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Editorial

EDITORIAL

We are able to publish the Issue 14 of the Annual Journal of Technical and Vocational Education well in time. Special initiative was taken to publish the Journal at the earliest taking into consideration the 3rd International and 34th Indian Academy of Applied Psychology (IAAP) Conference which is to be held at Technical Teachers' Training Institute from 29th to 31st Dec. 1997. The theme of the Conference is 'Managing Human Behaviour in Organizations: National and International Perspective' which is within the purview of the Journal. Distinguished delegates from India and abroad those who are not familiar with Journal can go through it and contribute in the forthcoming issues. In this issue apart from contributions from different institutions of India, we have got contributions from Canada and Nigeria.

We are all familiar with the work of Dr. S. Lakshmi in the field of Education. In this issue she has presented her research study on Technical Teachers of two Polytechnics with respect to their career behaviour anchors. Ms. Carolyn E. Beatty has contributed her worldwide experience in the area of Life Skills Training for the Empowerment of Women. In her article she has narrated her experiences of Canada, Singapore, Pakistan and India.

Value education is often a neglected component in our Educational System. This appears to be missing from the college curriculum including technical education curriculum in these days. Dr. Arun Kumar and Mr. Biju Varghese have traced the views of various commissions and individuals and suggested several activities which can be incorporated in technical education curriculum. In a different but related perspective Ms. Anjali Saini and Dr. S.P. Sinha have contributed a research paper on the basis of their investigation on perception of environmental problem, ecological attitude and knowledge among students. Dr. T.J. Kamalanabhan and Ms. V. Vijaya have contributed an unique research paper on work values and occupational preferences among students.

Human Resource Development is one of the factors for economic growth of any nation. Dr. R. Srinivasan is his paper has attempted to highlight Indian Economic Growth and its relation with technician education.

The Journal of Technical and Vocational Education has always appreciated the contributions of academicians from Nigeria. In the present issue Ms. C.N. Ikeagu has presented one article on motivational approach for technological development, Mr. E.C. Ebonine has appraised the contributions of technical education programme in the Nigerian Society through his article and Mr. G.E. Odunukwe in his paper has explained the need for practical learning in Nigerian context.

We profusely appreciate the efforts of the contributors for the present issue of this Journal. The editors appeal to the academics and larger readership to come forward and contribute by way of publishing papers, articles, best practice in this Journal for the benefit of the TVET community. We welcome suggestions for further improvement of the Journal.

Thanks to Dr. R. Srinivasan for assisting editorial work including proof corrections.

The last date for receipt of contributions to the next issue No. 15 is 30th May 1998.

— *EDITOR*

CAREER - BEHAVIOUR ANCHORS OF POLYTECHNIC TEACHERS - A STUDY

S. LAKSHMI

ABSTRACT

In the present paper performance evaluation of the faculty with respect to career behaviour anchors is attempted. Behaviourally anchored rating scales are used here for the collection of data. This study throws open a wide area of careers and performance assessment by faculty members.

Thanks to the industrial revolution and electronic era. Technology has percolated into every aspect of society, with very few exceptions. Speed and comfort are provided by the small and big machines and to think of a civilisation without the advantages of a technology setting appears to be well-nigh impossible. It is also worthy to note that technology is not independent of the society in which it develops and flourishes. The social setting has a lot to do with whether, to what degree, in what ways and which one's of the benefits potential in technology will be achieved. Society as in all cases of innovations has imposed its initial resistance to technology in each specific situation of human living. And as usual, when the benefits are known, the gadgets and the invented machines get accepted. Enthusiasm is evinced to utilise technology in all major aspects of living and this includes education.

Technical education provided by the polytechnics and colleges of engineering provide the cognitive and psychomotor specialisation relating to specific areas of technology. The teachers who instruct the technology - students, are provided with some training by the TTTIs and others. Most of them learn to teach better, by their in service work and as demanded by the job specifications. Findings of research reveal that evaluation of performance influences behaviour of students and the teachers in educational setting. Student entry behaviour and terminal outcomes are in general, focused by each level of schooling or higher education.

Performance evaluation of the faculty by the faculty itself is attempted here, in a recent study of teaching staff of two polytechnics, regarding the career behaviour anchors of staff in performance. The objective is to study the career - behaviour anchors of the teaching faculty of polytechnics using behaviourally anchored rating scales, which have received a great deal of attention in recent years. These scales combine major elements from the critical incident and graphic rating scale approaches. The appraiser rates the

teachers/employees based on items along a continuation. The points stated are examples of actual behaviour on the given job. Such behaviourally anchored rating scales specify definite, observable and measurable job behaviour. Such an evaluation method where actual job related behaviours are rated along a continuum, is used for the present study.

PROBLEM OF THE STUDY

To study the Career - behaviour anchors of polytechnic - teachers'

OBJECTIVES

To evaluate the following career behaviour anchors of polytechnic - teachers:

1. Technical Competence
2. Autonomy
3. Service
4. Identity
5. Variety
6. Managerial competence
7. Security and
8. Creativity:

Meaning of the terms i.e. Career anchors is briefly given below:

1. **Technical Competence:** One's Career is organised around the challenge of actual work one is doing e.g. teacher — instruction.

2. **Autonomy:** Freedom and independence are valued while at work. e.g. freedom to adopt a new method or a new topic in class.

3. **Service:** One is concerned with helping others or working on an important cause.

4. **Identity:** One is concerned with status, prestige and titles in one's work.

5. **Variety:** The worker/teacher seeks endless variety of new and different challenges

6. **Managerial Competence:** The worker/teacher likes to solve problems and wants to lead and control others.

7. **Security:** The worker/teacher wants stability and career security.

8. **Creativity:** The worker/teacher has a strong need to create something of his/her own.

RESEARCH DESIGN

Normative survey is used as the research design.

HYPOTHESIS

The following hypothesis were formulated

1. Technical teachers of different polytechnics do not differ in their career - anchor scenes.

2. Men and women technical teachers do not differ in their career – anchor scores.

Sampling and Sample: Lecturers working in (a) Annamalai Polytechnic, Chettinad and (b) Theagarajar Polytechnic, Salem formed the sample of the study. Cluster sampling is used. 19 Lecturers from Annamalai polytechnic and 28 lecturers (which included 3 women) from Theagarajar polytechnic formed the sample. Both the institutions are aided polytechnics, under the Directorate of Technical Education. The lecturers are Engineering graduates with years

of teaching experience, ranging from 5 to 15 years. All the lecturers in Annamalai Polytechnic are 'Men'. In Theagarajar Polytechnic, three women lecturers and 25 men lectures responded to the rating scale on career anchors.

TOOL USED

This instrument is an expanded version of Schein's five career anchors. This version has the following eight career anchors:

a) Technical Competence b) Autonomy c) Service d) Identity e) Variety f) Managerial competence g) Security and h) Creativity.

It is a four point rating scale and summated rating is arrived at for each career anchor, by obtaining subscales.

PROCEDURE

The tool was administered to the lecturers of the two polytechnics undertaken for study. Data analysis was done based on the career anchor subscale, relating to each anchor such as Technical Competence, autonomy and others.

ANALYSIS OF DATA

The hypothesis formulated were tested based on the interpretations of the statistics obtained.

Table 1: Showing $\overline{X}$, σ and t scored for the Lecturers of Annamalai and Theagarajar Polytechnics.

Career Anchors	Polytechnics	N	$\overline{X}$	σ	S	SE	t	ρ
Technical Competence	Annamalai	19	3.27	0.46	0.21	0.168	2.08	<.05
	Thegarajar	28	2.91	0.70	0.48			
Autonomy	Annamalai	19	2.95	0.45	0.21	0.026	4.23	<.01
	Thegarajar	28	2.84	0.67	0.44			
Service	Annamalai	19	3.32	0.48	0.23	0.147	0.408	NS
	Thegarajar	28	3.26	0.58	0.27			
Identity	Annamalai	19	3.63	0.49	0.24	0.412	1.359	NS
	Thegarajar	28	3.07	0.46	0.21			
Variety	Annamalai	19	3.067	0.68	0.46	0.188	0.122	NS
	Thegarajar	28	3.09	0.56	0.31			
Managerial Competence	Annamalai	19	2.91	0.65	0.43	0.184	0.908	NS
	Thegarajar	28	3.08	0.57	0.33			
Security	Annamalai	19	2.82	0.78	0.61	0.206	1.743	NS
	Thegarajar	28	3.18	0.54	0.29			
Creativity	Annamalai	19	2.88	0.72	0.52	0.194	0.567	NS
	Thegarajar	28	2.99	0.53	0.28			

From table 1, meaningful results are observable. The table value of t for df 45 is 2.02 at .05 level and 2.69 at .01 level. The obtained t values for the careers anchors subscore are discussed based on the reference regrading table values at .05 and .01 levels respectively.

Teaching methodology and instructional performance in classroom teaching and in the engineering laboratories are referred to by the career anchor-Technical Competence. Annamalai Polytechnic, Chettinad and Theagarajar Polytechnic, Salem are compared for difference and the obtained t value of 2.08 is found to be significant at .05 level. Lecturers of Annamalai Polytechnic and Theagarajar differ significantly in technical Competence, the faculty of the former showing a higher meanscore ($\overline{X} = 3.27$) compared to the latter ($\overline{X} = 2.91$)

Autonomy which refers to freedom or independence at work is the second career anchor analysed. The obtained t score is 4.29 and it is significant at .01 level. Faculty of Annamalai Polytechnic show a higher autonomy-meanscore ($\overline{X} = 2.95$) compared to the faculty of Theagarajar polytechnic, their mean score being 2.84.

The table shows that in all the other career anchor sub-scores, such as Service Identity, Variety, Managerial Competence, Security and Creativity, lecturers do not differ. Similar career anchors are perceivable in both institutions.

Of the two Polytechnics studied here, Annamalai Polytechnic does not have women

Table 2: Showing $\overline{X}$, σ and t scores for the Lecturers Men and Women of Theagarajar Polytechnic

Career Anchors	SS	N	$\overline{X}$	σ	S	SE	t	ρ
Technical Competence	Men	25	3.05	0.46	0.22	1.029	0.224	NS
	Women	3	2.82	0.17	0.03			
Autonomy	Men	25	2.88	0.56	0.31	0.46	0.348	NS
	Women	3	2.72	0.77	0.59			
Service	Men	25	3.29	0.49	0.24	0.429	0.69	NS
	Women	3	3.0	0.72	0.52			
Identity	Men	25	3.05	0.46	0.21	0.305	0.728	NS
	Women	3	3.27	0.50	0.25			
Variety	Men	25	3.13	0.50	0.25	0.609	0.476	NS
	Women	3	2.84	1.04	1.08			
Managerial competence	Men	25	3.05	0.46	0.22	0.379	0.549	NS
	Women	3	3.1	0.64	0.40			
Security	Men	25	3.2	0.47	0.22	0.649	0.308	NS
	Women	3	3.0	1.11	1.24			
Creativity	Men	25	3.02	0.47	0.22	0.596	0.738	NS
	Women	3	2.58	1.04	1.04			

lecturers. Hence comparisons for career anchor subscores were attempted for the men and women lecturers working in Theagarajar Polytechnic, Salem. This institute is reputed for its faculty-expertise and students' performance in terms of excellence. It is heartening to find that, the new Sona Engineering college, started this year, in Salem by the same management, is the dream of excellence in technical education extended through the new College of Engineering.

