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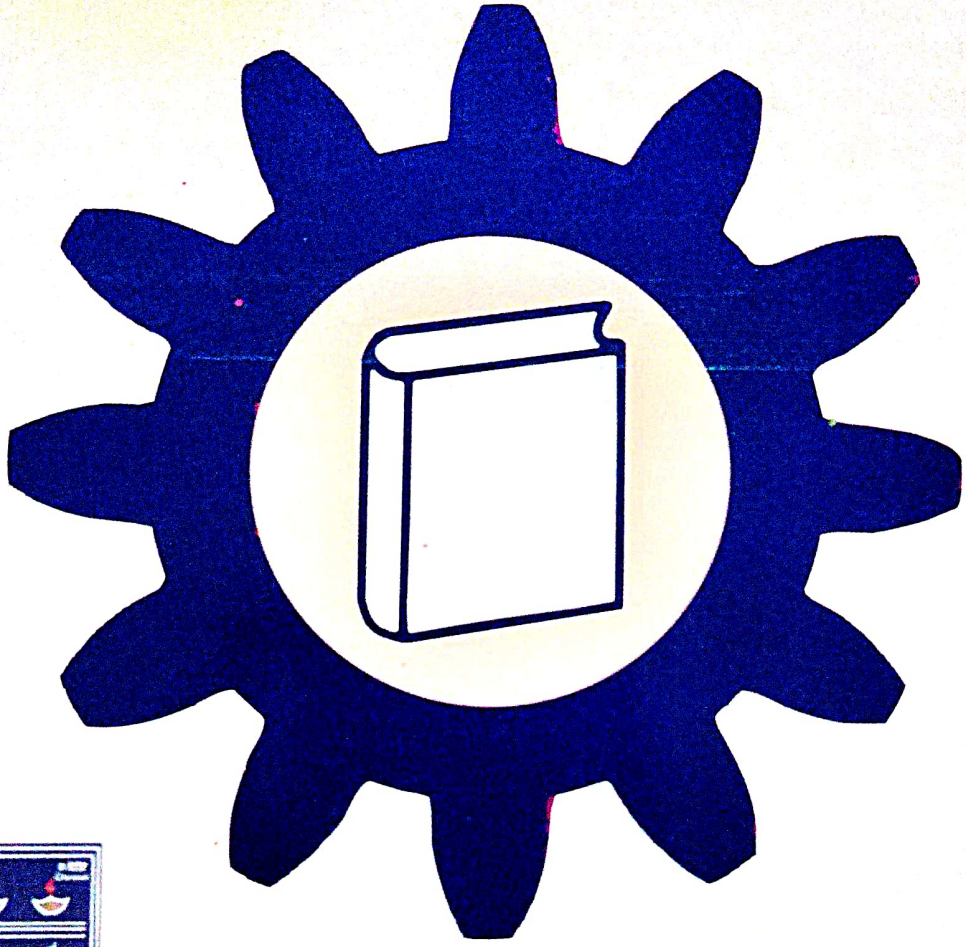

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EDITORIAL

We are happy to publish the Journal of Technical and Vocational Education, Volume 21, Number 1 and we are thankful to the authors for their splendid contributions. This volume contains a good number of articles and research papers which were well thought out and well written. We believe, these will be useful and interesting to our readers.

Dr. Offiong on the basis of the research in Curriculum Development wrote a paper titled "Development and Evaluation of a Mechanical Engineering Education Curriculum: The University of Uyo –Nigeria Case". The paper examines the accreditation of engineering programmes in Nigerian Universities, before considering the factors affecting engineering education in Nigeria. This paper generally reports the research undertaken by the author in facilitating the development of a Mechanical Engineering Education Curriculum. This research output is envisaged to be one of the motivating factors of curriculum framers in engineering discipline.

Shri. Sharma on the basis of his experience as Head of Product Development – Decision Works of RAMCO Systems Limited came out with the paper on "Chief Information Officer – the Emerging Exciting Profession". His paper describes in brief the changing business scenario, the expectations of IT, the function of IT departments, the role and responsibilities of CIO and finally suggests changes to the current educational systems to meet the new growing demand of specialized officers. This article will definitely be of some use to the Career Counsellor working in various engineering colleges and technological institutions.

Prof. Raju and Prof. Paradesi Rao have contributed the paper titled "VLSI Test Generation by Genetic Algorithms for Mobile Communication". The authors have discussed how genetic Algorithms can be used for automatic test generation. Genetic algorithms have been very effective for sequential circuit test generation especially when combined with deterministic algorithms.

Prof. Jaiprakash Narain contributed his rich ideas on "Competency Based Vocational Education and Training" which not only recognizes students' skills but also provides education and training in a mode that suits their economic compulsions. It will not only benefit the workforce to earn a decent living but also contribute to the national economy by better productivity of the work force.

Almost all our volumes contained atleast one article on "Teacher Behaviour". Dr. Panch Ramalingam, in his research paper on "Exploring Personality Dimensions and Decision Making Styles of Teachers" attempted to investigate the relationship between Eysenck Personality Traits and Decision making styles of teachers of Colleges and Universities.

On the basis of his findings the researcher felt that the personality dimensions and decision making styles of the teachers may be enhanced by providing comprehensive guidance.

Prof. Naidu, Prof. Alagusundaram, and Prof. Mansoor in their article on "Effective Management – An Overview in Technical Institutes of Andaman Nicobar Islands" reviewed certain aspects of Management and highlighted the significant contribution of the standards of the International organization for Standardization. Ms. Rathi Ananth and Ms. Reeni Samuel in their article on "Approaches in Planning and Utilization of Human Resources in India" have felt that the improvement in India's human resources depends on the policy makers, officials who implement the policies and the group at the receiving end. The Government cannot be held responsible for the condition of the citizens. Awareness will help people in-terms of health and hygiene and earning a livelihood.

A different kind of an article on "Food Culture and Environment" written by Mrs. Uzo, has been included in this Volume. This paper applies to the personal life of an individual with regard to food habits and those parts of food heritage which are significantly correct and helps to modify in food habits and culture. It is envisaged that a paper like this will be of some interest to our readers for enhancing their efficient and emotional well-being through food culture.

Shri. Kulanthaivel has come out with his idea on "Knowledge Management for Networked Learning Environments" which is thought to be useful to the technical teachers.

We once again acknowledge the contributions of authors for this present volume. We welcome papers and research articles for future issues. We thank Dr. (Mrs.) S. Renukadevi for going through the proof and shouldering editing responsibilities which made it possible to publish the journal.

– Editor

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Development and Evaluation of a Mechanical Engineering Education Curriculum: The University of Uyo-Nigeria Case

ANIEKAN OFFIONG

ABSTRACT

The Department of Mechanical Engineering at the University of Uyo has in the last five years been exploring methods that address innovation and modernization of Engineering Education. The aim of this new Department of Mechanical Engineering established in 1995 in undertaking this exercise is to create an Engineering Education system that will meet the NUC/COREN standard and at the same time incorporate into its programme features that will align the curriculum with the industrial needs of the country. This paper generally reports the research undertaken by the author in facilitating the development of this curriculum. The paper first examines the accreditation of Engineering programmes in Nigerian Universities before considering the factors affecting Engineering Education in Nigeria. Based on these challenges in mind the Mechanical Engineering curriculum for the new Department of Mechanical Engineering was developed. The paper discusses the general philosophy for developing the curriculum and then goes ahead to present the new curriculum. The methods used for development and evaluation of the curriculum are also presented.

Keywords: Curriculum Development, Curriculum Evaluation, Mechanical Engineering.

INTRODUCTION

The Faculty of Engineering, University of Uyo, Nigeria was established in 1995 during the tenure of Engr. Prof. Fola Lasisi as the Vice Chancellor. The Faculty started with 63 undergraduate students [of which 14 were Mechanical Engineering students] under the leadership of Dr. Charles Uko. In 1997, the Department of Mechanical / Agricultural Engineering in the Faculty was established with Dr. L.O. Asuquo as the Head. In 1998 there was need to create a separate Department of Mechanical Engineering and Dr. Aniekan Offiong was appointed Head of Department. The first Dean of the faculty, Engr. Prof. E.U. Nwa who had long been expected arrived finally in October 1998 and work on curriculum development commenced in earnest. The faculty runs eight programmes under five departments namely:- Chemical/Petroleum; Civil; Electrical/ Electronics /Computer; Food/Agricultural; and Mechanical Engineering. The Mechanical Engineering Department currently runs a programme leading to the award of the Bachelor of Engineering (B.Eng.) degree. This programme is concerned with transmission of knowledge and concepts in science and technology and is primarily aimed at producing Mechanical Engineers who would function immediately and effectively in government and industry in the planning,

design, construction and management of facilities serving the needs of society.

The B.Eng. Programme consist of lectures supplemented by tutorials, laboratory, and field-work, and projects, supported and reinforced by practical training in industry. Courses are designed to impart sound knowledge to students on application of scientific principles to solution of practical problems. In this regard, a good background in mathematics, physics and chemistry is required. These subjects enable the student to develop the necessary technical skills, intellectual discipline and the power to analyse and solve complex problems.

The B. Eng. Programme is for duration of five years consisting of nine semesters of study in the University and one semester and three long vacation periods of compulsory practical training in industry. The first two years of study are common to all the branches of Engineering and are devoted to the teaching of general Engineering courses to give a broad-based Engineering Education. From the third year onward, the emphasis is on the teaching of courses in the various areas of Mechanical Engineering. In final year, an in-depth study of some aspect of Mechanical Engineering is undertaken by each student in the form of a project. A total of 12 months of compulsory supervised industrial experience aimed at giving the practical orientation and adaptability towards industrial life is also arranged by the University from the second to the fourth year of study.

When Engineer Prof. E. U. Nwa the first Dean of the Faculty resumed work in October 1998, he started by setting up a faculty committee on curriculum development under the chairmanship of Engr. Prof. I. C. Ijoma. This paper discusses the research undertaken by the author, the Head of Department of Mechanical Engineering in presenting his Department report to the Curriculum Development Committee. The paper discusses the general philosophy for developing the curriculum, and then goes ahead to present the contents of the curriculum. The methods used for evaluation of the curriculum are also presented. Generally this work is intended to serve as a building block for the establishment of new Departments of Mechanical Engineering or the modernization of existing ones.

METHODOLOGY

In January 1999 the Departmental Board of the Mechanical Engineering Department embarked on the exercise of developing and formalizing their curriculum in line with the faculty directive. In addition to National Universities Commission's guidelines on Minimum Academic Standard/Departmental Programmes from other Universities in Nigeria/overseas, a number of theoretical works were also considered. These include Esan(1997), Shen (1996), Achi (1988) and Ojiaku (1986). The vision of the Mechanical Engineering Department was to develop an Engineering curriculum, which ensures that the student graduate will have specific abilities or knowledge upon graduation. First the Department requested for departmental brochures from all the 23 Universities in Nigeria offering Mechanical Engineering in order to enable them commence the research. As many as 18 of them did. The brochures from overseas Universities were easily obtained from the University Library.

The Department then compiled reports of staff from their informal surveys of Mechanical Engineering graduates from other universities and employers to assess the desired characteristics of the graduates, the importance of specific knowledge or skills for

their job requirements and the degree to which the students received adequate coverage of such knowledge or skill in their academic programme. Based on this survey it was agreed that effort should be concentrated on the brochures from the University of Nigeria, Nsukka; the Obafemi Awolowo University, Ile-Ife; and the University of Port Harcourt, Port Harcourt. It was also agreed that Engr. Prof. D. C. Onyekwe from the University of Nigeria, Nsukka be adjunct to the Department to assist in the development and implementation of this programme. Identifying key concepts from other Mechanical Engineering curriculum that should be included in the University of Uyo Mechanical curriculum entails a lot of work which the Departmental Board did as reported in Offiong (2003). The curriculum was developed over a period of about three years. Several innovative approaches to curriculum content were incorporated into the academic programme, reflecting the challenges and opportunities that Mechanical Engineering professionals will face in the coming decades [Meyer and Sass 1993; Schillaci 1996; Wall 1996; Woodcock and Chan 2002; Liu et al 2001; and Odai and Andam 2002].

The development of sound curriculum for any Department of the Faculty will requires a good knowledge of (i) the accreditation process by the National Universities Commission [NUC]/ Council for the Regulation of Engineering in Nigeria [COREN] and (ii) the factors affecting Engineering Education in Nigeria. These issues will first be examined before going into the philosophy of the new curriculum, its development, and evaluation.

ACCREDITATION OF ENGINEERING PROGRAMME

In every society there is a need to maintain basic minimum standard of practice and professionalism. In Nigeria all degree programmes run in the universities including the Mechanical Engineering Programme must be accelerated by the NUC. The NUC to this effect has published its Minimum Academic Standard and this document is very essential for any Department, be it a new Department seeking fresh accreditation or an existing Department seeking re-accreditation. Also in Nigeria, any degree programme run in the Faculty of Engineering must be accredited by the COREN. The COREN to this effect usually makes available to the faculties their requirement. COREN requirement is usually NUC Minimum Academic Standard plus additional professional requirement which most Registered Engineers in academics are familiar with. A Department is usually free to set higher standard, but the standard must not fall below the minimum of NUC and COREN. The goals and objectives of any accreditation are to set desired standard and monitor adherence to that standard usually by visitations. The aim is to certify at meeting all formal official requirements of academic excellence, curriculum and facilities so as to make authoritative creditable or reputable programmes which will:

(i) assure employers and other members of the community that graduates of all academic Programmes have attained an acceptable level of competency in their areas of Specialization.

(ii) certify to the international community that the programmes offered in the universities are of high standards and their graduates are adequate for employment and for future studies.

The status of accreditation of an academic programme may be identified at one of the following levels.

Full Accreditation: These shall be granted to any degree programme that has met the Minimum Academic Standard. Full accreditation shall be granted for a period of six (6) academic sessions with a mid term appraisal after three years. After the six academic sessions, there shall be a re-accreditation visit.

Interim Accreditation: This shall be granted to any degree programme that has minor deficiencies that must be rectified within a stipulated period. This is granted for not more than two (2) academic sessions after which the programme would be automatically due for revisitation.

Denied Accreditation: Denied Accreditation applies to any degree or other academic programme, which has failed to satisfy the approved. Request for re-visitation for the purpose of accreditation shall come from the University concerned.

The criteria for accreditation of Engineering based programmes in universities in Nigeria are derived from issues relating to academic matters - goals and objectives of the programme, the curriculum, resource available for teaching the programme, satisfactory standard and quality of students' work, effective management of the department, good financial support and satisfactory rating of graduate performances on the job by employers. For more details see Gulma (2002).

The fact that the University of Uyo Mechanical Engineering Programme will have to be examined during the accreditation exercise by the NUC/ COREN visitation teams greatly influence the outcome of the curriculum that was eventually drawn up for the Department.

FACTORS AFFECTING ENGINEERING EDUCATION IN NIGERIA

Engineering Education in Nigeria is being affected by such factors as poor secondary school foundation, faulty admission policies, and large student enrolment versus poor facilities and the equipment, and the non-flexibility of the engineering curricula [Ajayi, 2002].

Poor Secondary School Foundation: Most secondary schools in Nigeria do not have the manpower and facilities required to effectively prepare their students for the engineering discpline. The teachers and laboratories required to teach core courses like mathematics, physics, chemistry, and technical drawing are insufficient in most of the secondary schools in Nigeria.

Faulty Admission Policies: Admission into any University in Nigeria is primarily through the Joint Admission and Matriculation Board (JAMB). In 1997 the Federal Government of Nigeria set up JAMB to prevent multiplicity of admission and to reflect the federal character by giving a fair chance to all and sundry via the quota system. By quota system only 40 - 45% are admitted on merit, 30 - 35% are from the state around (catchments), 20% from educationally less disadvantage states and the remaining 0 - 10% is left to the discretion of the university [part of this which is often reversed for University staff children]. This admission policy which admits less than half on merit is faculty and it has out-lived its usefulness. Again the JAMB Examination known as the University Matriculation Examination (UME) nowadays are fraught with a number of examination

malpractice. A number of research studies have shown that the UME is no longer effective and reliable tool in predicting the academic performance of students [Ukwunife, 1990; Nwana, 1996; and Ogunyele, 1999]

Student Enrolment, Facilities and Equipment: Ogunleye (1999) reports that the rate of student enrolment in Nigerian universities increased form 3,646 students for the five Universities in 1962 to 180, 871 Students for the 31 Universities by 1990, a 700% increase in the number of students per university. Agbon and Ajienka (1996) data reveals that between 1985 and 1995 Universities enrolment increased at an average of 20% from 102, 370 in 1985 to 310, 700 in 1995. Agbon and Ajienka (1996) also reveal a decline from $4753 appropriation per University Student in 1985 to $129 per University student in 1995, this represents a decrease by 3271% in appropriation. This reduction in funds in dollars terms, explains the obsoleteness and complete irrelevance of most of the facilities and equipment, with which the academic have had to teach and conduct research work.

Non-Flexibility of the Engineering curricula: The foundation faculties of Engineering in Nigeria such as the University of Ibadan, Ibadan; University of Nigeria, Nsukka; Obafemi Awolowo University, Ile-Ife; University of Lagos, Akoka; and Amadu Bello University, Zaria were founded by foreign personnel and therefore were modeled after foreign institutions. Even though some of the foundation faculties have modernized and adapted themselves to the needs of the nation, most of the younger faculties which were modeled after them have remained status-quo with minimal changes. There is need for every Faculty of Engineering in Nigeria to examine how relevant its curriculum is to the developmental needs of the country today. (Ajaji, 2002).

