

**WHAT OTHERS HAVE SAID
ABOUT
BITS PRACTICE SCHOOL**

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**BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE
PILANI (Rajasthan)**

DECEMBER 1984



From the Editor's Desk

This publication entitled 'What Others Have Said about BITS Practice School' is one significant link in the chain of Documentation Series, numbering 26 as of to-day, which the Practice School Division launched years ago to cover the entire gamut of the Division's activities, both past and present as also its future projections.

This series was the consequence of Dean Vijay V. Mandke's dynamic vision, the purpose being a desire to share with the educational and professional world our manifold accomplishments in off-campus education as distinct from the conventional classroom instruction.

Ever since the inception of the Practice School programme of BITS in the early seventies under the stewardship of Dr. Mandke, a considerable number of eminent people representing various spheres of activity have visited the Institute in general and its PS Division in particular, evincing an extremely keen interest in the Institute's innovative programmes initiated by Director C.R. Mitra with the assistance of some of his able colleagues determined to give a practical and professional orientation to the campus-based courses of instruction, thus effecting a judicious synthesis of theory and practice. BITS, through its innovative scheme of off-campus education (comprising practice school, M.E.(Collaborative) and doctoral research programmes conducted at industrial sites by its faculty in harmonious collaboration with men of industry), has over the years contributed to the idea of relevance in Indian education. Equally responsive to our novel approach have been numerous other people who have articulated their appreciation in their perceptive articles and interviews published from time to time in our own journals as also in the leading national dailies and News Letters of foreign universities.

The present publication, thus, incorporates extracts from authentic opinions and observations of these luminaries embodied, inter alia, in such publications as 'What Others

WHAT OTHERS HAVE SAID ABOUT BITS PRACTICE SCHOOL

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Have Said about BITS', the special Practice School issue of the Vidya Vihar Bulletin (1980), the various volumes of the PS Division's bulletin (now christened Pracollab), BITS Academic Week records, some international academic journals such as CIHED NEWSLETTER of Northeastern University, Boston, testimonials and certificates issued to PS students by organisational experts, and, above all, letters and communications from leading educationists addressed to Dr. C.R. Mitra and Dr. Vijay V. Mandke over a whole decade.

These extracts have been arranged in a chronological order, rather than under disparate heads with a view to giving the reader a picture of the PS Programme's growth and development in all its sophisticated infra-structural dimensions and, finally, a synoptic idea of its total achievement. Furthermore, these extracts have been culled from a variety of sources in such a way that, taken together, they show how this programme of off-campus education has found acceptance in the academic and industrial world to such an extent that it is now considered worthy of emulation by other universities in the country.

The editor is pleased to acknowledge the assistance of his ministerial colleagues in the PS Division, especially Mr. H.S. Kulhari, who made available all the necessary office files and other material from which these extracts have been gleaned; and then arranged the same in a particular sequence. Special mention must be made of the constant guidance of Dr. Mandke who helped in the visualisation of the total perspective and, as a consequence, made the editorial task both pleasurable and fruitful.

BITS PRACTICE SCHOOL THROUGH THE DECADE
(1973-1983)

RUMBLINGS OF CHANGE

An extract from the Convocation address

6 March 1969

Your education and training was intended to deepen your insight, widen your horizon and to create in you a meaningful outlook on life. This should give you a positive and constructive approach to all the problems that may confront you in life.

Dharma Vira

2 December, 1970

So from a sympathetic and slightly informed point of view I feel that I can say that I believe your planning is in the right direction and wise and practical.

Grace Morley
Permanent Expert
International Council of
Museums

It is good that from the very beginning, this search in these varied directions is kept as a special feature and the programmes of training is made varied, purposeful and meaningful also.

J.M.A. Pai
President
The Academic of General Education
Manipal

"It is proposed that the Institute would start a co-operative educational programme with industry (as an optional stream) under which a team of teachers and students will spend (between 3 to 6 months) in a selected industry where a field station would be maintained by the Institute. This programme rejects the concept of unsupervised practical training which has no direct involvement of the faculty."

Document entitled 'A Forward Plan for the Institute,' published by BITS, Pilani, 1970.

"The question of conducting co-operative courses in association with industry should be examined by institutions whereby the technical and other facilities available in industry are utilised to the maximum extent possible in the post-graduate development."

The Thacker Committee for Post-graduate Engineering Education & Research (1961).

22 January, 1971

The stimulating changes and new adaptations which you have planned to carry out are all long overdue, especially in view of the rather fossilised pattern of education in India. I shall eagerly look forward to their implementation in full over the coming few years.

M.L. Roonwal
Ex Vice Chancellor
Jodhpur University & Emeritus
Scientist (CSIR) Jodhpur

1 February, 1971

B.I.T.S. already has a distinguished record of contributions to the needs of Indian education, but I am confident that under your leadership its eminence will be greatly enhanced. Its role as a leader in technological education in your country is assured.

Gordon S. Brown
Dugald C. Jackson Professor
of Engineering
Massachusetts Institute of Tech.

16 November, 1971

Recently the Institute has achieved a major reform in their academic programmes to evolve a flexible educational programme. This, I think, can, if pursued vigorously, give great advantage in developing new approaches to our rather stale education. I hope the collaborative programmes with MIT and Ford Foundation, USA will help in building new attitudes and get new inputs into the Institute.

B.D. Nag Chaudhuri
Scientific Adviser to
Minister of Defence

4 June, 1973

Your whole approach to the problem of education in India and the innovations which you have devised, are, to say the least, exciting.

Dr. N.C. Mehta
Director
National Institute of Bank
Management
Bombay

P.T.I. News item published in the Press-Summary Times of India dated 7th August, 1972.

Studies Revolutionised at Pilani Institute

The new flexible system had been made possible because the Institute has restructured the entire courses in such a way that engineering, science and humanity students could learn things in 'common'.

BEGINNING AND BURGEONING



BITS Pilani

Pilani Campus

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Extract from the HINDU dated 23 September 1973

"A major problem concerning the education in Science and Technology arises from the lack of coordination between the teaching institutions and the industry. An interesting solution of this problem is being tried at the Birla Institute of Technology and Science (BITS) at Pilani in India.

The Institute has opened several ministations which are located at various factories. These stations are equipped with a small reference library, a small laboratory and even provide residential accommodation for the students and the staff of the Institute. The students both at the undergraduate and the postgraduate level, accompanied by some faculty members are required to spend 8-12 months at the Institute's stations located at the various factories where they acquire practical training. These so-called 'practice school' at the postgraduate level will be oriented towards trouble-shooting and research and development. The programme for the undergraduate students is concerned with achieving really purposeful education.

What makes this programme particularly useful and different from the usual sandwich courses is the presence of the resident faculty member at the factory partly to supervise and guide students. If the supervision was left entirely to the factory personnel it might be an unwelcome burden and sometimes even irritating for the factory managers. The programme is only experimental at present but there are strong indications that the experiment will be a success."

12 September, 1974

Extract from 'Problems Confronting the Industrial Scientist; Report on a Commonwealth Foundation lecture tour by Dr. R.N. Gonzalez, formerly Technical Director, Scientific Research Council, Jamaica, March 1974. (The Commonwealth Foundation Occasional Paper No. XXX).

Another feature of the integrated programme is its practice school feature. This programme does not approach the sandwich programmes of the U.K. or the U.S.A. but does provide two periods of relevant industrial practice, a short one at the end of the third year and a long one at the end of the fifth and final year.

The programme, which represents a break with tradition, has considerable merit. Besides the integration of disciplines the programmes also stress 'doing'. Workshops, laboratories and practice schools play a central role in the programme and thus move away from the tradition of text-book cramming and memorizing. Dr. C.R. Mitra, who worked for several years in industry in the U.S.A. before being called to the director's post, is most enthusiastic and eager to demonstrate the relevance of the programme.

"Most forward looking Institute with novel ideas and experiments in education."

S.C. Jain
Director of Research & Training
Ministry of Education
New Delhi

Extract from the article, 'Education and Industry' by Shri Babu Desahi, in University News, December 1974 Issue (Vol. XII No. 12)

The spreading mechanisation in present educational system is dangerous to rationalistic approach to meet the arising challenges of the time. Today's education, apart from current problems of life, is unable to fulfil the increasing needs of the professional world. Present teaching is responsible for increasing gap between the practice and theory. That's why more and more problems are coming up. For a scientific and prosperous living it is needed to coordinate such lacuna through educational programme by introducing in it the real life problems caused by industries.

Dr. C.R. Mitra, Director, Birla Institute of Technology and Science, Pilani, is making efforts to coordinate the educational movement and industrial-social development through 'Practice School' programmes thereby combining several countrywide industrial social institutions with the sophisticated scientific and technical background of education to prove it more practicable and useful. Recently this Institute has started a new five-year integrated programme after making a total change in present educational set-up. One of them is practice 'school', consisting in each discipline it aims to awake and make the students able to take practical decisions on mechanical, social, human, economic and political problems in and around the industries.

Extract from the article, 'Education and Industry' by Shri Badu Desani published in the 'University News,' December, 1974

Dr. C.R. Mitra, Director, Birla Institute of Technology and Science, Pilani is making efforts to coordinate the educational movement and industrial-social development through the 'Practice School' programme, thereby combining several country-wide industrial, social institutions with the sophisticated scientific and technical background of education to make it more practicable and useful. Recently this Institute has started a new five-year integrated programme after making a total change in the present educational set-up. One of them is practice school which aims at enabling the students to take practical decisions on mechanical, social, human, economic and political problems in and around the industries.

No doubt, practice school hopes for self-sufficiency through its working with the help and cooperation among industrial experts and students, instead of frustration and non-directiveness which is rapidly spreading in today's youth. The triangular association of industrial awareness in teachers, academic attachments with professional skills and proper incentives to students will provide refreshment and enlightenment to increase the national youth power.

Badu Desani

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Babu Desani

Extract from D.O. letter dated December 30, 1974, addressed to Dr. C.R. Mitra, Director, from Dr. R.C. Mehrotra, Vice-Chancellor, University of Delhi.

"I really enjoyed the discussions in the evening and it was a pleasure to hear the young man, Dr. Mandke, who is so enthusiastic about this novel and academically far-reaching programme of Practice Schools. I would certainly like to know about the programmes of this scheme, which to my mind is the first in the country for all Faculties of Science and Social Sciences."

R.C. Mehrotra

The practice school programme is certainly a very good one. I had taken liberty of suggesting to some of the staff members that they can explore the possibility of establishing a centre at Baroda.

As I understand, the first batch of students under this new system of education is coming out into the new school, viz., school of experience, this year. In our group of industries we are very much interested in graduates who are developed "whole" and not spoon-fed ones, as we normally come across.

8 August, 1975

K.S.S. VASAN
Pioneer Electric Furnace Manufacturers
Vallabh Vidyanagar (Gujarat)

During our two days' seminar and discussion on Co-operative Education in January 1977 we could find that BITS is experimenting with some new ideas which are entirely different from the usual conventional education system. I do strongly believe that under the dynamic leadership of Dr. Mitra, Dr. Mandke would be able to establish better rapport between this institution and the industry.

25 January, 1977

I. MOOKERJEE
Chief Training Officer
Fertilizer Corporation of India
Durgapur

Extract from the letter dated 8 August, 1975 of Mr. K.S.S. Vasan Pioneer Electric Furnace Manufacturers, Vallabh Vidyanagar (Gujarat) addressed to Dr. C.R. Mitra, Director, B.I.T.S.

The practical school concept that you have introduced is certainly a very good one. I had taken the liberty of suggesting to some of your staff members that you can explore the possibility of establishing a centre in Baroda. I would welcome a visit of your team of people concerned in this activity to Baroda.

.....

As I understand, the first batch of students under this new system of education is coming out into the new school, viz. school of experience this year. In our group of industries we are very much interested in graduates who are developed "whole" and not spoon-fed ones, as we normally come across. I have requested my colleagues and friends in my organisation to make a visit to your Institute in due course of this year to meet these young men for the possibility of utilising them in our organisation. I hope that something useful would come out of this.

I wish all the very best in the bold step that you have taken in introducing this useful concept of education in our country and assuring you all the cooperation from my side.

K.S.S. Vasan

From a letter of Prof. V. Lakshminarayanan, former Director, B.I.T.S.

20 November 1975

It is a matter of great satisfaction for me to visit Pilani after six years and see the great strides made by BITS in successful implementation of its educational programmes. The BITS has gained the reputation for the lead it has given to the country in adopting modern concepts and innovation in the scientific, technological and humanities fields.

My joy is that of the gardener who had planted the tree and nurtured it and sees it laden with flowers and fruits. I congratulate Dr. C.R. Mitra and his colleagues for the great progress achieved. I wish them all success.

V. Lakshminarayanan

Remarks of Shri Kondajji Basappa, M.P., in the Visitors Book dated 3 September, 1976.

I had the pleasure of meeting the Director of B.I.T.S. and his trusted workers in the Institute. I am glad to note a number of reforms have been introduced in the field of science and technology such as five year integrated courses, introduction of practice school education, etc. Thanks to the dynamic leadership of the present Director of B.I.T.S., Shri Mitra and his dedicated band of teachers.

Kondajji Basappa

SAMACHAR

Registered Office:

PTI Building, 1st Floor, 4, Parliament Street, New Delhi-110001

(A testimonial issued to a PS student)

New Delhi 7th July, 1976

This is to certify that Mr. K. Gopalakrishnan, student of M.A. (Hons) in English at BITS, Pilani underwent a four-week practical training course in the Editorial and Reporting sections of Samachar. During the period he showed keen interest in news work and made serious efforts to learn the art of reporting as well as processing copies.

I wish him well.

P.S. KASBEKAR
Chief News Editor

Extract from letter (dated 15 September 1976) from Kondajji Basappa, M.P. New Delhi.

They have a number of measures in the educational field which are really laudable, for example, the integrated course of five years having science, technology and humanities which bifurcates at the end of the 2nd year; the double degree course which a boy can take by spending one or two years more, and the practising centres established all over India at the industrial centres as well as selected villages in the rural areas. I have suggested to the Director that Harihar Polyfibres may be considered as one of the practising centres along with Kondajji, nearby village, for a rural study in the near future.

Kondajji Basappa

Extract from letter (dated 1 November, 1976) from L.R. Shah, N.D.

You may have received my letter No. 2(1)/76-Prog. Advr. dated 8.12.1976 regarding the Project Reports of BITS about Dhandhar village. The report has been studied carefully and it is felt that it would be desirable to have it printed so that it may be circulated among all the NSS units. This kind of survey could well be a model for other units to emulate in the country.

L.R. Shah

Extracts from Practice School Bulletin (1976)

Intellectuals Commend BITS

Mr. S.C. Shukla, Instructor-in-charge of Practice School, at Delhi, this summer, (1976) had a brief but memorable encounter with the Union Minister of Commerce, Professor D.P. Chattopadhyay, at the Annual Convocation of the Indian Institute of Foreign Trade, held in June, 1976, at which Mr. Harsh Mohan, who topped this year's Examination and is a former student of BITS, was also present. The honourable Minister was visibly impressed when the topper told him about his BITS background. He asked Mr. Shukla many questions regarding BITS' academic Programme and showed particular interest in its Management Studies and Practice School.

Harsh Mohan was all excitement when Mr. Shukla (incidentally, one of his former teachers at BITS) told him about the recent administrative restructuring and the introduction of many new courses at the Institute. He was delighted to meet (Miss) Kiren Nirmal and Gopalkrishnan, PS-I students from BITS, who interviewed him as reporters from The Hindustan Times Evening News.

Mr. Shukla also met Mr. Sunil Roy, a Professor of Journalism and a Samachar special correspondent. He talked to the students about many fascinating things regarding journalists and journalism and was highly appreciative of the extension of Practice School facility to M.A. English students. He commended the idea of exploring the possibility of introducing at BITS a course in Journalism, including science journalism.

Mr. Shukla had several meetings with the eminent young journalist, Mr. Hiranmay Karlekar, Editor-in-Chief of the Hindustan Times. He discussed with the PS-I students the advantages and pitfalls of a journalist's career, and exhorted them to work hard and not let their enthusiasm flag when they returned to Pilani. He was extremely happy to learn about our educational innovations and showed a keen interest in the activities of the BITS Practice School.

The other renowned journalist Mr. Shukla et was Mr. W. Lazarus, General Manager of Samachar. When told about the Institute's research Projects, the recent administrative streamlining and the ambitious Practice School programme, he in his characteristically brilliant manner, assured the PS faculty that such exciting news could not for long go uncovered by his Science Reporter, Dr. Jairam.

Two other well-known journalists, Mr. V.K. Narasimhan, Chief Editor of The Indian Express, and Mr. S.T. Chopra, Acting Editor, Eastern Economist, were equally appreciative of our Practice School scheme and generous in promising their whole-hearted co-operation to the Practice School programme in the future.

BITS STUDENTS TURN REPORTERS

Our M.A. third year English students hit the journalistic jack-pot when for the first time The Hindustan Times Evening News prominently published many of their reports and features during their Practice School I training at the Samachar news agency and The Hindustan Times at Delhi in the summer of 1976. One of them which was the first to be published in H.T. is reproduced below minus the photograph that accompanied it :

(Please see next page.)

IIFT TOPPER IN A SMALL FAMILY
BY GOPALKRISHAN

This year's Indian Institute of Foreign Trade's topper Harsh Mohan is a tall, soft-spoken young man. He is a strict believer in hard work but adds it should be well organised.

After finishing his B.E.(Hons.) in Electronics from the Birla Institute of Technology and Science (BITS), Pilani he joined a Bombay firm.

(Incidentally he was indentified as a former student of BITS by one of his old teachers, Mr. S.C.Shukla at the convocation ceremony here yesterday.)