The t scores for men and women lecturers of Theagarajar Polytechnic shows that men and women do not differ in any of the career anchors, such as Technical Competence, Managerial Competence, Autonomy and others. Gender is not a barrier to performance here.

FINDING OF THE STUDY ARE

1. Aided Polytechnic faculty members such as Annamalai Polytechnic, Chettinad and Theagarajar Polytechnic, Salem do not differ in six of the eight career anchor sub scores. Significant difference is visible, in career anchor subscores of Technical Competence and autonomy.

2. Men and Women lecturers do not differ in their career anchor subscores, there by showing that gender is not a factor that influences performance of teaching. Women are as capable and competent of teaching technical subjects as their men counterparts in Polytechnics.

The above brief study relating to career anchors of polytechnics throws open a wide area of career and performance assessment by faculty members. A Career is a "Sequence of positions occupied by a person during the course of a life time". Industrial and business organizations feel that if employees are to remain productive, career development and training programmes need to be available that can support an employee's task and emotional needs at each stage.

Career anchors is another concept which can help to understand people's in their jobs. These anchors, as in the case of boats and ships, help to stabilise people's career decisions and keep them within constraints. This concept holds good in the profession of teaching too, where by in service programmes for staff development during intervals of time, proper decisions regarding career are arrived at by teachers and performance appraisal provides a clean indication to where they stand in profession.

Technical Teachers Training Institutes are resource institutions established in India by the Government of India for Human Resource Development in Technical Education of our Country. Apart from pre-service and in service technical - teachers-training, these institutions, by their research findings relating to the several issues encountered by the institutions in training technical teachers, throw ample light on the inputs, through-puts and outputs of these institutions.

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LIFE SKILLS TRAINING FOR EMPOWERMENT OF WOMEN

CAROLYN E. BEATTY

ABSTRACT

Empowerment of women is a felt need in many countries. This paper describes the usefulness of Life Skills training to women especially in managing their multifunctional roles. Life Skills programmes conducted in various countries and their results have been highlighted.

NEED FOR EMPOWERMENT OF INDIAN WOMEN

Education is a first step towards social change. The level of educational equality is an indication of women's equality in society. As women become more educated, they have more options and choices including career choices, financial independence and marital choices. A review of the recent studies in women's education in India suggests that significant progress has been achieved in the enrolment of women students as a percentage of total enrolment. Misra (1994) found that at the tertiary level, 33% of students enrolled were women. This is an increase of 4000% in the last four decades. Although these are very encouraging figures, Pal and Khandol (1994) have suggested that there are major obstacles in the way of spreading equality in women's education throughout India. One of the major restraints is the social structure. Young women are prepared for the role of wife and mother, as opposed to being prepared as career women and breadwinners. This indicates a limited view of women's choices as they are already dictated by the society. They further suggest that the lack of awareness among women limits their future. In a study of educated married women, Barua (1978) found that women's education "hardly made any significant impact on their day to day life, both socially and economically".

This social structure and society's expectations of women are not unique to India. Women the world over experience stereotyping which places them in the home as opposed to the work force. Women often do not have the self-confidence or assertiveness skills to oppose family's expectations and pursue a career. Often women do not feel as though they have a choice at all and enter into marriage and child raising as soon as they have completed their schooling.

DYNAMICS OF LIFE SKILLS TRAINING

Himsl (1973) in the New Dynamics of Life Skills Coaching, defines life skills as follows:

Life Skills are defined as problem-solving behaviours appropriately and responsibly used in the management of personal affairs. As problem-solving behaviours, life skills liberate in a way, since they include a relatively small class of behaviours usable in many life situations. Appropriate use requires an individual to adapt the behaviours to time and place. Responsible use requires maturity or accountability. Also, as behaviours used in the management of personal affairs, life skills apply to five areas of life responsibility identified as self, family, leisure, community and job.

The Life Skills course makes certain assumptions. It is assumed that Life Skills can be identified, demonstrated, broken down into component parts, learned through imitation and practice and transferred to other situations. Knowles (1980), in The New Dynamics of Life Skills Coaching, identifies four assumptions that can be made as people mature:

Their self-concept moves from one of being dependent toward one of being self-directed; they accumulate a growing reservoir of experience that becomes an increasing resource for learning; they become ready to learn something when they experience a need to learn it in order to manage real life issues in a more satisfying way; and, they want to be able to apply whatever knowledge and skill they gain today to live more effectively tomorrow.

Life skills coaches address each of the assumptions by encouraging participants to become more self-directed, using techniques that build on the resources that the participants bring to the group, creating opportunities for participants to assess their needs, designing the programme around real life applications and organizing learning opportunities outside the group to put the knowledge and skills participants have learned into practical applications.

In Life Skills behavioural changes occur when learners have a clear understanding of their goals, a clear description of the new behaviour and an understanding of those conditions that make the behaviour appropriate. For example, in a class on assertiveness training, a participant would need to learn the skills of assertive communication as well as learn in what situations it is appropriate to use those skills. A skill, as used in the life skills course, must have a purpose and be described in terms of observable behaviour. It is important that an increase in competency can be observed and commented upon.

STRATEGIES/METHODS OF LIFE SKILLS TRAINING

The format used in Life Skills training is a group work method that focuses on improving problem-solving skills. In an ideal situation, the group is made up of 15 participants and one life skills coach. The Life Skills unit is called a lesson. There are four resources which the Life Skills Coach brings to the group. These are the resources, skills and experiences of the participants in the group, the coach's own life experiences and training in life skills, the resources of the community, and the life skills materials which set out content and goals for developing effective, self-directed, problem solving individuals. Learning takes place as the group allows for the practice of "simple" behaviours which can be used as building blocks for other more complex behaviours. Trust is developed

among members so that they can learn and practice new behaviours. As individuals express themselves, feedback is given to them by other group members and their self-confidence increases. The activities in a life skills group are either coach centered, interactive or individualised depending on the topic to be discussed in the lesson.

The techniques most commonly used in life skills groups are questioning techniques, role-playing, the case method, logs, guided imagery and warm-ups.

The following is a list of techniques used in a Life Skills class which are used to achieve the desired behavioural outcomes.

MATCHING TECHNIQUES TO DESIRED BEHAVIOURAL OUTCOMES

Type of Behavioural Outcome	Most Appropriate Technique
Knowledge (generalizations about experience; internalization of information)	lecture, television, debate, dialogue, interview, symposium, panel, group interview, motion picture, slide film, recording, book-based discussion, reading
Understanding (application of information and generalization)	audience participation, demonstration, motion picture, dramatization, Socratic discussion, problem-solving discussion, case study, critical incident process, games
Skills (incorporation of performing through practice)	role playing, games, nonverbal exercises, skill practice exercises, drill, coaching

Type of Behavioural Outcome	Most Appropriate Technique
Attitudes (adoption of new feelings through experiencing greater success with them than with old)	experience-sharing discussion, group-centered discussion, role playing, case study, participative cases, nonverbal exercises
Values (the adoption and priority arrangement of beliefs)	television, lecture (sermon), debate, dialogue, symposium, motion picture, dramatization, guided discussion, experience-sharing discussion, role playing, games
Interests (satisfying exposure to new activities)	television, demonstration, motion picture, slide film, dramatization, experience-sharing discussion, exhibits, trips, nonverbal exercises

AREAS OF TRAINING

All Life Skills lessons fall under the categories of Self, Leisure, Career, Community or Family, the five areas of life's responsibilities which the course addresses. Some examples of topics which might be included in a Life Skills group include Harmful and Helpful Group Behaviours, Group Trust, Self-Esteem, Assertiveness Training, Dealing with Loneliness, Dealing with Anger, Dealing with Fear, Conflict Management, Money Management, Decision Making, Goal Setting, Stress Management, Communications Skills, Researching Resources in the Community, Dealing with

Fear, Helping Elderly Parents, Dealing with Teenagers, Budgeting, etc.

ROLES OF THE COACH

The coach has many roles to perform as group leader. Some of them are motivator, planner, group discussion leader, instructor, counsellor and evaluator. The coach is faced with the challenge of making learning effective and meaningful.

The following is a list of techniques used in a Life Skills class which are used to achieve the desired behavioural outcomes.

As facilitators, the tasks of the Life Skills coach are to facilitate problem-solving, create a safe climate and manage conflict. These goals are accomplished by helping groups identify their purpose, goals, issues and resources both within and outside the groups. Coaches model and teach helpful group behaviours, share their own experiences, resources and processes to achieve group goals. It is also the coach's role to help group members accomplish their goals and to encourage the group to look at its development and ways of working together.

PROGRAMMES CONDUCTED IN VARIOUS COUNTRIES AND THEIR RESULTS

Life skills training courses have been conducted to groups of women in Canada, Singapore, Malaysia, Pakistan and India with similar positive results. The lessons are very structured and can be easily transferred from culture to culture because the input comes from the participants, based on their own experience and values.

Canada

In Canada women are among the "employment disadvantaged" groups identified by the Canadian Government. In educational programmes designed specifically for unemployed women, one successful method of empowering women is Life Skills Training. Life Skills training is an integral part of all federally-funded Government training programmes for women in Canada. The Life Skills curriculum which was developed in Saskatchewan, Canada, in the 1960s began as a trial project and was funded by a grant by the federal Government as part of its "war on poverty" at that time in Canada. The mandate of the programme was to assist "disadvantaged" adults in their ability to find and to maintain employment. It had been observed that this particular target population did not have the prerequisite skills to be successful in employment. After the success of Life Skills training in the pilot project, Life Skills training became an integral part of all career planning or skills training programmes sponsored by the federal Government. At present in Canada life skills groups are being sponsored both by Government and by community organizations to assist the participants to become job ready.

Singapore

Life skills training was introduced in Singapore at the Polytechnic Level and has become an integral part of the curriculum at Ngee Ann Polytechnic Teachers who were participants in a Life Skills Train the Trainer programme have developed their skills further by attending advanced training sessions in England, by conducting classes for students, by conducting training sessions for other staff and by developing materials which are

culturally specific to Singapore. 'Student feedback has been excellent and students feel that they have increased self-confidence and problem-solving skills which will enable them to be more successful in their careers and their personal lives.

Many Train the Trainer Life Skills programmes were conducted under the Guidance and Counseling Unit, Vocational Institute Training Board, Singapore. Guidance counsellors, heads of departments, principals and teaching staff from 22 institutes were trained over a one-year period. Life skills lessons were adapted for the level of the students at the institutes. Feedback from students was very positive.