The factors Affecting Engineering Education in Nigeria had considerable influence on the final curriculum that was drawn up for the Department of Mechanical Engineering University of Uyo. For example the first and second years were overloaded in order to reinforce fundamental subjects like mathematics, chemistry, physics, and engineering drawing which most of the students were discovered to be deficient in. Also, even though programmes from other universities in Nigeria were consulted and actually used to formulate the Department's curriculum, the Departmental board was aware of the dangers of lifting those programmes without examination of their relevance to the contemporary Nigeria. In every of the Departmental Board decision, consideration was given to the large student enrolment versus the current state of funding/poor facilities and equipment.

PHILOSOPHY OF THE PROGRAMME

Mechanical Engineering includes the science and art of formulation, design, development, manufacturing and control of systems and components. These may include both power -generating machines and machines that transform and consume this power such as nuclear and fossil power plants, propulsion devices, engines, turbines, motor control mechanisms, transportation system (automobiles, trains, space vehicles, marine vehicles, etc), refrigeration and air-conditioning system, cryogenic system, manufacturing machines and systems, materials handling and earth-moving devices. The field requires a basic knowledge of mechanics of solids, fluids and machines, material, machine design, heat power, thermodynamic, heat transfer, manufacturing

process, industrial engineering, management science, optimization and systems analysis.

In line with modern trends in curriculum development in Mechanical Engineering the world over, the programme of study includes basic subjects common to all Engineering field, fundamental subjects important to all Mechanical Engineers and specialization in one area of Mechanical Engineering. Specialization in an area involves (1) selecting project topic that are related to the area of specialization and (2) offering two additional courses in the area of specialization. The options currently available are Thermo-fluid Engineering, Production Engineering and Industrial Engineering and Management. The programme aims at giving a balanced Mechanical Engineering training suitable for any level of development. On successful completion of the programme, the graduate of Mechanical Engineering will be able to master the basics of Mechanical Engineering analysis and design. Generally, the programme aims at producing a graduate Mechanical Engineer who will be able to

(a) Read, interpret and prepare technical reports and drawings;

(b) Actively participate in the analysis and design of any infrastructural facilities of Mechanical Engineering nature;

(c) Actively participate as a Mechanical Engineer in the running of an industry and

(d) Plan, organize, control and coordinate the running of an industry.

THE MECHANICAL ENGINEERING CURRICULUM

The programme structure of the Mechanical Engineering curriculum developed for the university of Uyo based on the above challenges is presented below. A comparison of this curriculum with that of other universities can be seen in Offiong (2003).

Programme Structure of the Mechanical Engineering Department

Year 1

First Semester		Second Semester	
Course Title	*Unit*	*Course Title*	*Unit*
General Physics 1	3	Engineering Physics II	3
General Physics Laboratory	1	General Physics Laboratory II	1
General Chemistry 1	4	General Chemistry II	4
General Mathematics 1	4	General Mathematics II	4
Use of English 1	2	Use of English II	2
Nigerian People & Culture	2	Intro. to Philosophy & Logic	2
Social Science for Science Student	2	Engineering Drawing	1
Engineering Drawing 1	1	-	-
Total Units	*19*	*Total Units*	*17*

Year 2

First Semester		Second Semester	
Course Title	*Unit*	*Course Title*	*Unit*
Engineering Mathematics I	3	Engineering Mathematics II	3
Engineer in Society	1	Engineering Drawing IV	1
Engineering Drawing III	1	Workshop Practice II	1
Workshop Practice I	1	Thermodynamic & Heat Transfer	3
Strength of Materials I	2	Fluid Mechanics	2
Engineering Machines I	2	Engineering Mechanics II	2
Engineering Materials	2	Electrical Engineering II	2
Electrical Engineering I	2	Computer Prog. & Application II	2
Industrial Chemistry for Engineers	2	Strength of Materials II	2
Computer Programming & Application I	2	Technology Policy & Development	2
Total Units	18	Total Units	20

Year 3

First Semester		Second Semester	
Course Title	*Units*	*Course Title*	*Units*
Engineering Mathematics III	3	Engineering Mathematics IV	3
Electrical Mathematics Devices	3	Resch. Mets. & Tech. Report Writing	1
Structural Mechanics I	3	Electronic circuits I	3
Theory of Machines	2	Quality Surveying Estimating	1
Advanced Thermodynamics I	2	Measurement & Instrumentation	2
Metallurgy	2	Manufacturing Technology	2
Fluid mechanics II	2	Machine Design I	2
Mechanic Engineering. Lab.I	I	Workshop practice III	2
Heat and Mass Transfer	2	Machine Drawing	1
-	-	Mechanical Engineering Lab. I	1
Total Units	20	Total Units	18

Year 4

First Semester		Second Semester	
Course Title	*Unit*	*Course Title*	*Unit*
Numerical Analysis	3	Siwes II Industrial Training	6
Engineering Economics	2	-	-
Applied Thermodynamics I	2	-	-
Applied Fluid Mechanics I	2	-	-
Mechanics of Machines	2	-	-
Control Systems	3	-	-
Machine Design II	2	-	-
Mech.Eng. Laboratory	1	-	-
Total Unit	17	-	6

Year 5

First Semester		Second Semester	
Course Title	Unit	Course Title	Units
Engineering Management and Law	2	Applied Thermodynamics II	2
Engineering Metallurgy	3	Applied Fluid Mechanics II	2
Applied Design 1	2	Eng. Mat. Selection & Economics	3
Mechanical Engineering Lab. III	1	Applied Design II	2
Final Year Project I	3	Mechanical Engineering Lab. IV	1
Elective I	3	Final Year Project II	3
Elective 2	3	Optional Elective I	2
		Optional Elective II	2
Total Units	17	Total Units	17

For Elective 1, students are required to opt either Production Engineering (2 Units) or Principles of Industrial Engineering (2 Units). For Elective 2, students are required to opt either Power Plant Engineering (3 Units) for Principles of Air-conditioning & Refrigeration (3 Units). For Optional Elective 1 & 2, students are required to opt any two courses from one of the following optional areas. *Thermod-Fluid Engineering Option:* (i) Internal Combustion Engine (2 Units); (ii) Fundamentals of Nuclear Engineering (2 Units); and (iii) Fluid Machinery (2 Units). Production Engineering and Management Option: (i) Manufacturing and Tools Engineering (2 Units); (ii) Computer - Aided Design & Manufacturing (2 Units); and (iii) Production Planning & Control (2 Units). *Industrial Engineering Option:* (i) Operational Research Models in Industrial Engineering (2 Units); (ii) Inspection Quality Control and Reliability (2 Units); and (iii) Analysis of Capital Investment (2 Units).

EVALUATION OF THE CURRICULUM

The Mechanical Engineering curriculum for the University of Uyo has a number of factors built into it to help evaluate the programme, in addition to the evaluation carried out by an external moderator and

employer. The internal indicators used to evaluate the curriculum are tested during, design exercise, industrial attachment, and field trips.

Testing: Testing is done at least twice in the semester. At the middle of the semester a class test is given which will form part of the continuous assessment which carries 30% of the final grading. A student who registers to study for degree programme in Mechanical Engineering is also evaluated in terms of attendance. Student are normally required to satisfy 70% attendance requirement of scheduled classes in lectures, tutorials, practicals, workshops and field work to be eligible to take examination.

Design Exercises: Several design exercises in the form of course work are incorporated in the curriculum. Machine Design I is taken in the third year second semester, followed by the Machine Design II in the fourth year first semester. Applied Design I is taken in the fifth year first semester and Applied design II in the fifth year second semester. Applied Design I involves design project in which students will be required to conduct a design project under supervision using the techniques taught in previous design courses and taken at least to a workable layout of a device. The student must make satisfactory attempt to construct the device. The design should involve simple mechanical systems for a specified duty. The students must analyse its operating conditions and after considering the design criteria, choose between potential solutions. Reports submitted by students should contain all calculations, a comparison of potential solution, justification for the design finally chosen, and instruction on detail design, manufacture, testing and use. Applied Design II is a continuation of Applied Design I. Each student working under supervision of the course lecture is required to submit a report on his design / construction of the device and undergo an oral examination. In addition to these, several courses have course work. Also in the final year a student in required to carry out a research project under the course title Final Year Project I & Final Year Project II. Final year Project II is a continuation of final year project I. Each student working under supervision of an academic staff is required to submit a report on his findings and undergo an oral examination.

Industrial Attachment: Industrial attachment programme during the long vacations in the second semester provides a unique opportunity for most student engineers to witness for themselves how their profession is organized. It is also a period for self evaluation by the students. In order to evaluate the students in the industrial training programme, the department has incorporated into its curriculum industrial training seminars which are done before and after each encounter of the students with the industry. The pre-attachment seminar prepares the student for the task ahead while the post-attachment seminar grades the student. It is also required that a student should submit a written report to qualify for grading.

Field Trips: The University of Uyo Mechanical Engineering curriculum has field trips as part of its comparison. These field trips are designed to give students a first hand impression of how engineering project look and operate. This component influences their appreciation of engineering and impacts on their understanding of lectures. This is another period of self evaluation, as serious student do not have difficulties reconciling theories with practices in the industries.

External Moderators: An external examiner is invited once every year to evaluate the

programme. The external examiner will go through student's project, look at examination questions and answers sheets, interview some students, check lecture notes given to students and interview the staff. The external examiner then gives an assessment of the programme which will then be submitted to the Vice Chancellor.

Employers and Alumni: Another important factor that will help the Department maintain quality of the programme is to convene meetings with Alumi, Practicing Engineers, and Employers, to discuss the quality of the programme [Odai and Andam, 2002]. This will assist in developing a feedback quality control system. This part is yet to be included in the University of Uyo Mechanical Engineering Programme because of the age of programme. Only one set of students so far have graduated.

CONCLUSION

Seasonal academicians with diverse background led the discussion on the curriculum development described in this paper. It was a rich experience as they shared thoughts, which we believe will be of benefit to the Department in the coming years. The exercise included Prof. D. C. Onyejekwe [*Adjunct Professor*]; Dr. A.O. Ette [*Associate Professor*]; Dr. L.O. Asuquo [*Senior Lecturer*]; Engr. P.O. Umanah [*Senior Lecturer*]; Dr. E.O.P. Akpan [*Visiting Senior Lecturer*]; Dr. U.H. Udomon [*Visiting Senior Lecturer*]; Y.N. Ukaru [*Lecturer*]; O.W. Obot [*Lecturer*]; And Ebene Ufot [*Lecturer*]. They all accepted the challenge that this exercise of curriculum development is a dynamic one and that continuous review is needed if the Department should be abreast with latest developments. It was however agreed that the present programme should be allowed to run for at least five years. Future plans will focus on bringing together all stakeholders for evaluating the programme. This will involve distributing questionnaires to alumni and employers. This may be followed by a workshop to discuss the direction of the curriculum development. Certainly at the expiration of the five years period there will be further innovations and modernization.

ACKNOWLEDGEMENTS

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Chief Information Officer (CIO) – The Emerging Exciting Profession

M.V.K SARMA

SUMMARY

Post Industrial revolution, we are all now in the midst of another major revolution viz., Information Technology (IT) revolution. IT has become so pervasive that today there is hardly any area untouched by IT. With automation and IT, the mantra of business, the content of direct labour is shrinking and indirect labour is on the rise. This is more pronounced with the fast growth rates in the services sector, where the demand is more for "knowledge workers". To handle this, companies are forming specialists departments called "IT department" to take care of all the information needs of the company, demanding, people with different kind of skills and competentices. To supervise and lead this change a new addition is being made to C-Class officers' (The others being CEO, COO, CFO etc) viz., "CIO-Chief Information Officer".

This paper describes in brief the changing business scenario and expectations on IT, the functions of IT department, the role and responsiblilites of CIO and finally suggests changes to the current educational system to meet the new growing demand of specialized officers called "CIO's".

INFORMATION AGE: THE CURRENT REVOLUTION:

Today's business environment is extremely brutal and uncompromising. Globalization has spawned bigger, more poweful competitors. Customers are more sophisticated and selective, demanding higher levels of service, quality and customization. Coupled with this is the effect of economic slowdown, which is squeezing the profits, and slowing capital investments just as the pace of business is accelerating into realm of real time.

In this scenario companies that work "smarter" have a competitive advantage. Rather than react to crisis and opportunities these organizations anticipate them. They also see and capitalize on oppotunities before competition; identify and resolve problems before they escalate into crisis; reengineer internal processes, products and services to enhance customer satisfaction.

The secret weapon that these "smart" organizations wield is information - more specifically, highly integrated information that empowers workers with new insights about what drives business and how to optimize business to meet strategic goals and objectives.

The automation and other advancements in technology have resulted in reduction in number of people to work on shop floors and have increased the demand of indirect or managerial staff requiring doing analytical functions based on "real time" information. Hence there has been a gradual and steady displacement of so called "blue collared workers / jobs" by an increased demand of

"knowledge workers". This effect is more pronounced with rise in service industries where the demand of "knowledge workers" is more than the traditional manufacturing companies. The value that a company can create or generate is governed by the value that the employees contribute by what they know and what information they can provide.

With every revolution, come opportunities calling up for new skills, new jobs, new job definitions, new challenges. For a nation or company or individual to survive in this hyperactive digitized world one has to equip or rather reengineer himself or herself with the latest technologies and methodologies. All the stakeholders in the society viz., the government, the educational institutions, parents, students must look at newer ways on leveraging this wonderful opportunity.

IT DEPARTMENT: ROLE & RESPONSIBILITIES

Information Technology has touched every aspect of business. IT initiatives cover all internal functional areas of the organization viz., Production, Planning, Marketing, Finance etc, and external interactions like Suppliers, Customers too.

What's IT? IT is an interaction and integration of hardware, software, people who have the knowledge/ skills of hardware & software and end users who use the systems. The main objective of IT department is to provide the **Right** Information to the **Right** people at the **Right** time in the **Right** format.

Thus, IT deployments are seen ranging from simple single "isolated" systems to huge networks connecting companies across the globe. Companies are investing substantial amount of money, time and resources in IT with a strong intention to revolutionize themselves into "smart" companies. An IT deployment typically involves:

- Computer Harware – Desktops, Servers, Laptops, Printers etc.
- Software – Operating Systems
- Applications – Packaged products like Office, ERP etc.
- Storage Systems – SAN / NAS
- Networking Systems – LAN, WAN, VSAT etc.
- Security Systems
- Hardware / Software Maintenance systems

Many of these vary in complexity of usage, space, and maintenance. The skills and competency levels required to handle these vary as wide as the technologies being used.

These "IT assets" need to be monitored, upgraded, used and maintained as much as any other assets (Like Plant & Machinery, money etc) for effectiveness and efficiency. Unlike other physical assets these are something, which are owned by the IT department but are used by all other people in the organization. The customer base of IT department are theoretically all the employees in the organization and external people like end customers, dealers, wholesalers, vendors etc. Hence the cost of non-availability of these systems is extremely high and service levels demanded are very extreme. The activities of the IT department typically are:

- Deploying technology to align the organization to strategy
- Maintaining high availability of systems
- Rolling out packaged software
- Deployment of software upgrades, fixes and service packs

- Development of software based on end user requirements
- Planning for Disaster Recovery and Business Continuity planning
- Capacity Planning and Hardware upgrade policies
- Maintaining security of the systems
- Building of Data Warehouse, Marts
- Procurement of Hardware / Software etc.

The Staffing requirements of a typical IT department in any company are:

- Programmers
- Administrators
- Security Specialists
- Packaged products implementers for ERP, SCM etc.
- Hardware / Software maintenance
- Quality Specialists ensuring methodologies like CMM etc.
- Knowledge management specialists

The department is run by "CIO – Chief Information Officer" which was erstwhile known popularly as "EDP manager".

CIO's job spans both the depth and breadth of an organization, which is very demanding and challenging. Thus the mandate on all CIO's is to run the IT function like a business.

CIO: ROLES / RESPONSIBILITIES:

In many corporations, the Chief Information Officer (CIO) or IT director is the newest addition to the senior management team. But while it may be the latest ingredient in the alphabet soup of corporate management, the CIO's role is growing fast in both numbers and importance, and it is evolving as it grows.

CIO's are senior executives responsible for all aspects of their companies' information technology and systems. They direct the use of IT to support the company's goals. With knowledge of both technology and business process and a cross-functional perspective, they are usually the managers most capable of aligning the organization's technology deployment strategy with its business strategy. CIO's oversee technology purchases, implementation and various related services provided by the information systems department. It has been estimated that companies worldwide are spending in excess of $50 billion a year on reengineering, of which $40 billion goes annually into information technology. In other words, the CIO is at the center of many of the most volatile and costly changes in the life of a corporation.

Based on independent research conducted by an Australian agency, the mandate on all CIO's is to run the IT function like a business. This means CIO need to work like a CEO – planning and executing IT financial controls, marketing campaigns, HR strategies, customer service efforts and all the other disciplines that make a business run. Running it like a business is not only about efficient operations and financial controls. CIO's need to leverage practices in all the processes and functions typical of any business – customer service, HR, supplier management, marketing and, of course, leadership and governance.