Satisfied with his performance, the firm sent him to the IIFT for specialisation in international trade. Though Mohan admits the programme is very expensive, he says it is very useful.

Mohan got married last year and both he and his wife Neema believe in a small family-one boy and one girl. He is an admirer of the policies of Prime Minister Indira Gandhi and says, "With her at the top, we feel secure."

Mohan's other interests are drama, cricket and movies. Now a days he spends his spare time either in decorating the house with his wife or at the urban community development centre where they coach people for interviews.

He said, "In the office I am meticulous, organised, fussy and even short-tempered. At home I am sweet and affectionate."

Asked about the unforgettable period in his life he said : "The days I spent at BITS were memorable because I acquired the confidence to deal with the outside world there. The foundation of my career was, in fact, laid at Pilani.

(The author of this report was subsequently offered a reporter's job at The Hindustan Times and has since been working in this capacity with great success-Editor.)

25 January, 1977

During our two days seminar-cum-discussion on Co-operative education we could find that the BITS is experimenting with some new idea which is entirely different from the usual conventional education system. I do strongly believe that under the dynamic leadership of Dr. Mitra, Dr. Mandke would be able to establish better rapport between this institution and the industry.

I wish and hope BITS will be able to infuse their own concept with more and more industries in near future.

I. Mookerjee
Training Department,
Durgapur.

6 February, 1977

A very encouraging programme which creates new vistas learning for those engaged or are going to be engaged in industries.

L.M. Bhandari
Sr. Chemist, H.Z.L.

Extract from letter from Prof. Norman N. Lichtin, University Professor, Professor and Chairman, Department of Chemistry, Boston University, 685 Commonwealth Avenue, Boston Massachusetts 02215 dated April 5, 1977.

I have reviewed the copy of 'Introducing BITS to Prospective Faculty' which you sent me, with considerable interest. In several ways its innovative approach is an Indian analogue of the programme of my Alma Mater, Antioch College. Particularly the emphasis on learning through experience in the real world, on real involvement of the whole faculty and the student body in institutional development and the efforts to integrate realistically over artificial barriers between formal disciplines are similar to some of the most valuable components of my own education.

Norman N. Lichtin

A report published in The Financial Express dated 8 February, 1977.

BITS' 'practice school a Big Success

PILANI (Rajasthan), Feb. 7 (Samachar) - The Birla Institute of Technology and Science (BITS) here has drifted from the traditional practice of classroom teaching and has started sending a large number of its students and professors to organisations outside its campus to make them "learn by experience."

In what is said to be an innovative approach to make education relevant to society students are sent out to the "field" where they learn the "hard way" under the supervision of BITS resident faculty, "thus providing them an opportunity to apply their classroom knowledge to live situations."

This year, some 300 students and 40 professors from all disciplines will be sent for two-six months' on-the-spot experience at industries, banks, business houses, research institutes, consulting and design offices across the country under a scheme called "practice school."

The bold and novel scheme, which has attracted international attention was launched by BITS in 1973 when it set up its first "practice station" at the Hindustan Aluminium Corporation (Hindalco) in Renukoot with 12 students and four teachers.

According to Dr. Vijay Mandke, Dean of the Practice School Division, BITS has now 42 practice stations attached to several host organisations — from Jammu in the north to Hyderabad in the south.

Each practice station is a sort of "mini BITS", complete with classroom, office and some of them with hostels for students and the resident BITS teachers.

Almost every BITS student, whether he studies engineering, languages, science, or economics spends upto eight months in any of these practice stations — two months in the third year and six months in the final year.

There the students, along with their teachers and staff of the host organisations, work as a team in studying and solving "real life problems" that cannot be taught in classrooms, Dr. Mandke said.

A recent seminar held here to review this innovative approach was attended by leading educators and representatives of host organisations who hailed the practice school as "the first successful Indian experiment to build a bridge between university, industries and society."

Dr. Mandke said practice school benefits everyone — students, teachers and the "hosts."

Apart from exposing students to real problems of society, the practice station enables them to meet their future employers. It helps the host organisations update their academic knowledge by their interaction with BITS faculty. Among the BITS faculty, the practice school creates "greater awareness" to societal problems which in turn makes them better teachers when they return to BITS.

The success of practice school in the last three years has been so impressive, it is claimed, that several organisations in the country are playing "host" to BITS.

BITS now runs round-the-year practice stations at the Central Bank of India, Department of Electronics, Bharat Heavy Electricals Limited (BHEL), some laboratories under the Council of Scientific and Industrial Research, M.N. Dastur and Company, Gwalior and Century Rayon, the Administrative Staff College and Hindalco.

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BITS practice school is said to be unique in the world in that it is open to all students irrespective of their disciplines. Science students go to practice stations attached to banks, industries and research institutes while economics students are sent to banks, business houses and the National Council for Applied Economic Research (NCAER) in New Delhi. Last year a batch of language students from BITS had their practice session at the Hindustan Times Office and at the Samachar news agency.

Dr. Mandke said BITS students go to practice stations not just to learn but they also help the host organisations in identifying and solving their problems.

Because the scheme is mutually beneficial, many host organisations pay the students a monthly stipend ranging from Rs.200 to Rs.500. And some organisations have built at their cost hostels for BITS students attending the practice stations.

The recent seminar highlighted several successful projects which BITS students and teachers conducted at the practice stations in the last three years.

For instance, the Gwalior Rayon Company in Nagda agreed to implement suggestions of BITS students for reducing pollution from its factory and a method for economising steam.

BITS practice station at the Century Rayon in Bombay prepared a design to improve the production of the sulphuric acid plant from 63 to 80 tonnes and the factory accepted this design.

Economics students working at the practice station at the National Institute of Bank Management in Bombay studied the national banking plan and the Bihar banking plan.

Mathematics students in their practice station at NCAER analysed and collected data concerning rural energy consumption in North India.

Physics students working at a practice station in Delhi produced a low-priced solar water heater. Working at BHEL in Hyderabad a team of engineering students built a windmill and a "dual-engine" that works on gobar gas and diesel oil.

At the National Institute of Oceanography in Goa, a BITS student of mathematics identified a data processing problem and his subsequent work for the NIO earned him a Computer Society award.

BITS has also a practice station in Dhandhar, a village near Pilani where a team of students from different disciplines are carrying out more than a dozen projects for the economic development of the village.

Their project report has been taken as a "model" by the Union Education Ministry which is now printing 3,000 copies of the report for distribution to all institutions in India that are engaged in rural development, Dr. Mandke said.

"The practice school scheme has exploded the myth that industries and universities cannot co-operate" said Dr. V. Krishnamoorthy, BITS Deputy Director.

"The practice school has created enthusiasm in every quarter, except our national laboratories," Dr. C.R. Mitra, BITS Director, said. He hoped the situation would change.

(contd.)

Birla Institute of Technology and Science (BITS) has drifted from the traditional practice of classroom teaching and has started sending a large number of its students and professors to organisations outside its campus to make them learn by experience.

In what is said to be innovative approach to make education relevant to society, students are sent out to the field where they learn the hard way under the supervision of BITS resident faculty, thus providing them an opportunity to apply their classroom knowledge to live situations.

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"A recent seminar held here (at Pilani) to review this innovative approach was attended by leading educators and representatives of host-organisations who hailed the practice school as 'the first successful Indian experiment to build a bridge between university, industries and society'."

Extract from the news-report in The Financial Express dated February 8, 1977, covering the Seminar on 'Co-operative Education' held at BITS, Pilani in January, 1977.

A sustaining principle of the programme is that in the (engineering) profession, the premium is on the man who can best apply his theoretical background and research aptitude to the formulation and solution of real technical problems. The practice school experience has been shown to accelerate the development of these abilities in areas which cannot be treated adequately in the classroom."

(Document entitled 'Graduate Study at the School of Chemical Engineering Practice' published by M.I.T., U.S.A.)

Extracts from the report of the 'Estimates Committee 1977-78 (Sixth Lok Sabha) Ninth Report : Higher Technical Education New Delhi. Lok Sabha Secretariat 1977 (pp 184-185, 187-188 and 215).

In a memorandum to the Committee the following measures, inter alia, have been suggested for establishing close linkage between institutions and industry:

"The institutions and industry must get together to strengthen practical training to improve guidance given to students and to plan a fruitful industrial exposure. Simultaneously, industry could use this young manpower for solution of small specific problems."

"The institutes have much to offer to industry in terms of consultancy services for solution of specific problems. Such work is beneficial both to industry which finds a solution to its specific problems and to the institutes. The institutes and their staff benefit by a recognition for rendering a much needed national service, by an enrichment of the experience and a sense of involvement in an active professional capacity."

.....
In the report of the Seminar on Cooperative Education held at the Birla Institute of Technology & Science, (BITS), Pilani in January, 1977, the following details of the Practice Schools organised by the Institute have been given:-

"The practice school as a part of the educational programme was started by BITS in 1973 and has become popular with students in all disciplines including engineering, science, management, pharmacy, economics and English, the various areas in which 'BITS' awards degrees. This programme envisages batches of students and teachers drawn from

different disciplines to physically reside for a period of six months in industry, R and D organisations, Banks etc. and continue the educational process of the students in the real life setting by using real-life problems as a vehicle for education. The host organisation where BITS practice schools have been located are 17 in number."

The Committee note that the All-India Council for Technical Education has recommended a number of steps for establishing meaningful linkage between engineering institutions and industry like organising sandwich courses, periodical review of curricula in consultation with the industry, organising short-term courses for employed personnel, undertaking consultancy services, assigning live problems to students as project work etc. The Committee need hardly stress the importance of close linkage between the engineering institutions and industry as it not only would enable the engineering institutions to produce the technical personnel required by the industry but would also help the industry in resolving technical problems and challenges facing them. In short, it would help in developing a need-based and job-oriented system of education in technical institutions. The Committee are, however, anxious that these measures for establishing close linkage should be implemented by the various engineering institutions and the Industry in actual practice. For this purpose both the engineering institutions and industry would have to make concerted efforts and ensure that the linkage between them which would be of immense mutual benefit, is not only maintained but continuously strengthened. The Committee would like that the Department of Education should **Play** an effective role in this matter and closely watch the implementation of these programmes and resolve difficulties, if any.

.....

The Birla Institute of Technology and Science, Pilani has achieved some success in establishing linkage with industry laboratories etc. where the students continue their educational process in the real-life setting by using real-life problems. Such practice stations would not only make the students aware of the world of work but would develop in them willingness to work with their own hands rather than aspiring for white-collar jobs. The Committee would like the Department of Education to carefully study and evaluate the working of these practice stations and, if found suitable, commend it for adoption by other engineering institutions, with such improvements as are considered necessary in the light of the experience.

.....

The Birla Institute of Technology, Pilani has a Training and Placement Unit which conducts seminars on small scale industries. The Institute also offers Practice School Courses and a full Semester Course in entrepreneurship.

Birla Institute of Technology and Science, Pilani has achieved some success in establishing linkage with industry by organising practice stations in industry and research laboratories, etc. where the students continue their educational process in the real-life setting by using real-life problems. Such practice stations would not only make the students aware of the world of work but would develop in them willingness to work with their own hands rather than aspire for white collar jobs. The Committee would like the Department of Education to carefully study and evaluate the working of these practice stations and if found suitable, commend it for adoption by other engineering institutions, with such improvements as are considered necessary in the light of the experience.

- From the Ninth Report of the Estimates Committee, 1977-78 presented to Sixth Lok Sabha on 21 March, 1978.

I make particular mention of your practice school which is unique in the country. I believe, by and large, our country will know the usefulness of such an approach for scientific and engineering education in our country.

5 April, 1978

R.L. DATTA
President
International Solar Energy Society

Another feature of the integrated programme is its practice school. This programme does not approach the sandwich programmes of the U.K. or the U.S.A., but does provide two periods of relevant industrial practice, a short one at the end of the third year and a long one at the end of the fifth and final year.

The programme, which represents a break with tradition, has considerable merit. Besides the integration of disciplines, the programmes also stress 'doing'. Workshops, laboratories and practice schools play a central role in the programme and thus move away from the tradition of textbook cramming and memorizing. Dr. C.R. Mitra, who worked for several years in industry in the U.S.A. before being called to the Director's post is most enthusiastic and eager to demonstrate the relevance of the programme.

— From 'Problems Confronting the Industrial Scientist : Report on a Commonwealth Foundation Lecture Tour' by Dr. R.N. Gonzalez, Formerly Technical Director, Scientific Research Council, Jamaica, March 1974

Extract from letter dated April 5, 1978 from Dr R.L. Datta, President, International Solar Energy Society, C/o Asiatic Oxygen Ltd., First Pokhran Road, Thana (Maharashtra).

I recall with great pleasure my stay at Pilani in your campus. I am grateful to you and your colleagues for your kind hospitality and exposing me to a very competent and devoted group of solar scientists who have undertaken a number of useful projects. I make particular mention of your practice school which is very unique in the country. I believe, by and large, our country will know the usefulness of such an approach for scientific and engineering education in our country.

R.L. Datta

Remarks of Dr. K.S. Gill, Vice-President, Guru Nanak Dev University, Amritsar in the Visitors' Book of the Institute 1 December, 1978.

This was my first visit to the Institute. Pilani is an oasis in a desert. The Institute is the core of the town. It is a beacon light of science and Technology. I had a very fruitful academic discussion with Dr. Mitra and his colleagues. Their experiments in flexibility of curricula and combination of class room and workshop studies with practice in the field are worthy of serious study and emulation. I wish the Institute the best of success. May it shine ever more brightly!

K.S. Gill

Remarks of Dr. B. Ramachandra Rao in the Visitors Book of the Institute: 4 February, 1979

It has been a thrilling experience to visit B.I.T.S. This Institute has developed several innovative techniques and implemented new ideas, foremost among them the Practice School which is widely acclaimed.

B. Ramachandra Rao

Mr. R.C. Lightcap, 1/19, Shantiniketan, New Delhi.

A most remarkable Institute with great ideas of blending ^{the} students and industry together for the benefit of the good education of the students. A very progressive programme.

R.C. Lightcap

Extract from the letter of Prof. M.A. Pai, Department of Electrical Engineering, Indian Institute of Technology, Kanpur addressed to the Director, Dr. C.R. Mitra, BITS.

M.A. Pai

I hope everything is well with you and the Practice School programme. Any pioneering effort has a certain gestation period in our country to be recognised and your tireless work at Pilani is bound to have its impact.

An extract from an article published in PRACOLLAR: 1980-81 entitled

"A View-Point on Practice School and M.E.(Coll.) at GRASIM : An Interview with Mr. P.A. Phadke, Vice-President - Grasim."

Q: BITS PS-II Programme is supposed to be a two-way Street. Both the host industry and students are supposed to give and take. How do you think have BITS students contributed to GRASIM in the last four years?

Ans: I think they have contributed considerably. In the Engineering Division good work was done in scheduling and calculation of idle time in the M/c shop. It helped us greatly in costing, etc. In the Chemical Division a lot of long term projects have been undertaken which our personnel do not find time for as they are loaded with routine work.

Q: Sir, don't you think we help in problem spotting in your industry by virtue of the fact that we are outsiders and so look at the system more objectively?

Ans: Yes, of course.

Remarks of Justice V.S. Deshpande, Chief Justice, High Court of Delhi in the Visitors Book of the Institute dated 1 April, 1979.

A unique institution which combines inter-disciplinary studies with practice schools to bring out the best from each student and apply it to the solution of the top priority needs of our country.

Justice V.S. Deshpande

Wonderful to find a University with standards of excellence in a rural area which unites physical and social sciences to help villagers.

June Starr
Wife of Mr. Scott H. Meadow

Remarks of Mr. Scott H. Meadow and Mrs. June Starr in the Visitors Book of the Central Library of the Institute dated 11 May, 1979.

I believe that BITS Pilani has the philosophy that is best suited for rural development in the 1980's. The enthusiasm and committed sense of problem. the faculty and students have demonstrated in the short time we were here gives us a great deal of optimism for the future of Indian Development.

Scott H. Meadow

An extract from the interview with Dr. Chandra of the Administrative Staff College of India published in Interface (Vol. 1, No. 1), April, 1979.

Dr. Chandra : As I see it, the PS program functions at three levels; a) the trainee, b) the host organisation and c) the Nation.

At the trainee's level, the PS gives me a chance to work via regular organisational environment and thus give him a taste of what might be when he is employed. Apart from helping to concretise his career goals and channelising his efforts more fruitfully, the PS also helps in bridging the gulf between the relatively protected classroom and the reality of job.

At the host organisation level, it gives us a chance to evaluate the output of the educational institutions without firm commitments on either side. Just as PS gives the student a chance to experience an organisation and decide if he wants to join, PS gives us a chance to evaluate the student a chance to experience an organisation and decide if he wants to join. PS gives us a chance to evaluate the student and to decide if we want him. Also it will be difficult for us to get such capable help at these low wages.

At the National level the PS programme should help in making educational curricula more topical, relevant and problem oriented. This is because in the PS both students and staff get a taste of real life problems and the solutions expected.

