

INNOTECH JOURNAL (Vol. X No. 2 / July-December 1986)
INNOTECH Experiences

Editorial Notes

Men and institutions and their ideas and works, innovations and experimentations, sustained the INNOTECH Journal for 10 years. This issue completes the 10 volumes.

The first article "INNOTECH: A Role Model for Educational Development" describes INNOTECH as "a very unique institution which qualifies as a source for serious study by western educators (developed countries) as an institutional model for structuring and implementing the advancement of educational research."

Some important INNOTECH innovations which are products of R & D may have applicability for certain educational situations in the United States. Those innovations as well as the INNOTECH organizational and operational elements represent potential for reversing _ the one-way technical information flow.

Technical assistance has been provided by most major United States universities to educational institutions and/or agencies in developing countries around the globe.

The assistance entails the transfer of technology or technical knowledge or experience, and information has flowed in one direction: from the United States institutions to a host country's receiving institution or agency.

The article recommends a two-way technical assistance and development; a mutually contributing process in which both the provider and recipient learn and benefit.

Part II of "Education in Bavaria- Has it Relevance to the SEAMEO Region?" presents the educational system in its concept of education as a lifelong endeavor encouraged by the State.

The overall purpose of the presentation is to share with other educators in the SEAMEO Region information on an educational program that effectively develops the State's manpower and supports a strong and viable agro-industrial economy.

The education of the individual in Bavaria, as in the entire Federal Republic of Germany is a joint responsibility of the parents, the state through the school system, the churches and society in general.

Educational opportunities for the individual in Bavaria continue after school or university. For the adult citizen, there are educational opportunities aimed "to make life more interesting and worth living, to promote their working life, to inform them on civic duties or problems, and to assist them in gaining a critical and intelligent understanding of social and political life."

Adult education serves the ideal of lifelong education and well-sustained government or private program. An adult population comparable in number to the combined populations of the primary and secondary schools participate in lifelong education which is assisted and made lively by programs of government and private institutions. Churches and religious organizations,, foundations, allied to political parties, educational centers, correspondence schools contribute to the further education of adults.

The INNOTECH Six-Month Course on Planning and Management of Applied Research and Development Project, conducted from 1977 to 1985, trained a total of 104 educators from Southeast Asian countries.

It was one of the various problem-oriented training courses that stress the potential of educational innovation and technology in solving existing educational problems of the member countries. The course was designed to provide the necessary knowledge, skills and attitudes that enable the participant to plan, manage, disseminate and evaluate innovative educational research projects, utilizing basic INNOTECH concepts.

The strength and weaknesses of running a training program are also clearly discussed in the light of the training courses that preceded the six-month program.

INNOTECH: A Role Model for Educational Development

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Introduction

Most major United States universities have been engaged in one way or another with the provision of technical assistance to educational institutions and/or agencies in developing countries around the world. Normally, this process involves the transfer of technology or technical knowledge or experience, and the flow of information has been exclusively one way: from United States institutions to a receiving institution or agency in a host country. Seldom is there a search for institutional or educational models which United States institutions might study or apply, to reverse the information flow in a purposeful and systematic manner. Indeed, potentially useful models often are present in the host country and are often obscured or overlooked in either the "haughtiness" or the "busyness" of the technical assistance process.

This article describes a very unique institution which qualifies as a source for serious study by western educators (developed countries) as an institutional model for structuring and implementing the advancement of educational research.

INNOTECH

The Regional Center for Educational Innovation and Technology, more commonly referred to as INNOTECH, is located in the Philippines and is known as the principal problem-solving arm of the Southeast Asian Ministers of Education Organization, SEAMEO for short. Established in the late 1960's, SEAMEO's purpose is to promote educational development through regional cooperation and sharing of educational leadership within peninsular and insular Southeast Asia. Unlike the other SEAMEO Centers which are assigned to deal with specific subject areas or disciplines such as agriculture, tropical medicine, science, and mathematics, INNOTECH is mandated to deal with a wide range of educational issues as they are identified by the member countries which include the Philippines, Malaysia, Indonesia, Thailand, Brunei, Singapore, Kampuchea,* and Laos. * In compliance with this mandate, INNOTECH undertakes research to develop effective and economical solutions to identified educational needs. This comprehensive mandate to identify problems at all levels and in all areas, and to workout possible solutions (prototype models) which can be tested and applied by each member country is SEAMEO's instrumentality for pioneering innovation and developing indigenous solutions to common educational problems in the Region.

INNOTECH also conducts training programs aimed at accelerating the process of educational change and improvement by providing the member countries with a corps of innovative planners and change agents who can develop efficient and economical solutions within the constraint of the countries resources. Through offering residency based seminars at the Center and through field based projects, the Center provides both theoretical and practical training for educational leaders in member country ministries. This on-going participation allows for teachers and administrators to share, discuss and experiment with educational solutions that are both efficient and economical and that are within the constraints of the countries resources, but without the restraints of fixed and biased ways of thinking based on past practices and tradition on.

INNOTECH's operational philosophy and concepts put forth in practice and programming has remained fairly firm throughout its history. The components of this operational philosophy are as follows:

1. Since INNOTECH does place a major emphasis on innovation, it is also important to note that the Center stresses effectiveness and workability in developing solutions to educational problems. In other words, as possible ways of solving identified problems are considered, effectiveness and workability will be paramount in deciding the closeness of fit to the specifications set for a satisfactory solution, no matter whether the solution is an innovation or a revival of something done in the past
2. The work of the Center is problem-oriented. This is one of the most important elements in the INNOTECH philosophy, Work with new educational approaches and technology is in relation to identified problems, and the possibilities presented by these alternative approaches in deciding the most effective solutions to the problems. For example, educational television, programmed textbooks, and self-instructional devices, or any other innovative approaches may be introduced for consideration as possible solutions to actual, existing, identified problems, but they must pass the same workability and effectiveness criteria applied to other possible solutions before they are selected for trial. They will not be developed as floating

solutions after which there would be a search for problems to which they might be anchored.