CIO: SKILLS AND COMPETENCIES:

The top 10 skills and competencies desired by a CIO are:

- Ability to hire, develop and retain high quality IT professionals.
- International or global experience.
- Knowledge of an experience in a specific industry.

- Ability to create and manage change.
- Communication skills.
- Management skills.
- Relationship skills.
- Business savvies
- Expertise in aligning and leveraging technology for Business advantage.
- Leadership

The ideal qualification for the CIO are changing as the IT function becomes more central to business planning. Thus an ideal resume of a CIO is a mix of strong technical background, sound understanding of business functions and excellent behavioral attributes of being able to herald changes.

CURRENT EDUCATIONAL SYSTEM

Given the complex requirements on one side and the excellent opportunities that are emerging for CIO role, we hardly have a formal curriculum in our education system across undergraduates or postgraduate programs to imparting this knowledge and skill. The undergraduates are either too specialized or have too much of a breadth covering host of technologies and the PG programs are more oriented to provide IT as "ADD ON" to the general management discipline.

Hence it is suggested to have a specialized and focused program to prepare the next generation CIO's. The curriculum should cover basic and advanced concepts of

- Technology
  - Hardware
    - Desktops, Servers, Storage Systems, Laptops, peripherals etc.
    - LAN, WAN, VSAT, Terminal services, Intranets, Internets etc.
  - Security
    - Firewalls, Identity Management etc.
  - Capacity Planning, Administration & Monitoring
- Software
  - Software Engineering Practices
    - Software Development Lifecycles
    - Project management
    - Effort Estimations
    - Maintenance and Support
  - Programming concepts and Languages
  - Systems Administration and Monitoring
  - QA methodologies like CMM, Six sigma etc.
  - Packaged Software Implementations – ERP, SCM, CRM etc.
- Business
  - Business knowledge – Finance, Marketing etc.
  - Strategy Planning
  - Business Process Reengineering
  - Change Management
  - Legal and Government policies
  - Domain of Business Vertical specialization
- Behavioral concepts – Team management, Leadership
- Cross Countries etiquettes

Expertise in the above areas coupled with few years of experience, would make aspiring CIO take up formidable challenges of the changing economy with ease and

confidence. This would also enable companies to leverage on aspirant's formal knowledge in their endeavor to revolutionaries themselves into "smart" organizations.

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VLSI Test Generation by Genetic Algorithms for Mobile Communications

B.L.RAJU and Ch. D.V. PARADESI RAO

ABSTRACT

Genetic Algorithm based encoding for the test automation problem has been straightforward. A simple string representation is typically used in which each gene represents the logic value to be applied to a particular input of the circuit at a specific time. Standard crossover and mutation operators can therefore be used. While the first implementations targeted a large number of faults in the circuit concurrently, the trend has been to separate the tasks of fault excitation and fault effect propagation and to target faults individually. This approach has resulted in the highest fault coverages ever reported for many of the benchmark circuits. Although the simple strategy used initially for test generation does not achieve such high fault coverages, it is very effective for test sequence compaction.

INTRODUCTION

The Integrated Circuit (IC) fabrication process is prone to random defects, which may affect the functionality of a device and cause erroneous outputs. Testing of finished circuits is essential in weeding out defective parts to ensure that electronic systems built using the ICs function correctly. Sets of test vectors applied to circuits by a tester must have high defect coverages if they are to be effective in identifying defective chips. Furthermore, since the cost of testing VLSI chips is a significant fraction of the overall manufacturing cost, the time required to test a chip should be minimized. Effective tools for Automatic Test Generation (ATG) are needed to obtain compact test sets with high defect coverages.

In this article, we will discuss how genetic algorithms can be used for automatic test generation. Genetic algorithms have been very effective for sequential circuit test generation, especially when combined with deterministic algorithms.

TEST GENERATION IN GENETIC ALGORITHMS

The objective of Automatic Test Generation (ATG) is to obtain a set of test vectors that will detect any defect that might occur in the manufacturing process. However covering all potential defects would very difficult and would require an inordinate number of test vectors. Therefore ATGs operate on an abstract representation of defects referred to as faults and model a subset of the potential faults. A fault represents the logical effects of a defect on the circuit.

The single stuck-at fault model is used most often, with the assumption that many additional faults will be detected by tests generated using this fault model. With the single stuck-at fault model, faults that tie a

circuit node to logic one or logic zero for every node in a circuit are considered.

In a typical ATG tool, individual faults in a circuit are targeted and after a test (one or a sequence of test vectors) is successfully generated to detect a fault, a fault simulator is used in order to identify additional faults that are covered by the test. These faults are removed from the fault list and need not be targeted by the more computation-intensive test generator.

Genetic algorithms can be used to generate populations of candidate test vectors and sequences and to select the best to apply in a given time frame. This process is illustrated in the Figure. The test generator begins by generating individual test vectors. When no more improvements in fault coverage can be made with the individual test vectors, the test generator proceeds to test sequence generation if the circuit is sequential. Test sequences are generated until no more progress is made, at which point test generation terminates. A Genetic Algorithm having a random initial population is used to generate each test vector or sequence, as shown in the algorithm and a sequential circuit fault simulator is used to evaluate the fitness of each candidate test. The best test evolved in any generation is selected and added to the test set. Then the fault simulator is used to update the state of the circuit and to drop detected faults.

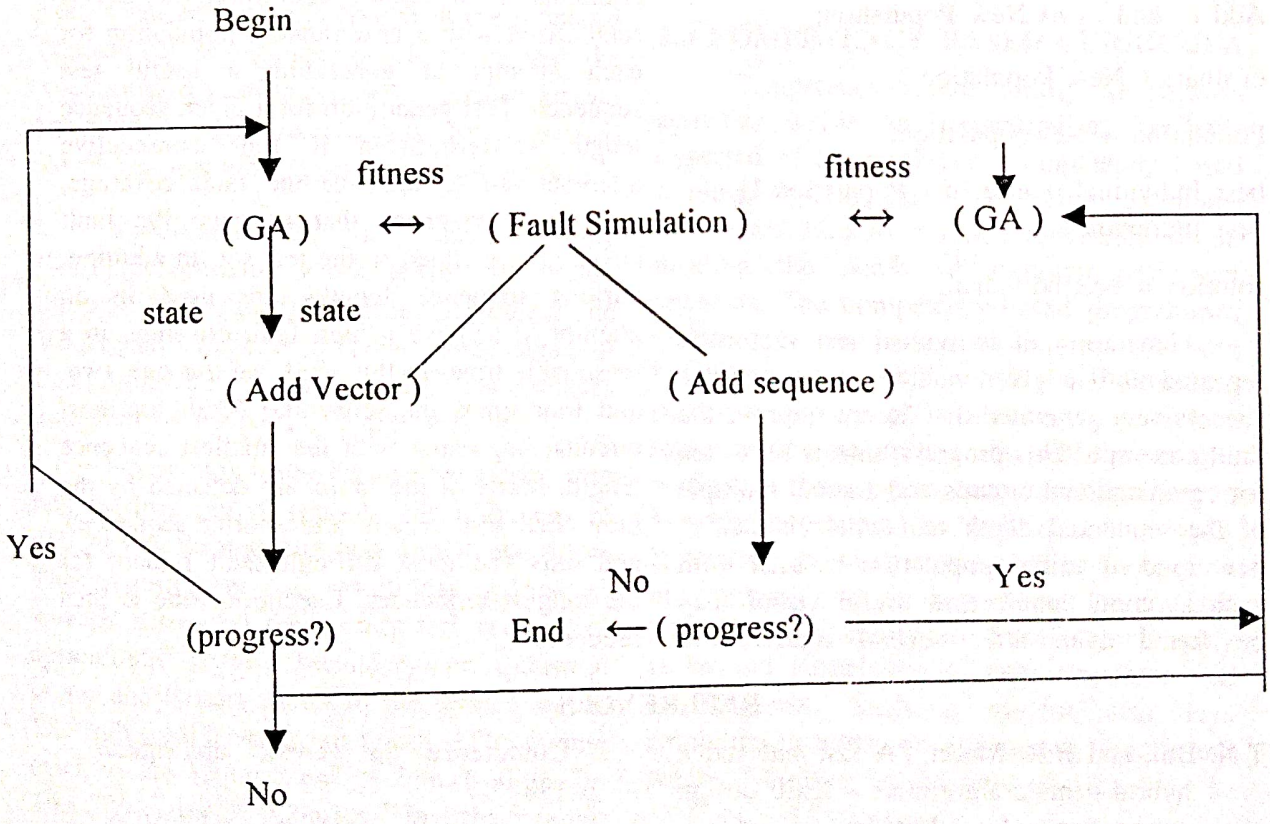

Fig. GA based test generation

GENETIC ALGORITHM FOR TEST GENERATION

generate initial Population:

evaluate (Population);

best Individual = best of (Population);

For i = 1 to Num Generations **Do**

New Population = ϕ;

For j = 1 to Population Size/2 **Do**

select p_1 and p_2 from Population;

crossover (p_1, p_2, c_1, c_2);

mutate (c_1);

mutate (c_2);

Add c_1 and c_2 to New Population;

evaluate (New Population);

Population = Newpopulation;

best Individual = best of (Population U best Individual)

solution = bestIndividual;

Generation of individual test vectors is repeated until a given number of vectors are successively generated that do not improve the fault coverage. This progress limit is set to ten for combinational circuits and a small multiple of the sequential depth sequential circuits. A new random initial population is used with each attempt; therefore, a useful vector may be found even after several unsuccessful attempts. For sequential circuits, several vectors may be required to change to a state in which additional faults may be detected. However, since the circuit is not guaranteed to go into a desirable state, a reasonable progress limit should be used to limit the execution time and test set size. For combinational circuits, only vectors that improve the fault coverage are added to the test set, and the second best test vector evolved is included in the initial GA population for the next time frame, since it may be useful.

Even when test sequences are being generated, a sequence may not be found to improve the fault coverage if the initial population does not contain the right combination of vector. Therefore, the GA is reintialized with a new random population for each attempt at generating a useful test sequence. Test generation for a given sequence length is terminated if four consecutive attempts fail to improve the fault coverage, and only sequences that improve the fault coverage are added to the test set. In addition, various sequence lengths are used in an attempt to achieve a high fault coverage in a reasonable time. In this work we use one, two, and four times the sequential depth for most circuits, beginning with the smallest sequence length. Many of the faults are detected by the individual test vectors and shorter sequences, and only the most difficult fault remain for the longest sequences. Execution time is thus reduced.

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Competency Based Vocational Education And Training

G.B. JAIPRAKASH NARAIN

1.0 INTRODUCTION

The Programme of Vocationalisation of Education has been accorded very high priority in the National Policy on Education. The Policy, *inter alia,* states: "The introduction of systematic, well-planned and rigorously implemented programme of vocational education is crucial in the proposed educational re-organization. It states that the vocational education will be a distinct stream intended to prepare students for identified vocations spanning several areas of activity".

Vocational Education and Training (VET) is presently available in the country through the Industrial Training Institutes, and Vocational Schools. These two sets of institutions are governed by different agencies and there is no parity of certification.

For economically deprived students, who had to drop out of schools, the only way to get jobs is through the non-formal education. The requirement of vocational manpower spreads across all the sectors like primary or agricultural sector, secondary or industrial sector and tertiary sector or the service sector. The Industrial Training Institutes (ITIs) mainly cater to the requirement of Industrial sector. The Vocational Courses in the senior secondary schools more or less duplicate the courses in ITIs. Very little is being done to meet the requirement of manpower in the service sector.

The formal courses have no provision to transfer or give credit to a person employed or trained in the work place. The entry qualification is to be strictly followed and the course duration is fixed. These two major factors called for a Competency based Vocational Education and Training system.

2.0 COMPETENCY BASED CURRICULA

Competency is the ability to perform activities within an occupation at standards expected of an employee. Competency based training system aims at trying to make Vocational Education much more relevant to meeting the needs of industry and user agencies. The competency-based programmes ensure that the person would possess both knowledge and skill of defined standard corresponding to relevant workplace requirement and reflect the realities of the workplace. The system encourages learning in a work environment as well as course work. It focuses on what is expected of the person in applying what they have learnt, and embodies the ability to transfer and apply skills and knowledge to new situations and environments. Such a system also lays emphasis on hands on experience (theory and practical training in the ratio of 1:2).

The crucial element of competency-based programmes is to shift the focus from curriculum content and standard period of time in each level of training to assessment of the competencies required in each

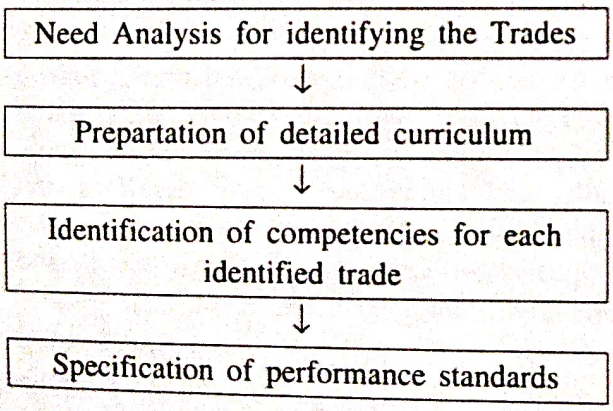
level. However, care has to be taken to ensure general skills and more general vocational knowledge is also included, where appropriate, in Vocational Programmes, so that training is not only concerned with the short-term and immediate needs of the user agency.

The competency based approach calls for large involvement of user agency. Vocational Education and Training should involve user agency as much as up to 85% or more, if required in:

- Identification of the competencies required by user agency from formal training at different levels.
- Developing competency standards for each training programme with a system of training packages for each user agency.
- Identifying the qualifications that are included in each user agency's training package.
- Developing assessment guidelines for assessing whether each trainee has achieved required competencies specified in training packages.

3.0 CURRICULUM DEVELOPMENT

The Curriculum Development is based on multi-entry and multi-exit pattern with the following procedure:

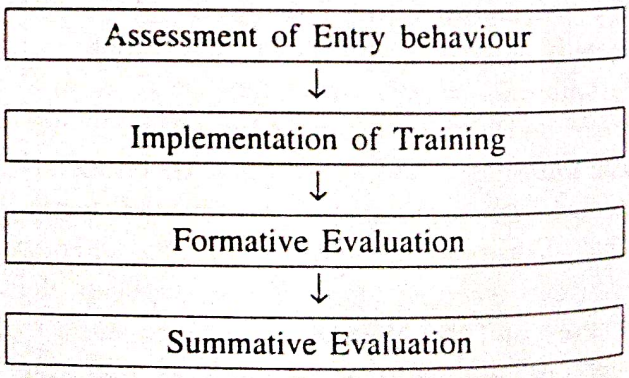


The Courses / Programmes shall be modular, credit based with adequate provisions for vertical and lateral mobility of students / trainees. The credit system shall be developed and equivalence of the courses / programmes shall be carried out by expert committee(s). The required amendments in the Board / Universities Statutes shall be carried out by respective organizations for giving due equivalence and recognitions of credits and certificates.

The qualifications Framework provides opportunities for developing flexible career pathways and enables people to move more easily between the education and training sectors and between those sectors and the labour market by providing basis for Recognition of Prior Learning, including credit transfer and work experience. This calls for a variety of linkages between work-based qualifications and academic qualifications, allowing choice and flexibility in career planning and continuous learning.

The curriculum shall include resources needed, list and broad specification of equipment and tools, raw material, list of reference books/instructional materials, certification assessment criteria, etc.

The State Directorate of VET shall be responsible for implementing competency-based training. Implementation of competency-based training shall involve:



In order to effectively implement the competency-based training, the State Directorate of VET shall need to:

- Establish linkages with other training agencies, community, industry and professional bodies and evolve mechanism for networking.
- Integrate modern communication and information technology in training to meet diverse training needs of various target groups and increase access.
- Adopt alternate approaches to training, for example, enterprise based, home based, apprentice mode, training-cum-production center approach.
- Ensure adherence to norms and standards specified for training by national or state level agency.
- Assess prior learning of trainees.
- Monitor progress of trainees on a continuous basis and provide feedback.
- Obtain continuous feedback from various stakeholders.
- Undertake action projects to improve effectiveness of training.
- Ensure involvement of qualified trainer, representative of user group licensed assessor in summative evaluation of the trainees.

4.0 ASSESSMENT PROCEDURE

The assessment shall be carried out both on process and product against the pre-identified criteria in order to make such assessment scientific, reliable and valid. The following procedures, testing steps and measures are to be adopted:

(i) Agreed parameters of competency and its statement.

(ii) Identified abilities in terms of knowledge skills and attitudes.

(iii) Identified tasks or activities to be performed, giving evidence of abilities acquired.

(iv) Agreed criteria of acceptable performance on Rating Scale.

(v) Assessment of process through observation by empanelled assessor(s).

(vi) Assessments of products against predefined measurable and assessable criteria, and

(vii) Assessment of evidence of prior learning and past performance.

The competency standards shall be developed by group of professionals, who are in the occupation or vocation. The group shall be headed by a specialist in standard measurement and evaluation and is assisted by one or two academicians in the relevant field wherever possible. The following techniques / procedures have to be adopted for developing Competency Standards:

(i) Site visits and multiple observations on a minimum sample of 20 "best" workmen in each trade.

(ii) Interviews with concerned people in industry, training institutions and users in rural, urban and industrial areas at various levels.

(iii) Search conferences for assessing current situation and predicting future trends and needs.