Dr. Chandra

Abstract from *Grasim Samdesh*, July-August 1979, p. 11

भारत में शिक्षा का नया प्रयोग

श्री पारैख द्वारा इंजीनियरिंग की नई शिक्षा पद्धति का उद्घाटन

गत १६ अगस्त को गौसिम अध्यक्ष श्री पारैख ने बी० आई० टी० एस० प्रेक्टिस स्कूल के द्वारा प्रारंभ की गई एम० ई० (कोलोबोरेटिव इन्स्टिट्यूट प्रोडक्शन) का उद्घाटन किया। इस अवसर पर कम्पनी के अन्य वारेण्ट अधिकारी श्री एम० कै० माहेश्वरी, श्री फडके, श्री राय मलिक आदि उपस्थित थे।

ज्ञातव्य है कि भारतवर्ष में शिक्षा का यह नया प्रयोग है, जिसमें कम्पनी में काम करने वाले इंजीनियरों एवं वैज्ञानिकों तथा साथ में अ० भा० स्तर पर चयन किए गए विद्यार्थियों को इंजीनियरिंग में उच्च शिक्षा दी जाती है। इस शिक्षा का मुख्य उद्देश्य विद्यार्थियों को व्यावहारिक तथा प्रायोगिक ज्ञान देना है, ताकि वे फैक्टरी के विभिन्न कार्यों को अधिक अच्छे रूप में समझ पर उत्पादन की क्षमता बढ़ा सकें। ज्ञातव्य है बिरेला इन्स्टिट्यूट ऑफ टेक्नोलॉजी एण्ड साइन्स, पिलानी द्वारा यह कार्यक्रम जुलाई १९७९ से कलकत्ता, बम्बई और नागदा में शुरू किया गया है। नागदा में आयोजित इस शैक्षणिक कार्यक्रम में १२ विद्यार्थी हैं तथा प्रेक्टिस स्कूल में ५ प्राध्यापक कार्यरत हैं। कक्षाएं रात्रि शाम को प्रेक्टिस स्कूल के सेमिनार हॉल में लगती हैं।

शुभारंभ के बाद बी०आई०टी०एस० प्रेक्टिस स्कूल के इंचार्ज डा० रमेश शिशु ने संक्षेप में इस नई शिक्षा प्रणाली के उद्देश्य एवम् शिक्षा विधि पर प्रकाश डालते हुए बताया कि उच्च शिक्षा के लिए अध्यापक के साथ-साथ विद्यार्थियों की भी पूरी जिम्मेदारी है कि वे नए से नए ज्ञान को अर्जित करने के लिए हमेशा तत्पर रहें और आत्म-शिक्षण पर विशेष जोर दें।

BITS has a unique programme of Practice School whereby the Institute is linked with its environment, and students and faculty get involved in real life problems for a total period of 5½ months or more in large industrial complexes, national laboratories, news agencies and publishing houses, etc.

- From Guidance Newsletter, University of Rajasthan, Jaipur.

A unique institution which combines interdisciplinary studies with practice school to bring out the best from each student and apply it to the solution of the top priority needs of our country.

1 April, 1979

- JUSTICE V.S. DESHPANDE
Chief Justice
High Court of
Delhi

Project Executive &
Head of Engg. Dept.

Agricultural Finance
Corporation Limited
Dhanraj Mahal
1st Floor
Chhatrapati Shivaji
Maharaj Marg
Bombay - 400039

4 October, 1979.

It is rather well-known that Engineers and Scientists become worthy citizens through their direct involvement in developmental activities. They become economic extraction of efficiency out of men, money and material. No classroom education would provide experiences while utilising the resources to face the problems and to find varied solutions. Therefore it is possible to be really useful and efficient only when knowledge is acquired from all corners. Here is the importance of Practice School where theoretical education is converted into useful practical training. We are thankful to BITS for deputing some of their postgraduate students on regular basis to work with our field engineers at the Command Area Development Projects, survey, planning and implementation at the first instance.

I congratulate you on your endeavour to focus the operating model of collaboration between university and professional bodies in search of knowledge.

K. ROY

GENERAL MANAGER

Corporate Mfg. Services
Jyoti Limited
Baroda - 390003

5 October, 1979.

Sometime ago I had an opportunity to meet your students of practice school during their industrial training in vacation with us and I was impressed with their participation and the outlook that they have developed towards their future career.

The task of providing systematic on-the-job training through practice school being undertaken by your Institute is of great significance not only in developing the students to become good engineers but also in bringing the institute and the industry close to each other.

NALIN H. SHAH

National Institute of
Oceanography
Dona Paula-403004
Goa, India

5 October, 1979.

BITS is well known for the services it has rendered in the field of education and deserves a great deal of appreciation.

We are fully aware of the scheme of Practice School because a number of students from BITS visited NIO for their practical training. We found your students extremely proficient in their job and well-trained to execute a scientific programme.

S.Z. QASIM

DR. AMARJIT SINGH
DIRECTOR

Central Electronics
Engineering Research
Institute
Pilani (Raj.)- 333031

5 October, 1979.

The system of practice school for the students is no doubt very beneficial to the young students, who in their student days gain practical experience of different industries and business organisations. This not only helps the students themselves, but also the host organisations. Apart from the work done on practical problems, the system establishes contact between students and prospective employers. We ourselves at CEERI have been very happy with the quality of work done by Practice School teams.

AMARJIT SINGH

-42-

9/1 R.N. Mukherjee Road
Calcutta - 700001

6 October, 1979.

I am also glad to know that it
is making good progress. I wish you all
endeavours. (BITS Practice School
success in your

L.N. BIRLA

-43-

VICE-CHAIRMAN

University Grants Commission
Bahadur Shah Zafar Marg
New Delhi - 110002

6 October, 1979.

I have personal acquaintance with the programme
'Practice School' by BITS Pilani which is considered to be
most successful and a novel experiment in our country. Although
it follows closely the pattern followed by the Massachusetts
Institute of Technology in USA, there are certain variations
which are suited to our country. The success of the practice
school can be judged by the number of the students who have
taken up this programme and are absorbed in the industry even
before they complete their degrees. I wish that most of our
Engineering Colleges adopt this programme and train students
in such a manner that they will be useful to the industry in
particular and the society in general. I wish this programme
to grow from strength to strength and be a pace-setter for all
other universities to follow.

B. RAMACHANDRA RAO

CHAIRMAN
TRAINING CENTRE

Central Food Techno-
logical Research
Institute
Mysore - 570013

8 October, 1979.

Since 1979 every year the Central Food Technological Research Institute, Mysore has been imparting training for about two months, during the summer vacation, to ten Practice School students of Birla Institute of Technology and Science, Pilani.

The training normally consisted of orientation lectures in food science and preservation and technology of all types of foods. This was followed by comprehensive lectures and demonstrations in instrumentation with applications in food research. Thus the trainees had a pre-view of the various phases of food science and technology, before they were asked to work on object-oriented investigation projects under the guidance of experienced scientists of the Institute. Such practical work exposed the trainees to varied aspects of research methodology. At the end of their work, the students were asked to report on and suggest open-ended projects as extension to their investigations in the form of seminars. This approach gave them an opportunity to put forth their ideas in solving problems, testing their innate capabilities and defending their work.

Apart from the lectures, investigation and seminar reports, two group discussions were arranged on topics of general interest to test the general knowledge and ability to put things in the proper perspective

Trainees were invariably accompanied by a senior staff member and this facilitated the coordination and evaluation work admirably.

From whatever little contact we have had with BITS students, we have found them quite intelligent and well-behaved, with an intense desire to profit from the exposure to the Practice School Programme in a research institute like ours. Such talented young men and women would be a great asset to the country. The Practice School Programme of BITS is therefore unique among similar In-plant Training Programme, mostly restricted to the engineering and technology institutions in India, in the sense that science students are also exposed to life situations during their academic career with careful supervision and guidance from academic staff, both from the parent as well as the host institutions.

I wish Practice School all success in the years to come.

S.P. MANJREKAR

Centre of Science for
Villages
Magan Sangrahalaya
Wardha - 442001

8 October, 1979.

The idea of bringing the students in direct contact with the conditions they are going to face after they complete their schooling is a sound one. This not only exposes them to the real field of activity but also helps in cross-fertilization of ideas of the younger generation with those of the established orders.

We, working in the field of technology transfer for the benefit of the rural poor with an aim that the S & T inputs help social justice along with increased production, are specially happy to observe that the practice school plans have an interface with the villages and their problems. With 80% of our people living in the villages no progress is possible until we touch the rural life. As till to date half the people of our land live below the subsistence level and more than half of the mandays in rural India still remain unutilised, the efforts of technological developments must take this challenge as priority number one.

Our experience with the practice school group which spent this summer 50 days at the Centre of Science for Villages was very fruitful and hence I hope that your special issue on Practice School will be a success in bringing home this need of the hour.

DEVENDRA KUMAR

PRINCIPAL

Delhi College of Engineering
Delhi

10 October, 1979.

I have been watching closely the evolution of the concept of the Practice School at the Birla Institute of Technology & Science for some years with great interest. I am really impressed by the purposive way in which the School is being operated. The follow-up action and the systematic assessment of the training programme is perhaps unique in the history of technological education in India. I have no doubt that other educational institutions could greatly benefit from the experience gained by the Birla Institute in this sphere.

R.C. NARAYANAN

DIRECTOR

-48-

I.I.T. Post office
Kanpur - 208016

10 October, 1979.

The Practice School is in fact entirely a new concept and phenomenon in the educational system in sharp contrast to the conventional Indian system. With the progressive changes in each walk of life teaching methods in education have also undergone great changes. The new programme is, in fact, of great educational value and significance in view of its emphasis on developing the talents of pupils by allowing them free hand for study and practice in the relative course of study. The teaching in the new system is not restricted to the instructions from books alone. In fact, the knowledge of books is translated into practice in the actual study so that it could generate interest in the students to utilise their sublime qualities and thereby have permanent imprints in their life. The child learns more through play and practice rather than by sitting at a desk and cramming voluminous books.

BITS has already done enough of pioneer work in the educational field and this will be its another landmark in initiating the new system of teaching.

A. BHATTACHARYYA

-49-

Dr. A.C. Parikh, Deputy General Manager, United Commercial Bank,
Calcutta : 13 October, 1979.

"BITS has certainly found a new path in educational system at graduate and postgraduate levels which is practical, and prudent, profitable to students and hence to the country as a whole. This being a practical innovation in the matter of integrated system, this flexible pattern and path finder Practice (Practical) School is worth adopting in other parts of the country. I earnestly hold the above view and I am very grateful for all facilities provided to me during my stay. I will cherish this in my memory.

A.C. Parish

Dr. Amalendu Bose, Chairman, Indian National Committee of International Council of Museums, Calcutta, 14 October, 1979.

I am happy to see that the expectations of the sponsors to develop a scientific approach and cultivate a scientific bent of mind for the students of BITS Pilani, are being fulfilled a group of dedicated faculty members aided by a well-knit administrative staff are largely instrumental for this process. The flexibility of degree programmes, the concept of practice school may result in establishing a strong linkage with the material world and may ultimately make the students useful members of the society. It will be worthwhile to watch the future progress of this Institute.

Amalendu Bose

SUPERINTENDENT OF
TRAINING

Steel Authority of
India Limited
Durgapur Steel Plant
Durgapur - 713203
Dt. Burdwan
West Bengal

15 October, 1979.

Under the Practice School scheme of Birla Institute of Technology and Science, Pilani a number of batches have come to our Plant for practical training. During that period a large number of students from other universities also come for vocational training. This has provided us an opportunity to directly compare the relative merit of the two systems. Undoubtedly, the Practice School system of vocational training stands out distinctly by the amount of opportunity it provides the trainees to learn, the systematic and regular evaluation which helps in improving the training as it continues and the presentation by the trainees; and makes it a unique feature.

During our discussion with other visiting professors of different universities, we have recommended them to follow this Pilani pattern of systematic scheme so that the trainees do benefit out of it.

I wish this Practice School more and more success in diverse fields in future. As an ex-student of Birla Engineering College, Pilani I feel proud at this achievement of our Alma Mater.

S.K. DAS

Chairman, Indian
National Committee for
International Council of
Museum

Camp Pilani

16 October, 1979

It is a common grievance of the university graduates that when they come out of the university, they invariably find that education imparted to them in the universities is of very little relevance to the materialistic world. The textbooks read by them and the experiments conducted by them with the help of sophisticated instruments are so different from the actual conditions outside that they feel downhearted because of the dissimilarity of the external world with the academic world with which they were closely associated for four to five years. What happens is that, although university curriculum has been carefully planned and experiments have been carefully selected, in reality the environment in which they are asked to work covers multidisciplinary fields and a student passing out in one particular discipline does not know how to handle the situation.

One of the new techniques used in some of the Western universities is the introduction of practice school for students who are shortly going to pass out of the university. For practice school training students are sent to industrial complexes, research and development centres, national laboratories, etc. where they are exposed to real-life situations. The student learns how to handle the situation, utilising the knowledge acquired by him during his studies and also how to adapt it to the changing needs of the environment. This short-time practice school experience gives the student confidence as to how a real life situation can be tackled even by utilising makeshift technology.

BITS is a pioneer in introducing the practice school system in India and this has done immense good to the young generations who will easily find solutions to real-life problems when they come into contact with them after passing out from the University.

AMALENDU BOSE

PROF. A.K. JALALUDDIN
DIRECTOR

Directorate of Adult Education
Ministry of Education and
Social Welfare
Government of India
34 Community Centre
Basant Lok, Vasant Vihar
New Delhi-110057

17 October, 1979.

For some time now, several educationists have felt that perhaps our educational system has come away from the community and social reality. It is, therefore, heartening to note that an institution like the Birla Institute of Technology and Science is taking a lead in bringing education and real life closer. I am sure that this experience will lead to significant strides in this direction. The Practice School movement initiated by BITS is bound to stir the system of higher education in our country.

A.K. JALALUDDIN

DIRECTOR

Regional Research Laboratory
(Council of Scientific &
Industrial Research)
Jammu (Tawi)

26 October, 1979.

The practice school programme, an innovation brought into practice first by Birla Institute of Technology and Science, Pilani (Rajasthan), embodies the training of the students in real life situations such as research laboratories, banks, industries, etc. during the course of graduation. It trains students to give seminars for the better expression in the competitive professional world and to conduct group discussions. The theme of the programme is excellent and really bridges the university atmosphere with the professional atmosphere. I have observed that the students after this training become self-reliant in their profession. It is noteworthy to mention the role of the practice school faculty also who, besides their allotted work, involve themselves in the laboratory projects for success. Practice School system of this type is bound to produce intelligent, competitive professionals for the betterment of the country rather than classroom-taught professionals, who are frustrated and detached from real life situations.

C.K. ATAL

Dean, School of Physics

Tata Institute of Fundamental
Research
National Centre of the Govt.
of India for Nuclear Science
and Mathematics
Homi Bhabha Road,
Bombay - 400005.

30 October, 1979

One of the oft-repeated criticisms about our educational institutions is that their educational methodologies are not relevant to the needs of the present society, and the institutions that employ the students coming out of places of higher learning are always quick to point out the mismatch between their needs and the students' training. It is my contention that it is impossible for any type of educational institution to provide students a training that satisfies exactly the needs of the employers, and this task is rendered more difficult with the accelerated changes in all spheres of human activity and the specialised needs of many such activities. What educational institutions can hope to do is to provide their students with experiences taken from real life, while they are being prepared to enter the cold world waiting to challenge them. Hopefully this would increase the trainability of a student so that when faced with the challenges of the modern society, he can rise to the occasion.

Such endeavours to increase the trainability of the student involve a close collaboration between educational institutions and the prospective employers. In Pilani, BITS has been carrying out interesting experiments in the practice school concept which they have built up to a praiseworthy level of achievement over the past few years. While "factory training" was common to many engineering curricula in earlier years, the concept of practice school goes far beyond the earlier practice of factory training. In the practice school, the extensive collaboration between the men in the industry and the faculty of the educational institution is the main reason for its success and the extension of the practice school to Humanities also is a welcome educational innovation. The country should be eagerly awaiting the results of this experiment that has been carried out over the past few years in Pilani.

B. VENKATARAMAN

DIRECTOR

National Institute of Bank
Management
85 Nepean Sea Road,
Bombay - 400006

2 November, 1979.

In the five years of NIBM's association with this programme, the NIBM has benefited no less than the students of the programme. The NIBM is proud of its role in this unique two-way educational process where, by a controlled exposure to a real-life environment, young men and women on the threshold of life are helped to acquire maturity and self-confidence. It was our association with the Practice School that emboldened us to be an active partner of BITS M.E. (Collaborative) Programme in Industrial Development, the first batch of whose students is currently stationed at NIBM.

P.D. KUSDEKAR



CHAIRMAN & MANAGING
DIRECTOR

Development Consultants
Private Limited
24-B Park Street
Calcutta - 700016

3 November, 1979.

Development Consultants Private Limited has been proudly associated with this programme for the past few years and is also happy to join the latest project of M.E. (Collaborative). I am very glad to welcome the idea of the special issue devoted to practice school and I am confident that further dissemination of ideas and information on this unique innovation in Indian education will reach a wider professional and educational world.

S.C. DUTT

DIRECTOR

National Council of Educational
Research and Training
Shri Aurobindo Marg
New Delhi - 110016

8 November, 1979.

In order to make education relevant to the community and to the individual, it is necessary to bridge the gap between the world of letters and the world of work which have been traditionally kept separate due to an unhealthy influence of scholasticism. Educators all over the world have been feeling the need for bridging this gap and the earlier it is bridged the better. The introduction of work experience in the schools following Education Commission's Report was the first attempt in this direction and it followed in this respect the tradition of basic education in this country. Subsequently, vocationalisation of higher secondary education has also received the attention of educators and some states have already introduced it and others are preparing for it. There is, however, still a feeling that the courses offered in the university should also provide facilities for practical experience of work while they learn in the university, so that the learning of students can become more meaningful and, when they come out of the university, they are better prepared to enter the world of work. In this respect BITS has made a very good beginning and I hope that this initiative and innovation of BITS through the organisation of practice school programme will be emulated by other institutions as well.

SHIB K. MITRA

DIRECTOR GENERAL

National Council of Applied
Economic Research
Parisila Bhawan, 11
Indraprastha Estate
New Delhi-110002

13 November, 1979.

The BITS Practice School Programme, a "real-life professional experience" has now been running successfully since June 1976, in the National Council of Applied Economic Research. This broadbased, flexible educational innovation, I feel, is in tune with the needs of the young technologists; and I hope that through a still closer cooperation between the two institutions, it will enter a new phase of even more relevant educational innovations.