Pakistan

In 1996-97, under CIDA/VOC project for women in Pakistan, both Introductory and Advanced Train the Trainer courses were conducted in for teachers and principals of the Women's Technical Training Institutes. A life skills curriculum was developed by the staff in each institute and incorporated into the training programmes as a compulsory course for students. Both students and teachers were very excited about the life skills curriculum, and its benefit for teachers and students. It is too early to know the effects of the training on the students but after three or four months, the feedback was very positive from the students and their self-confidence was greatly increased.

India

In 1996-97, under CIICP in India, five Train the Trainer Life Skills programmes have been conducted for both men and women at various polytechnics in southern India.

Women teachers and staff from Muragappa Polytechnic, Madras, were trained in early 1996 and have conducted many life skills programmes for their students, as well as offering programmes to business and industry through the Continuing Education Cell. Women in Development (WID) representatives and other trained teachers from the polytechnic are working together to deliver life skills lessons to students as an extracurricular activity. Although it is too early to see any long term benefits to the staff and students, the feedback to date is that the lessons are extremely helpful to the students in communicating with others, making decisions, setting goals and increasing their self-esteem and confidence.

Although the examples used in this paper relate to training given through educational institutions, many life skills groups are conducted by trained life skills coaches in the community with similar results.

Typical feedback from women's groups in Canada includes a statement such as the following:

"When I came to this course, I was depressed and down. I felt that I couldn't do anything. I never expected to experience such a change in the way I feel about myself".

The women who have participated in the training programmes, as well as the participants in the life skills groups, feel that the training has changed their lives in a positive way. They have increased self-esteem. They are better communicators. They understand conflict and can use their newly acquired conflict-management skills to assist in conflict situations. They feel that they are better goal setters and decision makers. They feel empowered to make choices which will be of benefit to them. They want to share their

new found knowledge and experience in the group with family and friends. They believe in themselves and know that they can set realistic goals and achieve them.

CONCLUSION

The experiences described in this paper clearly and consistently demonstrate the usefulness of Life Skills Training for empowering women. Life skills training can be imparted either as a stand alone adjunct to the curriculum or it can be incorporated as an integral part of the curriculum. After life skills training, women are in a better position to manage their multifunctional roles.

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VALUE EDUCATION IN INDIAN HIGHER EDUCATION

P. ARUN KUMAR & BIJU VARGHESE

ABSTRACT

Value Education is often a neglected component of Higher Education system. It used to take the shape of religious and moral education. These days even this seems missing from the college curriculum including the Technician Education curriculum. This paper traces the views of various commissions and individuals on the place of value education in Higher Education, what is value education, the need for it in Higher Education especially Technical Education and proposes several activities which can be incorporated into the Higher Education curriculum. This paper also explores the role of teachers in inculcating values and a few institutional strategies that could be used to enhance quality of Education.

INTRODUCTION

Higher Education in India seems to be fast loosing its values among its products as is seen from the behaviour of the students' on and off the campus. Today's young mind in the higher education is subjected to a lot of cultural expositions of the western kind. Also, the teachers very rarely attempt at inculcating Indian Cultural values in them. The common complaint of the teaching community being that the students are not interested in these types of developmental activities. The student community demand from the teacher's, examination oriented activities rather than developmental activities. All these lead one to have a fresh look at the Higher Education System and to the college classrooms in particular.

As Kapur (1993) puts it "Learning means receiving education and integrated education includes mental, intellectual, physical, moral, ethical, aesthetic and spiritual education. It includes building of character. A student can attain excellence in education if he uses every minute of his college life to build himself intellectually, physically and emotionally, aesthetically, morally and spiritually". Similarly, Parikh (1991) observes that the aim of education should be complete fulfillment of man in all his richness of his personality, the complexity of his forms of expression and his various commitments as -individual, member of a family and community, citizen and producer, inventor of techniques and creative dreamer. Thus we can say that Education has mainly two aspects, the cultural aspect which makes a person' grow and the productive aspect which makes a person do things. Both are equally important.

VARIOUS VIEWS ON VALUE EDUCATION

All the ancient scriptures of India – Yoga Vashistha, Upanishads, Mahabharata, etc and Altekar's Education inform us that in the ancient Gurukulas and Ashrams of the Vedic Rishis and Gurus about 5-6 thousand years ago, students were required to stay with the Guru and participate in a large number of activities in addition to developing their knowledge like cleaning and decorating the Gurukula or Ashram, serving the Guru, taking care of the Ashram animals, wrestling, archery, begging alms, fine arts etc.

Rousseau's revolutionary statements such as "To live is the trade I want to teach him (Emile)", "The object is not to give him knowledge but the taste and capacity for acquiring it, and the method is that of personal discovery, "Now the youth is to be educated for life with others, and is to be educated in social relationships"; clearly revealed the importance of Value Education. Herbart Spencer (1820-1903) came out vigorously in his advocacy of Right Education with his clarion call "To prepare us for complete living is the function which education has to discharge". French sociologist Emile Durkheim (1840 - 1917), who fathered Sociology of Education, considered education as nothing but the socialisation of the younger generation, and advocated all such activities in education which resulted in the maximum and proper socialisation of the younger generation. Karl Manneheim, another important sociologist of education, who taught in the London School of Education and was the pioneer of the modern sociology of education, advocated diversity of educational goals, variety of school subjects and school activities, active social participation and all useful experiences

which equipped one to understand, adjust in and change the society. Thus we see that the global trend of 'too much bookish education' that rose and held sway from the 13th to 19th centuries in most of the schools and colleges, was greatly checked and corrected by these progressive educational thinkers in the later half of the previous century and in the first half of the 20th century.

During the nineteenth century, because of the British influence, education in India became too much bookish. In Geet Mala – a collection of University Convocation Addresses during 1890 - 1940, we find how our great Indian Intellectuals, national leaders and freedom fighters like Rabindranath Tagore, Madan Mohan Malaviya, C.V. Raman, C.P. Ramaswamy Aiyer, Dr. S. Radhakrishnan, and even Lord Curzon, The Governor General of India (while delivering his thrilling convocation address at the University of Calcutta in 1900) had greatly lamented the banes of bookish education promoted in our schools, colleges and universities, which was devoid of the functional social experience, social consciousness, moral values and concern for the masses. Dewey and Gandhiji made all our educationist's, educational administrators and teachers acutely conscious of the importance of involving children in schools in all kinds of socio-cultural, economic and moral co-curricular activities.

Plato strongly believed in the principle of reflection, which meant that the vision of truth and goodness, in fact, was already in us but it was largely a question of the teacher helping to turn the eye of students inward, toward the light. Plato aimed at "good citizenship". He thought that competence in civic affairs was of prime importance. One

could attain citizenship if one knew the proper system of values, possessed profound knowledge and understanding which would lead to wisdom. All that could be achieved only through education. Almost two thousand years after Plato, Swami Vivekananda said in a similar vein: 'Education is the manifestation of perfection that is already in man'. Vivekananda thought that education should aim reforming the human mind, produce men of integrity, clean administration and socially conscientious rather that stuffing some facts into the brain. (Sharma 1991)

Ruhela (1996) observes "In the recent decades - 1970s 1980s and 1990s there has been a terrific upsurge of anomie (normlessness), sensate culture, social and political corruption, perversions and cultural distortions, political criminality and degeneration of the youth as a result of mass media and general trend of moral decay. Educational philosophers, spiritual Gurus and educationist's are, therefore, greatly advocating co-curricular activities aimed at the development of social responsibility, moral values and humanism as well as self-sufficiency in the younger generation. Instead of learning good moral and human values and useful experiences, most of our youth are in fact learning immorality, drug use, sensuality and indiscipline".

Education according to these thoughts should not limit itself to a mere cognitive process. The conative and affective aspects of learning are inseparable from cognitive aspects. Education should be the outcome of the totality of cognitive, conative and affective processes in an integrated manner.

Value Education in every country took the form of moral education. The concept underwent changes during the course of time and has assumed a totally new connotation There is a marked departure from religious education and is now focusing on the inculcation of basic human values.

It still continues to be debated on how education can be used as an effective instrument of social change and as to how far can our institutions of higher education play the role of a catalyst in the present set up. They may not be prime movers of social change yet they accommodate and prepare the youth for greater social tasks and responsibility. (Sharma 1995)

WHAT IS VALUE EDUCATION?

Value oriented education should not be equated to moral education, it has wider connotation and includes value of physical education, vital education, mental education aesthetic education, ethical education, spiritual education, etc. Value orientation does not merely imply an intellectual discussion on the theme of value as an integral part of the syllabus in various disciplines, but also the practice of those values in the day to day life by the students and teachers.

VIEWS OF COMMISSIONS ON VALUE EDUCATION

Several Education Commissions have looked into the various aspects of the Higher Education system and they have distinctly expressed their concerns on the state of value education in the higher education system. Some observations are as follows:

A. Recommendations of the Hammond Report to the American Society for Engineering Education. The goals of what the

report called "humanistic-social stem" were stated not in terms of subject matter, but in terms of competencies which the humanities and Social Sciences could help the students acquire:

1. An understanding of the evolution of the social organisation within which we live and of the influence of Science and Engineering on its development.

2. The ability to recognise and make a critical analysis of the problem involving social and economic elements, to arrive at an intelligent opinion about it and to read with discrimination and purpose towards these ends.

3. The ability to organise thought logically and to express them lucidly and convincingly in oral and written English.

4. An acquaintance with some of the great master pieces of literature and an understanding of their setting in an influence on civilisation.

5. The development of moral, ethical and social concepts essential to satisfying personal philosophy to a career consistent with the public welfare and to a sound professional attitude.

6. The attainment of an interest and pleasure in these pursuits and thus of an inspiration to continued study.

B. Report of the Special Committee on Reorganisation and Development of Polytechnic Education in India 1970-71 says "The committee feels it necessary to stress that besides imparting specialised knowledge and practice orientation to the world of work,

technician courses should be designed to foster development of personal qualities such as integrity, a sense of social responsibility, liberal values, a commitment to progress and adaptability to change. Moreover, an education should help students acquire an understanding of the social context in which they live and the processes of social change. To the extent possible general studies should also include subjects oriented toward developing an appreciation of the social and economic implications of science and technology and industrial and commercial activity (Damodaran 1971).

C. On value Education our National Policy on Education (1986) states in paragraphs 8.4, 8.5, 8.6 that:

"The growing concern over the erosion of essential values and an increasing cynicism in society has brought to focus the need for readjustments in the curriculum in order to make education a forceful tool for the cultivation of social and moral values.

In our culturally plural society, education should foster universal and eternal values, oriented towards the unity and integration of our people. Such value education should help eliminate obscurantism, religious fanaticism, violence, superstition and fatalism.

Apart from this combative role, value education has profound positive content, based on our heritage, national goals, universal perceptions. It should lay primary emphasis on this aspect."

The three committees or commissions referred above have stressed in different words

the importance of value education at all levels including the polytechnic level.

