structur of the system
 - Topographic models
 - Spatial representations
- Function of the components within the system
 - Comprehension of each individual component's function
- Behavior of those components
 - Causal relationships between the components and their structure

Performance/Procedural Knowledge

- Measuring voltage
- Hydraulic pressure
- Conducting tests
- Making observations of the operation of different parts

Strategic Knowledge

- Trial and error
 - Randomly attack any section of the system where the possible fault might have occurred
- Exhaustive
 - List all the possible faults and test them one by one until the actual fault is identified
- Topographic
 - Isolate the fault through identifying a series of functioning and malfunctioning checks following the traces through the system
 - Forward topographic strategy
 - Start the procedure at a point that the device is known to be functioning normally and then works toward the fault by following the system
 - Backward topographic strategy
 - Start at the point that is known to be malfunctioning and then works backward to the input point
- Split Half
 - Split the problem space in half and check the functioning condition to determine in which half the fault is located
 - The procedure is repeated until the potential faulty area is reduced to a single component
 - This strategy is efficient when the faulty system is complex and the initial problem space appears to contain several potential faults with no strong indication of where the actual fault lies
- Functional/Discrepancy Detection
 - Isolate the fault by looking for the mismatches between what is expected in a normal system operation and the actual behaviors it is exhibiting
 - By detecting the mismatches, the diagnosticien can identify the components where the difference is located and, in turn, isolate the actual fault

Experimental Knowledge

- Experience is the most common determinant of expertise, and that the recall of historical information is the most frequent strategy for fault diagnosis
 - Because of the importance of experimental knowledge, it is essential that learners be required to practice problem solving tasks (PBL)