We have certainly found the presence of the BITS scholars stimulating.

PRAKASH TANDON

CHIEF PLANNING &
PROGRESS ENGINEER

Development Consultants
Private Limited
Consulting Engineers
24-B Park Street
Calcutta - 700016
Branches : New Delhi
Bombay Madras

16 November, 1979.

The nation needs more professionally trained as well as qualified personnel to achieve higher and higher levels of technological and economic self-sufficiency. The Practice School concept of the Birla Institute of Technology and Science has given a new direction to engineering education in India. Exposure to the application of engineering principles in industry at earlier stages develops an interest in the students and creates enthusiasm in the learning process. In the consulting engineering profession knowledge of fundamental principles has always been of prime importance. It is hoped that emphasis will remain on this aspect in the Practice School concept also.

I am sure that this is only a beginning. The nation has to advance, and advance it will. It will advance in knowledge, in wealth, in prosperity, in self-sufficiency and in all this advancement, personnel who learnt while they worked and practised while they learnt will play a significant role. I, for my part, am proud to be associated with this endeavour and am gratified to contribute my mite towards its success.

S.B. MAJUMDAR

Development Consultants
Private Limited
Consulting Engineers
24-B Park Street
Calcutta - 700016
Branches : New Delhi
Bombay Madras

17 November, 1979.

For the past few years, our organisation has been participating in the BITS Practice School Programme. Every semester, several students from your institute are assigned to various divisions in our organisation.

During the current semester, two such students are working in the Management Consultancy Division. Having closely watched their performance and progress, we are convinced that your institute is really doing well.

The day M. Sashidhar and B. Srinivasan walked into our division for the Practice School-II Programme was one of the pleasant surprises. Instead of two callow youths, we saw two youngsters beaming with confidence.

Academic knowledge and brilliance can in no way substitute the sense of commitment or the willingness to put in the best. Sashi and Srini showed these very attributes and smiled as they did.

We shall miss them.

BHASKAR BOSE

Executive Director &
Head of the Department
Process Designs

Development Consultants
Private Limited
Consulting Engineers
24-B Park Street
Calcutta - 700016
Branches : New Delhi
Bombay Madras

19 November, 1979.

The new step in establishing the Practice School will definitely go a long way in bridging the gap between theory and practice. I am confident that the exposure of the students from the theoretical field to the practical aspect of engineering, i.e. from classroom practice to professional practice, will go a long way in making the students confident in facing the problems more realistically. I wish the scheme every success and the students a bright future.

N.C. CHAUDHURI

VICE-CHANCELLOR

University of Delhi
Delhi - 110007

21 November, 1979.

BITS has done yeoman's service to the society and has earned a name for itself in the academic world. The useful service that it has been rendering to the nation and the very good students that this institution has produced, are an asset to the nation. I am sure the Special Issue that it is going to bring out will include a description of its thoughtful programme, and reflect the dedicated efforts of the members of the staff.

R.C. MEHROTRA

Extract from 'A View-point on Practice School & M.F.(Coll.) at GRASIM : An Interview with Mr. P.A. Phadke, Vice-President, GRASIM, Nagda, published in PRACOLLAB, Vol. 1, No. 1, December 1980.

Q: BITS PS-II Programme is supposed to be a two-way street. Both the host industry and students are supposed to give and take. How do you think have BITS students contributed to GRASIM in the last four years ?

Ans: I think they have contributed considerably. In the Engineering Division good work was done in scheduling and calculation of idle time in the M/c shop. It helped us greatly in costing, etc. In the Chemical Division a lot of long-term projects have been undertaken which our personnel do not find time for, as they are loaded with routine work.

Q: And what, in your opinion, has been GRASIM's contribution to the students?

Ans: By a practical training of this kind, the outlook of students changes. They are better prepared for future by developing an aptitude for field work and problem solving in industry.

An extract from a letter dated 8 August, 1983 addressed to Dr. V.V. Mandke, Dean, Practice School Division.

This is to convey our gratitude for conducting PS-I this year at HAL, Nasik. Your students have made good impression regarding their behaviour, discipline, keenness to learn and a sense of maturity as compared to other engineering college students. Credit goes to you and your institution.

Mr. N. Das,
Senior Project Manager,
H.A.L., Nasik.

Extract from 'A View-point on Collaborative Education - An interview with Mr. I.H. Parekh, President, GRASIM, Nagda, published in PRACOLLAB, Vol 1, No. 1, December 1980.

In conventional industrial training, the students are not given any specific problems and as such their approach is not in depth to any specific problem. As a result, in an Industrial Training Programme, generally most of the students go through the operational and plant layout details in the industry to which they are assigned. This type of training to some extent looks to me superfluous and the knowledge they gain is not of much significance.

In the case of BITS Practice School Programme, the students are directly attached to the industry wherein specific assignments are given in consultation with the technical personnel connected with the industry. The students are therefore directly involved in the very important problems of the industry and hence gain much more useful knowledge.

Extract from 'Collaborative Education - An Innovative Step : An Interview with Mr. M.K. Maheshwari, Vice-President, GRASIM, Nagda, published in PRACOLLAB, Vol. 1, No. 1, December, 1980.

Q: The main objective of BITS Practice School programme is that students learn from a six-month exposure to real-life industry. How successfully, do you think, has this objective been attained in GRASIM ?

Ans: The best impression would come from the students themselves. As an onlooker, I find the P.S. Programme quite useful. Firstly, we provide the students with real life problems right at the site which gives them an exposure to the actual nature of things. Secondly, they gain a lot by inter-acting with the factory people everyday.

Remarks of Prof. John M. Ziman H.H. Mills, Physics Laboratory, Tyndall Ave., Bristol, B58 ITL, England in the Visitors' Book of the Institute, dated 2 December, 1979.

Self-reliance and intelligence characterize the programme of BITS, these are the qualities that will distinguish its students in the service of their country. We thank you for this most inspiring visit.

J.M. Ziman

Remarks of Sir Douglas Logan, Hon. Deputy Treasurer and Mr. T. Craig, Asstt. Secretary General of the ACU in the Visitors' Book of the Institute dated 6-2-80.

It was a real pleasure to visit BITS. It is an institution which has reassessed its objectives and is implementing its revised programme. There is an air of purposeful activity in the place and my only regret is that more of my colleagues on the Council of the Association of Commonwealth Universities were not able to share this valuable experience.

Sir Douglas Logan

Remarks of Shri S.B. Mazumdar and Shri T. Bharadwaj of Development Consultants Pvt. Ltd., Calcutta dated 18 July, 1979 in the Visitors' Book of the Institute.

I am impressed by the systems and methods of BITS and the care taken for each student and hope for the success of M.F. Collaborative Programme.

S.B. Mazumdar

-66-

JAMES R. KILLIAN, JR.
Chairman of Corporation
Massachusetts Institute
of Technology

77 Massachusetts Avenue
Cambridge,
Massachusetts 02139

4 December, 1979.

The Birla Institute is to be congratulated on its development of a successful Practice School. In achieving this program to supplement its work at Pilani, Dr. Mitra and his associates at the Institute have pioneered an educational arrangement in India that has proved to be exceedingly useful and successful at my own institution, M.I.T. here in Cambridge.

I derive much satisfaction from the overall development and growth of the Birla Institute and from the way that it has innovated in the field of technology and science.

J.R. KILLIAN, JR.

-67-

OFFICE OF THE CHANCELLOR

Cambridge,
Massachusetts 02139

11 December, 1979.

It seems to me that the development at the Birla Institute of a Practice School is an important educational step, for the Practice School concept combines the best of classroom education and practical experience in ways which enhance the values of each to the educational development of the engineering student.

PAUL E. GRAY
CHANCELLOR



3/4 - 5/4

DIRECTOR AND CHIEF
DESIGN ENGINEER

M.N. Dastur & Company (P) Ltd
Consulting Engineers
P-17, Mission Row Extension
Calcutta - 13

21 December, 1979.

As an organisation attached to BITS Practice School Programme we wish them all the best.

D.S. DESAI

-59-

An article by Mr. K.N. Khemka, President, Indian Rayon, published in Practice School Bulletin, Vol. 3, No. 3, December 1979.

In our country I have seldom come across a fruitful interaction of an Industry with a University. It is usual and has been almost accepted as a tradition for academicians in the Universities and technocrats in the Industry to look down on each other. This is probably because an academician thinks that he is superior to a technocrat because a technocrat can only produce the required end-product and cannot understand the basic principles and theory underlined in any process. On the contrary, a technocrat thinks that he is superior to an academician because only he can deliver the required goods, whereas an academician is incompetent for it. This, no doubt, is a sad commentary on the existing state of affairs in our country. Further, no one can deny the fact that it is essential to percolate the additional knowledge gained in the University to the Industry for its upliftment. In this connection, for the first time in my industrial experience of over 25 years, I am having an opportunity to interact with a Professor and a team of enthusiastic students from no less an esteemed university than the Birla Institute of Technology & Science, Pilani, who have opened Practice School programme for the benefit of both the Industry and the University in our organization. This has been possible because of the policy of BITS in which a student undergoes practical training as a part of his academic curriculum for a period of about 6 months in an industry where a station of the BITS Practice School is opened. I am given to understand that BITS is the only University in our country which has such a practical training programme as part of their curriculum. We are happy and proud to have one such station in our organization too.

K.N. Khemka

A news-item published in The Times of India dated April 14, 1980 on Director C.R. Mitra's visit to China.

CHINESE VARSITIES SEEK BITS COLLABORATION

NEW DELHI, April 13 (PTI) Chinese universities have sought collaboration with the Birla Institute of Technology and Science (BITS) in Pilani in the field of Practice School education.

According to a BITS press release, Dr. C.R. Mitra, the Institute Director, has just returned after a three-week visit to China in connection with working out details of such a collaboration.

BITS evolved the system in 1972 under which students of engineering and science combine classroom education with inhouse, on-the-spot training in engineering and manufacturing industries.

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Extract from the Convocation Address delivered by Dr. B.Ramachandra Rao, Vice-chairman, U.G.C., New Delhi, at the university of Poona, 1980.

-----I cannot but refer to the experiment of the Birla Institute of Technology (and Science) Pilani, which has started a comprehensive programme under the name of Practice Schools. This is a highly successful experiment in university-industry collaboration which to a large extent has yielded meaningful results not only in enhancing the practical skills and competence of their graduates but also in gaining first hand knowledge of the pressing problems of some specialised industries. In this manner, they have not only been able to increase their job potential but also earn scholarships for their maintenance of these industries for nearly half of an academic year. Systematic contact programmes with the industries enabled BITS to interact with a large number of industries, both in the public and private sectors to carry out the Practice School programme successfully. I wish that our engineering and technology departments try out this example in order to contribute to the proper training and placement of our engineering students.

B. Ramachandra Rao,
Vice-chariman,
U.G.C. New Delhi.

Remarks of Shri Yogendra Makwana, Union Minister of State for Home Affairs in the visitors Book of the Institute dated 31 December 1980.

I am really impressed by the Birla Institute of Technology and Science, Pilani. The new method of education and the new technique developed here can guide our other educational institutions in the country,

Yogendra Makwana

Remarks of Mr. Walter Whitham, Vice-President, Cochran Tool Design Ltd., Ontario, Canada in the Institute's Visitors' Book on 16 February, 1981.

Very impressed with your approach to the course where all students to basic courses for the first years then were able to attend Practice School in the last year. An approach that I am sure we could use at home.

Walter Whitman

An extract from an article entitled 'Practice School-A Point of View' published in The Vidya Vihar Bulletin's special issue on Practice School, 1980.

HARSH VARDHAN
Director, Central
Scientific Instruments
Organisation
Chandigarh.

Thus reduction of the existing course contents, addition of some new and relevant topics, and reorientation of the technique of imparting knowledge and training to the students have not brought about much of the change so keenly sought for. It is in this context that the Practice School system initiated and devised by the Birla Institute of Technology and Science has been perhaps the only approach towards achieving the above objectives in a completely unclassical manner as far as the Indian educational scene is concerned. It not only provides an opportunity for greater interaction with the real life situation and tackling real life problems for a variety of applications but also permits choice of assorted combinations of tasks to suit particular mental frames. Another important way in which the Practice School system is useful is the possibility of making the student aware of his own performance and permitting him the opportunity of mending his performance, if he so desires. It was because of these considerations that I encouraged and promised my support to the Director and the faculty of BITS right in the initial stages and am happy to continue to extend this on behalf of CSIO even now. I hope that this joint effort in making the education relevant will grow.

An extract from an article entitled 'BITS Practice School Programme at Nagda' published in The Vidya Vihar Bulletin's special issue on Practice School, 1980.

INTERVIEW WITH SRI I.H. PAREKH
President, Gwalior Rayon,
Nagda.

Q. The practice school programme is supposed to bridge the gap between the classroom and the real environment in which a student will find himself sooner or later. How far do you think this is being achieved?

A. What I find in India today is that this gap increases as we go to higher levels, i.e. from undergraduate to doctoral levels. I feel that research work must be relevant, and an exposure to the industry, such as the PS programme provides, contributes to one's thinking on practical lines.

Extract from an article entitled 'Views on Practice School Programme' published in The Vidya Vihar Bulletin special issue on Practice School, 1980.

V.T. MOORTHY
Chief Engineer, Hindustan Aluminium
Corporation Renukoot

As a professional engineer with a reasonably long span of practical experience, I would like to sum up my observations that a fresh engineer to be successful in life should acquire a sound base of engineering theory on inter-disciplinary subjects during his academic life and he should avail himself of the opportunities for practical training facilities provided in some of the large industries. As one associated with the practice school programme of BITS at Hindalco right from its inception in the capacity of a consultant-cum-coordinator, I firmly believe that PS programme of BITS provides sufficient opportunities to a student to develop his own imagination, initiative, and creativity. Practice school exposes students to the real life of an engineer in an entirely different atmosphere and working environment. The field-training in industries brings them in close contact with the workmen of the factory. In the process they learn the major aspects of human relations, labour laws, and industrial discipline, etc. All these are useful in their further career.

The Hindalco management has appreciated and recognised the work done by PS students and has offered them cash awards, etc. The management realises the importance of PS training and has specifically relaxed its recruitment procedures to give preference to BITS students who have undergone their PS training.

In the end, I would like to record that BITS PS Programme is indeed beneficial both to the students as well as to the industry and I wish all success to this programme.

Extract from an article 'Towards Technical Education' .
(published by V.V.B. sp. issue, 1980).

J.G. VED
Deputy Manager, Maintenance Planning Cell
Century Rayon, Kalyan

The experiment I have discussed above has been successfully implemented by B.I.T.S. through its Practice School programme. This I state from my own experience of two years with the programme as a professional supervisor and expert to examine and scrutinize the feasibility of the work done by the student-faculty team. To tackle industrial problems, knowledge of different disciplines is required and we find that the technical grasping of BITS students is much superior to that of other trainees, and this we appreciate. BITS students have got the capability to take challenges and they usually succeed. Their approach is positive and they have the desire to get results. We are proud of the students who can put forward arguments and defend their results.

Extract from an article entitled 'A Boon to Graduating Students' (pub. in V.V.B., sp. issue, 1980)

T.A. VENUGOPALAN
Director,
Research & Development Department
Hindustan Aluminium Corporation
Renukoot

The Practice School system has definitely made a big impact on the educational system of the country. Many other universities have come out with the same idea of Practice School system; and a number of industries, establishments, research organisations, and banks, etc. have offered their help and cooperation to train the students. No doubt, this type of coordination between universities, industries and other establishments will go a long way in making the country prosper.

An extract from an article entitled 'Significance of the Practice School Programme in the Indian Context' (V.V.B, sp. issue, 1980)

K.S.M. SASTRY
Assistant Director
Regional Research Laboratory
Jammu-Tawi

The teaching system followed in a majority of educational institutions in India is very old and is yet to change according to the needs of students and developing modern technology. The students who pass out from these institutions hardly have any significant knowledge about the immediate utility and application of technology. Sometimes the outstanding performance in their academic career remains only a record on a piece of paper, with very little or no significance in the actual technological sphere in which every student has to work one day or the other. Therefore, some of the recent reforms brought about by Birla Institute of Technology and Science (BITS), Pilani to help students to become mentally prepared to face the open-ended real-life situation are very significant and laudable.

The Practice School has been introduced for the first time in India by BITS, Pilani, as a reform to orient the education system and to meet the rapidly changing needs and challenges faced by technologists. The practice school method of education aids in promoting a controlled simulation of the real life situation to create opportunities, whereby the universities and educational institutions are linked with industries, national laboratories and other research institutions during the course of study. The curriculum of the practice school encourages a formal method of atmosphere whereby the

tradition-bound orthodox system of education is linked with real-life environment, and this has to be understood by the trainee during the educational process. Practice School is nothing but an integrated total programme where the students and the faculty get involved to convert their theoretical knowledge of the classroom into professional application in real life problems. The Practice School helps in generating and channelising the efforts to build the essential bridge between purely theoretical educational world and the practical professional world. Practice school also forms new blood in the veins of science and humanities, constituting a radical change in the development of educational world without any parallel. Under this programme the students have to undergo the rigour of the professional world in form as well as in substance, thus exposing themselves to the field where they can beneficially utilise their theoretical classroom knowledge to solve real professional problems of life and for its better utilization in the real economic sense.

Extract from an article entitled 'Concept and Relevance of Practice School System (V.V.E, sp, issue, 1980)

S.C. JAIN
Scientist,
Chemical Engineering and Design
Regional Research Laboratory
Jammu-Tawi

Practice School Programme is a movement in education which is concerned with the method of acquiring information, skill, reasoning ability and other educational values. It is a movement aiming, in general, at making methods of learning as similar as possible to those suited to real life. In fact, the extent to which a person utilises his learning in a wide range of affairs depends upon the alertness and the aggressiveness with which he puts his experiment to work.