NEED FOR VALUE EDUCATION

In the education of professional engineer, the function of the Humanities and Social sciences is not limited to the improvement of communication skills and the emergence of amiable employees. The engineer is a responsible professional man, whose every professional act has human and social consequences. To fulfill his growing community responsibilities as a leader the engineer needs both professional competence, and a sure understanding of himself and of the world in which he lives. Humanities and Social sciences are the foundations for a professional career. For well over 20-25 years all advanced countries have given much attention to the crucial problems of how to develop and maintain an effective programme of humanistic social studies in technological education. In U.S.A nearly 80 Universities and technician Institutions are actively engaged in this work and the American Society for Engineering Education has done much to promote an educational philosophy that is acceptable to the engineering and liberal arts faculties. Unfortunately, both at our Universities and our technical institutions little effort has been made so far to integrate humanistic-social studies into technological courses and to realise the full value of the contributions that the liberal arts can make to the training of engineer (Chandrakant 1971).

Universities have always been reckoned as the seats of learning where not only knowledge but, the best human qualities are infused into the youth. But the dismayed young university professor of today is greatly baffled and utterly confused on the moral issues. Does it mean that the old values are totally out of place in the present context? Or some new values have emerged during the second half of this century as it is during this period that most of the established norms seem to have been eroded from the scene. Whether values are not being perceived in the right perspective or they have eroded from the society, one thing is clear that the number of persons who now believe in the so called new values, has tremendously increased in the modern times. The definitions of honesty, sincerity, dutifulness, devotion and identification, have been recoined and perceived in a narrow sense which perfectly suits the beholder's needs. What is going to happen in the future cannot be predicted accurately today, but until the newly discovered norms do not give us good results i.e. prosperity, economic salvation, growth and freedom etc., such values cannot be accepted. If the newly discovered values do not lead us to become good citizens, can we reckon them as good human values?

Our higher education system continues to be dominated by models and systems adopted during the British colonial regime. It lays greater emphasis on narrow individualism, unhealthy competition to the neglect of social good, verbal fluency and mere acquisition of information, while it neglects social objectives, cooperation, manual work, training in skills and building up of character (Gandhe 1994).

The students of higher education become easy victims for the vested politicians, the religious bigots, the anti-social elements and the industrial zealots to exploit as goons in violence and other anti-social activity like strikes, lock-outs, bandhs, hooliganism, vandalism and what not. Instability of occupation and uncertainty of future are their

constant worry. They are, therefore, easily persuaded to join the anti-social band-wagon. Ideas like partiortism, social justice, democracy, love and brotherhood, national integration, equity, secularism, etc. are beyond their comprehension. It is this class of people who are the potential danger to the social, economic and even political advancement of the country. India has to worry about this internal enemy more than any external threat. What is needed is a value education system for this vast mass of Indian population.

Education is a potent media to propagate values and mould human beings into good citizens. But the present turmoil in the society, that is separatists' movements, daily murder of innocent people, lack of adequate knowledge and culture among our youth, have some relevance to our faulty educational system (Sharma 1991).

Sharma (1995) notes "technical education has indeed served very well the needs of the country over the last few decades. However it has not been impossible to do as mush as we should have, given the pace which prevailed and the vast resources of material and manpower which have been available in plenty". The challenge brought by rapid Industrial development has to be faced effectively by improving the quality and quantity of our country's technical manpower.

Technical education should not be considered merely as mechanical study of course books alone. It should include the whole environment and culture that goes to create a finished product of student for life that he has to face. Most of the professional colleges concentrate only on the theoretical and practical aspects that enable the students to take the exams and yield them better pass percentages. They do not give importance to the cultural and social aspects of life. The enhancement of the quality of mind of the student through better facilities of playground, laboratories and facilities for better expression, are not even referred to in the course of the development of the student.

Liberalisation of Indian Economy has spread waves of competition amongst all sectors of economy. Quality, reliability, efficiency and competitiveness are the watchwords of the Indian Corporate sector for its survival and growth. Indian Industries can't achieve the set objectives ignoring the all important human resource. The expectations of the corporate sector at present are not the same as before. They want the engineers who are going to become global players. Thus there is a change in the quality of engineers expected by our industries. The responsibility of the technical institutions has become all the more important in the present scenario. The objective of Technical institutions is not only to produce engineers with a degree but, it has got the moral responsibility of placing students in proper jobs. To market the product successfully, the institutions have to produce engineering graduates with requisite quality standards expected by prospective employers. Under the present industrial scenario, the quality standards expected can be spelt out as follows:

1. A sound technical knowledge in the chosen field of engineering.

2. Ability to identify, analyse and suggest solution to the problems.

3. Adaptability and flexibility. to changing corporate environment.

4. Be able to get along with people and strong believer of success through team effort and

5. Strong believer of corporate ethics like quality, cost and timeliness.

To meet these output standards, the engineering graduates should possess soft skills along with their engineering skills. All these days, our engineering institutions have done yeoman's service inculcating hard skills i.e., technical skills but they have never taken it seriously to even think of the soft skills. Thus the time has come for giving due emphasis to these soft skills.

WHAT ARE THE VALUES?

Basic principles in Human Relations that should be inculcated in students are: the principle of leadership; principle of equality, principle of giving freedom, principle of Co-operation, principle of justice, the principle of Recognition (Rastogi and Kantharia 1992). An exhaustive list of some of the values that teachers should help inculcate in students are: truthfulness, sincerity, integrity, honesty, goodness, beauty, love, non-violence, conscientiousness, compassion, endurance, perseverance, hard work, self restraint, independence of thought, righteousness, courage, friendliness, generosity, selflessness, equanimity in thought, feeling and action, concern for other living beings, empathy, excellence, grace, decency, concern for the natural environment, tolerance, self-confidence, espirit de corps, self esteem, honour, simplicity, being responsible, innovative, being adventurous, democratic way of living and acting, secularism, socialism, equality, cooperation, national integration, universal brotherhood, gender equality, removal of — poverty, caste, illiteracy, ill health and backwardness; upliftment of the weaker sections, pride in heritage and culture, peace, incorruptibility, law abiding, community orientation, and public duty, concern for public property, civil sense and responsibility, stability, self reliance, scientific temper, social justice, removal of social evils etc. The views of the students on the above list of values can be discussed as and when it arises in the classrooms so that individual and group differences are no longer perceived as deviations or aberrations. These discussions will help remove misunderstandings and maladjustments in students thereby helping them become better citizens of tomorrow.

It is perhaps necessary at this point to indicate in a little more detail what is meant by 'value education'. Amongst a number of broad approaches which have been identified are:

I. Inculcation — in which certain desired values are instilled in students by processes such as repeated exemplification and reinforcement;

II. Moral development — in which students are helped to develop more complex moral reasoning patterns, often by the use of moral dilemma episodes with structured small group discussions.

III. Clarification-in which students are helped to become aware of, and to identify, their own values and those of others, techniques such as simulations and self-analysis exercises being employed to assist students to use both rational thought and emotional awareness in the examination of their values.

ROLE OF TEACHERS' IN INCULCATING VALUES

Teachers play an important role in our system. The students look towards them for academic leadership, guidance and direction. The teacher is at the base of the entire pyramid of social change and growth. The society owes its responsibility and reverence towards him. His role in the present context is all the more crucial and in fact the crisis in education which contributes to be acknowledged could be partly be attributed to him.

We know it well that teachers should have concern for their students and show love for them. It is also quite true that values cannot be inculcated by including a few chapters in the textbooks or by providing one or two periods for it per week in the timetable. Schools, colleges and universities must undertake the responsibility to ensure imparting universal values of love and affection, without which much cannot be done in that direction.

The essential pre-requisites of value education are exemplary teachers, motivated students and a favourable socio-cultural milieu. Most teachers keep away from infusing values saying it is not their duty. The quality of the teacher and the standards of teaching are indeed at a very low ebb at present. Therefore, in the various teacher-training programmes special emphasis has to be given to equip the teachers with necessary qualities and a motivation for value education.

Apart from the meager moral education that is being imparted in the schools, as the Ministry of Education's Working Group to review Teachers' Training Programme (Govt. of India - 1983) rightly recommends: "a well conceived programme of studies of various subjects should naturally be provided both in their contents and thrust the requisite materials for value education" and "radical measures should be adopted to change the present degree-based 'anti-value oriented examination system' with a view to unilaterally fix the educational process on the right aims of education". This calls for a complete overhauling of our syllabi at all levels. A content analysis of school and university curricula would reveal that the courses are hardly intended to improve the quality of the individual; they are primarily for acquisition of information. Therefore, the recommendations of the Working Group: (1) that the programme of studies should be so carefully devised as to emphasize those aspects which can readily provide to teachers and students the required opportunities, conditions and materials for value education (2) that specific areas of value orientation should be given special attention, and (3) that in the totality of educational programmes, the core programme should be of value education. Much more important than the curriculum or a particular way of instruction is the exemplary behaviour of the teacher. Even if a teacher is able to impart the higher values in the most efficient manner, if in actual life he is guilty of misconduct, all his preaching will result in nothing. On the contrary, the noble character and the exemplary behaviour of a teacher will provide enough incentive to students to develop positive values of life even if such a teacher does not offer any formal instruction in value education (Unninathan 1988)

APPROACHES TO VALUE EDUCATION

There are mainly three approaches to value education.

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Direct Approach: Regular periods are provided in the time-table itself.

Indirect Approach: Values are imparted as integral part of studies as well as co-curricular activities.

Incidental Approach: Basic values are stressed on occasions like functions and celebrations (Lakshminarayanan 1997)

INSTITUTIONAL STRATEGIES FOR VALUE EDUCATION

A few strategies for imparting value education to students of Higher education Institution are listed below.

1. Organise commemorative meetings, seminars and rallies on the Birth Anniversaries of dignitaries.

2. Identify and organise co-curricular and extracurricular activities which help in value education by observation, experience and inference.

3. Learner and faculty interaction to appreciate and understand innovations and initiatives of voluntary agencies working for deprived and downtrodden.

4. Debates, critical analysis and discussions among the students and with the knowledge could lead to appreciation of rationality and acceptance of positive impact of science and technology. Environment, energy, pollution, population and such other areas could be the talking points.

5. Providing interaction opportunities with persons of unimpeachable character, creative abilities, literary tastes, scholarly attitudes whose mere presence could motivate others.

6. Make institutions responsive to emergency situations like floods, fire, drought, etc. This would strengthen the mutual relationship with the society.

7. Field visits to institutions, establishments, centers of creative arts, zoos, museum and to homes for the aged and handicapped not only enhance knowledge, understanding but also generate appreciation and empathy.

8. Students should be taught to practice discipline by following rules and regulations in libraries, laboratories and workshops.

9. Institutions can establish cells like Ecology cell, Environmental cell, etc. Which can conduct programmes on conservation of environmental resources.

10. Improved and extended facilities of sports, games, gymnasium, etc should be made available in universities and colleges for inculcating values like team spirit and co-operation.

11. Activities like N.S.S., N.C.C, Scouts and Guides, Art and Culture and other subject Associations should be promoted by providing incentives in terms of academic recognition. National Services like participation in approved social work and national reconstruction activities like literacy programmes should be compulsory for all students.