3. In serving the SEAMEO Region, INNOTECH recognizes that primary responsibility for implementing educational change rests with the member countries; that is, with national agencies and institutions. A regional center such as INNOTECH can play an important role in identifying common problems and in mustering the necessary resources to work out prototype solutions. But for these efforts to result in educational change and educational improvement there must be within each country a responsible "home" for innovation and implementation of change. INNOTECH links with the member countries through these national centers or programs; themselves, smaller versions of INNOTECH. Prototype solutions and model systems, fed to the national centers for local refinement, adaptation and application, thus lead to national educational improvement.
4. A basic element in the INNOTECH operational philosophy is close relationship between training and research. Participation in problem-solving activities is an important instrumentality for achieving training objectives, and certain of the research aims and tasks can be accomplished through training programs. This leads to two products: a) trained educators who will become change agents, knowledgeable with systems approach, research methodology and operative educational technology; and b) prototype solutions to educational problems developed with the participation and involvement of educators from the region, ready for trial, further experimentation and eventually implementation in the member countries.
5. In planning the work of the Center and in translating these plans into operation, relevance is of primary importance. This means that actual problems and situations that obtain in the region will be the targets of INNOTECH's projects and programs. The content and procedures of training programs will be regionally relevant and not drawn from external or esoteric models. Research programs will be based on Asian problems and needs; not on universalized or otherwise broadly generalized problems and needs.
6. Finally, flexibility and responsiveness are very important in INNOTECH's mission and operating philosophy. In education, as in other sectors, new problems develop continually and current problems take on new dimensions and directions as change unfolds. Furthermore, potential solutions are developing rapidly around the world, and though these are usually fitted to specific situations, many of them lend themselves to generalization. INNOTECH simply cannot carry out its charter or fulfill the expectations of the SEAMEO countries by developing fixed training syllabi and set research plans. On the contrary, INNOTECH will constantly orient its programs to changing circumstances, thus maintaining responsiveness to needs in member countries. This needed flexibility will be achieved without damage to important, long-range plans and programs by creative adaptation of the content of the training and research instrumentalities employed by the Center.

The future of INNOTECH described above, including the organizational structure, the policies and programs, and the operational philosophy, offer potentially useful patterns and guides for the institutionalization of research in the United States, and other Western countries and are deserving of study and trial. This is particularly true in situations where multi-state and multi-

country approaches for educational development are under consideration.

A Review of Major Innovations

Some of the products of INNOTECH research and development - important innovations- may have applicability for certain educational situations in the United States. They represent potential for reversing the technical information flow just as do the organizational and operational elements of INNOTECH as an institution. Rural education, instructional materials development, teacher training, craft and technical training, and curriculum development are suggested "educational situations" where something possibly might be learned from the innovations listed and described following:

Project IMPACT/PAMONG (Instructional Management by Parents, Community, and Teachers). This 5-year project, carried out in Indonesia and the Philippines, was completed in 1981. Its significant products are instructional models and dissemination models which provide an economical and effective alternative to traditional ways of achieving primary school objectives. The model combines a number of modern instructional technologies (programmed instruction, peer group learning, cross-age tutoring) with utilization of resources available in the community for facilitating learning. These components are orchestrated by an Instructional Supervisor (IS) who replaces the traditional teacher role with the role of learning facilitator. Through management of the system components and delegation of many of the former duties and tasks of the traditional teacher, the IS can manage a "teacher-pupil" ratio of up to 1:100. Successive evaluations demonstrated that the IMPACT learners fare as well as or better than traditional learners on various measures of achievement; and that the use of the system can cut the costs of primary schooling by as much as 50 percent. IMPACT/PAMONG is one of INNOTECH's major achievements. As mentioned earlier, the IMPACT/PAMONG models have attracted international interest and are now under trial in Africa, Central Asia, and Central America. As would be expected, plans are also under way for wider dissemination in South-east Asia. Indonesia, for example, has included utilization of PAMONG in the educational development component of the current Perlita (5-Year Development Plan). It is not improbable to expect that the future will bring broader and more dramatic impact on educational development worldwide from this particular INNOTECH innovation.

Project RIT (Reduced Instructional Time). This project, Reduced Instructional Time, was started in Vietnam and was transferred to Thailand after INNOTECH's departure from Saigon. It was launched anew in Thailand where the research and development work was brought to a successful completion in 1980. The purpose of the project was to explore the possibility of lowering primary education costs by reducing teacher/pupil interaction time. This was done by preparation of new materials which eliminated redundancy and overlap in the curriculum and which allowed pupils to learn on their own in self-directed activities. The project resulted in instructional models which reduced traditional instruction time by an average of more than 50 percent without sacrifice of achievement. The Ministry of Education in Thailand has implemented broad dissemination of the model, and recently UNESCO has expressed interest in promoting RIT throughout all of Asia. Cutting by one-half the instruc-

tional time needed to achieve the set objectives is a significant achievement, offering a number of options for reducing costs; e.g., doubling enrollment without increasing personnel costs; reducing the time required to complete primary education, and various combinations of these two possibilities. Or the time gained could be used to improve the quality of education without additional cost: for example, the introduction of new curriculum or the addition of enrichment materials. RIT is making an IMPACT on learning and on costs of schooling. Again, the future will undoubtedly see wider use of this model.

Project DELSILIFE (Development of Effective Learning Systems for the Improvement of Life). DELSILIFE is one of the most comprehensive research and development activities undertaken by INNOTECH. This project was designed with the main purpose of developing effective learning systems for the rural poor which would provide the necessary knowledge, skills, and attitudes (KSA base) for improving quality of life through self-reliant and self-directed effort. The acronym is derived from a shortened title, "Development of Effective Learning Systems for the Improvement of Life." The full title, "Development of a Coordinated Educational Intervention System for the Improvement of the Quality of Life of the Rural Poor through Self-Reliance," is more descriptive of the objectives of this research effort. DELSILIFE constituted the major research thrust of INNOTECH's 2nd five-year plan. The research and development activities are completed, resulting in system and process models which are now available for dissemination. All of the countries involved are keenly interested in promoting use of the models in all rural communities lagging in development, and there is growing international interest in the system. One of the reasons for this is that the models prescribe and blueprint procedures for the involvement of the target people and communities in the system from the outset. In other words, those who are to benefit from the intervention determine themselves their basic and priority learning needs; the solutions for meeting these needs are similarly agreed upon; and the implementation is in the hands of the beneficiaries. Whatever is done is not done for them by external agencies; rather, in DELSILIFE, the community and individual increments in quality of life are truly achieved indigenously. INNOTECH continues to be involved with DELSILIFE through support of dissemination efforts and activities, but for the most part, this is a completed project.