In the engineering/technical/professional world practice school is all the more meaningful since an engineer technologist has to implement in reality the scientific knowledge that he gains during his educational career. It is rightly said that theory without practice is futile and practice without theory is bling.

The concept of Practice School as introduced by BITS, Pilani involves the participation of students during their final year of degree programme in real life problems in industry and other organisations where they are likely to continue their professional career. The design of Practice School programme for any student takes into account the educational background and its evaluation into the live environment of the professional world so that he gets an opportunity to apply his classroom knowledge to real-life situations.

Extract from an article entitled 'A New Shade of Education' (V.V.E, sp. issue, 1980)

PRABHAKAR K. RANGOLE
Scientist and Project Coordinator
Communication Systems Division
Central Electronics Engineering Research Institute
Pilani

The Practice School mode of learning offers an exciting experience as compared to routine practical training of graduating engineers. Not only do the students and the faculty members get exposed to real-life problem solving situations, but it is also a thrilling experience for the consultant from the host organisation or the industry to sort out relevant problems for solution within a limited time span, and adopt results for further improvement of efficiency or alternate methods of operation. In the routine mode of work such problems are left unsolved. But the arrival of a team of young motivated students, guided to some extent by faculty members and dedicated to solve problems, even if a few aspects of knowledge lie outside the scope of their classroom learning, is the most coveted extension of facilities for the consultant. This process of learning is not unidirectional. If confessions are extracted from consultants, I am sure, there would be a frank admission of their learning in the process of teaching. That too, learning, relevant to the environment in which they are already working.

BITS having extended the Practice School coverage to a large number of organizations involving private industrial houses, consultants, laboratories and government and public

sector organizations for the last six years or so, it would have been less surprising if the host organizations did not ask for the natural extension of the idea of cooperative education. This response was promptly forthcoming and it is gratifying to note that the idea has been implemented by taking the faculty and the classroom setting to the environment of the host organization. This ensures a two-way expertise relevant to the needs of the country the host organization is catering for.

Extract from an article entitled 'Placement of Management Graduates
(V.V.B. sp. issue, 1980)

M.N. KULKARANI
Management Consultant
Administrative Staff College
of India
Hyderabad

The Practice School concept of BITS is an experiment in placing their M.B.A. graduates and others in good organisations after appropriate work-orientation, so that the graduates would feel rewarded both in terms of monetary and managerial gains.

The job training before graduation or practice school training is intended to help the students understand, (a) the work environment (b) mechanics of doing a particular task, (c) pressures, conflicts and tensions involved in carrying out tasks to obtain fruitful results, and (d) the relevance of management concepts to solve live problems of a particular organisation.

I have seen some of BITS practice school students working in several work-organisations as part of their graduate or post-graduate curriculum.

Extract from an article entitled 'View on Practice School'
(V.V.B. sp. issue, 1980)

INTERVIEW WITH DR. R.K. PACHAURI
Director of Consulting, Administrative
Staff College of India
Hyderabad

Q. You have been taking keen interest in our practice school activities. Will you please express your views about the educational and professional value of this programme?

A. About the educational value of this programme, I feel that there is a good scope of learning by getting involved in research activities. Later, when the student enters a profession, he can apply some of the knowledge acquired here.

Q. Is this programme contributing to the development of your organisation?

A. The answer is both yes and no. Yes, if the student is assigned a right kind of work and given a right kind of opportunity. Though the work done by students can't be said to be very useful to the host organisation, yet one has to look at students' limitations also. We shouldn't expect them to do something very extraordinary. The main advantage to the host organisation is that every semester, we have a group of students, though freshers, to work for the organisation.

Extract from an article entitled 'The Value of Practice School
in Higher Education' (V.V.B. sp. issue, 1980)

INTERVIEW WITH DR. A.C. PARIKH
Assistant General Manager
United Commercial Bank
Calcutta

"What I observe is that the grounding of BITS students is excellent. Their grasp is very good and they are capable of undertaking with confidence any task which is assigned to them. The remarkable thing is that whatever be the area of their specialisation, they have been able to handle economic problems and offer useful suggestions for their solution".
Asked about what made BITS students unique in their achievement, Dr. Parikh observed that they are very well prepared to face situations in real life because of the kind of education that has been imparted to them earlier. Offering of courses in Mathematics at an early level, for example, is very helpful. In situations where others would get baffled, BITS students, intelligent and capable as they are, keep their wits together and apply their mind with confidence. He added: "What has impressed me most is the analytical ability of BITS students; their minds are sharp and they start working on any problems given to them without any hesitation. To others it may be necessary to explain everything. But BITS students have the ability to feel their way to the solution."

Extract from an article entitled 'BITS Practice School - An Innovative (V.V.B. sp issue, 1980)

J.I. LEWIS
Deputy Personnel Manager
Century Rayon Kalyan

Century Rayon has been associated with B.I.T.S. Practice School Programme for the last four years. The success of this programme requires total involvement of both the students and faculty as well as the host organisation. The students are assigned projects with due consideration to the duration of the programme. Besides, seminars and meetings are also conducted with the students and faculty to keep in touch with the progress of their project work. Once the projects are through, they are scrutinized by the Development Cell, and, if found feasible they are also implemented. As a measure of further incentive these students are interviewed for jobs and if found suitable, they are absorbed. Also, suitable awards for proficiency are introduced for any efforts leading to increased productivity. The Practice School students are by and large hard working and sincere and they do a much better job of this assignment, as compared with similar other trainees. Through this programme, the host organisation is also benefited in a certain way. More fruitful results are achieved at a relatively easy follow-up because of very helpful approach adopted by these students.

This new approach of education, as can be seen from the B.I.T.S. Practice School, should be mobilised across the length and breadth of the country so that the rest of the institutes can try to emulate this system of result-oriented education and thus help fill the vacuum. To motivate others and to mobilise the opinion of such experiments, there should be debates, seminars and discussions organised at various levels. Mass media like the radio and television should also be put into operation so that the message reaches every corner of the country.

Extract from an article entitled 'Practice School - A Perspective' (V.V.B. sp. issue, 1980)

V.N. VASHIST
Chairman
Industrial Survey Division
Regional Research Laboratory
Jammu-Tawi

Men who matter know fully well that the present system of imparting education has miserably failed to meet the growing needs of science, technology and the society. A degree holder from a university enters the practical world with great expectations but very soon finds himself a stranger. He is just not equipped to face real life problems.

Practice School concept provides the first jolt to a student who is only trained in a classroom. BITS, Pilani is the first university in India to have ventured to conceive it and to transform it into reality.

article
Extract from the / Practice School at Grasim (V.V.B., sp. issue
1980)

INTERVIEW WITH SRI SHAILENDRA K. JAIN
Vice-President
Gwalior Rayon, Nagda

Question: In what way is BITS PS programme novel or innovative?

Mr. Jain: I think it is innovative. First of all, such a training Programme does not exist in many countries. Further, it is different from the conventional training programme in the sense that the students are under close supervision of their faculty. The industry people cannot devote much time to students for obvious reasons. Therefore, this guidance from the faculty and the constant interactions go a long way in properly channelising the students' effort. This is how, I believe, the P.S. programme is different from the conventional training where students are either generally left to themselves or get little guidance from the host organisation for gaining familiarity with the industry.

Question: Do you think it is relevant in the Indian context?

Mr. Jain: Yes, certainly it is. In fact, it is relevant not only in the Indian context, but in every context of higher education. The P.S. programme not only serves the purpose of exposing you to the actual industrial environment but it also trains you to deal with people, which is one of the most basic and vital components of any industry. In the USA students get exposure to industrial environment through customary summer employment and also get the feel of real life industrial problems through the research projects assigned to the university by industry. Thus students before taking up a job in any industry, do obtain a feel of the industrial working which becomes useful to them when they become regular employees

of a particular organisation. This sort of rapport between the student community and industry is not common in our country. Viewed in this context, the P.S. programme is definitely an innovative step in the right direction.

Question: But could this not be done in the initial period of one's job career when almost all industries employ the graduates as trainees for the first one or two years?

Mr. Jain: As I pointed out earlier, the faculty supervision does a lot in leading the students to correct approaches to problems. When we recruit trainees, they do get guidance from their Departmental Heads but they soon get involved in the routine work. A student who has had a prior exposure to such kind of work will proceed more efficiently. He will not feel lost. Definitely, a student who has undergone PS training will learn faster and understand the work better.

Question: Our Institute has an interdisciplinary and broad-based approach to education. Here at P.S. students from different disciplines work on a project as a team. In what way is a multidisciplinary approach to problem solving beneficial?

Mr. Jain: Not only is it beneficial but I would say it is absolutely essential. In industry, no real life problems can be compartmentalised into particular disciplines. So a multidisciplinary approach to problem solving becomes vital to arrive at any meaningful result.

Question: From your past experience with our P.S. students at Nagda, can you say how their work has been useful to your organisation?

Mr. Jain: Well, the awards your students have been getting in the past are enough indication of this fact. In most cases,

we may not derive direct monetary gains from the work of the students, but indirectly they are beneficial to us in the sense that they focus our attention on certain vital issues which otherwise would have probably escaped attention.

Question: Do you think that the stay at a P.S. station helps a student in his career identification, or putting it more clearly, does it help him in identifying his interest professionally?

Mr. Jain: Well, I would say it definitely does help. You see, at the P.S. Station you have the rare opportunity of meeting people from a broad spectrum of disciplines. You come across administrators, people who are incharge of designing, people who are associated with R & D, etc. Now you interact with such people who represent a wide cross-section of the various disciplines and if you are not sure of what you would like to become after you graduate, you can easily identify yourself with that particular discipline and gauge your suitability for the career you have in mind for yourself.

Extract from the article, 'Practice School- A view point (V.V.B., sp issue, 1980)

Practice School - A View Point

D.V. Rukmini
Statistician,
National Council of Applied Economic Research
New Delhi

By and large it was found that most of the Pilani students proved to be good and sincere workers with a zeal to learn. However, practice session of one year may prove more profitable both for the students and the faculty.

Extract from the article, 'BITS Practice School Programme' (V.V.B., sp. issue, 1980)

GUSTAD B. MEHTA
Deputy Manager,
Maintenance Rayon Division
Century Rayon
Kalyan

Exposing young enthusiasts, before they leave engineering colleges, to practical problems/training during the tenure of their course will make them appreciate and understand better the life and functions of an engineer in his chosen discipline. Hence the paramount importance of Practice School Programme as devised and implemented by the Birla Institute of Technology & Science, Pilani. The country expects us to strive our hardest for its progress so that India occupies a place of honour in the comity of nations. This can be achieved

only if each one of us puts in a hard day's labour for the generation of goods and wealth. Practice School Programme is formulated to achieve this basic objective also.

The students' suggestions for the exhaust system from our five halls have confirmed our own study of the much larger pressure drop in the system, necessitating an increase in the speed of exhaust fans and air washer fans. The speeding up job is more than 90% over by now.

Hence the interaction of fresh brains from college with the industrially live situations in close consultations with the engineers who have passed the prime period of their lives in industry, can lead to solutions of some of the industrial problems which will benefit not only the host organisation but also the student by building up his self-confidence, a sense of achievement and belonging. This will spur him on to win more laurels in future.

Alongwith the students, the resident faculty member is also exposed to the many knotty industrial problems and gets the opportunity of looking at and probing them first hand from many viewpoints including academic. This will broaden his outlook and enable him to impart such insights into situations to his future students in classrooms. Thus future students will stand to benefit from present Practice School Programmes and this can be further strengthened if professional engineers, who have some achievements to their credit, are invited by engineering colleges for talks to the students. In a similar manner, the results achieved through these programmes should be collected on all-India basis, grouping similar ones together, compiled with data, and photographs, etc. printed and distributed among practising engineers. Such publications will keep them in touch with the latest theories, processes, ideas and thus contribute to the advancement and progress of our Motherland.

Extract from the article named below (put in V.V.B. sp. issue 1980)

Participation and Experience of Host Organisation

O.P. GUPTA
Chairman
Pharmacology Department
Regional Research Laboratory
Jammu-Tawi

In fact, the practice school programme is very impressive in the sense that every student is trained to give good seminars, conduct group discussions, undergo periodic tests and viva voce examinations. All the things are executed very nicely under the supervision and co-ordination of practice school faculty. With every possible facility and encouragement provided, these students also work very hard, late hours even on Sundays and holidays without much respite. All this makes me wish this mutually benefiting practice school programme to continue for all time to come. This is quite relevant to the student and the institute. It is very useful to the host institute, as these students, for the sake of their own training to qualify for their degree, work hard and sincerely and thereby contribute sizeably to the research projects of this institute. The practical knowledge and go out as best of the lot in the country qualifying themselves for any challenging jobs including research or further advanced studies. While leaving this institute, each student carries with him the best satisfaction of having utilised the six month period under the kind guidance of the practice faculty and the scientists of this laboratory.

I wish to congratulate the authorities of B.I.T.S. who could conceive and introduce this programme. I am sure one day it is going to take a big shape in the curriculum of Indian universities.

Extract from the article named below (pub. in V.V.B sp, issue 1980)

Practice School as we see it

INTERVIEW WITH COL. GOPALAN KASTURI & OTHERS
Central Bank of India
Bombay

The officers were unanimous in their opinion that the students had sufficient background and basic knowledge to tackle their projects intelligently. They attributed this in part to the integrated programme of education at the Institute, and partly to the high quality of student input to BITS, which is in turn reflected in the input to the Practice School Stations.

The officers expressed satisfaction at the work done by the students. They stressed that wherever the students had been given well-defined objectives and proper guidance at different stages, the results had been very gratifying. Much of the work was such that the Bank could not possibly depute officers to undertake, and in such cases the students proved very valuable.

The main advantage, it was felt, was that students adopted an open-minded approach, and were able to establish good working relationships with staff members in their departments. Both of these factors enabled them to make noteworthy contributions to the Bank.

(This article has been written by R.S. Sisodia and is based on interviews by Sarvashri Kalyan Swarup, Rajendra S. Sisodia and Ashok Sapru, with the following officers of Central Bank of India: Col. Gopalan Kasturi, Officer on Special Duty; Miss Harsha Bukhanwala, Manager (P & D); Sri E.K. Vasudevan, Commodity Marketing Adviser, Dr. D.P. Pandey, Chief Officer, EID; Sri M.V.P. Padgaonkar, Chief Officer).

Extract from the article named below (put in VVB sp issue, 1980)
Practice School at BHEL, R & D Unit, Hyderabad

INTERVIEW WITH SRI K. APPA RAO AND OTHERS.
Research and Development Unit
Bharat Heavy Electricals Ltd.
Hyderabad.

What do they feel about our practice programme? In this connection, I have had talks with several senior officers from time to time. Among these officers are Mr. K. Appa Rao, Dy. General Manager (Personnel), Mr. K.V. Rao, Dy. General Manager (Admn), S. D. Harsha, Senior Engineer (Construction), Dr. Sathyanarayana, Manager (Electronics Lab.), Dr. R. Sinha, Dy. Manager (Controls and driver Lab.), Mr. K.P. Sharma and Mr. R. Jayapal (Engineers). They feel that this feature (i.e., Practice course) in the curriculum of our educational programme is really unique. In their view, the phenomenon is somewhat mutual in the sense that both the students as well as the host organisations are benefited by the programme. While the students get the work experience (or what may be called the experience of the real world), the host organisation in turn gets extra manpower for the period. Mr. Appa Rao, who is very much interested in our programme, cited a few examples of our students who did their practice course at this station and performed excellently. Dr. A. Gopalkrishnan, General Manager, is very helpful and impressed by our programme. Despite his busy schedule, he attends our seminars and gives his full cooperation in encouraging the students.

(Interviewed by R.P. Khare)

n extract from an article entitled "My Personal View about Practice School Programme" (V.V.B. sp. issue, 1980)

K.L. DHAR
Chairman
Director's Laboratory
Regional Research Laboratory
Jammu-Tawi

We have with us at the moment the batch of Practice School students from Birla Institute of Technology and Science. I have had the opportunity to get associated with the programme. Though it is difficult for us to know exactly how useful the training over here is, yet from the contact we get with the boys we are forced to believe it gives them a hard drill and makes them prepared for various potential jobs.

Extract from the article named below (pub. in V.V.B sp. issue, 1980)

Practice School Programme

INTERVIEW WITH SRI M.N. RAO
Manager (Tech),
Project Finance Division
Industrial Development Bank of India
Bombay

Practice School fulfils the much-felt need for bridging the gap between the academicians and the practitioners. It should be emulated by other institutions of higher education.

Interviewed by Aniruddh Kumar Srivastava

An extract from an article entitled "BITS Practice School"
(V.V.B., sp issue, 1980)

K.R. DATYE
Consulting Engineer
Bombay

The BITS Programme provides an excellent opportunity to involve Practice School students in special studies which have a bearing on the relationship between design and construction and theory and practice in engineering. Normally, it is difficult for the regular staff members of an engineering organisation to participate in monitoring performance or reviewing behaviour of existing structures. The pressure of normal work precludes a systematic and continuous follow up of field activities with a view to examining the relation between theory and practice. The availability of Practice School students is very helpful in this kind of work.

The practising engineers and experts benefit from interaction with students since they have to explain the practice of engineering to enlighten the students regarding the theoretical basis of good practice. Discussion with students also sometimes helps to clarify their own ideas.

The students get exposed to the process of translating design guidelines into construction practice and understand the theoretical basis and rationale of engineering decisions.