(iv) Functional analysis to break down an occupation or vocation into its major activities, roles and functions.

5.0 CERTIFICATE LEVELS OF COMPETENCY BASED TRAINING

Operative Level	Competency in performing varied work activities, most of which may be routine and predictable.	8 to 12 months of Full time study to complete
Craftsperson, Specialist or Senior Operative Level	Competency in a significant range of varied work activities, performed in a variety of contexts, with some individual responsibility and autonomy, but with the requirement to collaborate with others, perhaps in a team.	
Supervisory or Technician Level	Competency in a broad range of varied work activities, performed sometimes in complex and non-routine work contexts with considerable responsibility / autonomy and often including control or guidance of others.	10 to 12 months of Full time study to complete: Some of the courses in the Mainstream managerial Level may have 18 to 24 months of Full time study to complete.
Mainstream Managerial Level	Competency in a broad range of complex activities, with a substantial degree of personal responsibility and autonomy, often including responsibility for the work of other.	

6.0 CONCLUSION

It is imperative to recognize that, in the world of work, there is a large work force, which is trained not through the formal system but through an informal system of training by master craftsman. Informal sector contributes 49% to GDP and provides employment to about 93% of the workforce while organized sector contributes 51% to GDP and provides employment to 7% of the workforce. While their productivity is low, their contribution to the national GDP cannot be ignored. If the country can create a system of Competency based Vocational Education and Training which not only recognizes their skills but also provides education and training in a mode that suits their economic compulsions, it will not only benefit the workforce to earn a decent living but also contribute to the national economy by better productivity of the workforce.

Exploring Personality Dimensions and Decision Making Styles of Teachers

PANCH. RAMALINGAM

ABSTRACT

This study is an investigation of the relationship between Eysenck Personality Traits and Decision Making styles of teachers of colleges and universities. The Eysenck Personality Questionnaire-Revised (1985) and Decision Making Questionnaire I and II developed by Janis and Mann (1982) were administered to the teachers (N=209) drawn from various colleges and universities. The author used correlation analysis and found that (i) there is a significant positive relationship between decision self esteem and vigilant style of decision making; (ii) a significant negative relationship between decision self esteem and non-vigilant styles such as hyper vigilance, defensive avoidance, buck passing, rationalization and procrastination styles of decision making; (iii) a significant positive relationship between extroversion dimension of personality and vigilant style; (iv) a significant negative relationship between extroversion dimension and non vigilant styles; (v) a significant negative relationship between neuroticism and vigilant style; (vi) a significant positive relationship between neuroticism and non vigilant styles; (vii) a significant negative relationship between psychoticism and vigilant style; and (viii) a significant positive relationship between psychoticism and non vigilant styles of the teachers of colleges/universities. In the light of the findings, the personality dimensions and decision making styles of the teachers may be enhanced by providing comprehensive guidance in effective decision making skills to the teachers.

INTRODUCTION

The present education system is teacher centered. The teachers are playing the role as an awakener, friend, philosopher and guide to inculcate inter personal relationship. They are making behavioural manifestations in ethical, moral, spiritual and social consolation, guidance, showers of appreciation and encouragement. They treat the students with a sense of equality and looks upon them with compassion. A good teacher is one who is knowledgeable, a democrat, a humanist, a spiritualist and a social engineer. The present system of education must be revamped with new ideas and recent advancements. The science and technology will play a major role in modernising and revamping of education.

TEACHER'S PERSONALITY

Eysenck (1967) states personality as a stable and enduring combination of a persons' various physical and mental aspects.

There have been various attempts made to study the personality. One among them is the trait approach. Eysenck (1967) views the trait as three dimensions of personality which

include extroversion, neuroticism and psychoticism. The three major dimensions of personality in this theory are extroversion (E), neuroticism (N) and psychoticism (P). They are measured by standardised scales such as the Eysenck Personality Questionnaire (EPQ) and later (1985) he has revised it as EPQ-R.Traits associated with the extroversion factor are sociability, friendliness, enjoyment of excitement, talkativeness, impulsiveness, cheerfulness, activity and spontaneity. Traits associated with neuroticism include worrying, moodiness, tenseness, nervousness and anxiety. Psychoticism involves feelings of persecution, irrational thinking, a liking for very strong physical sensations, inhumane cruelty and lack of empathy. Eysenck (1985) defined the personality traits as follows:

Extroversion (E) is characterised as an outward flowing of libido, heartily gregarious and thereby making friends easily. Extroverts have emotional stability and no inhibitions. They are materialistic, practical, objective and experimental. Usually teachers belong to extrovert type of personality.

Neuroticism (N) is a tendency to develop neurosis. Neurotic persons are in touch with reality; frequently have anxiety, stress, strain and guilt feeling. They may have unresolved conflicts, insecurity, obsessive- compulsive reactions, phobias and other aspects of neurotic tendencies.

Psychoticism (P) is a tendency to develop psychosis. Psychosis are serious mental disorders, psychotics are out of touch with reality and they have delusions, hallucinations, paranoia, mania, melancholia and a host of other disorders.

Teacher's personality plays a vital role in the day-to-day class room management of students and curriculum development. The role of a teacher is not a mere pouring in process. The students mind is not a mere vessel into which the teacher is to pour his knowledge or wisdom. On the other hand teaching involves a creation of environment in which students may develop their own total quality personality shaped by the teacher. In a class room there are students of varying temperaments and so the class room management task requires a good personality. Besides a strong and healthy physique, a strong and cheerful appearance and a pleasing voice are of great asset to the teachers.

Teachers should act as mirrors and students will reflect properly. Hence appearance, behaviour, body language, knowledge of the subject, and the attitude towards students form the important mile stone in the personality of a teacher. Teachers provide valuable professional service to the nation, because they can guide pupils in acquiring knowledge and in developing high ideals of freedom. As the destiny of the nation is in the hands of the teachers, they can be peeped through inside the class rooms and outside the class rooms. A teacher should have the quality of open mindedness while dealing the students. A teacher should encourage his students to come out with creativity. He should have the tendency to appreciate and extend skill development if necessary. Outside the class room, the teacher should have the tendency to mingle with the students, in understanding their personal problems and their family background and should help them whenever they are in genuine trouble. Teachers should give encouragement to the students in taking part in co-curricular activities and games. In general, a teacher should be an interpreter, motivator, consultant, evaluator, adjudicator, arbitrator, co-ordinator, extension officer, and an executive.

There are some important aspects such as, leadership, communication network, organization's structure and size, motivation, job involvement, attitude, personality of the individuals, which influence the decision-making in the organisation. Rokeach and Barron (1960, 1963) viewed of flexibility in thought and personality pre-requisites, for creativity. The ability to view old stimuli in new ways, adopt new positions, have independence in thought and strong ego-strength are the behavioural traits and personality characteristics. These are related to creative solutions of problems by an individual.

PERSONALITY AND DECISION-MAKING

Personality and decision-making have some sort of relationship. Individuals who prefer extroversion tend to have a more positive communicator image than those who prefer introversion (Susan, K. Opt and Donald A. Loffredo, 2003). Fredrick's (1986) findings indicate that variation in motives and performance affects the decision-making process. Blaylock (1985) explained that three factors combine risk perception. The three factors are cognitive style of decision-maker, decision-environment and traditional risk measure. Richter and Tosvold (1980) studied the effect of students participation in classroom decision making on attitude, peer interacting, learning and motivation. Analysis of many studies on decision-making and personality, revealed that the specific personality factors are responsible in decision making. Some of the personality factors show their impacts on decision-made by the decision maker; they are the high ego-strength, imaginativeness, dominant personality, initiative, self-sufficient or independent in thought, intelligence, etc.

Janis and Mann's (1977) conflict theory model of decision making integrates both cognitive and affective components in a description of the decision process. Conflict is assumed to arise when the decision maker perceives both positive and negative outcomes associated with a course of action. Based on this concept Mann (1982) has defined the decision making styles into six types as follows:

Vigilance (V) - is the tendency to search carefully for information to consider many alternatives before making a decision.

Hyper vigilance (H) - is the tendency to make decision impulsively and to look for quick, easy solutions to problems.

Defensive avoidance (D) - is the general tendency to try to avoid or escape having to make decisions. There are three kinds of defensive avoidance such as rationalisation, buck-passing and procrastination.

Rationalisation (R) - is the tendency to avoid the reality of decisions. This is achieved by ignoring unpleasant aspects of the decisions.

Buck passing (B) - is the tendency to leave the hard decisions to others to avoid taking responsibility for decisions and to blame others when the decision is wrong.

Procrastination (P) - is the tendency to put off making decisions by doing other things or by thinking about the decision for too long.

Self-esteem (S) is some what the consistent sense of personal worth in making decisions. In this study the term self-esteem refers to self-esteem as a factor contributing to decision making.

The vigilant decision making involves a high quality of information processing (Cheryl

Ormond et al, 1991). The individual patiently classifies, analyses, organises and synthesises, compares and integrates various aspects of the alternatives together with the pros and cons of each alternative and selects the one which best satisfies his value and objectives.

The vigilant style of decision making can be called as healthy decision making, whereas hyper vigilance, defensive avoidance, buck passing, rationalisation and procrastination styles of decision making are called as unhealthy or defective decision making. Hence, the present day teachers' personality and decision making styles are very important for taking care of the student community and development of need based curriculum for the society.

THE PRESENT STUDY

A teacher is the focal point in an educational system. Kothari Commission (1964 - 66) emphasised in its report that the teachers are having crucial role to play in educational reform. It also stressed the importance of professional development of the teachers. In an educational system, teacher must have professional competency to uplift younger generation. Role of a teacher is not only teaching the course content but also to guide the students so as to enable them to meet challenges and opportunities in the world. There have been several studies on teacher competencies, teachers' personality development, job satisfaction and decision making styles.

A teacher must be involved in many aspects like, decision making, motivation, career guidance, etc., In the present educational system, a teacher must be involved not only in the direction making profess but also be given freedom to shape the total quality personality of the students, and freedom to shape the forming of education, A teacher cannot leave these things to others to make all the decision. Decision making and personality development are the prime concern teachers must be aware of and apply in their day to day life. Realising that there is a lacunae in available literature, the present study was initiated to bridge the gap in the research in educational psychology.

The conflict model of decision making is of recent origin. We do not have adequate investigative results to definitely prove the relationship between decision coping pattern and personality dimensions. Since an understanding of the relationship among the variables of the teacher of colleges / universities studied has implication for counselling, the present study is conducted.

OBJECTIVES

The present study was undertaken with the following major objectives.

(i) To explore the relationship between Esyenck personality dimensions and decision making styles of the teachers in colleges and universities.

(ii) To explore the relationship between decision self esteem and personality dimensions such as extroversion, neuroticism and psychoticism of the teachers.

(iii) To explore the relationship between self esteem as a decision maker and decision making styles such as vigilance, hyper vigilance, defensive avoidance, rationalisation, buck passing and procrastination of the teachers.

HYPOTHESES

In the present investigation certain empirical hypotheses have been formulated. It is a fact that several factors such as self esteem, risk taking, information processing,

culture and family influence teachers' decision making. Decision making styles of teachers differ according to their self esteem and personality dimensions. Usually teachers are taking the decisions by adopting decision making process of approaching the challenges in a positive way, survey the available alternatives, evaluate the suitable alternatives, make commitment and adhere despite negative feedback. There are several recent studies to link between decision making styles and decision self-esteem (Janis and Mann, 1977, Burnett, et. al, 1991 and Cheryl Ormond, et. al 1991). Decision self esteem involves thorough understanding of the self, values, abilities, etc. Hence it was assumed that a positive relationship may exist between decision self esteem and vigilant style of decision making. A negative relationship may exist with hyper vigilance, defensive avoidance, buck passing, rationalisation and procrastination styles of decision making.

Self esteem of an individual is a contributing factor in making decisions. Self esteem serves as a frame of reference and is also the corner stone of one's personality. High self esteem contributes more in the process of decision making. Branden (1969) states that high self esteem as the integrated sum of self-confidence and self-respect, that is, positive self esteem is the feeling that a person is competent to live worthy of happiness. Vigilant decision making is characterised as optimistic about finding a solution. Hence, teachers having high self esteem may likely to be a vigilant decision maker, whereas a teacher who is more worried about stress and strain may opt for hyper vigilant or defensive avoidance styles of decision making. Since a teacher who is having a low self esteem is overwhelmed by fear and anxiety, he may likely to adopt anyone of the non vigilant styles of decision making. Teachers with high and low self esteem will differ in their decision making styles. So it was hypothesised that

H_1 : There is a significant positive relationship between decision self esteem and vigilant style of decision making of teachers of the colleges/ universities.

H_2 : There is a significant negative relationship between decision self esteem and hyper vigilance, defensive avoidance, buck passing, rationalization, and procrastination styles of decision making of teachers of the colleges/universities

H_3 : There is a significant positive relationship between decision self esteem and extraversion dimension of personality of teachers.

H_4 : There is a significant negative relationship between decision self esteem and neuroticism, and psychoticism dimensions of personality of teachers.

H_5 : There is a significant positive relationship between extroversion dimension of personality and vigilant style of decision making of teachers.

H_6 : There is a significant negative relationship between extroversion dimension of personality and non vigilant styles of decision making of teachers of the colleges/universities

H_7 : There is a significant negative relationship between neuroticism dimension of personality and vigilant style of decision making of teachers of the colleges/universities

H_8 : There is a significant positive relationship between neuroticism dimension of personality and non vigilant styles of decision making of teachers of the colleges/universities

H_9 : There is a significant negative relationship between psychoticism dimension of personality and vigilant style of decision making of teachers of the colleges/universities

H_{10} : There is a significant positive relationship between psychoticisim dimension of personality and non vigilant styles of decision making of teachers of the colleges/universities

SAMPLE

The sample for the present investigation has been selected at adulthood where in the development of decision making skills reaches its optimum level and thereby adopt different styles of decision making. The present study was proposed to conduct on teachers of colleges and universities. In order to collect data from the teachers it was decided to administer the questionnaires to the teachers who are undergoing refresher courses in the UGC Academic Staff College of the Pondicherry University during the period from July 99 to March 2000. The teachers (N=209) who have attended in the refresher courses were included in the study.

PROCEDURE

The Questionnaires were distributed to the teachers, and clear instructions were given to them with regard to the purpose of the test, the method of answering as per the manual of each questionnaire, and no time limit was fixed for the test. Then, the teachers were instructed to put a tick mark against each question on "yes" or "no" according to their first reaction. After the instructions were given, the teachers were allowed to fill in the questionnaires. They were also asked to fill in personal information such as name, sex, age, discipline, birth, educational qualification, years of experience in teaching and state in which he belongs. They were assured that their responses would be kept in strict confidence and used only for the research. The filled-in questionnaires were collected from them. Ultimately, the information furnished by 209 respondents was used in the present study. Six respondents were not considered since they furnished inadequate information.

INSTRUMENTS

To measure the decision making styles and personality dimensions of the teachers of colleges and Universities, the following standardised instruments were identified and used to collect data. The instruments are:

(i) Decision Making Questionnaire - I

It was designed and validated by Leon Mann in 1982 to measure self esteem as a decision maker. The questionnaire was constructed based on Janis and Mann's (1977) conflict theory of decision making. There are six items in the questionnaire. There are three alternative choices for each item (i) true for me, (ii) sometimes true and (iii) not true for me. The subject was asked to indicate how he/she felt about making decision by ticking the response which was most applicable to him. All the responses were counted for individual score. The maximum score for an individual is 12 and the minimum is O.

(ii) Decision Making Questionnaire - II

It was also designed by Leon Mann in 1982 to measure decision making styles based on the conflict theory of decision making as described by Janis and Mann (1977). This questionnaire consists of six sub-scales measuring decisional coping patterns such as Vigilance, Hyper vigilance, Defensive avoidance, Rationalisation, Buck passing and Procrastination. There are 31 items in the questionnaire. There are three alternative choices for each item of the questionnaire,

(i) true for me, (ii) sometimes true and, (iii) not true for me. The subject was asked to indicate how he/she felt when making decision by ticking for each item.

(iii) Eysenck Personality Questionnaire (EPQ-R)

The Eysenck Personality Questionnaire - (Revised) was developed by Eysenck, H.J. (1985). It consists of 100 items; the researcher has chosen only 48 items for the present study. It is a standardised tool to measure the personality dimensions of adults such as Extroversion (E), Neuroticism (N) and Psychoticism (P). The author of this instrument has included one more subscale as lie scale to measure the unreliable responses of the individual. The lie score provides a check on the reliability of the responses given by the individuals. Each subscale consists of 12 items. Each items followed by two alternative responses "yes" and "no". An individual is asked to respond the alternative as applicable to him/her. Each response is scored according to the scoring procedure laid down by the author.

RESULTS

In order to find out the significant relationship between the chosen variables of the personality dimensions and the strength of decision making styles correlations were computed by using Pearson Product Moment Correlation Statistics. In the present study there are nine variables such as extroversion, neuroticism, psychoticism, decision self esteem, vigilance, hyper vigilance, defensive avoidance, buck passing, rationalisation and procrastination. The following tables represent the correlations and level of significance between the variables.