Project NTR (Nontraditional Roles of Teachers). This research project, "The Development of Models to Prepare Teachers for Alternative Education Programs for Mass Primary Education," resulted in models called Teacher Preparation Packages designed to prepare teachers for nontraditional teaching roles in both in-service and pre-service training. All five countries active in SEAMEO at the time NTR was started participated in this research and are now using the models in their teacher training programs.

Project CB-BLP (Community-Based Basic Learning Package). From this project, instructional/learning models have been developed for teaching basic literacy and numeracy skills, and skills needed for effective community participation. These models are now in use in four of the SEAMEO countries participating in the project.

Project TDP (Test Development Program). The objective of this program was to develop an achievement test battery and item bank in the area of basic education which could be used to assess the outcomes of basic education. The project is completed and INNOTECH has

printed the main outputs: (1) Basic Education Objectives in SE Asia, (2) Tests on Basic Education, (3) Item Banks in Mathematics, Language, and Science and Health, (4) Teacher-Made Tests: A Manual on Test Construction for Classroom Teachers, and (5) a Manual on Administering the INNOTECH Tests on Basic Education. These products are marketed by INNOTECH.

Project TBIPBE (Test-Based Instructional Program for Basic Education). This project is designed to produce a low-cost instructional program in basic education which has its origin in the item bank of the Test Development Program. In this instructional model the teaching objectives are used to design and develop an evaluation instrument (or item bank) before devising the instructional program to achieve the objectives. The major TBIPBE elements have been completed. These include (1) the Objectives of Basic Education, (2) the Item Bank, (3) the Teachers Guide, (4) the Training Program for Teachers, and (5) Learning Packages for Language, Mathematics, Health and Science, including student texts, teacher notes, module pre-test and post-test, student workbook and answer sheet. The models have been tested in the Philippines and are now ready for wider use.

The low-cost learning system models described above have components which could help improve the efficiency of instruction and learning in United States classrooms without adopting the entire system. Further, the research and development involved in the creation and trial of those systems have led to problem solutions and answers to research questions which can add to the efforts by those pursuing similar research goals

Several new initiatives and programs are being established. These include the following:

1. Indigenous learning systems. Research relating to identification and utilization of indigenous learning systems has been started and is in its pilot phase at the present time. This research effort is an offshoot of a regional seminar on "Indigenous Learning Systems" held recently by INNOTECH. The purpose of the research is to identify, adapt, and apply the methods of indigenous systems to effect improvement in the quality of education both in the formal and non-formal school settings.
2. Value formation. This research is also in its pilot, exploratory phase. Feasibility of developing models for the teaching of value formation is to be determined in the pilot phase. The member countries of SEAMEO have expressed strong interest in this topic and have urged INNOTECH in the survey of needs to undertake this effort.
3. Vocational/technical education. Through its survey of needs, INNOTECH is undertaking a pilot program to develop curricular models for secondary vocational/technical courses and programs in rural settings among member countries. Features of the model will focus on rural development, agricultural related vocations and course materials.
4. Computerization. Plans are in the advanced stage for establishing instructional computer laboratories at INNOTECH. The Center will provide training programs for SEAMEO ministry level personnel ranging from computer literacy to programs on administrative use. A model classroom for computer assisted instruction is being developed as a part of the learning

programs.

Summary

More than ever, the educational needs of societies need the concerted effort, creativity and research necessary to advance the well being of the people for whom education is to serve. Education is a "people science" in which issues are as complex as the society in which it functions. INNOTECH is a joint regional approach by member countries to share ideas and pursue mutually beneficial research for social and economic enhancement through education. The future educational leaders of the SEAMEO countries are sharing their professional development in a way unique to most developing regions in the world. It is through this sharing and problem solving that better and more enlightened solutions are being determined for specific needs.

INNOTECH as an institution and the results of its research projects are models which deserve serious study by educators, researchers and educational institutions in the United States. Technical assistance and development can no longer be perceived as stemming solely from the more advanced nations, but must be thought of as a mutually contributing process in which both parties learn and benefit.

As Lord Perry states, " I think that there is quite a good chance that it will be the developing countries of the third world, and perhaps China that will first make the new patterns of education work. They will not have to surmount the barriers of vested interests and the professional pride that tend to inhibit change in the West, so they may well give the lead in introducing some of the changes in the patterns of education. . . "

EDUCATION IN BAVARIA-HAS IT RELEVANCE TO THE SEAMEO REGION?

Text of a Slide-Tape Presentation
Dr. Efrain Abracia

This is a presentation on the educational system of Bavaria, a state in the Federal Republic of Germany. It was prepared during a one-year scholarship, 1985-1986, pursued by Dr. Efrain E. Abracia of the Training Division, SEAMEO Regional Center for Education Innovation and Technology INNOTECH, Quezon City, Philippines under the sponsorship of the Hanns-Seidel Foundation of Germany. Its preparation was undertaken with the encouragement and assistance of the Bavarian State Institute for Pedagogics and Educational Research (Staatsinstitut für Schulpädagogik und Bildungsforschung) of the Bavarian Ministry of Education and Culture. Dr. Abracia was attached to the Institute after his German Language Study. The purpose of this presentation is to share with other educators in the SEAMEO Region information on an educational program that effectively develops the state's manpower and sustains a strong and viable agro-industrial economy.

Part 11

Overview of the Bavarian Educational System

The Bavarian educational system, exemplifying that of the whole Federal Republic of Germany is the outcome of the history of primarily the past two centuries in close conjunction with the industrial revolution. Religious, philosophical, political, economic, technical and social developments left their marks on education which has always been the responsibility of the State, except during the National Socialist Rule of Hitler from 1933 to 1945. The German people today do not desire a centrally controlled educational system. They want to prevent the rise of a monolithic, all-powerful State in which education might once more be used as an instrument for authoritarianism and the enforcement of ideological conformism which happened during Hitler's Third Reich.