Extract from the article named below (V.V.B. sp issue, 1980)

Industry Expectations and Requirements

INTERVIEW WITH SRI D. DHAR
Divisional Manager (Transformers)
General Electric Company
Allahabad

BITS Practice School he thought was an important positive step towards bridging the gap between the academic and professional world. Such interactions between educational institutions and industries should be further strengthened, for they were mutually beneficial.

Summing up, he said it would be ideal if other higher educational institutions could also think in terms of such linkages and interactions, in accordance with their own ethos and experience.

Remarks of Mr. K. Binott, Mr. I.K. Salat, and Mr. J.K. Kimetto in the Visitors Book of the Institute, 18 February 1981.

A remarkable Institute which offers a challenge and perhaps an answer to the urge to establish an education system relevant to third world.

K. Binott

Extract from the article entitled 'Innovative Training' by Mr. K.V. Subramanian published in The Hindu dated 10 March, 1981 (and making reference to the Special Issue of V.V. Bulletin of January, 1980).

The concept of Practice School (PS) at higher levels at engineering and technology implies the Industry-university collaboration in providing real practical knowledge and skill through effective training in the industries. In fact 'it is different from the conventional training in the sense that the students are under close supervision of their faculty' (p.145) and 'the interactions with the personnel in the industry go a long way in properly channelling the students' efforts.

This PS Programme is advantageous over the industrial placement provided when graduates are appointed as trainees in industries because faculty supervision does a lot in leading the students to correct approaches to problems (p.146)

The Birla Institute of Technology and Science introduced this PS programme from 1973. It is an innovative programme, planned and implemented taking into consideration the operation of such programmes in USA. The Director of the Institute points out in

his foreword that though the process began as an imitation but ultimately acquired a true authenticity and originality. Unlike some 'innovations, it did not get atrophied or mutated. They normally provide Practice I for 2 months during summer following the third year of the course and Practice II for 5½ months during the final year.

Organisations all over India (chart at p. 76) are selected from all sectors and the students are placed on training with elaborate programmes of problem solving, case study and evaluation. The details of the stages of the programmes are explained in appendices to Part 1 (p.80-81).

The book is a comprehensive collection of Articles and view points on various facets and aspects of the programme. It contains two Parts. In part one a detailed analysis of the programme is made as a case study in Industry-University collaboration, by the Dean of the Practice School Division of the Institute. Part Two consists of the following four sections: (1) Observations of host organisations; (2) Reflections by faculty; (3) Experience of students, and (4) Miscellaneous gleanings.

The total PS programme is implemented adopting systems approach, taking into consideration all major inputs, process and output evaluation and the book provides a graphic description of the complete details - its advantages, drawbacks and feedback of the faculty, host organisations and the students. One of the students narrates (p. 269 & 270) that the PS programme enabled him to perform well both in interview for selection and actual working in the industry.

K. Venkata subramanian

Extract from the article 'A pioneer of Indian Industry' by
K.S. Ramanujam. The Hindustan Times, April 14, 1981 p. 17.

Emerson once said, "An institution is the lengthened shadow of a man". This is true of the now famous BITS - Birla Institute of Technology and Science - at Pilani, Rajasthan, an outstanding educational centre founded and assiduously nurtured by Birla himself all these years and guided by him even today. This fine institution is an eloquent tribute to Birla's faith in the importance of science and technology for the progress of his country. His contacts in America enabled him to obtain for BITS the whole-hearted co-operation of the world-renowned MIT of Boston.

K.S. Ramanujam

Remarks of Shri P.P. Brahmananda, Department of Economics, University of Bombay in the Visitors' Book of the Institute on 5.5.1981

BITS = BRILLIANCE
I = INDIGENOUS
T = TALENTFUL
S = SYSTEM

Wish it all development along innovatory lines. This is wholly a private sector enterprise in a ^{ph}ere dominated by the Public Sector; an oasis in a desert. The practice school idea is worth tons of gold! Hope the educational process in the country will profit. I am sure BITS will be open to change through continuous introspective discussion.

P.P. Brahmananda

Mr. N.C. Menon, the distinguished Deputy Editor, and an internationally known journalist of India, who was the official co-ordinator of our PS-I Programme during the Summer 1981, has this to say about our students performance:

Hindustan Times House
18-20, Kasturba Gandhi Marg,
New Delhi - 110 001.

August 10, 1981

It was my proud privilege to be associated with the part of the BITS Practice School Programme conducted at The Hindustan Times. I found the group of students extremely bright and intellectually independent. Without exception, they worked hard at their assigned tasks and their reports gave us useful insights into areas where improvements are possible and necessary. To that extent it has been a two-way programme from which we in The Hindustan Times benefited as much as we hope the students did.

I must also mention the sense of responsibility and dedication with which Prof. S.C. Shukla organised and conducted the programme. He performed with distinction the difficult task of providing constant encouragement and direction to his students without in any way curbing their originality or initiative.

I sincerely hope at least some of the trainees will take to journalism. We would love to have them as colleagues.

N.C. Menon

Extract from the letter of Dr. O.P. Garg, Group Leader, PFC-R&D, Jyoti Ltd., Hydraulics Electricals Power Electricals, Baroda, addressed to Dr. C.R. Mitra, Director, BITS, Pilani.

I was delighted to read a news in I.E. (A'bad edition) at 14th April, 1981, about Chinese Universities seeking collaboration in running PRACTICE SCHOOL. The Chinese authorities whom you met during your recent visit to CHINA were highly impressed by the unique Experiment of BITS dovetailing the Engineering Theory with Manufacturing Practices through Practice School Programme. Accept my heartiest congratulations to you for this unique distinction and recognition given by outside Universities to BITS programmes.

D.P. Garg

Remarks of Shri R.N. Sen, P445, C.I.T. Scheme, XLVII Fast of Vivekananda Park, Calcutta - 29 in the Visitors Book of the Institute dated 21st November, 1981.

I have been greatly impressed by what I have heard and seen. I had some ideas but the other University people or the Industry did not agree with one. It was a pleasant surprise to find that this University has followed many of the ideas which were in my mind. I have no doubt that this University will take the education and Indian industry forward.

R.N. Sen

An Extract from An Article entitled : 'BITS Collaborative Educational Program - An Innovation' published in PRACOLLAB No1 1 No.1 Dec. 1981

Engineering education is incomplete if it is not backed up with industrial experience in the educational process itself before graduating from a University or an Institute. This fact was recognised long back by BITS, Pilani and so is the outcome of PS-I and PS-II programmes which adequately meet this requirement and enable the student to choose the right career in conformity with his aptitude and interest. A successful engineer of today has to be highly innovative and skilled and should be prepared to switch over to the other allied disciplines of work by crossing the barrier of the major discipline in which he has graduated. For a challenging career it is a must. This can only be possible if a student has a broad-based engineering education with a good Pure science, engineering science and technology base. The under-graduate curriculum of BITS, as it is now, is appropriately designed to produce engineering and scientists who are fully Prepared to meet the challenges of today and tomorrow.

V.K. Agarwal
Chief Research & Development Officer,
HINDALCO, Renukoot

CIHED NEWS LETTER of Northeastern University, Boston, U.S.A. includes BITS Practice School in one of the World's top ten programmes in Co-operative Education.

The centre for International Higher Education Documentation of Northeastern University, BOSTON has brought out a Special Issue of its reputed journal entitled CIHED NEWS LETTER, published in connection with the Second World Conference on Cooperative Education held in April, 1981. Its editor, Mr. Solveig M. Turner refers to 'the extensive variation world-wide in the types and extent of work experience in educational institutions and the corresponding variation in nomenclature', including the 'Practice Program' of BITS as India's response to this educational innovation.

The Conference discussed 'world experience as an educational tool for man-power production' which is considered synonymous with the 'new stress on the linking of education and work'.

An informal survey at CIHED in 1978 identified four types of work experience, the "Practice work as a Degree Requirement" being one of them. This kind of education in the words of Mr. Turner "includes programs such as Cooperative education in U.S. and Canada, sandwich programs in the Commonwealth countries, Practice School in India..... The ten cases included in the News Letter as well as the following discussion treat work experience education as a degree requirement, however, it is of value to note that practical work relates to education also in other ways."

EDITOR
PRACOLLAB

A write-up published in the journal of Northeastern University, Boston, entitled CIHED NEWS LETTER in connection with the Second World Conference on Cooperative Education held in April, 1981.

PRACTICE SCHOOL: INDUSTRY-UNIVERSITY COLLABORATION
AT BIRLA INSTITUTE OF TECHNOLOGY, INDIA

In 1973, the Birla Institute of Technology instituted the Practice School, a novel work-study program involving theoretical study at the Institute and practical work exposure at so-called Practice Stations. From one practice station in 1973 the program has grown to 60 practice stations located throughout India and from an enrolment of a mere twelve students supervised by three faculty to 700 students and 60 faculty in 1980.

The unique aspect of Birla's collaboration with industry is the establishment of the Practice School stations in factories, businesses, and government agencies. Referred to as host institutions, the agencies and businesses collaborating in the program offer the students varying facilities, ranging from classroom and library space to free accommodations for students and/or faculty, and allowances for the students.

The Practice School method of education is a controlled simulation of real life working conditions. During the period of study (four- and five-year bachelor's programs and master's degree in all of the university's disciplines are offered in the Practice School program), the classroom is moved into a Practice Station for a total of seven and one half months; two months (PS-I) following the third year of final year of study. The students going into PS-II are divided into two groups; half attend the PS-II in the first semester; the other half during the second semester. The PS-II assignment generally is in production units or in design, development, or consulting agencies. Students are divided into teams of three to four and assigned problems

identified by the host agency in collaboration with BITS faculty. Each group has a student leader who is responsible for the planning, scheduling, and implementation of the full task. Examples of work project are: Design and Fabrication of Pneumatic Crust Breaker; Reorganization of an Electrical Distribution System.

After successful completion of both theoretical study and the PS requirements students are awarded a degree with the designation "With Practice School". Those students who complete Practice School have carried a greater academic and hourly load than students in traditional programs although BITS is attempting to equalize the extent of study time by utilizing summer vacations for the PS assignments.

The Practice School students have, as a rule, found great acceptance in the job market, which has, of course, stimulated the growth of the program within BITS.

"The Birla Institute of Technology and Science, Pilani has achieved some success in establishing linkage with industry by organizing practice stations in industry and research laboratories etc. Where the students continue their educational process in the real life setting by using real life problems. Such practice stations would not only make the students aware of the world of work but would develop in them willingness to work with their own hands rather than aspiring for white collar jobs. The Committee would like the Department of Education to carefully study and evaluate the working of these practice stations and, if found suitable, commend it for adoption by other engineering institutions, with such improvements as are considered necessary in the light of the experience."

Chapter VI of the Ninth Report of Estimates Committee (1977-78) of Sixth Lok Sabha.

"Except Birla Institute of Technology & Science, Pilani, which (has) very successfully introduced an integrated education programme (integrating practical training with industry), in no other engineering college of the country has there been any such arrangement."

Extract from the news-paper report in The Economic Times dated Jan. 17, 1982 covering the Seminar at Calcutta on 'Training of Engineers' organised by the Indian Association of Training Executives (IATE).

"Selected institutions may be encouraged to introduce the 'practice school' system for integrating training programmes on an experimental basis."

-The Hindu dated February 16, 1982 reporting the recommendations of the Warangal Seminar held at REC, Warangal in January, 1982.

I have been going through the literature given to us and in "What others have said about BITS", Pandit Jawaharlal Nehru said in 1953: "What shall be the place of Pilani in the history of national progress? I know it shall find an eminent place and in fact is endeavouring for it. Your achievements will definitely hasten the advent of a prosperous India."

You and your colleagues have made Pandit Nehru's prophecy come true. On behalf of AIEI, I offer my very hearty congratulations

-Extract from the letter dated April 3, 1982 from Mr. U.P. Pandit, Chairman, TET Committee, Association of India Engineering Industries (AIEI) addressed to Dr. C.R. Mitra Director, BITS.

Extract from a Special Report on the National Seminar on "Industry-Institution Collaboration" held at Warangal in February, 1982, and published in The Hindu dated 16 February, 1982.

Special Report

Industry-institution collaboration, teaching aids, educational technology and faculty appraisal will help improve the content of engineering study. These suggestions emerge from a recent seminar. Our Education Correspondent sums up the conclusions.

Joint endeavour : Pilani example

Industry-Institution collaboration is a theme of unfailing interest to educationists, politicians and planners who participate in seminars, conferences and workshops. But they do not spell out how exactly this can be brought about.

A concrete example of how such collaboration can be accomplished is provided by the Birla Institute of Technology and Science (BITS), Pilani. Since its inception in 1973, about 800 students (400 during the summer session for the Practice School-I or PS-I course, and 200 during each of the two regular sessions for PS-II course) come under the supervision of 60 teachers, 40 in the summer and 20 round-the-year. PS-I is of two months duration and PS-II of five and a half months span.

About 60 professional organisations of different types - Government, public, private and quasi-government sectors are collaborating in this joint endeavour. The Director of the Pilani Institute, Dr. C.R. Mitra has been providing the much needed guidance at the stages of planning, design and implementation of the scheme.

PS System

The core concept of the PS system is the integration of teaching and research in the institution with tasks of design, production and development faced in industries. According to Prof. Vijay V. Mandke, Dean, PS Division and professor of electrical and electronics engineering, BITS, Pilani, the practice school requires

students of engineering, science and humanities to practise their profession during their years of education and this is done by establishing in the professional world classrooms called 'practice stations'. But the responsibility for supervising student education and evaluation rests with the institution's faculty resident at the station.

Practice station

Participants at the Warangal seminar could get a picture of the working of the system when Mr. Panduranga Rao of BITS, Pilani addressed them. The analogue of the classroom and laboratory set up in the professional world, practice station is manned by a team of teachers. If a city has more than one practice station, the conglomeration is designated 'practice centres'. A small library, office, blackboard facilities and, when necessary, instrumentation and computational facilities are also provided. The host organisations have been willing to help in this activity.

The salient features of the systems are:

1. The PS assignments take on a multidisciplinary aspect and students drawn from different subject areas tackle these.
2. The problems posed to students are mission and goal-oriented and so time bound.
3. The strategy for solutions to real life problems is often a peculiar mix of attitudes of a scientific mind, respect for day-to-day routine and element of adventure.
4. Problems are also open-ended and rarely do the students know the exact answer. Thus 'decision-making in the face of insufficient data and uncertain parameters' is involved.

How can the practice assignments be classified? While some of these may be 'improvement' or 'design and/or development' type, some others can be of continual type forming part of long term research and/or development project.

Student Profile

While student allotment to PS-I is done based on experiences available at any PS-I station, PS-II allotment becomes a challenging task. The host organisations and PS faculty help in giving a picture of the students' integrated personality appropriate for each task. At the same time, profiles of PS students are prepared with available details on assignment worked on at PS-I languages known and personal aspiration which summarise student capabilities. The two types of information are then matched when arriving at student allotment.

According to Mr. Panduranga Rao, the student profile is an academic matrimonial which is sent to every organisation. A problem bank listing organisations and tasks requiring to be done is also got ready. The student station matching is based on these documents.

*"The Birla Institute of Technology & Science at Pilani Was the only (Institute), it was pointed out, which had successfully introduced an integrated education programme (integrating practical training with curriculum) at the post-graduate level."

-News paper report in The Statesman, March 3, 1982 covering the seminar on training of engineers conducted at Calcutta By the Indian Association of Training Executives.

Extract from Dainik Navjyoti March 4, 1982, P.3, Piloni Parikrama(3)

परिवर्तनों के लिए प्रसिद्ध पिलानी विश्वविद्यालय

पिलानी के दो दिन के प्रवास में संस्थान की प्रतिष्ठा के जो दो सबसे बड़े कारण मालूम दिए वे हैं, परिवर्तन करने का साहस और उस साहस को मूर्त रूप देने वाले समर्पित व्यक्ति। सामान्य विश्वविद्यालयों से जो विभिन्नता विकसित हुई है उसे संक्षेप में समझाने के लिए सात पृष्ठों का विवरण दिया गया, जिसका शतांश भी यह नहीं वापस किया जा सकता। इसी प्रकार, अध्यापक वर्ग में विस्तार से मेरी वार्ता केवल विजय मंडके से हुई। अवश्य जो भावना संस्थान को उठा और बेटा रही है उसके डा० मंडके दूसरे को भी तल्लीन और तेजवान बना लेने वाले प्रशंसनीय प्रतीक हैं, परन्तु इस बात की भी सराहना करना सही होगा कि संस्थान संवालों ने कम आयु को संकाय अधिष्ठाता जैसा उच्च पद देने में संकोच नहीं दिखा कर यह बता दिया है कि नवीनता के प्रति उनका आकर्षण और आस्थान वास्तविक है।

प्रशिक्षण प्रबन्ध में पिलानी की तीन विशेषताएँ:

- (१) कला, विज्ञान और तकनीक का समन्वय तथा व्यावहारिकरण,
- (२) संस्थागत पाठ्यक्रम का उन बाहरी संस्थानों से साक्ष्य और निरन्तर संपर्क और समन्वय जिन में विद्यार्थी पढाई के बाद काम कर सकते हैं और (३) इन दोनों उद्देश्यों के लिए पाठ्यक्रम का सर्वा नवीनीकरण। इन तीनों दृष्टियों से जो कार्य पिलानी में हो रहा है वह भारत में किसी दूसरे स्थान में नहीं हो रहा।

पाठ्यक्रम के आन्तरिक अंग के रूप में दो बार कर के हर विषय के विद्यार्थी को सात महीने के लिए किसी न किसी निजी, अर्ध सरकारी, सरकारी औद्योगिक अथवा व्यापारिक संस्थान में रहना पड़ता है। श्रीनगर से लेकर मैसूर तक, उदयपुर से लेकर डिगबाई तक, ऐसे कोई पचास संस्थान हैं जो निरन्तर पिलानी के पाठ्यक्रम में भाग ले रहे हैं। इसके दो परिणाम विशेष हैं, प्रत्येक विद्यार्थी को व्यावहारिक ज्ञान प्राप्त होता है, और पाठ्यक्रम समाप्त होते ही अधिकांश उत्तीर्ण स्नातकों को जीविकापार्जन अथवा विदेशों में उच्च शिक्षा का स्वतः अवसर मिल जाता है औद्योगिक संस्थानों की विशेष आवश्यकताओं के अनुरूप विशेष पाठ्यक्रम संगठित करने का प्रबन्ध भी पिलानी में है।

Extract from the D.O. Letter No. R&D/Gen-54 of April 1, 1982 of Sri S. Raghavachari, General Manager (R&D) Instrumentation Ltd., Kota - 324 005 to Dr. C.R. Mitra, Director, BITS.