Table 1. Correlation between the scores of decision making styles and self esteem as a decision maker and level of significance ($N = 209$)

Sl. No.	Decision Making Styles	Self esteem (r)	LS
1	Vigilance	0.256	0.01
2	Hyper vigilance	– 0.467	0.01
3	Defensive avoidance	– 0.385	0.01
4	Buck passing	– 0.425	0.01
5.	Rationalisation	– 0.413	0.01
6.	Procrastination	– 0.485	0.01

Table 1 shows a significant positive correlation between decision self esteem and vigilant style of decision making ($r = 0.256$). Which is significant at 0.01 level whereas the other decision making styles are negatively correlated with decision self esteem as hyper vigilance ($r = -0.467$), defensive avoidance ($r = -0.385$), buck passing, ($r = -0.475$), rationalisation ($r = -0.413$) and procrastination ($r = -0.485$) which are significant at 0.01 level. These results prove that there is a significant negative relationship between self esteem and hyper vigilance, defensive avoidance, buck passing, rationalisation and procrastination styles of decision making.

Hence, the formulated hypothesis H_1 is confirmed.

The correlation coefficient of decision self esteem and decision making styles reveal that decision self esteem has a significant positive relationship with vigilant style of decision making, whereas it has a significant negative relationship with non vigilant styles of decision making. It was found that the teachers with high self esteem were more

vigilant than those who were with low self esteem. The reason could be that those who were having high self-esteem thoroughly search for more alternatives and weigh them carefully. They may also consider the pros and cons of the situation and calculate the probabilities while making decisions. This result is in accordance with Feather and Mann (1982), Govind Tiwari (1983), Disdefano, Pryor and Smith (1987), Leon Mann, et al (1989), Burnett, et al (1991), and Cheryl Ormond, et al (1991).

The correlation coefficient of decision self esteem with non vigilant styles of decision making such as hyper vigilance, defensive avoidance, buck passing, rationalisation and procrastination have a significant negative relationship. This result indicates that teachers, who have high self esteem as a *decision maker, do not adopt hyper vigilant, defensive avoidance, buck passing, rationalisation and procrastination styles of decision making. Hence the formulated hypothesis* (H_2) *is confirmed.*

Table 2 Correlation between the scores of decision self esteem and personality dimensions and level of significance ($N = 209$)

Sl.No.	Personality Dimensions	Self esteem (r)	Level of significance
1	Extraversion	0.173	0.01
2	Neuroticism	– 0.279	0.01
3	Psychoticism	– 0.091	NS

Table 2 shows a significant positive relationship between decision self esteem and extroversion dimension of personality (0.173). Which is significant at 0.01 level. Whereas the other dimension neuroticism is having a significant negative relationship with decision self esteem (-0.279) and there is no significant relationship between decision self esteem and psychoticism dimension of personality.

Hence the formulated hypotheses H_3 and H_4 are accepted

Table 3 Correlation between the scores of extroversion dimension of personality and decision making styles and level of significance between ($N = 209$)

Sl.No.	DMS	Extraversion (r)	LS
1	V	0.205	0.01
2	H	– 0.205	0.01
3	D	– 0.172	0.01
4	B	– 0.164	0.01
5	R	– 0.147	0.01
6	P	– 0.260	0.01

Table 3 shows a significant positive relationship between extroversion dimension of personality and vigilant style of decision making (0.205). There is a significant negative relationship between extraversion dimension of personality and non vigilant decision making styles such as hyper vigilance (–0.205), defensive avoidance (–0.172) buck passing (–0.164), rationalisation (–0.147) and procrastination (–0.260)

The correlation coefficient between extroversion dimension of personality and vigilant decision making style is 0.205 which is significant at 0.01 level. The result indicates that there is a significant positive relationship between extroversion and vigilant decision making style of the teachers, Hence the formulated hypothesis H_5 is accepted.

Teachers who are extroverts interact freely move with others and acquire

information from various sources. They will search for alternatives and weigh them before making decisions. This result is in accordance with the finding of Richtel and Osvold (1980), Barson and Rokeach (1989) and Robins Thomas (1991)

The correlation coefficient between extroversion dimension of personality and non vigilant styles such as hypervigilance, defensive avoidance, buck passing, rationalisation and procrastination styles of decision making has a significant negative relationship. Hence the formulated hypothesis H_6 is confirmed.

Table : 4 Correlation between neuroticism dimension of personality and decision making styles of teachers and level of significance ($N = 209$)

Sl.No.	DMS	Neuroticism(r)	LS
1	V	–0.138	0.01
2	H	0.434	0.01
3	D	0.218	0.01
4	B	0.303	0.01
5	R	0.279	0.01
6	P	0.354	0.01

Table 4 shows a significant negative relationship between neuroticism dimension of personality and vigilant style of decision making (–0.138). The other non vigilant styles are having significant positive relationship with neuroticism dimension of personality as hypervigilance (0.434), defensive avoidance (0.218), buck passing (0.303), rationalisation (0.279) and procrastination (0.354)

The correlation coefficient between neuroticism dimension of personality and vigilant style of decision making is - 0.138 which is significant at 0.01 level. This result indicates that there is a significant negative relationship between neuroticism and vigilant decision making. Hence the formulated hypothesis H_7 is confirmed.

The correlation coefficient of neuroticism dimension of personality with other non vigilant styles is having significant positive relationship. Hence, the formulated hypothesis H_8 is accepted.

These results are in accordance with the findings of Meena Sehgal (1984) wherein she found that those who were low on neuroticism type of personality were superior in vigilance, and Eysenck (1975) found that high neuroticism personality subjects were poor in vigilance. Findings of Olof (1990) show that neuroticism type of personality has positive relationship between rationalisation and the findings of Campbell (1981) proved that neuroticism tendency is likely to avoid making decisions. The positive correlation between neuroticism and hypervigilant style of decision making is consistent with the previous studies done by Campbell (1981).

Table 5 Correlation between psychoticism dimension of personality and decision making styles of teachers and level of significance ($N = 209$)

Sl.No.	DMS	Psychoticism(r)	LS
1	V	-0.218	0.01
2	H	0.073	NS
3	D	0.177	0.01
4	B	0.138	0.01
5	R	0.110	0.01
6	P	0.118	0.01

The correlation coefficient between psychoticism dimension of personality and vigilant sytle of decision making is -0.218, which is significant at 0.01 level. This correlation indicates that there is a significant negative relationship exists in between psychoticism and vigilant style of decision making. Hence the formulated hypothesis (H_9) is confirmed. The reason could be that teachers who are having less psychoticism tendency will be more vigilant in making decisions.

The correlation coefficient between pyschoticism dimension of personality and other non vigilant styles of decision making such a defensive avoidance, buck passing, rationalisation and procrastination are having a significant positive relationship. There is no significant relationship between psychoticism and hyper vigilant style. Hence the formulated hypothesis (H_{10}) is accepted.

These results are consistent with earlier studies done by Meena Sehgal (1984) and Radford, Mann and Kalney (1986). They found that severity of psychiatric disturbances was positively correlated with defensive avoidance.

FINDINGS

In the present investigation certain empirical hypotheses have been formulated and verified. It is a fact that several factors such as self esteem, risk taking, information processing, culture and family environment influence teachers' decision making. Decision making styles of teachers differ according to their self esteem and personality dimensions. Usually teachers are taking the decisions by adopting decision making process of approaching the challenges in a positive way, survey the available alternatives, evaluate the suitable alternatives, make commitment and adhere despite negative feedback. There are several recent studies to link between decision making styles and decision self-esteem (Janis and Mann,1977, Paul C.Burnett, et.al, 1991 and Cheryl Ormond, et.al 1991). Decision self esteem involves thorough understanding of the self, values, abilities, etc. Hence it was found that there is a positive relationship exists between decision self esteem and vigilant style of decision making. A negative relationship exist with hyper vigilance, defensive avoidance, buck passing, rationalisation and procrastination styles of decision making. The study reveals that there is a significant positive relationship between decision self esteem and extraversion dimension of personality. Whereas the other dimension neuroticism is having a significant negative relationship with decision self esteem and there is no significant relationship between decision self esteem and psychoticism dimension of personality. The result indicates that there is a significant positive relationship between extraversion and vigilant decision making style of the teachers, extraversion dimension of personality and non vigilant styles such as hypervigilance, defensive avoidance, buck passing, rationalisation and procrastination styles of decision making have a significant negative relationship. This result further indicates that there is a significant negative relationship between neuroticism and vigilant decision making and neuroticism dimension of personality with other non vigilant styles is having a significant positive relationship. It also reveals that pyschoticism dimension of personality and other non vigilant styles of decision making such as defensive avoidance, buck passing, rationalisation and procrastination are having a significant positive relationship. There is no significant relationship between psychoticism and hyper

vigilant style of teachers of colleges/universities.

Self esteem of an individual is a contributing factor in making decisions. Self esteem serves as a frame of reference and is also the corner stone of one's personality. High self esteem contribute more in the process of decision making. Branden (1969) states that high self esteem as the integrated sum of self-confidence and self-respect, that is, positive self esteem is the feeling that a person is competent to live worthy of happiness. Vigilant decision making is characterised as optimistic about finding a solution. In the present study, teachers are having high self esteem and are vigilant decision makers; where as a teacher who is more worried about stress and strain may opt for hyper vigilant or defensive avoidance styles of decision making. Since a teacher who is having low self esteem is overwhelmed by fear and anxiety, he may likely to adopt anyone of the non vigilant styles of decision making. Teachers with high and low self esteem will differ in their decision making styles.

IMPLICATIONS

The outcome of any research depends upon the extent to which it has widened the existing frontiers of knowledge. It also depends upon the degree of its social relevance and utility. The present investigation has shown that the personality dimensions of teachers of colleges / universities can be significantly related with decision self-esteem, and decision making styles, Therefore, teachers who teach at the graduate level should try to enhance the proper development of personality. The decision making styles of the teachers should be improved by searching a lot of information with suitable alternatives. In order to enhance the vigilant style of decision making of students, the teachers could identify the pros and cons of the problems and aware of the advantages of vigilant style and disadvantages of the non-vigilant styles of decision making.

In the light of the findings of this study the personality dimensions and decision making styles of the teachers may be enhanced by providing comprehensive guidance in effective decision making skills. Counselling services should be directed towards the development of a positive attitude among the teachers, towards self-esteem as a decision maker, and the improvement in the quality of interpersonal relationships within the family and classroom.

LIMITATIONS

The present study was limited to the teachers at higher education level of south India. So it is obvious that the investigation covers practically a good sample of the colleges in existence and gives due recognition to the importance of educational facilities rendered by educational administration. The study was conducted within the limit of a very modest sample of teachers those who attended the refresher courses in a particular Academic Staff College. The number of teachers has been chosen by stratified random sampling technique from the institution selected.

The importance and usefulness of the study is limited to the extent to which reliable and authentic information could be secured from the teachers themselves and spontaneous responses of the teachers to the items in the instrument, when it was administered. In the adult stage, number of factors will influence personality dimensions and decision making. In view of the limited resources and the time constraint, the present study was undertaken on a few psychological variables such as decision self-esteem, decision making styles,

and personality dimensions with certain demographic variables, viz., age, discipline, order of birth, area of living, etc., It has taken into consideration only teachers of colleges. It has not considered the teachers of the same age group undergoing different courses other than social science and sciences. The other problems of teachers have not been brought within the purview of the present investigation. Besides, other variables like extra curricular activities, career planning, stress management, job satisfaction, job involvement, risk taking, achievement motivation, and available support systems for teachers have not been included within the scope of the present investigation. In view of these limitations, further research in this area could be made to incorporate the following suggestions.

SUGGESTIONS

This investigation is an empirical attempt to understand the decision making styles and personality dimensions teachers. Therefore further research may be conducted with a large representative sample of teachers at various levels. An extensive study on personality dimensions and decision making styles among teachers may also be undertaken. The study of personality dimensions and decision making styles can be extended in relation to the students personality factors, achievement motivation, risk taking, self-efficacy, time pressure, etc. A study can also be conducted to investigate socio-economic status with regard to personality dimension and decision making styles. So, further studies can be conducted to find out the facts on various psycho-social aspects.

Since decision making and personality in counselling is a new area, further research could examine whether the findings of this study reflect the personality dimensions, decision-self-esteem and the decision making behaviour of other societies. Moreover, actual decision problems could be investigated to examine the relationship between personality dimensions and decision making. The facilities for research on psychological aspects could be increased. Academic institutions should be adequately funded and the infrastructural facilities required should be developed so as to conduct extensive research on various aspects.

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Effective Management - An Overview in Technical Institutes of Andaman Nicobar Islands

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ABSTRACT

Effective Management has uplifted the various industrial sector and brought many other sectors as an industry. Advancement in the impartment of education and effective management has brought a tremendous upliftment in the standard of teaching learning process and personality development. The technical institutions of Andaman Nicobar Islands were the first of its kind to receive the **ISO** certification. The introduction of ISO system brings a revolutionary change in the mind set of students and the teaching community. The pace in various developments has increased enormously in the field of Academics, Training and Placement. The market feedback has pushed in for a new curriculum based on the market demand.

INTRODUCTION

Recent advances in the technology has brought a new dimension into our life style and living standards, which has caused challenges to the engineering education and the engineering profession, resulting into the change in technological and organizational aspects as well as getting into internationalization.

The Introduction of quality management has changed the face of Indian industry since 90's. It has been observed that quality management has taken a big leap towards the development of quality audit for increasing the productivity and the efficiency of the industry. The quality audit leads to quality control, which shapes into perfected outcome. The educational Institutes are keeping pace with the industries. As they pressure the quality standards these institutes have started jointly acceptance as an endeavor of institution of repute in higher education. In association with this scenario the technical Institutions of these Islands has put their feet in the shoes of industries. Here the quality in the education system is different from that of any manufacturing process or assembly line industry. In the case of technical institutions, the process, product, customer, raw material and technology needs the review and redesign in the management system.

The educational dynamics of the technical institutions involves the value system objectives, emotional growth and tacit knowledge. In the polytechnics of ANDAMAN and NICOBAR Islands, an altogether different perception is used to establish a total quality environment. As the quality in education is a continual process of an institution and for the same, the system is designed for its effective implementation, all along with periodic reviews and corresponding revisions, this makes the quality management to be dynamic. There is need to establish the quality aspiration and achievements in an

institution to bring the changes in various directions. Here this change, caused by policy ambiance is proving to witness a radical change.

The fast growing Industrial sector of the islands and mainland needs highly efficient technicians for the sake of this fast growing market and for the requirement of skilled technicians. Therefore the educational institutions imparting technical education are termed as knowledge industries, as they have to care the needs of the fast growing sectors.

The modern day requisition of the local industries of these Islands has laid down certain strict norms and quality standards. To meet these challenges and norms the up gradation in the knowledge imparting system and change in training methodology is required, it also needs a continuous timing. In that regard the old curriculum has to be changed and to be brought in accordance with the present need based curriculum to break the ice of rigidity in terms of predetermined curriculum and fee structure. It is the high time to update and from their action the autonomy is to respond at various styles. The society is sensitive to quality education. The society has its own yard stick for finding the quality based upon past performance and image. Therefore the third party certification for assessing the quality, performance and prospects has become imperative. On these lines to meet the challenges, ISO certification and NBA has turned to be an impartial mirror to view and visualize the institutions of these islands.

The complete activity of our institution is according to the ISO 9001-2000 certification. The activities had been decentralized and has been made available on LAN. Due to the availability of information the activities have become transparent and is accessible to every body. The complete polytechnic administration/management has been transferred to an ISO scale.

ACADEMIC MANAGEMENT

Academic section is the heart of all the institutional activities. In this regard the management has taken serious view to strictly follow the activities of the schedule, which is in accordance to the ISO norms.

The activities of academic cell is undertaken in three phases in a cyclic manner.

The activities begin with the pre academic activities i.e. Planning and its Implementation. This section is divided into three parts:

- Selection and assignment of teaching to the staff (Time Table and Teaching Plan preparation).
- Admission of students (Class Room)
- Space allotment and class room material acquisition,

Under the ISO student is a customer when he enters the institution. As soon as the student completes the course, the student becomes a product. As a product the student is floated in the market. Therefore a student has been considered as:

– a customer(during input)

– a product (as output)

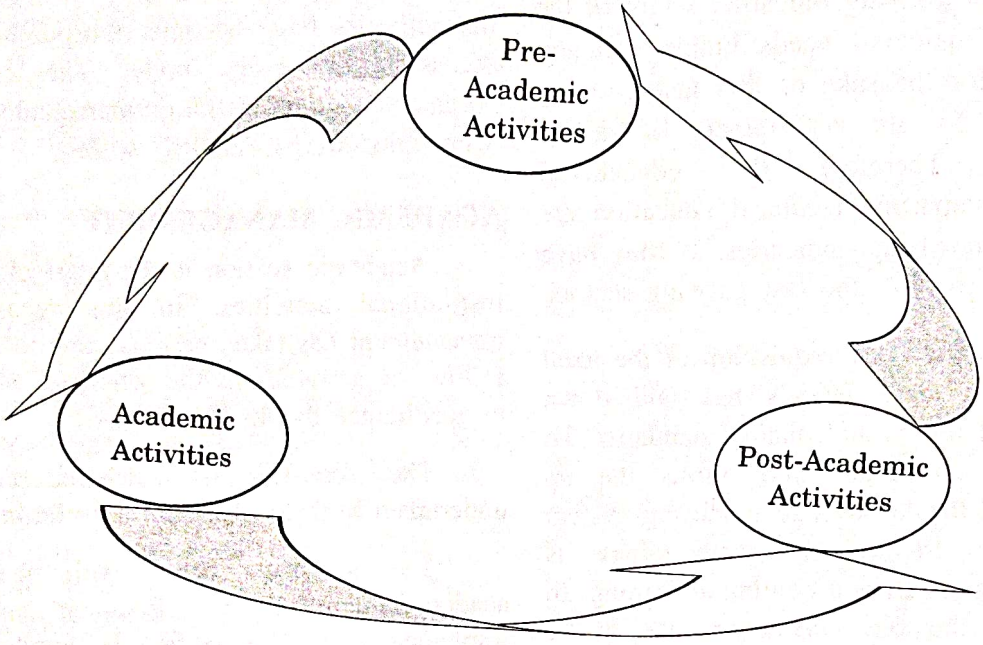

Fig. 1. Academic Activity Cycle

STUDENT AS A CUSTOMER

A student at the point of entry into the institution is as a customer. He wants to procure the technical knowledge, to make him to get a good employment or entrepreneurship in the technical field. For acquiring the same the students expect from these polytechnics a six/five semester diploma course. After completing any of these courses he can fit in the slot of market requirement.