The presentation consists of two parts: Part I (published in the INNOTECH Journal, Vol. X, No. 1) briefly reviews SEAMEO as an education-promoting institution of the Southeast Asian countries and then describes Bavaria from a socio-economic view. In this issue, Part 11 presents the educational system in its concept of education as a lifelong endeavor encouraged by the State.

(Pls. see Map)

The education of the individual in Bavaria, as in the whole Federal Republic of Germany, is a joint responsibility of the parents, the state through the school system, the churches and society in general. The Basic Law of the Federal Republic and the Constitution of the State of Bavaria guarantee every individual the right to free development of his personality, an important element of which is the right to education (through schooling) according to his talents.

The family meets the initial obligation to educate the child. The Constitution stipulates that it is the natural right and a duty primarily incumbent on them to educate their children towards physical, spiritual and mental fitness. But it is not at their discretion whether to educate their children or not. In case of parental negligence, the State will intervene.

The State participates in education through:

1. the construction and maintenance of school buildings and facilities
2. the training and hiring of properly qualified teachers
3. the adequate provision of textbooks, references, educational equipment and tools
4. the provision of free compulsory education (12-13 years) including vocational training
5. the provision of transportation and/or financial assistance to needy pupils.

State participation in the education of the child is done through the school and university. In a more indirect way, the State facilitates that educational process through its assistance and protection measures extended to the youth.

What quality of product is the school expected to turn out? The Constitution of Bavaria states: "Schools should not only convey knowledge but should also train spirit and character."

The Bavarian youth likewise receives a measure of education from business/industry that endeavors to cooperate with the school in providing him knowledge and skills towards a vocation or profession. The Churches and religious communities also exert education influence.

Religious instruction is a regular subject in State schools regulated by Concordats with the Catholic Church or Treaties with the Protestant Churches. There also exist youth organizations which, influenced by a variety of tendencies and outlooks, provide the members various forms of self-education.

Educational opportunities for the individual in Bavaria do not cease after school or university. The adult citizen is provided educational opportunities aimed to make life more interesting and worth living, to promote their working life, to inform them on civic duties or problems, and to assist them in gaining a critical and intelligent understanding of social and political life. Adult education in Bavaria serves the ideal of lifelong education. In other words, lifelong education in Bavaria is not just an accepted educational concept. It is a lively and well-sustained government or private program participated in by an adult population comparable in number to the combined populations of the primary and secondary schools. It is therefore interesting to ask: How is the concept of "lifelong education" actualized in Bavaria?

The chart on "The Bavarian System of Education" indicates the various learning levels in Bavaria. Children of ages 4-6 years may be in kindergarten, ages 7-10 in Grundschule or primary school, ages 11-15 either in the main secondary school (Hauptschule), in classical/grammar school (Gymnasium), or in non-classical/intermediate school (Realschule). At ages 16-18 years, the Bavarian youth is either still in the Gymnasium or Realschule, or in vocational training at the end of which he completes compulsory education.

Students in the Gymnasium finish at age 19 and after obtaining the Abitur, i.e., passing the examination, becomes eligible for specialized colleges or the university. Adult education looms large after formal schooling.

Students in full-time vocational schools or in alternative schools finish at age 20 or so. Those qualified may enter the university for higher technical or academic studies. The others go into the world of work already possessing skills for specific self-selected careers or vocations. If they need other skills and they so desire, further education classes are conducted by business or industry, by adult education organizations of both private and public management. Even the disadvantaged or the physically handicapped are provided opportunities for academic and vocational education.

(Pls. see Chart)

(Pls. see Table)

The sizes of the various education clienteles in Bavaria in 1983-1984 are shown in the table "Populations of the Various Types of Schools, 1983-1984." The total enrollment of 1,965,819 was 18% of the eleven million people of Bavaria then. Attendance in the various types of adult education activities in 1982 for example, show that such activities are well attended. This is an expression of the citizens' appreciation of the efforts of government and non-government institutions to keep adults going educationally and culturally.

(Pls. see Chart)

Bavaria spends more than 30% of its budget annually to provide all these educational opportunities free to its population. Could this be seen as a reflection of society's belief that the human population is a nation's foremost resource for development; that adequate investment in education reaps the best returns not just for the individual but also for the people as a whole?

(Pls. see Table)

Most of the budget of the Ministry of Education and Culture is of course spent on the delivery of formal education. However, the related purposes of nonformally developing the people, particularly the youth, spiritually, culturally, physically and politically, encouraging the growth of talent, and maintaining cultural monuments for posterity receive equally adequate funding from the Ministry.

(Pls. see Table)

Formal Education

Formal education in Bavaria consists of a 12-year compulsory education which culminates in the preparation of the individual for gainful employment in a self-chosen occupation, and a career education which could reach up to the university for those interested and capable.

From the home or the Kindergarten, the child at age six enters the four-year Grundschule or primary school. After finishing primary school, the pupils goes either to Hauptschule or main secondary school, or to Gymnasium or the classical secondary school. The first two years serve as orientation period to provide parents, pupils and teachers a better basis for the final decision on the pupil's secondary school. Thus after the sixth year of schooling the pupil may continue in Hauptschule or Gymnasium, or he may choose to go to Realschule (non-classical secondary school) or to Wirtschaftsschule (commercial secondary school).

(Pls. see Chart)

The various secondary school types of this branched education system have different profiles of subjects and educational aims. The Hauptschule continues basic general education started in Grundschule and assists in giving pupils an occupational orientation according to their aptitudes, interests and achievements in both concrete thinking and its practical application. Hauptschule pupils mostly aim at undertaking apprenticeship connected with vocational school

to become skilled workers, or they may go into immediate employment. Hauptschule ends with Grade 9. Other options of the Hauptschule graduate are (a) a vocational preparation year of full-time attendance for those without a training (apprenticeship) contract or those unemployed (This training, as a special arrangement, satisfies the completion of compulsory education) or (b) three years of full-time study in the Berufsfachschule (specialized vocational schools) which could lead to higher vocational schools.