12. Associations of Teachers, Students Union, Unions of Non-teaching staff should evolve codes of conduct.

CONCLUSION

The present education system does not teach the basic human values which determine the worth of educated person. Factually speaking, the literate persons are creating more problems than the illiterate ones. Knowledge heightens the ego of learned persons and many times they utilise their knowledge for satisfying their ego and that way causing harm to the society. Discipline has almost totally declined among students. National character is at discount. Who is responsible for all this? It is wrong to blame the students alone. In homes the parents are responsible, in schools and colleges, the teachers, and outside, the governments which have failed to provide a proper system of education and the administrators who have not recognised their obligation to train young people on right lines. All of us should own the responsibility and take remedial steps (Verma 1995).

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PERCEPTION OF ENVIRONMENTAL PROBLEMS: AN ECOLOGICAL ATTITUDE AND KNOWLEDGE SURVEY

ANJALI SAINI and S.P. SINHA

ABSTRACT

The present study was designed to investigate perception of environmental problems, attitude and knowledge, among students of different faculties of Dayalbagh Educational Institute (DEI), Agra. A stratified random sample of 400 students of age range 18 to 21 years belonging middle socio-economic status were selected. A revised scale for the measurement of ecological attitude and knowledge developed by Maloney et. al. (1975) was used, comprising four scales i.e., Verbal Commitment (VC), Actual Commitment (AC), Affect (A), and Knowledge (K). To find out differences among the mean attitudes scores of the students of different faculties, F-test was used followed by Post-hoc test: Newmann Keuls tests. The findings were that the seven faculties viz., Arts, Commerce, Education, Engineering, Science, Social Science and Technical varied significantly on environmental knowledge and concerned scales. Engineering, Science, Social Science and Technical showed superior performance than Arts, Education and Commerce on total knowledge and environmental concerns course.

INTRODUCTION

Environment today, is gasping its last breaths from beneath blankets of pollution. The advantages of science and technology during the century have led to decreased environmental problems on our planet. All was well before man started 'meddling' with nature. Increasing material abundance through economic revolutions in commerce, agriculture and large scale industrialisation has no doubt made life easier and luxurious but has also brought about profound, undesirable and irreversible changes in the environment. The unchecked growth of industries in the west, population explosion and poverty in the east have inflicted environmental damage threatening man's very existence. Our air, water and land grow more polluted day by day as economic progress and demand for production far outstrips man's ability to preserve an environment hospitable to life. When man destroys his environment, he is ultimately creating conditions for his own destruction. The complex life support system of the biosphere receives the cumulative impact of all pollutants released in the atmosphere due to technological culture of

man. Born out of ignorance and apathy, environmental problems, appear basically a social problem which begins with people with a cause and ends with people as victims (Asthana, 1992).

Much research work has been done in global environmental problems, like - green house effect, ozone layer damage and loss of genetic diversity as well as other environmental problems, but less attention has been paid in the field of individual's attitudes towards their environments.

Developing countries have a lager total population than the developed nations, but their level of affluence is much lower, as their impact on global environment (Miller, 1994). Even so, efforts to feed and shelter India's rapidly growing population, provide for economic development, and pay international debts are destroying ecological capital in that country. Agricultural soil is being degraded and lost by overuse, huge areas of forests have been destroyed and underground aquifers are

being depleted (Dwivedi and Tiwari, 1987; Postel, 1990).

Ajzen and Fishbein, (1977), have developed the "Reasoned Action Model" based on the theory of attitude – behaviour relationships that helps to clarify when this relationship will or will not hold. Ajzen and Fishbein proposed that attitudes can, at best, yield good predictions of classes of behaviors, but are not necessarily predictive of specific behaviors (see following figure).

An important implication of this model is that attitudes are too far removed form the actual behavior to provide reliable prediction. That is, attitudes affect behavior directly via intentions and jointly with the subjective norm. This model has been recently applied to understanding the relationships among beliefs, attitudes, and behavioral intentions toward nuclear energy vs. coal in the production of electricity (Verplanken, 1989). Attitude-behavior inconsistency would actually be predicted by this model if the behavioral attitude and subjective norm were in conflict,
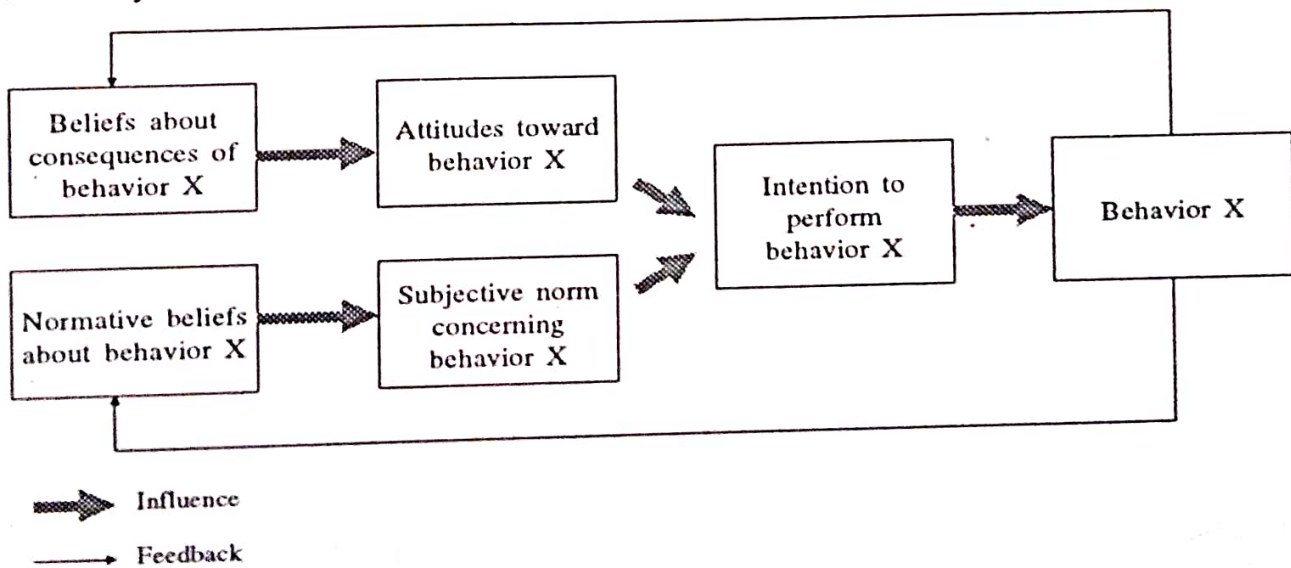

➤ Influence

—→ Feedback

Fig:1 "Reasoned Action Model" of Behavior by Fishbein and Ajzen (1977)

and if the subjective norm were stronger than the behavioral attitude.

STATEMENT OF THE PROBLEM

"To study the perception of environmental problems among the college students with the help of ecological attitude and knowledge survey".

OBJECTIVES

To compare the environmental attitude and knowledge of the students of different faculties.

HYPOTHESES

Subjects of faculties of Science, Engineering and Technical would score higher than other faculties.

METHODOLOGY

Sample: The sample comprised of 400 subjects (214 males and 186 females), age range 18-21 years, students from Dayalbagh Educational Institute, Agra.

Stratified random sampling method was adopted and strata were made on the basis of different faculties and gender. The subjects selected for the purpose were from seven faculties (Viz., Arts, Commerce, Education, Engineering, Science, Social Science and Technical) situated in Dayalbagh, Agra. The number of subjects taken were from middle socio-economic status. Parental education of the subjects was at least intermediate. The number of subjects selected from different faculties are given in Table below:

Table: Displaying the Respective Faculty Code, Names and Number of Subjects

Serial No.	Faculty Code	Faculty Name	Number of Subjects
1	ART	Arts	60
2	COM	Commerce	44
3	EDU	Education	60
4	ENG	Engineering	53
5	SCI	Science	64
6	SSC	Social Science (Management)	54
7	TEC	Technical	65
		TOTAL	400

TOOLS

The revised ecological attitude and knowledge scale developed by Maloney, Ward and Braucht, (1975) was used to collect data. The scale comprised of four sub-scales: (i) Verbal Commitment - (VC), which measures what a person actually does in reference to pollution - environmental issues (10 items); (ii) Actual Commitment - (AC), which measures what a person actually does in reference to pollution - environmental issues (10 items); (iii) Affect - (A), which measures the degree of emotionality related to environmental issues (10 items) and (iv) Knowledge - (K), which measures specific factual knowledge related to ecological issues (14 items). There were multiple choice type questions having five alternatives in each question in K sub-scales. One item (42 number of the original) was deleted because it was not applicable for Indian population. Hindi translation of the questionnaire was done for Hindi knowing students.

The correlation calculated (part -whole) between the original and revised forms for the various sub-scales were 0.95, 0.94, 0.92 and 0.9 for the affect, verbal commitment, actual commitment and knowledge sub-scales respectively. The Cronbach's alpha for the various sub-scales ranged from 0.805 to 0.888.

INSTRUCTIONS

"I'm doing a survey to assess what you know, think, feel and actually do regarding existing environmental problems. For this you have to fill this questionnaire, which contains 44 questions on environmental issues. Write either True ($\checkmark$) or False (x) according to your agreement and disagreement towards each statement and tick ($\checkmark$) on any one of the given five alternatives in case of multiple choice type questions. There is no time limit, so take your own time, but try to complete it within a class period i.e., 50 minutes time.

RESEARCH DESIGN AND STATISTICAL TECHNIQUES

It was a survey type of research and for this more than two groups design of research was used. As the aim of the study was to compare the attitude scores of subjects of different faculties one way analysis of variance design was used. Scores on the four sub-scales of ecological attitude and knowledge survey obtained from the students of different faculties were analyzed by calculating F-test followed by Post Hoc test: Newman-Keuls.

ANALYSIS OF THE DATA AND RESULTS

The present study aims to find out the difference among the Mean attitude scores of the students of different faculties. The Mean and Standard Deviation for the different faculties were calculated and analysed with the help of F-test (Table I). The post hoc comparisons were made on the basis of Newman-Keuls test (Table II).

Table I. Summary: ANOVA (Total scores)

Source	df	Sum of Squares	Mean Squares	F-ratio
Between groups	6	1084.76	180.79	8.89**
Within groups	393	7983.52	20.31	
Total	399	9068.29		

** $p < 0.01$

It is evident that the results given in Table I, that F-ratio (6,393) = 8.87 exceeds the critical value of 2.86 at 0.01 level, which indicates that all seven groups differed significantly from each other for the total scores or attribute and K scale (Table I).