STUDENT AS A PRODUCT

The students after their successful completion of the various diploma courses become the product of the institution and seek his place in the market. At this stage the student becomes the output product / finished product of this technical Institute/Industry. Here the institute becomes responsible for selling its best product in the market. The complete production cycle can be seen in Fig. 2.

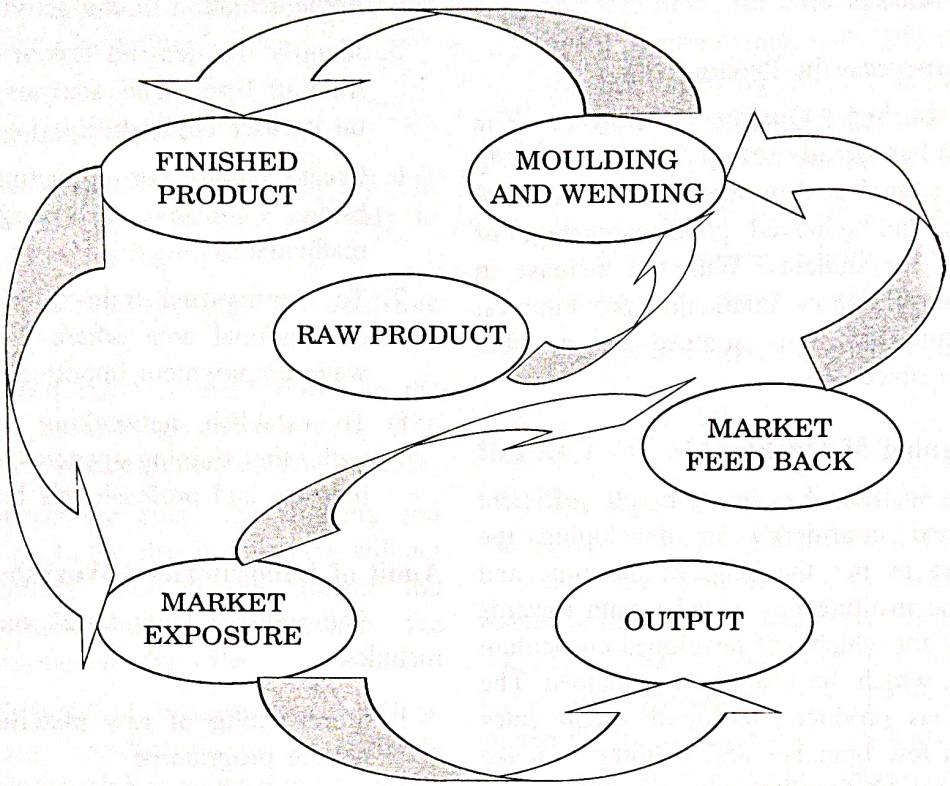

Fig. 2. Production Cycle

ROLE OF POLYTECHNIC

After selecting the raw product (Human Resources), the material is shaped and developed in terms of developing the

- technical knowledge
- technical skill
- exposure towards the technical activities
- analysis of market and to develop the product accordingly.
- confidence for gaining entrepreneurship in the desired field.

RESULTS

1. Established quality mission

The quality management of this institution has emphasized the technical education and training as a long range process and as a mission. The institute is infusing right knowledge and skill at the right time within the available resources. The ultimate aim is to compete globally in a short span of time.

2. Established quality policy declaration

By considering the external environment quality profile has been developed for the rich quality of technical education and training has been imparted. The institute has been always critical over the customers demand and feedback, as per the demand of the various enterprises for human resources. As these human resources ejected out of the institution are directly employable in real time situations the list of the objectives are formulated well in advance for fulfilling the demands of the situations as per the customers demand and

need. In terms of ISO quality process the focusing is more on:

1. The Increase in Productivity

Established Quality Objective: The institution has already set up the goals for long term and annual quality objectives of technical education and achieved good percentage of placement for students. With the increase in the Industry Institute interaction programmes, the institute has, thus attained the possible long term objectives.

2. Designing of Quality

The institute has become self sufficient and gained confidence in developing the curriculum as per the head of the time and space. The institute has paved a path towards autonomy for which self developed curriculum is a must, which the institute has attained. The institute has produced multipath credit entry system in few branches and is going to make common for all faculties.

ROLE OF AUDIT IN MANAGEMENT

Audit of the head of the institute

The audit is mainly on the personal involvement and implementing, report building and motivating various activities along with

1. Facilitation of various activities with respect to various programs
2. Conduct of advisory committee meetings, Management of funds and timely submission of utilization certificates and accounts
3. Extending guidance, provide resource and facilities to ensure quality and schedule of activities
4. Enhance programmes to reach in the society and ensure involvement of the industry and other stakeholders for promoting and successful implementation of the activities
5. Identify the demand driven courses and training from need analysis with focus on its user applicability
6. Create facility for upgrading courses / bridge courses in language and mathematics
7. To identify and train students in such occupational area where there are self wage employment opportunities
8. To establish networking and linkage with other training agencies, community, industry and professionals bodies.

Audit of Laboratories / Workshops

The audit of laboratories and workshop includes

1. Storekeeping of raw materials required for the programme
2. Preparation of laboratory exercises / workshop practice sessions ensuring smooth operation of plant and equipment
3. providing assistance in demonstration
4. Issues and maintenance of tools / equipment / material used in programme
5. Maintaining laboratory reports and records of the trainees
6. Assisting the trainers during industrial visits
7. Maintenance of issue / receipt of library documents / learning resources and teaching aids such as computer, OHP, film projector etc.
8. Enforcing standard related to occupational health and safety, performance security and proper house keeping during the training.
9. Ensure optimum utilization of resources and checking wastages

10. Attend all duties / responsibilities as and when assigned by programme coordinator or trainer.

Audit of academic cell

The maintenance and analysis of academic records are thus done seriously to obtain high class precission.

The activities relating to academic documents are:

1. Introduced the brochure printed in the press and saved time and energy by 50% and the revenue generated thus is 15%
2. Introduced the rules for students and hostellers in the Brochure, which will act as contract between the student and management, and will reduce the indiscipline rate by 15%
3. The timetable is available on LAN so that any rectification is immediately possible which has reduced the class rate by 60 - 70% and time consumption is lessh than 20%
4. The use of electronic media and telecom services links, for quick disposal of long pending complaints, with BTE to reduce the time span by 30%. The MSBTE is an network which reduces the work by 60 - 70% and time to 80%
5. The academic records as available on LAN for easy accessibility and to reduce the time consumption rate to 50%
6. Concept of introducing e-file is on progress.

IMPACT OF MANAGEMENT

The impact of advance management system can be seen through Fig 3 and Fig 4. Here Figure 3 shows the analytical study between the institution and activities and retrival of tracing the documents and tracking out the information. Before the implementation of ISO/management system the retrival time was very high. Tails can be seen with the steep valley where as the retrival rate after the ISO Management flattered and is very small nearly zero.

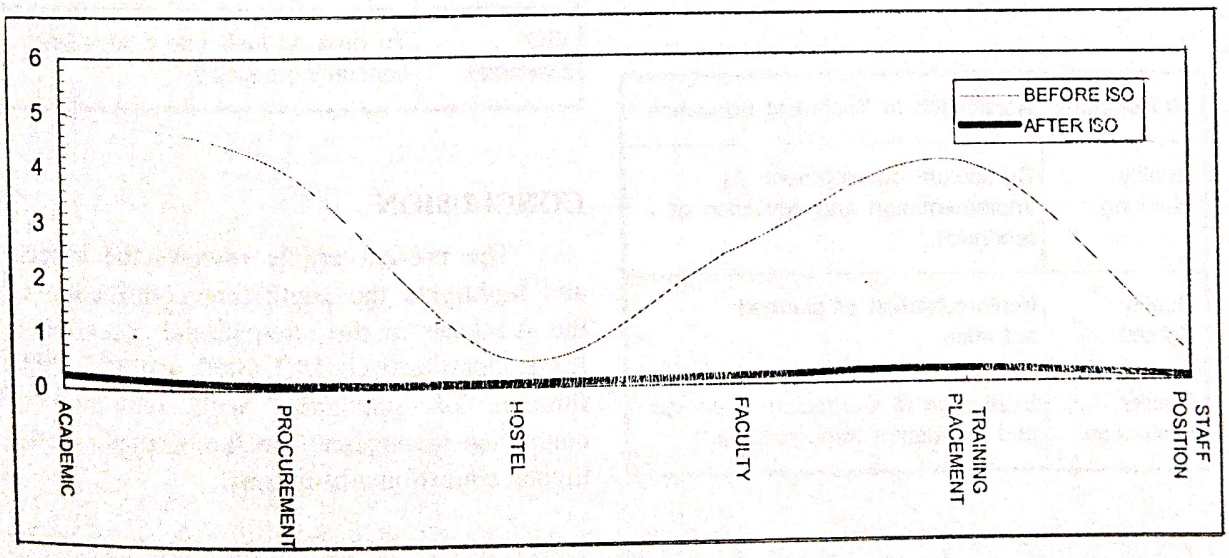

Fig. 3 Document Retrieval Time

The figure 4 shows the document comparison study. The increased number of documents justifies the availability of large data bank, which can provide any information at any time for any purpose.

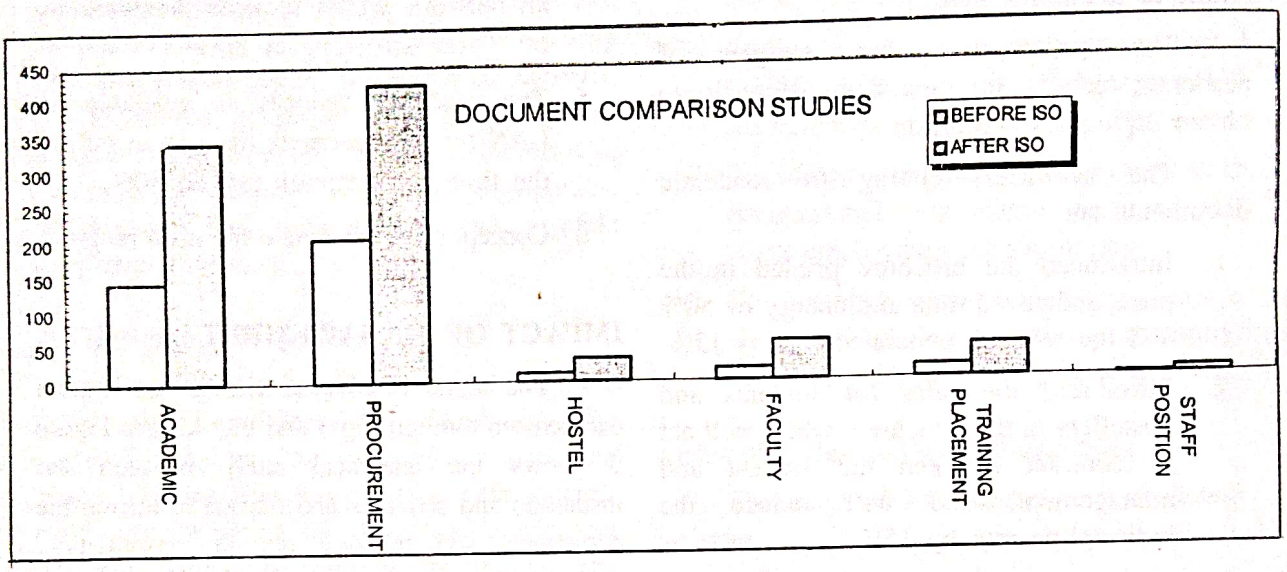

Fig. 4 Availability of Documents

Relevance of ISO in Technical Education

The Relevance of Technical Education is given as:

ISO enables	Application in Technical Education
Quality Planning	Curriculum development, its implementation and collection of feedback.
Quality Control	Implementation of planned activities
Quality Evaluation	Evaluation of Curriculum coverage and evaluation through tests.
Quality Improvement	Feedback collection from the customer and the curriculum is moderated accordingly
ISO strategies	To develop fault free & less time consuming policies.

CONCLUSION

The present article reviews the aspects and highlights the significant contribution of the standards of the international organization for standardization (ISO 9000 and ISO 2000 families of standards) with reference to eductional management in the curricula of the higher education institutions.

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Approaches in Planning and Utilisation of Human Resources in India

RATHY ANANTH and REENI SAMUEL

INTRODUCTION

India is one of the richest countries in human resources. Be it, the August 15, 1999 UN prediction or May 11, 2000, Government of India estimates [1], India has crossed the one billion mark and is set to overtake China as the most populous country by 2045. According to the Constitution of India right to life is a fundamental right. Article 21 of the Indian Constitution reads: " No person shall be deprived of his life or personal liberty except according to procedure established by law." According to the courts including the Supreme Court, the right to life includes the right to a living environment congenial to human existence.

India is a diverse nation culturally, socially, geographically. There are problems common to this vast human resource as well as those peculiar to a particular locale or group. In this paper the populace has been considered in three groups viz., the tribal population, the villagers and city dwellers.

OBJECTIVE

Since India is rich in Human resource, proper management of this resource (like any other resource) will reap good results. Even though the term human resource development has gained importance in recent times in our country due to the incumbent of multi national companies, the importance in the real sense of the term has not penetrated into the large population of the country. Developmental programmes have been initiated but the output many a time is not as per the initial objectives. This paper brings to light the problems faced by the three groups, the developmental activities, the impacts and suggestions for improvement.

TRIBAL COMMUNITY

India is in the forefront among nations committed to the assimilation of its ethnic minorities whom the constitution of India calls Scheduled Tribes. The tribal population comprising little more than 8% of the country's populace is spread across the length and breadth of the land from Jammu & Kashmir in the North to Kerala in the South and from Nagaland in the East to Gujarat in the West. Such a wide variety in agro-climatic and geographical conditions of India's tribal areas, ensures availability of an equally wide range of natural products. These tribals particularly those living in the interior forest areas depend for their livelihood to a considerable extent on produce available from the forests and agriculture. The collection of forest produce and its trade provides opportunity for livelihood for the tribal people. Efforts to improve their living standards through sustainable development efforts require that the right balance between modernisation and the traditional belief systems of the tribals is struck while enabling them to harvest the rich bounty of nature to

their advantage. At the same time need to conserve the nation's ecological wealth of which the tribals are in many ways guardians should not be lost sight of. The Government of India has been implementing a wide range of programmes keeping these considerations in mind to bring about their economic upliftment in a sustainable manner.

Scheduled Tribes, numbering 6.77 crores, according to 1991 census constitute about 8.08% of the total population of the country. The essential characteristics of these communities are primitive traits, geographical isolation, distinctive culture, and shyness of contact with community at large and economic backwardness. Certain communities amongst STs are so backward that these have been defined as Primitive Tribal Groups (PTGs) with specific characteristics viz. very low level of literacy, declining or stagnant population and pre agricultural level of technology.

DEVELOPMENTAL ACTIVITIES

An important element in the policy spectrum of the government to bring about a multidimensional transformation of the tribal society is generating and establishing proper marketing channels for tribal produce, the collection of which is the main occupation and source of income for the tribals. This, in turn ensures, assured off take of their products and remunerative prices while eliminating exploitation of tribals by market forces. The combined impact of these initiatives is aimed at bringing about sustained up gradation of living standards among these indigenous people.

To pay specific attention to the marketing requirements of tribal forest and agricultural produce, the Government of India set up the Tribal Cooperative Marketing Development Federation of India (TRIFED) in 1987 as a cooperative society under the Multi-State Cooperative Societies Act, 1984.

It is an organisation committed to serving the needs of the tribals and contributing to the up gradation of their living standards. Their aims and objectives include

- Generate increased income among the tribals
- Generate more employment opportunities
- Provide support in marketing the tribal produce.
- Marketing of over 50 Non Wood Forest Produces, (NWFP) & Surplus Agricultural product (SAP) collected / cultivated by tribals and also exporting it.
- Offer Training to tribals in methods of scientific collection, storage and processing of forest / Agricultural produces.

TRIFED has undertaken an ambitious project of establishing a network of retail chain of TRIBES shop. The first unit of this countrywide retail outlet has been launched in New Delhi. It gives the tribal community access to the urban market and sell genuine tribal artifacts, handicrafts, textiles, agricultural products grown in the most eco friendly manner.