(Pls. see Table)

The Realschule provides a general education through a process that integrates basic theory with practical application. It ends at Grade 10 with an assessment examination for the middle level school degree. The targets after Realschule are mostly apprenticeship in office occupations or services, or continuation of full-time studies in higher vocational schools. As an exception, the Wirtschaftsschule (commercial secondary school) offers direct access from Grades 6 or 7 of Hauptschule and leads to a middle level school qualification.

Required Subjects in the Different Types of Secondary School in Bavaria

Hauptschule

Religion

German

English

Mathematics

Physics/Chemistry

Biology

History

Geography

Pedagogics

Civics

Work Education

* Each type of secondary school has its own set of elective and optional subject offerings

The Gymnasium provides the pupil with a thorough general education as a preparation for an academic career and assists him in acquiring additional requirements of professional development. Grades 12 and 13 of the Gymnasium are called Kollegstufe. Here students choose two main subjects for pre-academic concentration and have a reduced load of subjects in general education. The final examination is for the Abitur which qualifies one for the tertiary level of education in the university, polytechnics or other specialized colleges.

Vocational education is closely linked with the general education system. It reflects the highly differentiated and specialized economy of the state and offers practice-oriented educational programs and facilities at all levels. Thus, it provides well-trained manpower for the economy

-from the skilled worker up to the highly qualified technologists. Most of the Hauptschu leavers move on to the Berufsschule (vocational school) which up to completion after Grade 12 at age 18 years, is still part of compulsory education. The first year of Berufsschule provides a basic vocational course in one selected work area the student chooses out of 13 main occupational fields. In the second and third years, the student specializes in one specific occupation in his selected work area. There are a total of 420 occupations recognized for training in the 13 occupational fields. All the three years of Berufsschule consist of apprenticeship and part-time study in school, based mostly on a one-day release from work per week. Apprenticeship is done in firms qualified by the government to provide such training. Student-apprentice and employer-trainor observe a training contract and the prescriptions of the specific occupational training program. The employing companies or institutions and the Berufsschule thus cooperate in providing the youth with a thorough preparation for qualified work. This "dual system" is instituted by law and is certainly a base for the industrial success of Germany. The economy shares willingly in this effort and investment in the future manpower of the country. The apprentice is paid about 10% of the salary of a skilled worker in his training occupation, but he is not bound to the training company. At the end of apprenticeship, the student is free to choose his place of employment Beyond the three basic levels of vocational education, a variety of schools provide access to studies needed by more demanding occupational tasks and responsibilities. Most of these are full-time schools requiring either the completion of the "dual system" of training such as the Berufsaufbauschule or advanced vocational school, and the Berufsoberschule or vocational college, and/or a middle level school qualification such as the Fachoberschule or higher technical school.

The Occupational Training Areas

1. Management and Administration
2. Metal technology
3. Electrical technology
4. Construction
5. Wood technology
6. Textiles and clothing
7. Chemistry/Physics/Biology
8. Printing
9. Paint technology/interior design
10. Body and health care
11. Nutrition/home management
12. Agriculture
13. Others (leather technology, etc.)

Via various paths which have corresponding relevance in the employment market, the system of higher vocational schools leads the achievement-oriented student to special technical colleges or to the university. Thus the vocational education system as a whole constitutes a second ladder, one of practice-oriented courses equivalent to respective levels of the academic/general education path.

Sharing of Expenditures for Education in the Federal Republic of Germany in 1980, 1982, 1983

	1980	1982	1983
Federal Government	8.8%	8.6%	8.9%
Federal States	72.4	79.2	74.3
Local Authorities and Countries Corporate	18.9	18.1	16.7

As in all the other states in West Germany, the system of education in Bavaria is maintained jointly by the State and local authorities. The costs of buildings and facilities, together with office and maintenance staff, are met by local governments. Teachers' salaries, textbooks and financial assistance to certain pupils are shouldered by the State. The limited sphere of Federal authority in education probably accounts for its small, 8-9% contribution to educational expenditure.

Attendance in all public schools is free. Most study materials, particularly school books are provided free of charge. Furthermore, needy pupils can receive State support under a Federal Education Promotion Act, say, if great distances require them to live away from home. About 3096 of senior class pupils receive this kind of financial support from the State. Many pupils are provided free transportation to and from school, especially in the rural areas. These measures are aimed to provide equal access to education notwithstanding the pupils' social situations or geographical locations.

(Pls. see Table)

In the school year 1984-1985, the total populations of all types of public schools in Bavaria added up to 1,742,831, including 39,444 pupils in schools for the handicapped.

The present Bavarian educational program has been implemented for many years now. It has been supported with adequate facilities and well-trained teachers, and in the case of the Berufsschule's "dual system" with effective cooperation from business and industry in the vocational training of the youth. It is not difficult then to see why Bavaria is able to maintain and in fact raise the level of the skilled society it is today.

The Curriculum and the Bavarian Citizen

The primary school child in Bavaria starts formal education in a curriculum designed to help him extend his awareness of things in his environment. Direct and vicarious experiences provide him more information about things and equips him initially with the basic skills of sensing and manipulating, concomitantly gaining a start in the attitudes of inquiry and objectiveness and the learning skills. School experience kindles in him the formation of socially desirable habits such

as respect for authority, orderliness, cooperation, sportsmanship, friendliness, helpfulness and respect for others' rights. He develops personal habits of cleanliness and body care, reading to learn or enjoy, concentration in study and seriousness in work through lessons contrived by the teacher. Pupil guidance is done with the cooperation of parents.

(Pls. see Table)

The Conference of Ministers of Education has underscored the necessity of collaboration between parents and schools. This is of utmost importance when decisions on the child's further schooling are being made, when a child has particular problems or when the handicapped needs the best possible help. Cooperation between parents and teachers also take place within the activity of institutionalized representative bodies legalized by the State. Functions of such Parents Advisory Boards have been suggested for a variety of concerns, such as the promotion of learning, school organization, communication among parents and teachers, school climate, pupil-pedestrian safety, making requests of authorities, and using newspapers to benefit school and learning.