Table II. Significance of Mean Difference on Newman-Keuls Test (Total Scores)

NFAC	grp 1	grp3	grp2	grp7	grp5	grp6	grp4
grp1							
grp3	*						
grp2	*						
grp7	*						
grp5	*	*					
grp6	*	*					
grp4	*	*					

* $p < 0.05$

(NFAC is the numerical values of the various faculties, i.e., grp1 = ART, grp2 = COM, grp3 = EDU, grp4 = ENG, grp5 = SCI, grp6 = SSC, grp7 = TEC)

The Mean scores of the different faculties were found in the following order:

Arts (4.72) < Education (5.29) < Commerce (5.51) < Technical (5.70) < Science (5.82) < Social Science (5.90) < Engineering (5.98)

The results of Newman-Keuls test for the significance of Mean Difference on total scores are given in Table II. It is evident from the table that Mean scores of subjects of Arts faculty had the lowest scores and it differed from that of the faculty of Eduction, Commerce, Technical, Science, Social Science and Engineering at 0.05 level. The Mean attitude scores of the subjects of Education faculty also differ significantly from that of Social Science and Engineering. The scores of the rest of faculties did not differ significantly from each other even at 0.05 level.

Table IV. Summary: ANOVA for A Sub-scale

Source	df	Sum of Squares	Mean Squares	F-ratio
Between groups	6	142.86	23.81	8.15**
Within groups	393	1148.07	2.92	
Total	399	1290.93		

** $p < 0.01$

It is clear from the results given in Table IV that F-ratio $(6,393) = 8.15$ exceeds the critical value of 2.86 at 0.01 level, which indicates that all seven groups differ significantly from each other on A Sub-scale (Table IV), therefore we reject null hypothesis and conclude that they differ significantly with respect to their degree of emotionality towards environment. The graphical representation given if Fig. I makes it clear.

Table III. Faculty wise Mean and Standard Deviation for different Sub-scales.

Faculties ⇒ Sub-scales ⇓		ART	COM	EDU	ENG	SCI	SSC	TEC
A	M	5.60	6.34	6.83	7.54	6.14	7.05	6.86
	SD	2.12	1.52	1.96	1.35	1.57	1.36	1.78
AC	M	4.05	4.36	2.93	3.67	4.89	4.44	4.53
	SD	2.29	2.17	2.11	1.95	1.87	2.15	2.04
K	M	3.36	4.68	5.41	5.54	5.09	5.40	4.75
	SD	1.67	1.97	2.21	1.87	1.97	1.77	2.12
VC	M	5.88	6.68	5.98	7.17	6.15	6.70	6.64
	SD	1.99	1.63	2.21	1.82	2.19	1.92	1.90
TOTAL	M	4.72	5.51	5.29	5.98	5.82	5.90	5.70

Table V. Significance of Mean difference on Newman-Keuls test (A Sub-scale)

NFAC	grp1	grp5	grp2	grp3	grp7	grp6	grp4
grp1							
grp5							
grp2							
grp3	*						
grp7	*						
grp6	*	*					
grp4	*	*	*				

* $p < 0.05$

(NFAC is the numerical values of the various faculties, i.e., grp1 = ART, grp2 = COM, grp3 = EDU, grp4 = ENG, grp5 = SCI, grp6 = SSC, grp7 = TEC)

The results of Newman-Keuls test for the significance of Mean difference on A Sub-scale are given in Table V. It is evident from the result obtained that the subjects of Arts, Science and Commerce had lower scores than that of other faculties and they differed significantly from faculty of Education, Technical, Social Science and Engineering at 0.05 level. The Mean attitude scores of the subjects of Science differed significantly from Social Science and Engineering. Again faculty of Commerce scored significantly lower than Engineering. The scores of the rest of the faculties did not differ significantly from each other even at 0.05 level.

Table VI. Summary ANOVA for A Sub-scale

Source	df	Sum of Squares	Mean Squares	F-ratio
Between groups	6	152.67	25.44	5.84**
Within groups	393	1712.03	4.35	
Total	399	1864.71		

** $p < 0.01$

It is clear from the results given in Table VI that the F-ratio $(6,393) = 5.84$ exceeds the critical value of 2.86 at 0.01 level, which indicates that all seven groups differ significantly from each other on AC Sub-scale (Table VI) regarding what they actually do for ecological issues. The graphical representation given in Fig.II makes it clear.

The results of Newman-Keuls test for the significance of mean difference on AC Sub-scale are given in. Table VII

Table VII. Significance of Mean difference on Newman-Keuls Test (AC Sub-scale)

NFAC	grp3	grp4	grp1	grp2	grp6	grp7	grp5
grp3							
grp4							
grp1	*						
grp2	*						
grp6	*						
grp7	*						
grp5	*	*					

** $p < 0.05$

(NFAC is the numerical values of the various faculties, i.e., grp1 = ART, grp2 = COM, grp3 = EDU, grp4 = ENG, grp5 = SCI, grp6 = SSC, grp7 = TEC)

It is evident from the table that Mean scores of subjects of faculty of Education and Engineering were as compared to the scores of other faculties and they differed significantly from that of the faculties of Arts, Commerce, Social Science, Technical and Science at 0.05 level. The mean attitude scores of the subjects of Engineering differed significantly from that of Science. The scores of the rest of the faculties did not differ significantly from each other even at 0.05 level.

Table VIII. Summary: ANOVA for K Sub-scale

Source	df	Sum of Squares	Mean Squares	F-ratio
Between groups	6	279.45	46.57	12.12**
Within groups	393	1509.73	3.84	
Total	399	1789.19		

** p <0.01

It is evident from the results given in Table VIII that the F-ratio (6,393) = 12.12 exceeds the critical value of 2.86 at 0.01 level, which indicates that all seven groups differ significantly from each other on K Sub-scale regarding their factual K related to such issues. The graphical representation given in Fig.III makes it clear.

Table IX. Significance of Mean difference on Newman-Keuls Test (K Sub-scale)

NFAC	grp 1	grp2	grp7	grp6	grp3	grp4	grp5
grp1							
grp2	*						
grp7	*						
grp6	*						
grp3	*						
grp4	*						
grp5	*	*					

* p <0.05

(NFAC is the numerical values of the various faculties, i.e., grp1 = ART, grp2 = COM, grp3 = EDU; grp4 = ENG, grp5 = SCI, grp6 = SSC, grp7 = TEC)

The results of Newman-Keuls test of the significance of mean difference of K Sub-scale are given in Table IX. It is evident from the table that subjects of Arts faculty had lower Mean scores and it differed significantly from that of the faculties of Commerce, Technical, Social Science, Education, Engineering and Science at 0.05 level. The mean attitude scores of the subjects of Commerce faculty also differed from that of Science. The scores of the rest of the faculties did not differ significantly from each other even at 0.05 level.

Table X. Summary: ANOVÁ for VC Sub-scale

Source	df	Sum of Squares	Mean Squares	F-ratio
Between groups	6	73.56	12.26	3.11**
Within groups	393	1544.74	3.93	
Total	399	1618.31		

** p <0.01

MOTIVATION APPROACH FOR TECHNOLOGICAL DEVELOPMENT

To buttress this fact, Okeke (1995) in discussing non-motivation of indigenous technology and publication as one of the impediments of effective acquisition of technology education in Nigeria hinted that Nigeria is a country where a talent is never recognized and motivated. He further stated that Nigerians with ingenious potentialities are not aided by Government, industries and agencies. Nigeria is endowed with various human resources for the development of appropriate indigenous technology that can be effectively employed for the enhancement of technological education in the country. Okeke (1995) cited an instance where some Nigerians invented one thing or the other but these inventors were not motivated for improvement and diversification of their inventions. Some of such inventors are as follows:

Inventor	Invention	Date of Invention
Israel Egbufor	Nigeria's solar energy Driven car.	Early Eighties
Tahana Bolkva	Acha processing machine	1977
	and portable combined harvester	1978
Paul Mbamali	Thirty kilometer per hour farm motor-car called "Pauline" which does not use batteries rather motor cycle tyres.	Early Eighties

In another development, Okeke (1995) stated that many human resource in Nigeria are not motivated by the Government in form of fund, grant or award to produce soft and hardwares or publish relevant texts and prints written from their bulk of experience and knowledge for use in effective teaching and learning of technological education for the development of technology in the country. Okeke (1995) therefore concluded by stressing that the quicker technological development and indigenous fabrication of equipment relevant to technology education, Governments and industries should identify specific technological problems and mandate indigenous scientists, engineers and technologists to provide solutions to such problems by making funds available.

In his own contribution, Eyibe (1994) stated that poor motivation as it affects income is one of the problems at the centre of brain drain against technological development. He stated that great disparity between the income earnable in the income country and other countries is the main motivating factor for brain drain. The developed countries as well as the richer developing countries motivate their manpower through the payment of high remuneration. For instance, according to the New African Magazine (1988), the Nigerian Airways pays a boeing 707 pilot a gross salary of ₦28,000.00 per annum while Saudi Arabia pays US $72,000.00 per annum. Again, according to Newsaratch (1988), the highest paid professor in Nigerian Universities earns a maximum salary of ₦27,000.00 per annum but in Saudi Arabia, a professor is paid between US $50,000.00 and 80,000.00 per annum tax free. This amount does not include other allowances and fringe benefits.

In support to Okeke (1995) Eyibe (1994) hinted that another cause of brain drain in Nigerian technology is the absence of adequate research grants and facilities for researchers in the country's institutions of higher learning, research institutes and hospitals. It is painful when academics and researchers cannot carry out this research and publish their findings for the technological and social development of the society. The inability of Government to motivate the human resources has driven away many professionals who have option to seek these facilities in the developed countries. The result of this is that the country is denied the services of first class research personnel and useful research findings necessary for her educational and technological advancement. However, in fairness, the Nigerian Government has offered scholarship to young Nigerians to study technical education courses abroad, but on completion of their courses, refuse to return to their father lands and those who come back remigrate. And the simple reason for this type of behaviour is the glaring absence of motivation across the conditions of services of the human resources involved in the scientific and technological sectors. Eyibe (1994) therefore concluded his discussion by suggesting that the salaries and conditions of service of our experts and professionals be reviewed constantly on the basis of productivity so as to reward hard work and creativity, and improve their social image.

At the school level, motivation is highly instrumental to technological development. Because it is one thing to train teachers of technology and it is quite another to retain those teachers in the classrooms after their training in a period of economic recession and worsening structural adjustment programme. Education on the whole is at a disadvantage vis-a-vis all public services, and this is related to the generally low salaries of teachers or the reluctance to pay their salaries on time in many developing countries including Nigeria. More often than not, school building are more out of date than others. The criteria of efficient technology education for technological development can be measured interms of commerciality and economic resources – income, economic interests, student-teacher ratios, space per student, the quantity and quality of specialized equipment, audio-visual aids and text books are usually laid down by the Nigerian authorities and the educators. The provision of these necessary ingredients nearly always falls far below the level regarded as adequate Bissau (1988) and Eyibe (1991). When these ingredients are grossly inadequate, staff begin to experience job dissatisfaction in their professional environment resulting in certain organizational and personnel problems such as high rate of absenteeism, sick leave, personal complaints and changes job within and outside the country where motivation reigns as the bedrock of their technological development.

RECOMMENDATIONS

1. It is recommended that the motivation approach to optimum utilisation of human resources has no alternative for any meaningful technological development in Nigeria.

