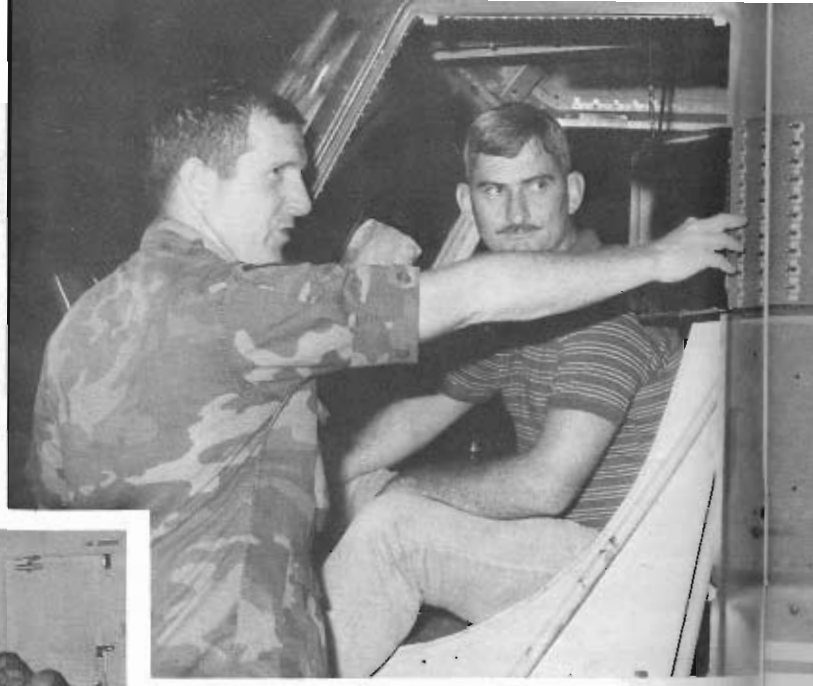
Electronics education

A joint venture in high technology

by Dr. William D. Ketner

The United States Army has embarked on a domestic venture with the states, to work as partners, to better prepare young high school graduates for the high technology world of electronics.

The Army Signal Corps has the major responsibility for operating much of the communications-electronics equipment in the Army, and it has the total responsibility for maintenance of all Army communications-electronics equipment. To accomplish the task of preparing young men and women to operate and maintain communications-electronics equipment, the Signal Corps trains about 30,000 young people in the area of communications-electronics every year. Because most of these young people have neither a background nor an understanding of basic electronics, the Army must spend from 2 to 10 weeks teaching the fundamentals of electronics. This is a common subject that could have been learned in high school. Instead, the Army, either directly with an introductory module, or indirectly with the basic electronics being taught throughout the course, must spend an average of 5.5 weeks teaching 30,000 soldiers basic electronics every year. The average cost



for this training, including soldier salary, instructor salary, equipment, facilities, etc., is about $1,000 per week. In other words, it is now costing about $165,000,000 per year to get our soldiers ready for advanced or specialized electronics training. The Army and the country could save much of this cost if these young people learned fundamental electronics while in high school.

The pre-service electronics training program is one way of insuring such basic preparation. The idea behind it is that the Army and the state departments of public instruction and vocational education will cooperate to establish a curriculum that satisfies the Army's basic electronics requirements. Actually, this joint pre-service electronics program was not conceived by the Army but by the state of North Carolina. In Nov. 1982, Mr. Robert Mullen, deputy director of instructional services, Department of Public Instruction, Raleigh, North Carolina, wrote a letter to General John W. Vessey, Jr., Chairman, Joint Chiefs of Staff, proposing a joint effort between the Department of the Army and the vocational programs in North Carolina to develop and validate competencies, creating a continum in the curriculum which would make it easier for students to move from high school to an Army specialized electronics training program. Mr. Mullen indicated that bringing the resources of the Army to the North Carolina vocational programs would have obvious advantages for both the Army and the schools. Aside from better preparing future soldiers, the Army would benefit from an increased awareness on the part of vocational instructors and students about the training and educational opportunities available in the Army, while the North Carolina public schools would get valuable assistance in improving the quality of vocational programs. Another advantage would be in curbing drop-outs. Through such a joint effort, students could be made to see the advantages of completing their high school programs before attempting to enter the highly technical areas offered by the United States Army.

General Vessey found the program promising and forwarded it through channels. As a result, an action officer from the Signal Center at Fort Gordon met with Mr. Mullen in January 1983 to discuss the project. A plan was developed by the USASC&FG in coordination with North Carolina and was approved by TRADOC's deputy chief of staff for training in August 1983. Since that time, the USASC&FG has worked on the pre-service electronics training program with North Carolina representatives and has developed a joint curriculum for Level I (tenth grade). At the beginning of the 1984 school year, 18 high schools in North Carolina implemented this joint program in their sophomore class. A jointly developed draft electronics curriculum for the eleventh grade was finalized in the spring, 1985 and implemented in the junior class at the beginning of the school year. The twelfth grade joint curriculum will be developed during 1985 for implementation in 1986.

The US Army Signal Center is the largest technical training school in

the world. The Staff and Faculty Development Division trains many senior technical NCOs to become electronics instructors each year. It is thus well prepared to help civilian vocational electronics instructors hone their teaching techniques. The teachers who are selected to participate in teaching the joint curriculum visit Fort Gordon for one or two days to see the basic electronics training, the advanced individual training, the instructor training, and a broad range of communications-electronics equipment. During the summer before implementing the joint curriculum, they attend a two-week summer workshop where the agenda is adjusted to their needs. The North Carolina teachers received one week of precision soldering training, two days of instructor training, and one and one-half days of advanced individual training. In addition, during evening sessions, they reviewed the joint curriculum they would be implementing in the fall.

This program has worked so well with North Carolina that TRADOC has decided to expand it to other states in the southeast. Three additional states (South Carolina, Georgia, and Florida) have recently developed joint action plans and joint curriculum that were implemented in the fall of 1985. In addition, Tennessee, Alabama, Virginia, and Mississippi are working on a joint action plan for the fall of 1986.

If the program progresses as expected, and the Army begins to get better qualified electronics entry soldiers, the joint concept will be expanded throughout all 50 states.

In summary, the joint Army/state basic electronics program could help raise the technical electronics level of entry soldiers and provide a more technically competent citizen soldier for the Reserve and National Guard units. This joint program will also provide a means for vocational instructors to broaden their exposure in the technical areas of communications-electronics and technical instruction. As Major General T. D. Rodgers, commanding general, USASC&FG, recently stated, "The dynamics of this project is such that it would benefit not only the Army, but our country as well. A joint program such as this will do a great deal to upgrade the technical skills of our young people which will ultimately strengthen the country."

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