The Federal Conference of Ministers of Education says:

"The local authorities, the teaching body, the parents (representative body) and the pupils are to be involved in the administration and shaping of the school system ..."

(Resolution on "School Autonomy")

"Schools must give parents the opportunity of responsible cooperation."

(Resolution on "The Pupils' Place in School")

The basic principles and details of this cooperation are laid down in the constitutions or the school legislation of the Bundeslander or other federal state school regulations.

Pupil-Pedestrian/Passenger Safety

1. To suggest improvements on the school bust system, say, through better bus routes and guidelines. To insist on the faithful adherence to the bus plan. To recommend the deployment of more school buses.
2. To recommend the construction or bus-stop islands, parking slots and waiting sheds.
3. To ensure that during winter, school buses are heated.
4. To see to it that there are adequate pedestrian traffic lights, properly painted crossing zones, speed limit signs, warning shields, and safe over - or underpasses.

5. To intercede on the assignment of bicycle lanes in main streets.
6. To ask the Police for advice on "pedestrians "watch"
7. To formulate a city plan on the safest routes to the school.

In the first two grades the curricular program provides the teacher leeway to adjust time periods for the basic subjects. This should enable her to pursue the day's lessons along current interests of the children and thereby make learning enjoyable and fun to them. Yes, teachers at the primary level have the fundamental mission of making children love going to school. Otherwise, it is a disservice to both the children and the system.

The secondary school-Hauptschule, Gymnasium, Realschule and Wirtschaftsschule -offer the pupil more subjects to study and learn. Compulsory subjects, the core of his curriculum, consist of the traditional subjects that are intended to broaden one's general knowledge. There are elective subjects to enable the pupil to gain depth in some favorite study area. Optional subjects are also offered for deepening or broadening the pupil's knowledge in a specific field of interest, say, English or computer science, or give him new skills he deems useful, for example, typewriting or stenography. Laying stress on work education, Hauptschule provides the pupil acquaintance visits to firms, as well as brief practicum periods on basic manual training.

The Gymnasium, Realschule and Wirtschaftsschule have more compulsory subjects than the Hauptschule. The Gymnasium requires at least two foreign languages, mostly selected from English, French, Greek and Latin. The Realschule requires beyond the subjects in Hauptschule, the study of Business, Law, Typewriting, and Handicraft/Art education. The Wirtschaftsschule adds business-oriented subjects.

Recently, courses in computer science/ data processing have been introduced in secondary schools in this manner: as optional subjects in Hauptschule and the school for handicapped, as electives (on pilot basis) or optional in Realschule; as compulsory, optional in some classes, subject in Wirtschaftsschule and the vocational schools, and in the Gymnasium, as optional in Grade 9, as an elective domain for Grades 10 and 11 and, as basic subjects in courses on Information science and on Electronics.

The rich curricular program is complemented by adequate instructional facilities whose utilization in classes, availability to both teachers and pupils, and proper maintenance and updating contribute immensely to the pupils' quality of learning.

Out-of-school activities and services through youth organizations sponsored by local institutions, community authorities or instrumentalities of the State, enrich the education of pupils. Such activities are encouraged by the Bavaria Youth Association, the umbrella organization funded by the State under its youth policy of 1974. The association runs youth centers, holiday and recreational facilities and a number of special institutions in Bavaria. Communities have local

youth centers, too. The experience provides the youth real-life opportunities for the practice of democratic leadership and processes and the growth of socially desirable traits observable in today's Bavarian society-punctuality, fairness, honesty, tolerance, courtesy, concern for the weak, disadvantaged and handicapped, seriousness in work, to mention some very desirable ones. It is evident that the secondary school leaver enters the vocational school with much experience in personal development and independent activity. He has a better view of what he wants to be and, in the vocational school, pursues a self-selected vocational training program. Like most of his peers, the Hauptschule leaver may proceed to Berufsschule and its "dual system" of vocational training.

THE INNOTECH SIX-MONTH COURSE ON PLANNING AND MANAGEMENT OF AN APPLIED RESEARCH AND DEVELOPMENT PROJECT

Dr. Demetrio D. Monis

In an era of rapid change, no institution can afford to remain static and insensitive to the changing needs of the times. Due to the tremendous achievements in the fields of science and technology, man is continually challenged by new problems and requirements. Even the old ones take on new dimensions.

INNOTECH, as the principal educational problem-solving arm of SEAMEO, offers various problem-oriented training courses that stress the potential of educational innovation and technology in solving existing problems of the Member Countries. One of these training programs conducted by INNOTECH was the Six-Month Course which underwent several important modifications to cater for the changing needs of the countries being served so that solutions could be developed to help solve them.

Historical Development of the INNOTECH Six-Month Course

The following discussions present the evolution of the Six-Month Course from its inception up to its final form, which was the Ninth Six-Month Course.

The Forerunners of the Six-Month Course

1. The Twelve-Month Interns Program

The course was conducted primarily in answer to the acute need for qualified research specialists both at the National INNOTECH Centers* and the Regional INNOTECH Center. Furthermore, it was designed to develop in the participants the following:

- a. attitudes and skills needed by educational innovators,

- b. ability to translate into action programs the ideas gained from the Center,
- c. familiarity with educational technology such as data processing, programming and related matters; and
- d. expertise in research methodology and its applications.

There were two Twelve-Month Interns courses conducted at the Regional INNOTECH Center, Singapore. The first course, which was held from September 1970 to August 1971, included seven trainees from the six countries of Indonesia, Laos, Malaysia, Singapore, Thailand and Vietnam.

The second course, held from 15 July 1971 to 3 June 1972, was participated in by fourteen key officials from the eight member countries, this time, including the Khmer Republic and the Philippines.

The participants in these Twelve-Month Interns Courses were nominated by their respective Ministries of Education upon request of the Regional INNOTECH Center.

Actually, the course was planned to last for two years; one year program of studies and research methodology to be followed by a second year of actual supervised research which could take place at the Regional INNOTECH Center or in the country of the participants.