A few steps taken up by the government to enhance the life of tribals are:

- Providing Girls/ boys Hostels for Scheduled Tribes
- Grant in Aid to Voluntary Organizations for the Welfare of Scheduled tribes
- Research and Training
- Price support to TRIFED
- Literacy in Tribal Areas
- Vocational Training
- Development of Primitive Tribal Groups

EXAMPLE

An example of how intervention has affected the tribals is the tribal population of Andaman and Nicobar Islands. The tribal population mainly constitutes of five tribes viz. The Jarawa, The Great Andamanese, The Ongoe, The Sentinelese, The Shompen on Nicobar. Except for the Jarawa tribe the other tribes have been forced to give away their traditional life style.

The proposal for the construction of the Andaman Trunk Road alongside the Jarawa territory has been given a green signal with conditions important for safeguarding the Jarawa's interests. The road remains a big hazard for the Jarawa population. They number about 200 in an area of 600sq km of reserved forest and tribal area, surrounded by more than 105,000 settlers. Their population could be overrun in the following years if no sensible and effective measures are taken to prevent such an eventuality. [11]

In 1986 the Government of India appointed a high powered committee of experts to recommend special measures for the small tribe of Andaman and Nicobar Islands to study them as well as to bring about their development in a scientific manner with minimal shocks. The recommendations of the committee headed by Dr. S. C. Sinha are submitted in New Delhi. The government currently in its 'Master Plan' for Jarawa, could be forced to return to its previous plan of settling them. [11]

So does it mean to say that the tribals need not be brought into the main stream? Let them be left untouched as living specimens of the bygone era. Let them be as they are? While considering the possibility of bringing the tribals into the main stream the ways and means used to achieve this goal has to be closely examined. To merge with the dominant 'modern' community material objects such as clothes domestic articles, food materials and visible life style etc are imitated. But neither the population undergoing the change nor the official agencies responsible for it show any sensitivity to the thought process, the mental tensions, the humiliation and the deprivation that relatively small primitive community might undergo in the process. [11]

Intervention of Government agencies in a bid to protect the natural resources ostracizes the poor tribals stripping them off their livelihood. In spite of the fact that officials are involved in denuding the forests while hypocritically acting, as guardians take no efforts to substitute their livelihood.

Most often the people to be affected on implementation of developmental projects are the tribals and the economically backward communities. The population of tribals and villagers displaced by construction of huge dams is quite large.

Simlipal Tiger Reserve is located in the state of Orissa. A population of around 450,000 scattered around the reserve live off the forests of Simlipal. The area is inhabited by tribals like Perenga, Kharia, Mankidia and Saura, who constitute 73.5% of the population in the area. The threat of eviction has been looming large on these people since 1973. [8]

Various developmental schemes have not helped these folks as accessibility is difficult. There is no proper facility for education and health care. In spite of the hardships there are people who do not want to be evicted as the forest has been their livelihood (like procuring honey, making ropes out of grass, collection of timber for fuel and implements, tubers, leaves to make cups and plates etc) the life beyond the forest is unthinkable. The forests officials say the folks have to move out while

the politicians who have a eye on the votes say so do not move. Pulled between two opposite forces their future does appear gloomy.

SUGGESTIONS FOR IMPROVEMENT

The five tribes of Andaman and Nicobar Islands represent one of the besieged human communities who need to be protected and looked after under proper scientific supervision and guidance so that they not only survive but also live as self-respecting communities. They have to change but the change should not be forced by the thoughtlessness of the dominant groups.

- Proper understanding of the delicate life structure of the tribals
- Respect for the tribal culture and tradition
- Implementing the modern trends and practices onto the primitive population and trying to blend the two
- Create awareness of the rights of the tribals
- Use non formal education for training the tribals and improving the skills
- Create the right attitude towards the tribals
- Encourage people deputed to work in tribal environments with commitment – many a times the health centers lack staff and medical facilities
- Encourage NGOs who are committed to work among the tribals

THE VILLAGERS

Villages harbour a major chunk of our population and the villagers' sweat provide for the food of our country. The major occupation followed by the villagers is agriculture and involves nearly 70% of the population. There are fishermen, artisans and craftsmen following traditional skills. All is not well for this vast majority with the onset of industrialization and globalisation. Industrialization has enabled greater productivity but lesser natural resources like water and fertile soil which are essential components for successful agriculture. There are problems of drought and floods for which "development" has not provided a solution. When all odds have been met and a bountiful harvest has been reaped, government policies dampen the farmer's prospect of enjoying the fruit of his labour. Many a times farmers have been forced to sell their produce at throw away prices and some times literally throw away in case of perishable goods like tomatoes. Coconut growers who had a good market of their produce once do not get even to pay for the labour, mainly due to the increase in imports of edible oils. Same has been the case with many other agricultural products. Imported goods are available at lesser prices and look better in quality, which has jeopardized the farmers in our country. Due to the natural as well as man-made calamities villagers are losing faith in their age old traditional occupation.

With the intrusion of education into villages the younger generation find it difficult to blend with the traditional activities and try for "jobs" in towns and cities. Many traditional crafts are on the verge of extinction, because younger generation is unwilling to take up ancestral profession or the craft has not been encouraged with a good market for the craftsman to earn a decent livelihood. Advent of new technology and more mechanized means of production and aim for more business has sent the long built up balance of traditional systems with the environment hay wire. Women are the worst affected lot. Literacy is low among rural

women. Girl child is not encouraged to go to school. The burden of the woman is high so the girl is forced to become the mother's assistant at a very young age. The 1981 census had revealed that the fertility rate of literate woman was much higher than a literate one [8]. Regenerating India's lands, making firewood, fodder and water easily available would make the rural woman's life better, it still remains a challenge.

CHILIKA AN EXAMPLE

Chilika is the largest brackish salt-water lake in India. Chilika is the leading centre in Orissa for fish, prawn and crab hauls. For centuries the traditional fishing communities through the system of gram panchayats managed the lake. There were regulations on various aspects of fishing like:

1. Rules regarding the seasonal catch areas and community related fishing equipment ensured that the lake was managed like a common property.
2. There were 'no fishing days' and restricted fishing seasons, which ensured the lake enough time to rejuvenate its stock of prawns, and fishes.

Spread over more than 1000 sq Km the lake is rapidly degrading. A few reasons being

1. Every year 113 million tonnes of silt is carried into the lake clogging all but two of the numerous channels connecting it to the Bay of Bengal. (6)
2. Decreased natural clearance and increased deforestation has increased the silt inflow and decreased the depth of the lake.
3. The entry of commercial interests, who neither came from the fishing community nor stuck to the traditional fishing rules.
4. Runoff of pesticides from agricultural lands, less inflow of seawater has decreased salinity all affecting the fish population.

Due to over exploitation and deterioration in the Chilika environment the brackish water fish production in the state has declined by 55.8% between 1988-89 and 1994 –95. The fishing community who depended on this lake for its livelihood has been left high and dry.

SUGGESTED PLAN FOR IMPROVEMENT

"If village perish, India will perish" said Mahatma Gandhi

Poverty is not about income alone, but is multidimensional. Upliftment of the poor will involve reduction of malnutrition expanding literacy and increasing life expectancy.

1. Encouraging rural crafts like pottery, blacksmithy, carpentry, weaving, agricultural processing etc and at the same time creating market avenues for the village products.
2. The use of rural products should be encouraged in the cities so that the crafts are not extinguished but the trade carried over through generations with pride so that the livelihood of the artisans are not jeopardized.
3. De scaling of large scale manufacturing processes for important consumer items like sugar, paper, cotton spinning to create new employment opportunities in rural areas. [4]
4. Improve the physical needs of the people for better quality of life like rural sanitation, water supply, education,

smokeless chullahs, training in rural health and hygiene.

5. Use of renewable sources of energy for trapping power for various requirements
6. Improve the road network and transport facilities with ample care for the environment so as not to "kill" water source and cause air pollution.
7. Improving agricultural equipments, utilization of waste and by products, encourage traditional water harvesting techniques, gobar gas etc. Technological developments implemented should be suitable for the rural environment. Conservation of the environment is often linked with the protection of village and tribal livelihood.
8. Rural development, poverty eradication should have a link with the environment.
9. Implementation of policies and plans require strong responsive and accountable institutions of governance, which is often the missing link in poverty reduction. [5]
10. Programmes that focus resources on poor areas, no matter how successful, may not reach disadvantaged social group like women, ethnic minorities, indigenous people etc. Special intervention may be required in such cases. [5]
11. Peoples empowerment, peoples participation and clean up of corruption would ensure that the benefits of the developmental plans reach the targeted group. Educating the masses about their rights as citizens of the country will help them to protect themselves from groups who try to take advantage of the weaker sections.

THE CITY DWELLERS

The population of the city is a heterogeneous group with a section at the last rung of the economic ladder finding it difficult to provide themselves with even a square meal a day, no shelter and also the highly affluent at the top rung with palatial bungalows and numerous vehicles. The balance fills the gap in between. The problems are numerous faced by each group. We shall consider the points common to all the groups.

Many towns and cities are not able to provide for the basic necessities to the citizens like water, good air, employment, good roads, proper medical facilities etc. The developmental activities do not focus on the need of the masses. One recent development in the city of Chennai can point how developmental activities are implemented - the construction of flyovers at many places in the city. Road users know that the congestion has just been transplanted to another place. The authorities only thought about the vehicle users not the pedestrian. The Central government in the last budget brought down the prices of vehicles. But where are the roads for them to ply. Who answers for the pollution caused by these vehicles and the health problems associated with it? When the time has come to encourage public transport to increase fuel efficiency, decrease pollution and congestion, steps taken are totally against the need of the hour. In India the influx of rural poor to urban slums in search of livelihoods is changing demographic, social, and economic profiles of the country. [10] The problems faced by this migrant population which becomes vulnerable to malnutrition in the process of transformation from the land-based to cash economy.[10]

Such people, mostly employed in service sectors finding it difficult to get affordable

houses, occupied vacant government/private lands and put up hutments. These habitations later develop into slums. These slums proliferated further due to natural population growth, rapid urbanisation and inelastic supply of land. [7]

A few of the evils that loom large among this group are

- Illiteracy
- Child labour
- Malnutrition
- Lack of family planning measures
- Lack of proper shelter
- Alcoholism
- No proper water supply and sanitation
- No proper medical facilities

In spite of measures taken by the Government and Non Governmental Organizations the drop out from schools is high. Most parents prefer the children to contribute in terms of money to the family.

Study conducted by IRDC showed that the basic area of intervention necessary to improve the slum conditions was education among children and income generation particularly for women. Some women even though they had skills like tailoring were unable to use them because of lack of economic and social support. [10]

A few steps that could be taken for the betterment

Provide encouragement and opportunities in the villages to prevent mass migration to urban areas.

Create awareness mainly through non-formal mode about the importance of education, family planning, about their rights and duties, health and hygiene.

Improve the health and nutritional status of urban slum families (specially children, pregnant and lactating women) by enhancing access to nutrition and health services and improving utilization through active community participation.

Awareness rising among children and youth about the importance of environmental hygiene so as to take initiatives with respective agencies to provide basic amenities like water supply, sewerage connections and their proper maintenance.

Rather than removing the population after they have established themselves in a particular area, the authorities should see that they are located in a place that will not pose a problem. Dislodging the slum population leads to loss of livelihood and people take to thieving to eek out a living.

Slum may be an eye sore but their settlement can be planned and rehabilitation done well in advance.

Concrete shelters need not be the answer. The beneficiaries themselves can be given the freedom of designing their own homes with the cheapest material with an eye on safety, health and hygiene.

SUGGESTIONS FOR IMPROVEMENT

Detailed study should be conducted to study the life of slum dwellers and effective long term solution to the problems should be arrived at.

Proper Town planning – open spaces, carparks, walkways, no vehicle zones etc

Improve water supply and sanitation system

Improve road network

Proper maintenance of roads (sometimes they become death traps with opens manholes,

Improve public transport systems (vehicles complying to the emission standards) which will ease traffic congestion, increase revenue, lessen pollution

Maintain the cities clean and green

Preserve and improve the city skyline.

Find long term solutions to the problems of solid waste disposal

Encourage rain water harvesting.

Encourage people participation in identifying problems and solving them.

Improving education at the lower level with cleansing of the corrupt bureaucratic system, with better and committed outlook on the environment will make our cities and towns better living places. It means a committed involvement of all citizens. Here the NGOs are playing an important role in creating awareness among the citizens to improve the quality of their life.

CONCLUSIONS

From the above discussions we can conclude that the improvement in our country's human resources depends both on the policy makers, the officials implementing the policies and the group at the receiving end. Always the government cannot be held responsible for the condition of the citizens. Proper employment of the people will ensure that in a democracy the people dictate what they require and not a privileged few above them. Awareness will help people to help themselves in terms of health and hygiene and earning a livelihood. Awareness of the rights and duties help the citizens to be prevented form being harassed because of ignorance by 'learned' members of the society.

Let us as part of this big resource of our country help ourselves as well as fellow citizens as individuals and part of the institutions we represent to live better lives in a holistic term and not in terms of material good alone.

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Food Culture and Environment, Their Role in Nutritional Education

ABAZU, HELEN, UZO

ABSTRACT

Food occupies the first position in the hierarchical needs of man. Ignorance of many factors relating to food is wild spreading. Good food is a function of both economics and education. In Nigerian society, the most serious form of nutritional disorder, under nutrition arises from inadequate purchasing power, tribes and culture of individual as well as influence of environment and lack of knowledge. This paper applies to your personal life to retain those parts of your food heritage which are scientifically correct and modify incorrect which may be evident in our appearance, efficiency and emotional well-being.

INTRODUCTION

Food has formed the basic part of our existence. Wealth of information has been acquired centuries ago through the use of food. As part of our community, social, national and religious life, it has been used as a way of expression of love, friendship and social acceptance. It is also used as a symbol of happiness in certain events in our lives. For example rice is prepared and distributed at birthday, wedding parties, while cassava foo foo may be served during traditional wedding, elders meeting and so on. Cakes are served at wedding as well as birthday parties and so on.

All these kinds of foods are part of our heritage and may be an asset in helping us to improve our nutrition and that of our community. Unfortunately people do not have correct ideas about foods, this paper examines the wealth of information and ideas the role of food culture and environment will have in Nigerian nutrition.

FOOD HABITS AND THEIR ROLE IN NUTRITION

All people have their likes and dislikes, their beliefs about food and their environment also determine their style of food and feeding habits.

Most people are conservative in their food habits. They tend to like what their mothers cooked and served them when they were young. The food that people ate without a second thought in childhood are seldom revolting to them in their later life.

Individuals are further influenced by friends or what those around them eat, and by what foods are thought to be sophisticated, expensive or are popularly considered good for health. There is a dislike of being conspicuous or different from others in the society with regard to foods eaten.

Food habit differ most widely with regard to foods of animal origin. Few people have strong feelings about cereals, roots, vegetables or fruits, the affected foods are therefore usually those rich in protein, because protein is deficient in many African diets. Encouragement and not discouragement should be given to the consumption of any foods of animal origin, irrespective of how bizarre they may seen. The sophisticated or educated man may be doing a disservice to his community if after his life in the city, returns to his village and tells his people and friends that it is disgusting to eat flies or locusts, snails, toads and frogs and others.

The child at school is still young and is still forming his tastes. If he is introduced to a new food because he has a new environment, he will often readily accept it and like it, school meals may serve as a useful means of introducing new foods to children, and therefore of influencing food habits and culture. This widening of food experience in childhood is extremely important, because the child himself might influence his family to eat new, highly nutritious food of which he after all will be a future parent.

FOOD HABITS AND CULTURE

There are number of food habit practices which are unfortunately poor from a nutritional point of view, Some of these are just traditional views about food which tend to change in time with the influence of neighouring people, travelling, education and experiment.

There are other food practices which are governed by definite taboos. A taboo may have to be followed by a whole tribe, part of a tribe or by certain groups within the tribe. This tribes may be divided into sub-tribes clans lineages and even families which may have different food taboos. Cutting across this and within the tribe or clan, different food customs may be followed only by women, or by female children in certain tribes, traditional food customs are followed by particular age group and in other instances, a taboo might be linked with occupation such as hunting. At other times or on other individuals a taboo might be imposed because of some particular events such as an illness or an initiation ceremony, and other may be intimidation.

All these border on the realm of anthropology, but if there is little doubt it is important to be familiar with all food habits of people if their nutrition education is to be successful.

Some customs and taboos have known origins and many of these are often logical though the original reason for the logic may have disappeared. The custom may become part of the religion of the people involved.

Many taboos, unfortunately related to protein rich animals foods and to those groups of the community in need of all available proteins. The commonest of these taboos against the consumption of eggs, is rapidly disappearing. It usually applies to females who are said to become sterile if they eat eggs. The connection between human facility and the eggs is clear. In other places the custom relates to children, and the origin may have been the sensible one of eggs in other to discourage them from stealing the eggs of sitting hens. In other areas a whole tribe may not eat eggs, due to a revulsion against them. Other customs concerns fish, and these often affect women and children. This may be an actual taboo, though people often, are not used to fish, some just do not like it because fish has a distasteful smell or because some fishes are "snakelike". Other beliefs are concerned with goat's milk and goat meat. Some of these account to be illogical and their origin is

obscure. This is more than one tribe it is said that a child who drinks goat's milk will grow to look like a goat. If this is so, it might be argued, what can one eat? Who wishes to look like a cow or cabbage? Some tribes had in the past such a wide range of taboos for the pregnant women that it was well-nigh impossible further to eat a balanced diet.

