

Educating and Training Tomorrow's Transportation Professionals

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The purpose of my presentation is to discuss intermodalism from the perspective of transportation education and training. In addition, I will add my own thoughts about the research framework that has been presented by previous speakers.

Having been involved in research for over 15 years, I know how important it is to understand the trends and changing societal characteristics that will likely influence whatever research program you are involved with. Intermodal transportation is certainly an area in which many such trends and characteristics will greatly affect the efficiency and effectiveness of the intermodal movement of people and goods. The modern revolution in telecommunications and information technology is an example of how the application of such technology could provide significant technological innovation and improved efficiencies in intermodal transportation. Sustainable transportation, the relationship between transportation and the consumption of nonrenewable resources, is a big issue that will likely become even more important over the next several years. The technology used to manufacture vehicles and new materials will change the design and economics of many transportation facilities and systems. Globalization and trade will continue to be dominant characteristics of successful national economies. The focus of infrastructural improvements will be on the enhancement of system management and productivity. Mobility and accessibility will surface as the key motivators of public policy and investment in the transportation system. Urbanization, suburbanization, and exurbanization will continue to characterize many of our metropolitan regions.

All of these characteristics are important. Each should guide us in identifying the type of research that should be undertaken to understand intermodal transportation and the likely benefits of intermodal transportation in the future. They also affect education and training in that one of the major responsibilities of the educational system is to make sure that the education today will prepare transportation professionals for the world they will face tomorrow.

The transportation industry itself is also changing. The following themes emerged from a Transportation Research Board conference, held in New Orleans in 1994, called "Intermodalism: Making the Case, Making It Happen." If you look at some of the themes that emerged from that conference, you see the challenge we have with regard to training and educating transportation professionals. Some of the themes included the concept that we

can no longer use a business-as-usual approach to the provision of transportation. Rather, we need to develop new and nontraditional partnerships; adopt a total trip perspective in planning and operations; develop market-driven planning, providing a customer orientation in all aspects of service provision; explore innovative financing; incorporate intermodalism in all aspects of policy, planning, and design; use new technologies in system operations; and view intermodalism as a series of opportunities to enhance system productivity. Putting these concepts into the education and training system, however, is a real challenge. Many who teach transportation and logistics courses are not sensitive to or do not understand these types of issues.

In preparation for this conference, I reviewed several materials from the defense logistics arena. The most interesting material focused on training of U.S. Department of Defense (DOD) personnel for the logistical challenges of deploying large numbers of troops and materiel. One quote from this material stands out:

Given the lack of integrated deployment training, we may be able to deploy only a marginal force in the time available for a future deployment. Viewed positively, integrated deployment training as one element of a comprehensive and balanced program of investments and power projection will ensure the efficient operation of our mobility system.

In essence, this quote states that there must be a mindset established in those responsible for mobilization and deployment that adopts a total systems perspective, which will result in the maximum deployment efficiency.

Mr. Gansler in his excellent paper notes some of the mindset issues that the U.S. Department of Transportation (DOT) is facing in adopting an intermodal research perspective. He talks about the important linkages between freight and passenger transportation, which are often missed by the modal orientation of our institutions. He notes the critical challenges of setting standards for information systems and common design of containers, and standardization of communication systems and of other key elements of an intermodal transportation system. Although Mr. Gansler focuses on the technological and institutional aspects of these issues, I would also argue that there are very clear educational and training challenges associated with each.

A good example of how these issues can be incorporated into the education of transportation officials is found in the Army Civilian Training Education and Development System (ACTEDS), which is a training program for officials responsible for Army logistics. The intent of the training program is "to provide broad skills and knowledge, leadership and transportation management training, and managerial knowledge of organizations and missions." Many of the courses listed under this program were fairly typical of what one would find in a transportation and logistics program. All of the challenges and themes from the TRB's New Orleans conference could be easily incorporated into these courses. But who will do so?

Let me end my presentation with some thoughts about what an intermodal transportation education really means. Such an education should offer students four basic categories of knowledge:

1. a clear understanding of the functions of transportation systems;
2. a sensitivity to the relationships and linkages between transportation and its surroundings, whether they be the natural environment or communities;
3. analytical approaches to solving problems, which includes an understanding of what types of solution strategies are feasible, how they can be analyzed, and the analytical requirements of effective problem solving; and
4. how to implement the recommended strategy.

Of these four, it is the "how to implement" that we do not do very well in educational programs. My belief, after almost 15 years in universities and 5 years in state government, is that there is a great deal we can learn and teach in an educational program about implementation. Issues such as what to look at from a strategic perspective, funding, institutional barriers to

implementation, and the technology of implementation are all very critical for success in the transportation industry.

With regard to the research framework, the focus seems to be one of vertical integration. I suggest that in fact a real need is to have horizontal integration. We can learn a great deal from all of the groups shown in the framework—such as what their needs are—and bring all of these challenges together in a comprehensive way. The other observation I would make about the research framework is that it seems to focus on today's issues and problems. However, as noted earlier, we are educating tomorrow's professionals. There must be some temporal dimension to this framework that notes the dynamic nature of the intermodal transportation system. The educational and training component of the research that results from this program is critical to making this temporal dimension work. I have always found it strange that the research projects funded by the National Cooperative Highway Research Program or DOT never have an educational element attached to them. By this I mean a well-defined but separate section of the final report that in essence offers an outline of how the research results can be incorporated into courses. I recommend that every research project that emanates from such programs be required to have an educational module that allows those involved in education and training to incorporate the material into courses. My greatest fear is that all of the great work that will result from this integrated research program will come to naught as the professionals of tomorrow either are unable or unwilling to take the results of this research and incorporate it into their day-to-day operations. That to me is the challenge of linking education and training with the research results of this program.