However, the second component of the course was never implemented. The main reason was lack of staff time. Mr. Ly Chanh Duc, then their Center Director, said:

"The Intern(s) Program. . . involved too much of staff time so much so that actual research work suffered. It was also apparent that the interns, most of whom were unskilled researchers, could not acquire enough research expertise in 10 or 12 months, which made the original concept of combining research and training difficult to carry out."¹

Evaluation reports on the program showed negative results. The program was not successful in providing the participants the needed skills in systematic and innovative approaches to the solution of educational problems and the change agent behaviors necessary to ensure acceptance and implementation of new solutions. It was reported, "As a training program it has been an expensive success; as a research program, it has been an expensive failure."²

Furthermore, the inability of the Center to carry out its functions then was attributed to its setup of having joint research and training activities. Reports of Drs. Sim and Horst to the INNOTECH Governing Board categorically indicated that the coupling of INNOTECH's research and training programs was both wasteful of staff time and not productive of good research. "Dr. Sim described this dual role as ' . . . ineffective and inefficient,' and Dr. Horst stated that 'the net result was to reduce the effectiveness of the research program. ³

The observation that INNOTECH staff and resources were used mainly for training, particularly the Interns Program, was both obvious and unanimous. Dr. D.G. Nichols, then an INNOTECH consultant, said, "This has been true because the staff was small and because

the pressure for a tangible product could be countered most simply by pointing to the increasing number of interns and participants who had been trained."⁴

The aforementioned reports on and assessments of the Twelve-Month Interns Program brought to the fore the following problems at the time, namely: (1) lack of staff, (2) providing for the needs of many trainees, and (3) participants in the Interns Program who were assigned temporary research staff did not know much about the work; hence, activities became a series of training exercises, forcing the professional staff to lower their standards to a level that would benefit training at the expense of research.

Based on these findings, the INNOTECH Board during its meeting in Singapore on 1417 November 1972, recommended an increase in the number of staff; the production of self-learning modules; reduction of lecture time; and the phasing out of the Interns Program.

2. The Nine-Month Interns Training Program

Considering the aforecited problems and in line with new policies of SEAMEO issued on the redirection of training programs, INNOTECH experts conceived the Nine-Month Course as a new training instrumentality that replaced the Twelve-Month Course. It was conducted only once in Singapore, from September 1972 to June 1973. It was participated in by two representatives from each of the eight member countries.

The participants were specially selected from the staffs of (1) the National INNOTECH Centers; (2) national units having responsibility for planning and/or managing nationwide educational research; and (3) institutions offering academic preparation for researchers. Selection of trainees was based on the following criteria:

- "a. participants should be university graduates . . . in research techniques and methodology.
- b. English language proficiency must be adequate to handle instruction in English."⁵

This new training instrumentality was meant to deal with the shortage of practically trained, applied researchers in the SEAMEO region. The idea was based on the assumption that practicing researchers then were basically theory-oriented towards pure research but lacked the skills and techniques in dealing effectively with practical, applied and problem-solving situations. Hence, the primary objective of the Nine-Month Course was ". . . to develop applied research skills and inclinations of theoretically trained researchers so that they can plan and/or manage innovative educational research in the SEAMEO countries, utilizing basic INNOTECH concepts."⁶

The training methodology employed was mainly modularized and self-instructional learning. This was supplemented by individual project work and application of skills learned in actual field research.

The Nine-Month Course was conducted in four phases, namely:

- "a) participation in the three-month course on educational planning (which the staff considers to be a pre-requisite for creative research programs),
- b) two-month research planning phase, conducted primarily through tutorials with research advisors,
- c) conduct of research in their home countries, monitored by research advisors, and
- d) return to INNOTECH for analysis, critique and report preparation."⁷

The Certificate Awarding Ceremony for the Nine-Month Interns Program on 1 June 1973 was doubly significant to the history of INNOTECH for it was also dubbed as the Leave-taking Ceremony for the Center.

In June of 1973, the Center was moved to Saigon, then to Bangkok in April 1975, and finally, to Manila on 1 July 1976. It was in the Philippines where all the nine Six-Month Courses were conducted from 1977 to 1985.

The Six-Month Course

In 1976, SEAMES conducted an evaluation of all SEAMEO units including INNOTECH, "to obtain a candid and objective picture of the functions and operations of SEAMEO units, including the Secretariat based on the views and assessments of disinterested and knowledgeable persons not connected with the Organization."⁸ The evaluation team was composed of experts from within and outside the region who were not connected with SEAMEO.

The evaluation project lasted for five months in 1976. Some of the findings relevant to the planning and structuring of the Six-Month Course are the following:

1. Participants in the Interns Program did not meet the qualifications for internship type of training.
2. The training mode used which was "learning by doing" through simulation exercises and group discussions supplemented with minimum lectures was not suitable and effective.
3. Participants lacked the required proficiency in English which was the sole medium of instruction.
4. Participants did not meet the course requirements on statistics.

The final report of the External Evaluation Team indicated that all the participants were university graduates but none specialized in research techniques and methodology, and statistics. Furthermore, they had difficulty with the English language. Because of these inadequacies of the participants, the "learning by doing" method as implemented was simply inappropriate and ineffective.

The report revealed that "8 out of 18 interns had difficulty in understanding written and spoken English as well as in speaking and writing English. "9 Furthermore, "only 7 out of 16 interns had previous training in statistics and 10 out of 16 interns scored poorly in test results."10

In view of the aforementioned findings, the Six-Month Course was conceived as a replacement for the Nine-Month Interns Program.

Modifications of the Course Effected

Through the years within the period under investigation, the Six-Month Course was subjected to continuous assessments and modifications to make it effective in meeting the training needs of the region.

The following discussions present the significant changes as regards objectives, nature, scope, and format of the course; and requirements of participants.

A. The Course Objectives

The rationale of the Six-Month Training Course is derived from the basic idea of the creation of SEAMEO, to wit: involvement of Member Countries in regional affairs through coordinated and cooperative problem-solving activities. In line with the principle of sharing, the course was designed to bring ' . . . together educational researchers from the different Ministries. . . to exchange experiences and skills - in addition to inputs from INNOTECH professional staff - would be mutually beneficial to participants."11

Initially, the overall objective of the course was "to provide educational researchers with knowledge, skills and experience for solving an educational problem through research. 12

Formative and summative evaluations, both individual staff/ consultant of INNOTECH or in group, were conducted during and after the first implementation of the training course. One of these evaluations worthy of mention was done by Dr. Daryl G. Nichols, then INNOTECH consultant. He expressed his dissatisfaction with the course in his memorandum, dated 18 May 1977, to Dr. Lourdes Sumagaysay, then the Head of Training.

