



Florida Department of Transportation Research

Applying Instructional Design Practices to Evaluate and Improve the Roadway Characteristics Inventory (RCI) Training Curriculum

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The Roadway Characteristics Inventory (RCI) is one of FDOT's largest databases, including over 2 million records. The RCI contains data for several hundred features and characteristics representing geometric, operational, and administrative data related to 24,000 miles of roads both on and off the State Highway System. RCI feature data are collected in FDOT's district offices, primarily by field technicians. FDOT's Transportation Statistics Office (TranStat) trains these technicians in both office- and field-based RCI methods.

In this project, TranStat contracted with researchers at Florida State University to reinvent RCI training delivery, which had been conducted in a traditional classroom setting. TranStat was motivated by the need to find more cost-effective means of training because of budget issues and to develop more formally designed training to meet the needs of a job pool trending toward more diversity and less background.

Researchers from FSU's Center for Information Management and Educational Services (CIMES) structured their approach by examining four areas: responsibilities and tasks data collection technicians need to perform their jobs; the knowledge, skills, and abilities that technicians should possess; behavioral examples that demonstrate the existence of competencies; and the desired performance levels for these tasks.

An in-depth review of literature on competency and competency models was complemented by a review of existing training materials. A thorough job task analysis was also performed, including direct observation of RCI technicians and supervisors at work. Observations were video-recorded and transcribed in detail. Follow-up interviews clarified technicians' cognitive processes. RCI training sessions were also observed, which helped to develop the inventory of knowledge and skills technicians would be expected to possess. Session participants were interviewed to determine what topics they found



Recording the characteristics of the approach to a roundabout requires the ability to recognize dozens of elements and how to add them properly to the Roadway Characteristics Inventory database.

most useful. Interviews with subject matter specialists were used to confirm and focus information collected in previous project tasks.

Collected information led to a competency model comprising three broad categories: Personal Effectiveness; Academic Competencies; and Work Competencies. Subcategories of these were outlined and defined, along with descriptions of observable behaviors and on-the-job performance outcomes that would evince the competencies. The competency model was refined and validated with the assistance of an expert focus group.

This project provided FDOT with a plan for a more effective RCI curriculum using a competency-based approach that focuses on job performance outcomes and new delivery methods. Detailed analysis led to a curriculum design which matches specific competencies to specific Web-based tools. Researchers indicated how the design of the Web-based materials would be structured to engage learners, considering their range of background knowledge. Prototype course modules were developed.

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