2. The Government should look into the existing incentives of those directly related to the affairs of technological development, with a view to reviewing them, provided a good study is done to know the aspects of incentives that will actually satisfy the people.

3. Those working on the creation of engineering infrastructure for the country should also look into the area of the valence, instrumentality and tools of trade needed by the human resources in that area.

4. There should be material support in the form of research grants for specialists who are prepared to remigrate as well as cooperation between industrialised countries and the home countries on questions of employment opportunities.

CONCLUSION

The real measure of a society's attitude towards technological development is the recognition it gives to the skilled professional who are engaged in it and by its willingness to support non-productivity members of the society during the process. It will be measured too by the use made of skilled talent once it is trained, and a generalised willingness to accept changes in the cultural mores especially when these are dictated by the research and the experience of the educated professionals and experts. Therefore, unless the human resources involved in technology educated appropriately motivated, the Nigerian society will never avail itself of the fruits of technological advancement.

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WORK VALUES AND OCCUPATIONAL PREFERENCES AMONG STUDENTS

T.J. KAMALANABHAN and V. VIJAYA

ABSTRACT

A study was conducted to find out the influence of work values on occupational preferences of higher secondary school students in the city of Chennai, India. The tools used were the Work Value Scale with 45 items requiring forced choice responses and the Occupational Preference Test Schedule with 168 items measured on a four point scale. The total sample consisted of 110 students, from a Government and a private school, 25 boys and 30 girls from each. Biographical details relating to occupation of father, mother and family were also collected.

The multiple Regression Analysis was performed treating the various occupational preferences as dependent variables. It was found that work values like rural work value and social work value significantly contributed to the occupational preference except for Science professional and Business professional categories. Work values, like the Economic value, value placed on work conditions, value for creativity and value for humanistic co workers did not significantly contribute to occupational preference of any of the categories. Among the demographic variables, type of school, family income and occupation of father did not significantly contribute to occupational preference of any of the categories. Among the demographic variables, type of school, family income and occupation of father did not significantly contribute to occupational preference, but occupation of mother and sex were found to be significant contributors.

WORK VALUES AND OCCUPATIONAL PREFERENCES AMONG STUDENTS

For any employed person, preparing, getting organised and finally adapting to the functional requirements of an occupation forms a crucial facet of life. Occupations presumably vary in their attractiveness to different people, and an evaluation of occupational attractiveness is frequently called a preference (Rosenberg 1957). There are two main approaches to the study of occupational choice, normative and descriptive. The normative approach is concerned with how the decision ought to be made (Gelatt 1962). The descriptive approach examines how people actually make the choice. Darley and Hagenah (1955) saw vocational interests as a special case of personality theory, embracing needs,

value systems and motivations. Delving a little deeper into the descriptive approach, we find that value orientations play a very crucial role. Schwarzeller (1959), in his study, after controlling for IQ, sex and paternal occupation, found that value orientations are important in determining the choice of an occupation, and are not simply incidental to the process. The system of values, namely, what one considers important and unimportant in his work situation is an important determinant of occupational choice (Carruthers 1968). Mac Nab and Fitzsimmons (1987) held that the notion of job preference is closely tied to the concepts of 'need' and 'value' and so it is a crucial aspect in the dynamics of job orientation, in adaptation, in job satisfaction and motivation.

Research on vocational interests have, over the years, been successful in developing measures to gauge a person's occupational interests from many perspectives like values, personality, self-efficacy, expectancy etc and in extracting factors to explain the same. The approach most commonly adopted in classifying job preferences is based on the distinction between preferences concerning the intrinsic aspect of a job (autonomy, creativity, variety etc) and the extrinsic ones (pay, security, physical conditions etc) (Argentero 1987). The work value inventory by Ginzberg et al (1951) formulated three categories: extrinsic satisfactions in the form of rewards like way of life, security, prestige and money, extrinsic concommitants like surroundings, associates, supervisory relations and variety and intrinsic satisfaction including features like altruism, creativity, independence, intellectual stimulation, aesthetic, achievement and management. Anne Roe's (1956) two-dimensional approach classified occupations by level and field. The eight fields

were physical, social and personal contact, persuasive business, government, industry, maths and physical sciences, biological sciences and humanities and arts. The levels were responsibility, education and prestige. Super's (1957) classification of occupations differed in three dimensions. They differed in terms of the field of activity, the level of ability, education and training, prestige and reward and in terms of the enterprise in which the work is performed. John Holland et al (1970) had devised six classes of occupations; realistic, investigative, artistic, social, enterprising and conventional. The Holland's occupational codes were evolved as factors such as realistic vs social, artistic vs enterprising, realistic vs investigative, people vs things, data vs ideas and things vs ideas (Prediger 1976). Bates and Killcross (1967) constructed an improved measure of occupational interests among which the categories were scientific, social persuasive, literary, artistic, clerical, mechanical and outdoor. The Rothwell-Miller interest blank (1968) included categories such as outdoor, mechanical, computational, scientific, personal contact, aesthetic, literary, musical, social service, clerical, practical and medical interests.

Underwood (1971) selected ten categories in his study of the internal validity of vocational interest measures - aesthetic, business, agricultural, practical, literary, outdoor, people biological science, physical science and secretarial. Argentero (1987) evolved a number a factors relating to occupational choice, studying young men aged 19 to 21 years. The first factor was mental needs such as stimulation, interest, creativity, innovation, feedback, variety and opportunity to learn. The second was economic needs such as pay, benefits, recognition, opportunity for

career advancement, physical and environmental conditions, prestige and status. The third factor was responsibility, fourth, human conditions such as social usefulness, security, human supervision and physical and environmental conditions. The fifth factor consonance concerned a job's capability of suiting individual preferences and predisposition, the factor interpersonal contacts related to communication and interpersonal relations. The other factors were participation in management, the factor altruism that related to impact on the people's lives and jobs and the factor activity.

Janis (1969) had developed the 'decision balance sheet procedure' where students faced with the situation of choosing an occupation were asked to list their alternatives and the positive and the negative outcomes of each alternative. These outcomes were placed in four categories representing utilitarian gains or losses to self, utilitarian gains or losses to others, social approval or disapproval, self approval or disapproval. Katz (1973) developed a computer based model where information was gathered about the applicant's value system (importance ratings of actual job outcomes on a set of ten value dimensions). Along with importance ratings, a minimum level of acceptability for each outcome dimension was generated, the model being called the value system. The information system provided as accurately as possible the actual likelihood that a particular occupation would result in a particular outcome. These likelihoods were multiplied by the importance ratings and summed to produce the 'sum of value returns'(svr) for each job. It can be observed that at the heart of all these studies is the maximisation principle that stresses that people will prefer and choose those occupations, they believe are most likely to

lead to the highest personal benefit. The expectancy and expected value models provide solid, explicit ways in which people might use the information, their values and their expectations about the future, in order to make the best possible choices. (Mitchell and Beach 1976).

Among the various theories of vocational development, Ginzberg's theory of occupational choice in late adolescence, treated it as an event that is the outcome of a developmental process begun in childhood proceeding during adolescence to culminate in the early twenties. Ginzberg's approach (1951) was multi disciplinary. Career development was viewed as a process of identifying with key figures, while gradually developing self-understanding and understanding of the world of work. P.M. Blau and associates (1956) developed a model of occupational choice in which social conditions, economic practices, parental status and individual abilities and interests interacted to produce a choice by the individual.

Ginzberg (1951) asserted that there are definite "stages" in choice. At each stage a particular type of reason for choice becomes emphasised. The "interest" stage lasts from 11 to 12 years, "capacities" become important from 13 to 14 years and "values" and a balanced outlook become evident at 15 to 16 years. Super and associates (1983) showed that during adolescence there are increases in planning and the use of resources for exploration, in decision making and in gathering knowledge of the world of work and of career development and of the preferred occupation.

In a study by Gustav Jahoda (1952), of job attitudes and job choice among school

leavers, it was found that the items rated as important in a job were, good chances of getting on, friendly people to work with, good pay, clean work and short hours. Analysis of the reasons offered for the rejection of certain occupations indicated that there were three main causes. They were personal experience and observation, vicarious experience and contact with a negative climate of opinion. As it can be seen that value orientation plays an important role in determining occupational preferences in adolescents (Ginzberg 1951), this study tried to see how far work values influenced occupational preferences in adolescents. An attempt was also made to see whether the type of school, public or private, catering to the needs of lower class and lower middle class children, and upper middle class children respectively had any influence on occupational preferences.

Pandit and Daber (1990) had found in their study that the socio-economic status background of children generated vocational aspirations of boys as well as girls without any exception. Therefore other variables like occupation of father, occupation of mother and family income were also included in the study. The study tried to find out whether work values influenced strength of occupational preferences. Other variables like the type of school, and demographic details like occupation of father, occupation of mother, sex, family income etc were also studied for the probable influence on work values.

METHOD

SUBJECTS

The participants were 110 students, 30 boys and 25 girls each, from two schools, one Government and one private. In India, as the students in the Government schools usually are from the lower middle and middle class and those attending a private school are usually from the uppermiddle class or upper class, it was felt that this differentiation would be helpful in differentiating the background and the value held by these students depending on the school. The students were in the final year of their schooling and it was felt that this group would have given some thought to their career after schooling, having quite crystallised occupational preferences. Both the schools were situated in the city of Chennai, in the State of Tamilnadu, India.

TOOLS

1. WORK VALUE SCALE BY T. VENKATESWARA RAO.

The scale consists of 45 items requiring forced choice responses. It measures 10 work values - economic work value, security work value, value placed on work conditions, value for having humanistic coworkers, social work value, status work value, independence work value, creativity work value, academic work value and value placed for working in a rural setting. etc. The scale has been found to have a high level of reliability and validity when tested on the medical student population. The scale has been used extensively in India for measuring the work values of students attending medical courses. . Test-retest Reliability coefficient was reported to be 0.81 (Rao 1974).

2. OCCUPATION PREFERENCE TEST SCHEDULE BY T.J. KAMALANABHAN.

The questionnaire contains 168 items measured on a four point Likert scale. It measures preferences for fourteen occupational classifications like Science professional and skilled. Business professional and skilled,

Technical professional and skilled, Linguistic professional and skilled, Aesthetic professional and skilled, service professional and skilled, Outdoor and Clerical. It has been widely used (Kamalanabhan and Sunder, 1993) in the Indian context and the instrument was found to be reliable. Reliability coefficients ranged from 0.61 to 0.82 for the various dimensions.

DESIGN AND PROCEDURE

The study was based on an expost facto design. Data was collected in one sitting from the boys and girls from the school. To measure their work values and occupational preferences, the main variables, they were administered the Work value scale and the Occupational preference test schedule, which took them around one and half hours to complete. Information about other variables like occupation of parents and family income were treated as categorical and coded as either 1,2,3 or 4. Higher the value or level of the variable, lower the value of the coded number. Prior to the administration, an introduction about the study was given and specific test instructions of both the test were read out to them. Specific instructions were given to the students to state what occupation they personally liked to take up and what they looked for in a job, and not what was considered important in society, to bring down the social desirability of the responses.