It was clearly implied in the Nichols memorandum that one very important objective of the course should be to develop in the participant the ability to plan a problem-oriented research project which he can implement and manage after the completion of the training. It was emphasized that such problem-oriented research activity must be on real on-the-job problems.

The suggestions of Dr. Nichols and other findings and observations of professional staff and course participants generated a series of meetings and brainstorming sessions on the topic. Important decisions made in these meetings relevant to the formulation of course objectives were effected in the Second Six-Month Course which was held from 8 January to 30 June

1978. The following were the specific objectives of the course:

"After completion of the six-month training program, each participant should be able to:

- a. Create an educational planning system model appropriate for use in his own work and in his educational system;
- b. Devise potentially effective and innovative solutions to identified national and on-the-job problems through the application of the systems approach;
- c. Apply innovative strategies for change and acceptance of the solutions addressed to national and on-the-job problems;
- d. Acquire and apply the skills needed in developmental research designing and project planning; and
- e. Create a planning document for an applied research project that is problem-oriented, manageable, and based on sound research methodology. "13

From here on, the course objectives remained substantially the same, except for some changes in terminologies.

However, significant modifications of the nature, scope and format of the training were effected to cater for the new felt needs of the countries being served and the trainees. These changes comprise the next subject of presentation.

B. The Nature, Scope and Format of the Course

The training was a six-month in-house course that provided the participants more opportunities for interaction and discussion on their lessons and sharing of their experiences and expertise. Learning of the basic skills and concepts was achieved largely through self-instructional modules, namely: core and elective.

Opportunities for independent study were enhanced by a variety of learning situations that included individualized instruction, individual and small-group tutorials, and national and multinational small-group seminars and workshops. These were complemented with socials and educational and cultural field trips.

Initially, the participants were introduced to the concepts of innovation which were being applied in the projects and activities of INNOTECH. Then they were asked to identify their respective national and on-the-job problems using the systems approach and derive a more specific problem that was researchable, manageable and capable of verification. It was implied that the operational concepts used must be observable and measurable.

Finally, research proposals were developed and implemented in various parts of the Philippines. Findings and conclusions were derived and implications for further use of such findings were

drawn by the participants.

The First Six-Month Course included forty-two self-learning modules that were grouped into twelve major units or blocks.

As a whole, the participants in the first course expressed satisfaction over the course and felt that skills, knowledges and concepts acquired were both useful and needed. However, the staff and consultants noted some areas that required course modification.

In a memorandum to the Director dated 22 April 1977, Dr. William H. Schmidt, then INNOTECH consultant, pointed out some possible revisions of the course. He came out with a detailed course outline in lieu of the existing course format. Among other things, he recommended the following:

- "1 . . . statistics presented should be covered at the conceptual and interpretational level(s) and not at the technical level.
- 2 retain the practicum for it ~s a good experience and it must remain on a reasonably small scale so that it can be easily managed by the participants.
- 3 increased use of the computer to analyze their (participants) data.
- 4 participants should spend their mornings 8:3~12:00 with general lectures on the area of applied research and then spend their afternoons working on their specific projects.
5. ... this training should not be viewed as highly technical training in statistics for the University is probably better prepared to do this but rather an applied course in research and statistics with a practicum and geared specifically to the needs of educational research in Southeast Asia. This is what makes the training unique. "l4

In line with the recommendations of Drs. Nichols and Schmidt, the staff and the conclusive results of the survey of the first group of participants, the Second-Six-Month Course was modified in content, sequence of modules and format as follows:

1. The Three-Month Course on Educational Planning was made the first part of the course with the end in view of developing in the participant the fundamental skills in problem analysis, formulation of objectives, generation of alternative solutions and change strategies by utilizing the systems approach and other INNOTECH concepts and principles before he was introduced to research and statistics.
2. There were more topics on skills in planning and managing developmental research projects, based on systematically identified national problems, and
3. More intensive training in systems analysis and the application of a systems approach to educational problems was provided.

During the Fifth Six-Month Course, a special survey was conducted one month after the course was started. The survey aimed to find out the participants' course expectations and determine

whether there were any indications of their achieving said expectations. All ten participants in the fifth course accomplished and returned the survey questionnaire.

Although the feedback showed favorable attitude of participants towards the course, continuous evaluation was undertaken to find ways of improving it.

During the Seventh Six-Month Course, three significant things were introduced, namely:

1. An attempt was made to analyze the effectiveness of learning in some newly introduced modules on Educational Statistics. These modules were designed to hone up the computational skills and choice of research procedures of participants.

The participants were given a pre-test and a post-test to determine some areas where improvement could be effected when the Statistics component is offered again and the base data on entry skills of participants from different countries.

Interpretation of post-test results showed the following:

- a) All participants were weak in Educational Statistics.
 - b) All participants gained improvement in varying degrees.
2. The number of course participants was increased from two to three per country. This was approved by the Board during their meeting held in Manila, from 7-10 September 1982.
 3. Finally, the Seventh Six-Month Course marked the introduction of group dynamics and sensitivity sessions as an important component of the course. This 30-hour in-residence sub-training component was designed to enhance the development of smooth and cordial interpersonal relationship among participants and staff and create an atmosphere conducive to learning and sharing. Specifically, it aimed to develop in the participants the following:
 - a) Better understanding of oneself through awareness of self and others, and
 - b) Knowledge of and skill in the use of laboratory method of training/learning.

The activities were classified into two parts. Part I consisted of theoretical inputs intended to provide the participants the necessary background and orientation to group dynamics and sensitivity training.

Part II included activities the trainees were required to participate in. To optimize involvement, the trainees were divided into two or three smaller groups with one staff as facilitator.

All the foregoing course enrichments were carried through the next two courses. In addition, beginning with the Eighth Six-Month Course, a one-week lesson on computer was introduced to expose the participants to the uses of computers in research and education.