Though I had known something about the practice school system, it was enlightening for me to go through the details as they were presented to us by your Deans as we went through the various departments to see for ourselves the magnitude of work connected with it.

S. Raghavachari

Extract taken from the Presidential address given by Shri Sivaprasad Samaddar to the "Indian Society of Engineers" published in the journal "Science and Engineering" V.34 No. 9-12; September-December, 1981

Through practice school, class room teaching is shifted into the environment, and there is a controlled simulation of real life problems. The student spends an allotted time as an intern in the professional world before his graduation. Practice School is introduced not only for the engineering disciplines but also for science, humanities, social sciences and management disciplines.

All training is conducted under direct supervision of Institute faculty in residence.

Evaluation of usual factors, like personality, decision making, leadership, cooperation, team work etc. is given credit through practice school courses.

Masters of Engineering are introduced in functional areas in symbiotic relationship with industries like design organisation, planning, production and national development.

Sivaprasad Samaddar

Extract from the D.O. Letter of April 3, 1982 of Shri U.P. Pandit, Accumax Limited, Shrimad Rajchandra Marg, P.O.Box No. 229, Rajkot-360 001 to Dr. C.R. Mitra, Director, BITS.

I write this to convey my appreciation of and gratitude for the time and efforts spent by you and your colleagues in acquainting the members of the Technical Education and Training Committee AIEI with the working of BITS and especially the working of the practice school and the M.E. Collaborative programmes.

We were very much impressed by the work being done, by the able guidance and inspiration provided by you and the commitment of your colleagues and thoroughness of your programmes.

AIEI would very much like to have a full-fledged collaboration with BITS in the matter of technical education and training, and I am glad that you reciprocate the sentiments.

While summing up the meeting, my colleagues and I gave our views on what, we think, could be done in this matter, and we have suggested that at a suitable time we should meet again in a Workshop where these and allied matters can be discussed in detail and decisions taken. You have some specific idea on the subject and I shall appreciate if you send me a detailed note with what you think should be done. Kindly do the needful in the matter. I have been going through the literature given to us and in "what others have said about BITS" Pandit Jawaharlal Nehru said in 1953:

"What shall be the place of Pilani in the History of national progress? I knew it shall find an eminent place and in fact is endeavouring for it. Your achievements will definitely hasten the advent of a prosperous India."

You and your colleagues have made Pandit Nehru's prophecy come true. On behalf of AIEI I offer my very hearty congratulations.

Kindly convey my best regards and thanks to Dr. V.V. Mandke, Dr. Krishnamurthi, Prof. T.S.K.V. Iyer, Dr. S. Venkateswaran and others.

U.P. Padot

Extract from the D.O. Letter No. AI/58 of April 5, 1982 of Sri B.C. Agrawal, Deputy Secretary, Association of Indian Engineering Industry, 6, Netaji Subhas Road, 2nd Floor, Calcutta - 700 001, to Dr. C.R. Mitra, Director, BITS.

I am writing this to put on record our deep sense of appreciation and gratitude to you and your dedicated colleagues for making our visit to Pilani most fruitful and memorable. You made our visit most business-like and we could have a thorough insight of the Practice School and M.E. (Collaborative) Programmes. Members of our Technical Education & Training Committee, who visited Pilani, were greatly impressed with the new experiment in higher technical education being done at BITS and I am sure new vistas would open up for collaboration between BITS and the engineering industry.

B.C. Agrawal

Extract from the D.O. Letter No. 387 of April 6, 1982, of Sri L.R. Gosain, Sr. President, CIMMCO Ltd., Bharatpur, to Dr. C.R. Mitra, Director, BITS.

It gave me great pleasure to see some of your Laboratories; Science Museum and the Central Electronics Research Institute. I have been very much impressed by the details given by Prof. Rao of your Practice School.

I wish you success in your desire to improve the practical training through Practice Schools. I entirely agree with your ideas that an Engineer's education and training should be at least as good as that of a Doctor. We will be glad to extend any assistance or co-operation that we may be able to give you in this direction.

Pilani and Cimco have already close associations and many things in common for several reasons. It will be my privilege to strengthen these ties still further.

I wish to take this opportunity to thank you, several of your officers and staff, particularly Prof. Gopalan, Prof. Rao and Prof. Mandke, for giving me so much of their time to make my brief fleeting visit a success!

L.R. Gosain



Extract from the D.O. Letter No. AIM/TET of April 7, 1982 of Sri H.C. Verma, Managing Director, Associated Instrument Manufacturers (India) Private Limited, Sunlight Building, 26-27, Asaf Ali Road, New Delhi - 110 002, to Dr. C.R. Mitra, Director, BITS.

As already indicated, our organisation would be very pleased to provide facilities for the Practice School 1 & 2 and any collaborative M.E. programme. Since Delhi is already the existing centre for the entire range of activities it should not be difficult for it to handle any collaborative programme even if a batch of 10 such students cannot be accommodated by a single Industry. My organisation would be willing to participate in all the three programmes and in the case of any collaborative, we would be willing to make a start by accepting 2 to 3 participants in the M.E. Collaborative programme and an equal number in each one of the PS 1 and PS 2.

H.C.Verma

Extract from the D.O. Letter of March 8, 1982 of Shri Rajendra Shankar Bhatt, Editor-Daily Navjyoti, Jobner Baug, Station Road, P.O. Box No - 132 Jaipur - 302 006 to Dr C.R. Mitra, Director, BITS.

आपके संस्थान के प्राध्यापकों और अधिकारियों से जो स्नेह, समय और सहयोग मुझे मिला, उसके लिए मैं आपके माध्यम से उनके प्रति कृतज्ञता प्रकट करना चाहूंगा - विशेषतः डा० विजय मांडके और श्री ए० एन० भार्गव के प्रति। उन्होंने तो मुझे संस्थान की उपलब्धियों से इतना आतुरित कर दिया कि जो एक लेख अब तक मैं लिख सका हूँ ('दैनिक नवज्योति', जयपुर) वह अत्यन्त अपर्याप्त लगता है। एक दो लेख और लिखने की सोचता हूँ। सामग्री मेरे पास बहुत है, कमी जापसे मिलना हुआ तो आपकी भावी कल्पनाओं से अवश्य अवगत होना चाहूंगा।

डा० राजेन्द्र शंकर भट्ट

Extract from the letter No. IIT/ECE/MNF/82 of May 11, 1982 of Sri M.N. Faruqui, Department of Electronics & Electrical Communication Engineering, Indian Institute of Technology, Kharagpur - 721302 to Dr. C.R. Mitra, BITS.

Indeed it was a very pleasant surprise to see your Institute devoting so much effort to train students as well as keep a very flexible system going. Kindly convey our thanks to Prof. Iyer, Prof. Mandke, Prof. Nagrath and Prof. Ramanan. They took all the pains to show to us how BITS works. It was an experience for me personally to see such dedicated and devoted professors in a single Institute. I wish this Institute could also take up the Practice School idea and produce novel kind of engineers.

Extract from the D.O. Letter No. DM/TRG/2/51A/089 of April 16, 1982 of Sri S.N. Ghosh, Divisional Manager (Training & Admn.), Tata Engineering & Locomotive Company Ltd., Jamshedpur - 831010 to Dr. C.R. Mitra, Director, BITS.

You will kindly recall the discussion we had regarding M.E. collaborative scheme. As per the action plan suggested by me we are interested to have M.E. programme in collaboration with you for Post-Graduate education of 10 of our engineers in Machine Tool & Press Tool Design in Telco, Jamshedpur. If this works well, we would like to extend this to Machine Tool Maintenance and other areas.

S.N. Ghosh

An extract from a write-up on BITS Practice School published in the Maharashtra Times dated 12 May 1982 (translated into English by Mrs. Parimal Mankde).

.....Another significant feature of BITS education programme is its Practice School. Practice School Division is looked after by its Dean, Dr. Vijay Mandke. BITS Practice Stations are spread all over the country. Some important Practice Stations are Chandigarh, Delhi, Allahabad, Bhilai, Bombay, Bangalore, Durgapur and Baroda. Practice School education begins from the third year and is split into two components of two months and five-and-half months, respectively making a total duration of seven and a half months. What is important is that every ten students are accompanied by a faculty member to the Practice School station.

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Remarks of Dr. S.K. Baruah, Director of Technical Education, Assam in the Visitors' Book of the Institute, dated 7 October 1982.

I was impressed by the various innovative processes adopted by the Institute for making Technical Education more meaningful and relevant to the needs of industry. The Practice School is a system worth trying in the Technical Education system as a whole in the country.

Dr. Mitra's initiative in the various innovative processes is praiseworthy. I would like to congratulate Dr. Mandke and all other staff members of the Institute for taking such a bold step.

S.K. Baruah

Remarks of Dr. H.G. Zempelin, President, Enka AG, Germany in the Visitors Book of the Institute, dated, 21 December 1982.

A remarkable model to resolve the conflict between theory and practice - to combine both.

H.G. Zempelin

Remarks of Prof. P.K. Bose, Former Pro-Vice Chancellor for Academic Affairs, Calcutta University; Director Institute for the Development of Research Personnel C/O Department of Statistics, Calcutta University, in the Visitors' Book of the Institute dated 7 October, 1982.

This is the second time that I visited BITS. I discussed with the Director and also with other faculty members the problems of linking higher education with industry. In this connection I saw the working of the whole scheme on 'Practice School'. This is an innovation in the realm of Professional Education in India. Dr. C.R. Mitra and his staff should be congratulated for this work. Further, Dr. Mitra has been able to motivate his teachers in this direction. This is a rare phenomenon in India now-a-days.

P.K. Bose

An Interview with Dr. Lalit Gupta, Vice-President (Process)
GRASIM, Nagda. Published in PRACOLLAB vol.1, No 3 1982-83

Q: Do you think the problem of analysing and solving of real-life situation in industry is where the M.E.(Coll.) student has a major advantage over a conventional Master's degree student?

Generally speaking, the M.E.(Coll.) student joins the M.E.(Coll.) Programme with a few years' industrial experience behind him. On account of his exposure to the industrial environment, the M.E.(Coll.) student approaches the academic courses in a more practical and pragmatic manner in comparison with a student joining a conventional Master's Degree. Thus an M.E.(Coll.) student is probably able to abstract more from the M.E. Programme not only for his own advantage and development but also for the benefit of his employer.

Q: In the M.E.(Coll.) Programme, BITS has introduced formal contact hours through group discussions, course seminars, and professional involvement for each course. Does this help in discharging the theory as a part of the training in the organisation?

Group discussions, course seminars and professional involvement projects in various courses of M.E.(Coll.) Programme provide excellent means for learning and disseminating information. An added advantage of this approach is the development of all facets of the participant's personality to enhance his competence and improve his prospects for career advancement. The wide-ranging exposure and multi-disciplinary approach can also result in a better appreciation of the other persons' problems and difficulties and may lead to better cooperation amongst colleagues and department.

Q: The Group Discussions link the central concept of the course with a real-life problem faced in the industry. The problem solving efforts and exchange of ideas in a group aim at developing an individual with professional judgement, decision-making ability and board room behaviour. Comment.

Group discussions are useful tools for improving the professional judgement, decision-making ability and board-room behaviour of the participants. Group discussions also serve to bring out leadership potential and improve communication skills of the participants. For best results, perhaps some sessions may be thrown open to the participants without formally nominating a chairman, while others could be chaired sessions.

Q: Students are assigned course seminars in which they present a talk on the latest technological developments in various fields. This multi-disciplinary approach to learning trains the students in the arts of communication and in defending his subject on technical groups, thereby boosting his confidence and personal development. Comment.

I agree entirely with your observations regarding benefits of course seminars. Such seminars afford opportunity to the students for developing their communication skills. Presentation of material, which has been gleaned from various text books, magazines and journals is not a very difficult task. But, when it comes to defending the material presented and answering queries from the audience, it is quite a different matter. In the ultimate analysis, a professional's brilliant ideas are of no use unless he is able to sell these ideas and convince the concerned authorities of the potential benefits. Otherwise, the ideas will remain on paper only.

From the point of view of an ex-student of an IIT, I found BITS to be a truly remarkable institution on the whole. As far as the "Academic Week" is concerned, it I think, is a step in a very positive direction.

I owe thanks to a perfectly organisation of the "Academic Week".

Naresh Mansukhani,
CMC, BOMBAY

The opportunity to visit BITS came in seven years after my first wish to do so. My idea of BITS and its capabilities was confirmed by this visit, which, though short, was neworable. I am getting back with a hangover of sleepless nights, Usually salubrious weather, great hospitality and the successful Apogee'83 for which the Students need to be congratulated. Will come again for a greater participation in the future.

Dr. S.P. Manjrekar,
CFTRI, MYSORE

The academic Week was excellent experience. Such activities could usefully be duplicated/replicated by other institutions, the necessary condition being the informal but strong links of understanding that exist between staff and students of BITS.
Congratulations to all concerned.

Dr. Ashok Jain, Director
D.S.T.

I did not know fully what this was all about. After coming here, I have been greatly impressed by the interest taken by the Student's Union, students in general, faculty members and all others associated with it. So many things were going on together that I could choose what I liked best.

Arrangement for our stay here was very, very good.

Thanking you all.

17 April, 1983

R.N. Datta
CALCUTTA

I am glad that I came to pilani to attend the Academic Week. It was an enjoyable experience. I must congratulate the organizers for the personal attention given to each participant.

17 April, 1983

Mrs. V Dayal
CMC

It is a very good idea to have an Academic Week. I wish it goes on and on for many more years.

The arrangements were very good. Many praises for the organizers.

Mr. J.S. Rawalgaonkar
Consultant, CMC

An unforgettable stay.

Thanks.

P.C. Saxena
Lt. Commander
Indian Navy

It was sweet 'home coming'. A most memorable visit to my Alma Mater.

17 April, 1983

Arun Saxena
Commander, Indian Navy

Glad to be here again. My joy is more at this time. I came at the invitation of the students and participated in their youthful activity.

Thanks and best wishes.

17 April, 1983

S. Samadar
Member, U.P.S.C.

It was a very happy home (coming). I got more love and respect than any other place. I am very much happy. I will never forget it in my life.

The idea of having this type of Academic Week to encourage young students to present their work is excellent and should definitely be encouraged further. This type of get-togethers will help young engineers greatly.

With good wishes.

Y.K. Gupta

Larsen & Toubro Ltd.

Powai Works,

Bombay.

A magnificent flower in the desert. May it bloom for ever and spread its scent in all parts of the world.

Captain A.R. Dabir
Indian Navy

Professionally organised arrangements by budding engineers.
Highly impressed, and well done.
Best of luck.

P.K. Puri
Commander
DDME/NHQ

Apogee is undoubtedly a creative approach towards matching industry with academic institution and BITS Pilani takes the lead. The whole organisation of the week is just commendable; it demonstrates the professional ism.

I am really impressed with the dedication of the organizing students in general and my guide, Mr. Humanshu Chandra in particular.

Wishing all the success.

S.G. Awasthi
TELCO

Loaded with experience of attending and covering various national and international seminars, Apogee'83-the academic week is a unique exposition for me.

An entirely new approach, if has given me another angle for reporting. Students, mature and responsible, make me really a VIP, at the same time, they made the feel at home.

This is my first visit, but I carry an everlasting impression.
With regards to all those involved in the project.

16 April, 1983

K.V.Venkatsubramanian,
PRI, New Delhi

The seminar was exciting. I was glad to note that many students attended. I feel that there should be more emphasis on practical training. Wish you good luck for the future programme. Thanking for inviting us.

16 April, 1983

P.G. Bhide, Entrepreneur
Pune

It was nice to come back to a gathering of young people and it gave me ample satisfaction to be able to make a presentation which would be food for thought for them. Hope they would make a better India.

K. VENUGOPAL
Deputy Director General
NCAER.

It was a very great pleasure to have visited BITS again. The first time it was "Love at first sight". The love grows stronger and the admiration intense. In every sphere that BITS is engaged in one sees excellence. All the best.

15 April, 83

U.P. PANDIT
CHAIRMAN, TET COMMITTEE,
A.I.E.I.

What a splendid education for me. My talk on Management and Leadership was really incidental. But I am satisfied that it was worth while and that the organisers should have thought that I had something useful to say, and I am not referring to the nautical humour!

Well done, young gentlemen. You may have opened a fresh avenue which others could follow.

16 April, 1983

M.P. AWATI
Vice Admiral

I congratulate persons who have taken the initiative in bringing this concept to fruition. This is not the time to look for compliments. Like many great ideas, beginnings have many problems but to pursue them with conviction and determination is the only way to determine the goodness in them. This is what Mahatma Gandhi did when he proceeded on his Salt Satyagraha. Please keep up the idea of seminar living by arranging it annually without worrying about compliments.

N.W. Nerurkar
Director
Deptt. of Electronics
16 April, 1983

It is good to know BITS has become leader in organizing such academic activities.

I wish it all success.