CHANGING FOOD HABITS

In some parts of Nigeria the staple food of particular tribe is changing, in many cases it has already changed. It may prove surprisingly to learn that maize, cassava, potatoes and some other now important Nigerian foods originated outside the continent. It was known that some hundred years ago none of these foods have been eaten, the food habits of millions have indeed changed. Vast numbers of people in Nigeria have deserted yams and millet for maize and cassava, just as many Europeans deserted oats, barely and rye for wheat and potatoes. Food habits are still changing with great rapidity. The difficulty, of course lies in trying to guide and foster desirable changes and to show down undesirable ones.

The tendency as far as staple foods are concerned seems to be from

– Yams, millet to –

– Cassava, maize to –

– Rice to –

– Bread and wheat product.

Certainly to the outsider the rice seems a pleasanter staple food than maize or cassava.

However, some tribes have a reverence for one staple food and have no desire to change, as in the case of many Banana eating people. E.g. Cross River, Akwalbom.

But every where the basic staple food remains unaltered, the form in which it is preferred may change. Example, popularity of milled cereals in the southern part of the country, and again the great desire for cassava and yam flour meal in the Yoruba land of the country which is nutritionally inferior.

HARMFUL NEW HABITS

Many changes in food habits which have occurred or been fostered in Nigeria or in our environment by western civilization have been harmful. e.g. importation of foreign food like highly milled cereals taken over from lightly milled cereals which is becoming a serious problem in Nigeria.

Another nutritional problems that has arised out of westernization is a spread in bottle-feeding of infants. It cannot be overemphasized that human milk is by far the best food for the human infant. why is there a tendency to change from breast to bottled? It is convenient for a working mother but undoubtedly the main reason is that it is believed to be sophisticated or even better.

How are these ideas disseminated?

Largely in advertisements either newspaper, magazine, cinema, radio or television. These are powerful media. Many of these advertisement imply that it is easier and more sophisticated to bottle feed and that it produces a healthier baby. Often the milk is advertised as being vitamin enriched. The advertisement does not add that breast milk does not require vitamin enrichment. This type of advertisement can do much harm, as can the bad example of those who are already bottle-feeding their infants. Much efforts are now on baby exclusive, that is where a child is been given only breast feeding to a certain reasonable number of months.

CONCLUSION

Influencing change for the better.

What can a Home Economist, Agriculturalist or others concerned with health do about food habits and environment, old and new? They can:

- persuade people to maintain and preserve the many excellent existing food habits which are nutritionally valuable.
- Set good examples in his own household by adopting good food habits and not following undesirable taboos.
- Influence respected local leaders to state publicly that they themselves have dropped food taboos and have them, when occasion arises, eat "forbidden" food in public.
- Dissuade people who may be influenced to abandon good habits by:
  - Sophisticates back from the city who tries to discourage rural dweller from eating locusts or lake flies and other animals.
  - Expatriate and others who try to encourage the consumption and production of European-type of vegetables in place of better traditional ones.
- Define the disadvantages of highly refined cereal flour.
- Issue counterpropaganda to stop the spread of bottle-feedings.
- Take steps to introduce good feeding practices in the local schools.
- Help to introduce and embark on nutrition education to all level of tribes and families.
- Encourage people to eat anything that is edible especially animals.

SUMMARY

Having seen that food occupies the first position in the hierarchical needs of man, we have also seen that ignorance of many basic facts relating to food and nutrition is still widespread.

Consequently various nutritional maladies, for which there are remedies such as blindness caused by lack of vitamin A, where as we have our natural vegetable and fruits in abundant. Kwashiorkor and marasmas are caused by lack of protein and vitamins, while we have our flies, crickets, insects and other animals which will supply proteins. We suffer from those things because, some valuable, and traditional foods are neglected. We move and adopt the western cultural foods and their pattern of preparation. This, on the line of processing and preparation, the vital nutrients are gone.

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Knowledge Management for Networked Learning Environments

KULANTHAIVEL. G

INTRODUCTION

Organizations must learn continuously to keep up with the changing environment, and individuals in an organization must synchronize with changes in internal and external procedures and regulations. Knowledge management is an important aspect of organizational learning and has become a growing area of research during the last few years. Industries in the age of the knowledge-based economy are information-intensive and pay more attention to knowledge management than others. Many companies are beginning to feel that the knowledge of their employees is their most valuable asset. The goal of knowledge management is to promote the ability of innovation. The processes of knowledge management involve knowledge capture, sharing, classification, and understanding. Especially as a result of the availability of Internet, 'networked education' in these days becoming a wide spread and influential form of education; in fact, networked education is transforming and reshaping fast the framework of traditional education as it offers inroads for the application of new types of Information and Communication Technologies and methods in education. Within the setting of networked education, telecommunications facilities extend the range of options for the use of interactive multimedia products and multimedia databases in education and training. Not only educational multimedia products are involved though; networking provides the educational field access to a huge amount and variety of information sources, to data repositories such as 'sites', to tools for communication and for cooperative work, and to tools for finding information, such as 'browsers'. Without exaggerating we might state that the educational field is entering 'information world'; an information world of its own that we may call (educational) '*InfoSpace*'.

Not only do we perceive that the educational field is entering Information Space; by becoming networked the form and shape of education itself is also changing. Education becomes more information-intensive and information-based, as networks being the carriers of the educational process, become increasingly more important. Some authors even consider it possible to describe a goal state for networked education: to provide an ".. organization-wide information utility for access by anyone, at any time, anywhere and to be able to use, open and platform-independent technologies"

DATA, INFORMATION AND UNDERSTANDING

Data is numbers and text, and, for the purposes of this discussion, stored in some form of computer accessible format such as a database, file or spreadsheet. Data is usually

highly structured, such as fields in a record or a table in a database, and through that structure relationships to other data are captured. Once the data structure is known, retrieval is usually a trivial intellectual process, but may be an overwhelming administrative process.

Information is data in a contextual environment, which helps give shape, and make sense of the raw numbers and text. The context in which data is presented might be internally self-generated (means, standard deviations, accumulations by dept, division), internally comparison-generated (against last year's equivalents, this year's budget), or externally comparison-generated (against industry sales, GNP, inflation).

Understanding is likely to result when data is transformed into information, and presented to a person (such as a manager) experienced with the environment from which the data was collected. This understanding, when combined with that person's experience and beliefs, then may lead to actions (do nothing, tweak slightly, make radical changes) which in turn are expected to achieve desired results. Understanding and knowledge are strongly related and interdependent.

Tacit and explicit knowledge concepts first developed by Polanyi have been explained in the context of knowledge management by Sveiby (1996). Nonaka and Takeuchi (1995) suggest the following:

...we classify human knowledge into two kinds. One is explicit knowledge, which can be articulated in formal language including grammatical statements, mathematical expressions, specifications, manuals, and so forth. This kind of knowledge thus can be transmitted across individuals formally and easily. ....A more important kind of knowledge is tacit knowledge, which is hard to articulate with formal language. It is personal knowledge embedded in individual experience and involves intangible factors such as personal belief, perspective, and the value system.

Four Views of Knowledge

We now look at four views of knowledge. For each view, a short definition of knowledge from that view is given and an example of how those practitioners holding that view may be implementing knowledge management systems is described.

View 1: Knowledge Is Access to Information

Publishers and database builders may hold this view. We use the word publisher in a broad context to incorporate not only traditional publishers, but also organisations who build computer-based document repositories, containing items such as manuals, standards and product specifications. "Database builder" is used to describe those who wish to provide integrated corporate information in easily accessible repositories, which are used both for transaction processing of the day-to-day activities of the organisation, and also as an archive to which queries can be made. This view is that useable (and sharable) knowledge must already be in an explicit form, and perhaps combines and confuses the concepts of data, information and knowledge. This view then perceives that *knowledge* can be retrieved through access to documents and databases containing data and information, which is vital to the successful operation of the organisation. To facilitate knowledge sharing, the data and information must be added to the databases, or published in an electronic form. The knowledge-sharing infrastructure is the database and document repositories, together with the access technology, often implemented through an

intranet. This view of knowledge as access to information then implies that organisational databases and document repositories must be built to facilitate access to these databases and documents, and this can be partitioned into the technical issues of storage, and access. Organisations that adopt this view of knowledge then perceive knowledge management to invoke two problems: a technical problem of storing and providing access to databases and document repositories, and an incentive problem of ensuring useful data is available in databases, and useful documents are created and available in electronic form.

View 2: Knowledge Can Be Stored in ***Repositories of Electronic Communication***

Consulting firms frequently holds this view. These firms earn revenue by applying the expertise held by (or accessible to) their professional consulting staff, to the problems of their clients. Knowledge is perceived as the understanding that their consulting staff have in a given area of expertise, such as tax planning or process redesign. Hence, to build more client relationships, the requirement is to make the understanding held by an individual senior consultant more broadly available to other less expert consultants within the firm, as well as to some customers directly. However, the senior consultant's knowledge, or deep understanding of an area of expertise, may be difficult to capture and embody into "how-to" manuals or other sharable media. This view recognises that it is difficult to convert the tacit knowledge held by experts into explicit, how-to knowledge, and that the capture of dialogue among experts may be an important technique. To address this problem, many of the major international consulting companies have installed software systems, which provide both a medium, and an archive repository for electronic message based discussions organised by contextual area.

View 3: Knowledge Is ***Sets of Rules***

Expert system designers, machine learning researchers, and business process designers hold this view. A knowledge engineer extracts sets of rules, such as diagnostic procedures, from a domain expert who has extensive experience. These rules can then be embodied in an expert system that can guide a person much less experienced through the necessary steps in a diagnostic or design process. The rule sets and decision trees may be automatically generated through machine learning and data mining procedures, where large datasets, such as telephone toll call records, may be analysed to create understanding of usage patterns. This view holds that useable explicit knowledge is most easily embodied in sets of rules, and that knowledge engineering and machine learning techniques are important in converting the understanding of an expert, or the hidden meaning in a database. Process re-engineering and improvement efforts may be characterised as a formal methodology to embody tacit knowledge held by participants into a design for a business process. Group members brainstorm ideas based on their own experience, beliefs, and view of the future, debate and refine these ideas through group discussion into proposals, and then participate in the design of new processes (sets of rules and procedures), which incorporate this group knowledge. Workflow systems and other process management technologies can be then are implemented to embody and control these new processes.

View 4: Knowledge Is "Knowing", "Understanding"

This is the philosophical view of knowledge that some say this only happens in humans and therefore, is not possible to mechanise. If this view is to be accepted, then the role of information technology and knowledge management is to provide sources for searching (information repositories) and stimulation (information streams) so that individuals can expand their personal knowledge, and apply that knowledge to assist the organisation in meeting its goals. This view holds that the conversion of tacit knowledge to useable and transferable forms of explicit knowledge is extremely difficult, and unlikely to result in success. Some may hold to this pure view of knowledge, while still suggesting that technology may be able to assist if knowledge can exist outside the human mind. The use of knowledge embodied in such future systems may not be just query based, such as a human interactively searching a machine based repository, but rather more proactive, such as a machine implemented knowledge agent making unsolicited suggestions to a human based on environment factors of interest and the processing of incoming streams of data and information.

KNOWLEDGE MANAGEMENT

In this age of knowledge-based economy, many enterprises start to emphasize the management of knowledge. Knowledge management is a conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that will improve organizational performance. It is a complex process that must be supported by a strong foundation of enablers. The enablers for knowledge management are strategy and leadership, culture, measurement, and technology. Each of these must be designed and managed in alignment with other in support of the process. The knowledge management involves the following parts:

1. knowledge selection/mining
2. knowledge obtaining
3. knowledge learning
4. knowledge creation
5. knowledge diffusion
6. knowledge construction/coding
7. knowledge warehousing

The rapid growth of Information and Communication Technologies promotes the development of knowledge management. The goal for knowledge management technology is to create a connected environment for knowledge exchange. Knowledge management technology must support the exchange and transformation of tacit and explicit knowledge. The processes of knowledge transformation and exchange involve knowledge sharing, knowledge capture, classification, and understanding. The following knowledge management activities can be followed in the Technical Institution systems:

- Knowledge capture, i.e., creation of documents and moving documents onto computer systems
- Adding value to knowledge through editing, packaging, and pruning
- Developing knowledge categorization approaches and categorizing new contributions to knowledge
- Developing information technology infrastructures and applications for the distribution of knowledge
- Educating teachers or students on the creation, sharing, and use of knowledge.

NETWORKED LEARNING FOR TECHNICAL INSTITUTIONS

Networked/Online or e-learning is a multi-dimensional phenomenon which needs to be understood not only in intrinsic terms but as it relates to the societal environment within which it is applied. There are various ways of defining the term but, for the purpose of this paper, Rosenberg's three-fold categorization has been adopted:

- Online Learning is networked, which makes it capable of instant updating, storage/retrieval; distribution and sharing of instruction or information can also follow instantly.
- It is delivered to the end-user via a computer using standard Internet technology. It can be arranged as a stand-alone or hybrid solution (embedded in a traditional context).
- It focuses on the broadest view of learning – learning solutions that go beyond the traditional paradigms of training.

Hence it is difficult to separate online learning (which applies more the technical background as the core of the definition) from networked learning (which is implicitly covered by the above definition) or from technology enhanced learning (which starts from the assumption of "blended learning" approaches). Bearing in mind Rosenberg's definition, for the purpose of this paper, the term-networked learning is also used as a synonym for online and/or e-learning. Although the intention is to focus on networked learning as an educational tool, it is also necessary to deal with its other dimensions. It is precisely because of the multifaceted character of the term that meanings need to be established at the outset. The sense of networked learning varies depending on the context to which it is applied. The *educational meaning*, which places e-learning in an environment of teaching and learning as a particular approach for designing new instructional environments or new areas for research. In this context e-learning refers to the use of Internet technologies to deliver a broad array of solutions that can enhance knowledge and performance. The new ICTs are cheap and innovative device for the improvement of both the quality and the quantity of teaching. Collaborative learning, group work, peer learning etc. are approaches which are not restricted to networked learning. Over the last three or four decades, the rhythm of pedagogical innovation has become faster due to technological developments, like TV and video or new ICTs. Networked Learning is a pedagogical innovation, one element within a series of ICT-based innovations over recent decades, but the first one with certain stability because; it picks up the academics from their natural starting place. These core elements are also the more successful features of web-based networked learning environments, whilst others, like simulations, exploring learning environments or collaborative learning, where additional designing or methodological efforts are necessary, remain very much at the experimental phase. This correlates with the situation in face-to-face teaching.

It can be argued that the use of Internet technologies has the potential to increase the occurrence of positively valued outcomes of learning. All forms of problematic learning are caused by a limited access to information. Since Internet technologies offers the possibility of gaining broader and deeper access to information, the use of Internet will increase efficient and effective learning processes. Intranets can improve organizational productivity and effectiveness by giving

non-stop access to all organizational information, by publishing (internal) information on-line, by reducing long distance costs, and so on

Networked Learning has the potential to support educational innovation and change by:

- providing a focal point and learning environment for the dissemination of good practice, the generalisability of innovation and the creation of 'action oriented' knowledge about effective educational practices
- keeping the focus on the core purposes of Institutions, in particular in creating and sustaining a discourse on teaching and learning – and the organisational redesign factors that will support more powerful learning
- enhancing the skill of teachers, leaders and other educators in knowledge-creation, change agent skills and the management of change processes
- ensuring that systems of pressure and support are integrated, not segmented
- building capacity for continuous improvement at the local level by fostering leadership and creating professional learning communities, within and between Institutions.

Networked Learning Communities seek to use collaborative processes in a range of ways:

- supporting practitioner enquiry and enquiry-based leadership as a means of creating knowledge and generating theory about learning and school improvement;
- engaging teachers with the theoretical perspectives and research findings of others, in both academic and practitioner communities;
- providing distributed leadership opportunities through the ownership of knowledge-creating processes and the leadership of enquiry partnerships;
- modelling collaborative leadership learning through explicit head teacher learning processes;
- seeking accreditation for network-based learning activities;
- challenging thinking, benchmarking practice and incorporating external expertise;
- utilising diversity and uniqueness of context for and on behalf of all Institutions;
- making local, regional and national initiatives coherent through collaboration;
- targeting concrete outcomes that will attract widespread interest and take-up; and.
- establishing networking systems, processes and relationships geared towards knowledge-sharing and sustainability

The activities described by the term 'knowledge management' are socially active processes. There are also two key principles promoted within this. For collaboration it is: 'working smarter together, rather than harder alone'. For moral purpose it is: 'learning from, with and on behalf of'' one another.

CONCLUSION

The core tasks of Institutions involve the creation, processing, storing and public dissemination of knowledge and it is these prime functions, which are challenged by the new technologies. Survival and quality

assurance for education in this Information world can only become a reality if Institutions can use the networked learning environments. Such an approach is in line with current about knowledge management and learning organizations. But thinking, speculating, and wishing is not the same as doing and quite different form doing it successfully!

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The authors are requested to note that the Journal aims at a wide international readership of varied societal and cultural backgrounds. They are therefore encouraged to point out in their contributions the relevance of their results and insights to technical and vocational education system, other than their own. In the case of research reports, the emphasis should be on applicable research of national and international interest.

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