16 April, 1983

DAYAL DAS
Department of Electronics
Delhi

It was a refreshing experience. Youngsters' organisation was superb. Presentations were confident. Wish many more successes.

M.S. Ramamurthy
Deputy Sec. AIU

The following article appeared in the 'University News', vol. XXI, No. 9 dated May I, 1983, written by one of the Journal's own correspondents:

First All-India University Youth
Academic Week at BITS

The First All India University Youth Academic Week was held at Birla Institute of Technology and Science, Pilani, from 15 April to 17 April, 1983. This pioneering development is the culmination of an intense desire on the part of BITS students to add a new dimension to the educational process in which academic excellence is interfaced with professional expertise and through mutual interaction generates a new culture in higher education. A taste for this ambition among the students was implanted by the Practice School and M.E.(Coll.) methods of education.

Called Apogee-83 (a professions-oriented gathering over educational experience), the Academic Week provided to the first degree engineering, science and humanities students across the nation an opportunity to present their professional work achievements and share their thoughts and experiences with their colleagues, members of the faculty and professional experts from industrial, business, consultancy, planning and research organizations.

In all 80 papers were presented in 17 sessions; each session was chaired by a student who was assisted by a student secretary. The schedule, which was meticulously planned, was strictly adhered to and the paper presentations were held with clockwork precision. Interspersed within these sessions were 24 'invited lectures' by visiting professional experts, illustrated exhibitions to career opportunities, science and technology films, books exhibition and science quizzes. Each component reflected human effort at its best. Among the highlights, one may mention M.P. Awati's lecture on Management for

Technology Promotion Activities by Dr. Ashok Jain, Director in the Dept. of Science & Technology, Government of India and the Valedictory Address by Sri A.K. Battacharya, Director, DCPL, Calcutta who spoke on Scientifically Thinking. Thus the week turned out to be a sort of Youth Congress in which the rigours of scientific thinking and communication reigned supreme. This unique event brought to the fore an aspect of higher education which needs to be under-lined in the context of sometimes disappointing academic environment in the country: Our university youth's unflinching faith in the value of intellectual endeavour and constructive work. The rewards of an Academic Festival such as this are no less precious than that of a sports meet or a cultural festival— this is what the Apogee-83 has amply demonstrated. What is of greater importance is the fact that the week successfully focussed attention on the significance of those components of education which have been traditionally thought to be relevant only for postgraduate and research degrees. The intellectual pride comes from telling others what one himself has done. This is what made the week particularly valuable as all the papers were based on the project or thesis work done by students themselves and not on what they had merely read and heard.

The paper presentations were adjudged by a team of members of the faculty, BITS. In all 15 prizes were awarded: 3 for presentations in the area of Engineering Design and Development, 3 in Computer Systems, 6 in the rest of eleven areas, and 3 grand prizes adjudged to be the best among the 80 papers presented. The first, second and third grand prizes were won respectively by Sri Y.K. Bhatnagar, M.Sc. (Physics) final year, BITS; Sri S. Parthasarthy B.E. (Electronics and Telecommunications) final year, Regional Engineering College, Kurukshetra, and Sri S. Anand, M.Sc. (Tech.) Computer Science, final year, BITS.

For organising the week substantial sponsorship support was received from the Department of Science and Technology, Government

of India, Development Consultants Private Limited, Calcutta and Maruti Udyog Limited, New Delhi. A host of other organisations extended their support in the form of films, exhibitions, prizes, advertisements, etc. Besides these, a large number of students and member of staff of BITS gave their whole-hearted cooperation in making the event a success.

The recommendations adopted follow:

"The delegates, participants and observers who attended the first ever All India University Youth Academic Week (AUGC-83) organised by the Students Union of BITS, Pilani during 15-17 April, 1983.

1. that such a get-to-gether of University students (not Ph.D., not M.Tech., not M.Phil.) would gain a lot by presenting their projects and the theses findings (as partial fulfilment of their first degree programmes) and that the Students Union of BITS and the administration of BITS needed to be congratulated for arranging such a conference. They also thanked those personalities and organisations who have given multifarious support and help for this seminar;
2. that the increasing updating of university curricula in India relegates various components of education which were conventionally conceived to be only part of the higher two tiers of education to the first degree programmes. In this circumstance some of the components and the style of operation of these components would necessarily be influenced by the approach well-known at the second and third tiers of education;
3. that these projects, theses etc. when they originate from live labs, namely industry and other corporate organisations, would willy nilly help the students and the teachers to see the dynamic link between theory and practice. In this connection any institutionalised method of forging linkages with industry should always be welcome;

Concluded

1. that a large measure of objectives of this particular seminar was achieved and the degree of achievement should be now a challenge before the Students Union of BITS and the administration of BITS for further fructification and concretization for each succeeding year of organisation of such a seminar; they were informed that that is the aim of BITS Students Union;
2. that the operational arrangements and the intelligent and imaginative organisation of the paper presentation session, invited lectures, projection of scientific and educational films and book exhibition deserve heartiest expressions of appreciation;

Recommended

1. that it would be in the interest of at least similarly situated universities to organise their own versions of such seminars, as such institutions have been organising over the past decade their special and localised version of what is known as 'Cultural Festival' where students from all over India are invited to attend and participate in the different cultural festivals hosted and organised by the students of such universities. It is hoped that the initiative and the pioneering step taken by the BITS Students Union would act as a multiplying factor whereby another forum can emerge for first degree students to get together on what the jargon describes as 'Academics';
2. that this suggestion does not mean that there would be a single umbrella under which the different students unions have to function and operate. Their autonomy and ability to operate on local culture should be ensured;
3. that considering that the BITS Practice School and M.E. (Col-lab.) have assured a compulsory of its own both in depth and scope, other universities in the country should find their own methods and means of attaining the oft-repeated national declaration that meaningful education requires a continuing institutionalised linkages between Institute of higher learning and the world of work and production."

Following is the editorial by Mr M. S. Ramamurthy appearing in the 'University News', vol. XXI, No. 9, dated May 1, 1983 :

A NOVEL HAPPENING

APEGEE-83 was an academic activity organised on a mammoth scale by the Students' Union of the Birla Institute of Technology & Science, Pilani (Rajasthan). The vision was to provide "an opportunity for the first degree engineering, science and humanities students from across the nation to scientifically present and articulate their professional work achievements carried out in the course of their educational years". Eighty papers, organised into seventeen different groups, were presented and expounded upon by the students, with the teachers and the guests listening intently to these expositions. The topics on which the students spoke ranged in their sweep from the use of thyristor for control of output in a converter, micro-processor based systems and technological devices for improved productivity on the one hand to economic and social systems, relevance and use of mass media, etc. on the other. Expositions apart, seminars, panel discussion, quizzes, lectures, films, book exhibition, science exhibitions, etc. kept the 2,000 strong gathering busy and intellectually active. It was a hectic pace set by the students — each of the days beginning at 8 a.m. and going on till about midnight. If the pace was hectic, the enthusiasm of the students and the invitees only matched the pace. Even in the organisation of the mammoth activity the students were not found wanting. Indeed everything moved with uncommon ease and precision.

It was "A Professions Oriented Gathering over Educational Experiences". Hence the acronym, APEGEE. Active professionals and retired senior executives, young entrepreneurs and seasoned managers, engineers and media specialists, students and teachers rubbed shoulders with one another in business sessions and at the dining table and exchanged views and notes on developments in various disciplines, their work experiences and the like. At the back of the

pride and confidence with which each one of the students presented his report or finding was the rigour of the training undergone and the seriousness of approach,

APEGEE evidenced that students and teachers can, after all, be made to have a sense of pride and satisfaction in hard work merely for a feeling of achievement. It was evidenced also that they can respond constructively in matters concerning furtherance of their knowledge and strive to contribute to the process of enrichment of life. And, all these, for the greater glory of humanity!

As one speaker pointed out whether it was students who motivated the teachers or it was the teachers who had inspired the students was not clear. It was however a unique example set by the students' union of BITS in organising the first All-India University Youth Academic Week from 15th to 17th April, 1983 at their campus. The pertinent question on everyone's mind was "Will others follow?"

A mischievous student in a class who had a butterfly in his hand asked his teacher to guess whether the creature was dead or alive. The teacher, sensing the trap, merely replied: "It is in your hands". This was narrated by an invited speaker. So it ever was, is and will be.

— Editor

Following is the editorial by Mr H. S. Ramamurthy appearing in the 'University News', vol. XXI, No. 9, dated May I, 1988 :

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— Editor

Remark given in the report on 'The Study and Practice in English Journalism in India' written by PS-I students at The Hindustan Times in the Summer of 1983.

July 23, 1983

The report is a sure indication of the hard work done by the students. I hope they learnt something from us. We certainly learnt a lot from them; they made us remember something that tends to fade with the years - dedication and the excitement of commitment to a wonderful profession.

N.C. MEHON
Acting Editor
The Hindustan Times,
New Delhi.

Remarks given on the report on 'The Study and Practice in English Journalism in India' written by PS-I students at The Hindustan Times in the summer of 1983.

July 23, 1983

An excellent report by enthusiastic young men and women who are bent upon improving our society.

S.M. Agarwal
President
The Hindustan Times,
New Delhi

Remark given on the report on 'The Study and Practice in English Journalism in India' written by PS-I students at the Hindustan Times in the summer of 1983.

July 23, 1983

It was a happy and cheerful lot that came here, and it was a pleasure to do what little we could for them.

With best wishes,

L.B. Gokhale
News Editor,
The Hindustan Times,
New Delhi.

an extract from the letter of Mr N.C. Menon, Editor of The Hindustan Times, New Delhi, addressed to Prof. S. C. Shukla, P S I faculty of at The Hindustan Times during the summer of 1988.

Hindustan Time House
18-20, Kasturba Gandhi Marg
New Delhi - 110001.

This is not the first occasion on which you have brought groups of eager students to the Hindustan Times and I must say you seem to be improving with each visit.

I appreciate the tremendous effort you have put into guiding and helping your students, a task which becomes more demanding because of the bright and hard-working bunch you have brought this time.

I have been particularly impressed by the way you handle your students: You stimulate them to maximum effort with the minimum of intervention. In other words, you help them develop their faculties and capabilities in their own way without strait-jacketing them in your own mould. I believe that is the sign of the true teacher.

You lightened our load by arranging, on your own, visits to various institutions and interviews with various leaders. In the midst of all this, you also found time to have the Hindustan Times benefit from your poetic pen. And we are to have inspired some of your students to do likewise.

But not the least, I have personally profited from the various discussions we have had over the past two months. Listening to a fresh, new point of view on the journalistic endeavour has certainly opened up some new vistas for me.

I wish you all the best and hope you will be back again next year.

(N.C. MENON)
EDITOR

Extract from the "Khosla Lecture" on 'Pursuit of Excellence in Science and Technology' delivered by S.R. Valluri, Director, National Aeronautical Laboratory, Bangalore, on 6 October, 1988.

We should pay particular attention to identify them (gifted children) through schools and colleges and institutions of higher learning. I would suggest that as an integral part of their education, particularly in professional training, locating them over a six month period in the R & D and the industry to enable them to work on real (life) problems. The idea is nothing new; no doctor is given a degree without a period of internship, and Pilani has successfully demonstrated their Practice School concept.

S.R. VALLURI
DIRECTOR
NATIONAL AERONAUTICAL LABORATORY,
BANGALORE

It was a very great pleasure to have visited BITS again. The first time it was "Love at first sight." the love grows stronger and the admiration intense. In every sphere that BITS is engaged in, one sees excellence. All the best.

15.4.83



U.P. PANDIT
CHAIRMAN, TET COMMITTEE,
A.I.E.I.

The seminar was exciting. I was glad to note that many students attended. I feel that there should be more emphasis on practical training. Wish you good luck for the future programme. Thanks for inviting us.

P.G. Bhide, Entrepreneur
Pune

16 April, 1983

Loaded with experience of attending and covering various national and international seminars, Apogee '83-the Academic Week-is a unique exposition for me.

An entirely new approach, it has given me another angle for reporting. Students, mature and responsible, made me really a VIP at the same time, they made me feel at home.

This is my first visit, but I carry an everlasting impression.

With regards to all those involved in the project.

16 April, 1983

KV. Venkatsubramaniam,
PTI, New Delhi.

The idea of having this type of Academic Week to encourage young students to present their work is excellent and should definitely be encouraged further. This type of get-together will help young engineers greatly.

With good wishes.

17th April, 1983

Y.K. Gupta
Larsen & Toubro Ltd.,
Powai Works, Bombay.

It was nice to come back to a gathering of young people and it gave me ample satisfaction to be able to make a presentation which would be food for thought for them. Hope they would make a better India.

16th April, 1983

K. VENUGOPAL
Deputy Director General
NCAER.

Apogee '83 is undoubtedly a creative approach towards matching Industry with academic institution and BITS, Pilani takes the lead. The whole organisation of the week is just commendable; it demonstrates the professionalism.

I am really impressed with the dedication of the organizing students in general and my guide, Mr. Humanshu Chandra, in particular.

Wishing all the success.

16th April, 1983

S.G. Awasthi
TELCO

What a splendid education for me. My talk on Management and Leadership was really incidental. But I am satisfied that it was worth-while and that the organisers should have thought that I had something useful to say, and I am not referring to the nautical humour!

Well done, young gentlemen. You may have opened a fresh avenue which others could follow.

M.P. Awati
Vice Admiral

16 April, 1983.

I understand that this is the first get-together of undergraduates in the science discipline. I congratulate persons who have taken the initiative in bringing this concept to fruition. This is not the time to look for compliments. Like many great ideas, beginnings have many problems but to pursue them with conviction and determination is the only way to determine the goodness in them. This is what Mahatma Gandhi did when he proceeded on his Salt Satyagraha. Please keep up the idea of seminar living by arranging it annually without worrying about compliments.

Nerulkar, Director,
N.W. Deptt. of Electronics.
16 April, 1983

It is good to know BITS has become leader in organizing such academic activities.
I wish it all success.

16 April, 1983

DAYAL DAS
Department of Electronics,
Delhi.

It was sweet 'home coming'. A most memorable visit to my Alma Mater.

17 April, 1983

Arun Saxena
COMMANDER, Indian Navy

Glad to be here again.. My joy is more at this time. I came at the invitation of the students and participated in their youthful activity.

Thanks and best wishes.

17 April, 1983

S. Samadhar
Member, UPSC

I did not know fully what this was all about. After coming here, I have been greatly impressed by the interest taken by the Student's Union, students in general, faculty members and all others associated with it. So many things were going on together that I could choose what I liked best.

Arrangement for our stay here was very, very good.

Thanking you all.

17 April, 1983

R.N. Datta.
CALCUTTA

I am glad that I came to Pilani to attend the Academic Week. It was an enjoyable experience. I must congratulate the organizers for the personal attention given to each participant.

17 April, 1983

Mrs. V. Dayal
CMC

It is a very good idea to have an Academic Week. I wish it goes on and on for many more years.

The arrangements were very good. Many praises for the organizers.

17th April, 1983

J.S. Rawalgaonkar
Consultant, CMC

From the point of view of an ex-student of an IIT, I found BITS to be a truly remarkable institution on the whole. As far as the "academic week" is concerned, it, I think, is a step in a very positive direction. I owe thanks to a perfectly flawless organisation of the "Academic Week"

17th April, 1983

Narash Mansukhani,
CMC, BOMBAY.

The opportunity to visit BITES came in seven years after my first wish to do so. My idea of BITES and its capabilities was confirmed by this visit, which, though short, was memorable. I am getting back with a hangover of sleepless nights, unusually salubrious weather, great hospitality and the successful Apogee '83, for which the students need to be congratulated. Will come again for greater participation in the future.

17th April, 1983

Dr. S.P. Manjrekar,
CFERI, Mysore

The Academic Week was an excellent experience. Such activities could usefully be duplicated/replicated by other institutions, the necessary condition being the informal but strong links of understanding that exist between staff and students of BITES.

Congratulations to all concerned.

16th April, 1983

Dr. ASHOK JAIN, Director
D.S.T.

It was a very happy home-coming I got more love and respect than any other places. I am very much happy. I will never forget (it) in my life.

17th April, 1983

Professionally organised arrangements by budding engineers. Highly impressed, and well done.

Best of luck.

17th April, 1983

P.K. Puri
Commander
DDME/NIT

An unforgettable stay.

Thanks.

17th April, 1983

P.C. Saxena
Lt. Commander
Indian Navy

A magnificent flower in the desert. May it bloom for ever and spread its scent in all parts of the world.

Captain A.R. Dabir
Indian Navy

I was a refreshing experience. Youngster's organisation was superb. Presentations were confident. Wish many more successes.

17th April, 1983

M.S. Ramanurthy
Deputy Sec. AIU

Remarks of Shri James Lindsay, President, Institute of Cultural Affairs International,..... Brussels, in the Visitors' Book of the Institute (16th November, 1983).

The Practice School represents a tremendous advance in relating practice to theory in commerce and industry. Congratulations !

Remarks of Shri D.E. Lloyd Jones, 5 Playfair Mansions, Queens Club Gardens, London W14 in the Visitors' Book of the Institute (30th November, 1983).

A fascinating glimpse of your work (particularly the Practice School) which, despite differences between the countries, have an underlying unity of purpose.

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We are impressed with the philosophy behind your PS- programme and thank you for your explanations.

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It is a pity we don't have enough time to discuss the relation between university and Industry. We will both learn a lot from each other. Selection of a good teacher is as difficult as the selection of a good manager.

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I am greatly impressed with the achievements of the Birla Institute of Technology and Science. The bold experiments they have made in the field of education deserve commendation. It is easy to talk of innovation but very difficult to practise it particularly in the field of education. Western Universities had not bound students to choose only a select set of subjects but we have bound them to these restrictions. I am happy that the BITS has broken these shackles.

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