RESULTS

It was decided to carry out a multiple regression analysis to find out if there is any relation between the work values, demographical variables and strength of occupational preference. All the variables, those that were continuous and those that were categorical were introduced simultaneously while feeding the data.

TABLE I SHOWS THE RESULTS OF THE MULTIPLIE REGRESSION ANALYSIS OF WORK VALUES AND DEMOGRAPHIC VARIABLES PREDICTING OCCUPATIONAL PREFERENCES AND ANALYSIS OF VARIANCE

OCCUPATIONAL PREFERENCE	PREDICTOR VARIABLE	B	SEB	BETA	t	F
SCIENCE PROFESSIONAL	NIL				NS	NS
SCIENCE SKILLED MR = .61412 AR2 = .27776 SE = 6.218999	SEX OCCUPATION OF MOTHER ACADEMIC STATUS	-7.60705 1.61284 .48203 .60719	1.27514 .74564 .22721 .27838	-.51790 .19448 .25788 .25985	-5.966** 2.163* 2.122* 2.185*	3.79459**
TECHNICAL PROFESSIONAL MR = .54654 AR2 = .18680 SE = 6.41579	SOCIAL OCCUPATION OF MOTHER RURAL SECURITY	.48573 1.67091 .62864 .57417	.23555 .76924 .20947 .26377	.27534 .20724 .40442 .27571	2.062* 2.172* 3.001* 2.177*	2.66925**

MOTIVATION APPROACH FOR TECHNOLOGICAL DEVELOPMENT

To buttress this fact, Okeke (1995) in discussing non-motivation of indigenous technology and publication as one of the impediments of effective acquisition of technology education in Nigeria hinted that Nigeria is a country where a talent is never recognized and motivated. He further stated that Nigerians with ingenious potentialities are not aided by Government, industries and agencies. Nigeria is endowed with various human resources for the development of appropriate indigenous technology that can be effectively employed for the enhancement of technological education in the country. Okeke (1995) cited an instance where some Nigerians invented one thing or the other but these inventors were not motivated for improvement and diversification of their inventions. Some of such inventors are as follows:

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RECOMMENDATIONS

1. It is recommended that the motivation approach to optimum utilisation of human resources has no alternative for any meaningful technological development in Nigeria.

2. The Government should look into the existing incentives of those directly related to the affairs of technological development, with a view to reviewing them, provided a good study is done to know the aspects of incentives that will actually satisfy the people.

3. Those working on the creation of engineering infrastructure for the country should also look into the area of the valence, instrumentality and tools of trade needed by the human resources in that area.

4. There should be material support in the form of research grants for specialists who are prepared to remigrate as well as cooperation between industrialised countries and the home countries on questions of employment opportunities.

CONCLUSION

The real measure of a society's attitude towards technological development is the recognition it gives to the skilled professional who are engaged in it and by its willingness to support non-productivity members of the society during the process. It will be measured too by the use made of skilled talent once it is trained, and a generalised willingness to accept changes in the cultural mores especially when these are dictated by the research and the experience of the educated professionals and experts. Therefore, unless the human resources involved in technology educated appropriately motivated, the Nigerian society will never avail itself of the fruits of technological advancement.

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WORK VALUES AND OCCUPATIONAL PREFERENCES AMONG STUDENTS

T.J. KAMALANABHAN and V. VIJAYA

ABSTRACT

A study was conducted to find out the influence of work values on occupational preferences of higher secondary school students in the city of Chennai, India. The tools used were the Work Value Scale with 45 items requiring forced choice responses and the Occupational Preference Test Schedule with 168 items measured on a four point scale. The total sample consisted of 110 students, from a Government and a private school, 25 boys and 30 girls from each. Biographical details relating to occupation of father, mother and family were also collected.

The multiple Regression Analysis was performed treating the various occupational preferences as dependent variables. It was found that work values like rural work value and social work value significantly contributed to the occupational preference except for Science professional and Business professional categories. Work values, like the Economic value, value placed on work conditions, value for creativity and value for humanistic co workers did not significantly contribute to occupational preference of any of the categories. Among the demographic variables, type of school, family income and occupation of father did not significantly contribute to occupational preference of any of the categories. Among the demographic variables, type of school, family income and occupation of father did not significantly contribute to occupational preference, but occupation of mother and sex were found to be significant contributors.

WORK VALUES AND OCCUPATIONAL PREFERENCES AMONG STUDENTS

For any employed person, preparing, getting organised and finally adapting to the functional requirements of an occupation forms a crucial facet of life. Occupations presumably vary in their attractiveness to different people, and an evaluation of occupational attractiveness is frequently called a preference (Rosenberg 1957). There are two main approaches to the study of occupational choice, normative and descriptive. The normative approach is concerned with how the decision ought to be made (Gelatt 1962). The descriptive approach examines how people actually make the choice. Darley and Hagenah (1955) saw vocational interests as a special case of personality theory, embracing needs,

value systems and motivations. Delving a little deeper into the descriptive approach, we find that value orientations play a very crucial role. Schwarzeller (1959), in his study, after controlling for IQ, sex and paternal occupation, found that value orientations are important in determining the choice of an occupation, and are not simply incidental to the process. The system of values, namely, what one considers important and unimportant in his work situation is an important determinant of occupational choice (Carruthers 1968). Mac Nab and Fitzsimmons (1987) held that the notion of job preference is closely tied to the concepts of 'need' and 'value' and so it is a crucial aspect in the dynamics of job orientation, in adaptation, in job satisfaction and motivation.

Research on vocational interests have, over the years, been successful in developing measures to gauge a person's occupational interests from many perspectives like values, personality, self-efficacy, expectancy etc and in extracting factors to explain the same. The approach most commonly adopted in classifying job preferences is based on the distinction between preferences concerning the intrinsic aspect of a job (autonomy, creativity, variety etc) and the extrinsic ones (pay, security, physical conditions etc) (Argentero 1987). The work value inventory by Ginzberg et al (1951) formulated three categories: extrinsic satisfactions in the form of rewards like way of life, security, prestige and money, extrinsic concommitants like surroundings, associates, supervisory relations and variety and intrinsic satisfaction including features like altruism, creativity. independence, intellectual stimulation, aesthetic, achievement and management. Anne Roe's (1956) two-dimensional approach classified occupations by level and field. The eight fields

were physical, social and personal contact, persuasive business, government, industry, maths and physical sciences, biological sciences and humanities and arts. The levels were responsibility, education and prestige. Super's (1957) classification of occupations differed in three dimensions. They differed in terms of the field of activity, the level of ability, education and training, prestige and reward and in terms of the enterprise in which the work is performed. John Holland et al (1970) had devised six classes of occupations; realistic, investigative, artistic, social, enterprising and conventional. The Holland's occupational codes were evolved as factors such as realistic vs social, artistic vs enterprising, realistic vs investigative, people vs things, data vs ideas and things vs ideas (Prediger 1976). Bates and Killcross (1967) constructed an improved measure of occupational interests among which the categories were scientific, social persuasive, literary, artistic, clerical, mechanical and outdoor. The Rothwell-Miller interest blank (1968) included categories such as outdoor, mechanical, computational, scientific, personal contact, aesthetic, literary, musical, social service, clerical, practical and medical interests.

Underwood (1971) selected ten categories in his study of the internal validity of vocational interest measures - aesthetic, business, agricultural, practical, literary, outdoor, people biological science, physical science and secretarial. Argentero (1987) evolved a number a factors relating to occupational choice, studying young men aged 19 to 21 years. The first factor was mental needs such as stimulation, interest, creativity, innovation, feedback, variety and opportunity to learn. The second was economic needs such as pay, benefits, recognition, opportunity for

career advancement, physical and environmental conditions, prestige and status. The third factor was responsibility, fourth, human conditions such as social usefulness, security, human supervision and physical and environmental conditions. The fifth factor consonance concerned a job's capability of suiting individual preferences and predisposition, the factor interpersonal contacts related to communication and interpersonal relations. The other factors were participation in management, the factor altruism that related to impact on the people's lives and jobs and the factor activity.

Janis (1969) had developed the 'decision balance sheet procedure' where students faced with the situation of choosing an occupation were asked to list their alternatives and the positive and the negative outcomes of each alternative. These outcomes were placed in four categories representing utilitarian gains or losses to self, utilitarian gains or losses to others, social approval or disapproval, self approval or disapproval. Katz (1973) developed a computer based model where information was gathered about the applicant's value system (importance ratings of actual job outcomes on a set of ten value dimensions). Along with importance ratings, a minimum level of acceptability for each outcome dimension was generated, the model being called the value system. The information system provided as accurately as possible the actual likelihood that a particular occupation would result in a particular outcome. These likelihoods were multiplied by the importance ratings and summed to produce the 'sum of value returns'(svr) for each job. It can be observed that at the heart of all these studies is the maximisation principle that stresses that people will prefer and choose those occupations, they believe are most likely to

lead to the highest personal benefit. The expectancy and expected value models provide solid, explicit ways in which people might use the information, their values and their expectations about the future, in order to make the best possible choices. (Mitchell and Beach 1976).

Among the various theories of vocational development, Ginzberg's theory of occupational choice in late adolescence, treated it as an event that is the outcome of a developmental process begun in childhood proceeding during adolescence to culminate in the early twenties. Ginzberg's approach (1951) was multi disciplinary. Career development was viewed as a process of identifying with key figures, while gradually developing self-understanding and understanding of the world of work. P.M. Blau and associates (1956) developed a model of occupational choice in which social conditions, economic practices, parental status and individual abilities and interests interacted to produce a choice by the individual.

Ginzberg (1951) asserted that there are definite "stages" in choice. At each stage a particular type of reason for choice becomes emphasised. The "interest" stage lasts from 11 to 12 years, "capacities" become important from 13 to 14 years and "values" and a balanced outlook become evident at 15 to 16 years. Super and associates (1983) showed that during adolescence there are increases in planning and the use of resources for exploration, in decision making and in gathering knowledge of the world of work and of career development and of the preferred occupation.

In a study by Gustav Jahoda (1952), of job attitudes and job choice among school

leavers, it was found that the items rated as important in a job were, good chances of getting on, friendly people to work with, good pay, clean work and short hours. Analysis of the reasons offered for the rejection of certain occupations indicated that there were three main causes. They were personal experience and observation, vicarious experience and contact with a negative climate of opinion. As it can be seen that value orientation plays an important role in determining occupational preferences in adolescents (Ginzberg 1951), this study tried to see how far work values influenced occupational preferences in adolescents. An attempt was also made to see whether the type of school, public or private, catering to the needs of lower class and lower middle class children, and upper middle class children respectively had any influence on occupational preferences.

Pandit and Daber (1990) had found in their study that the socio-economic status background of children generated vocational aspirations of boys as well as girls without any exception. Therefore other variables like occupation of father, occupation of mother and family income were also included in the study. The study tried to find out whether work values influenced strength of occupational preferences. Other variables like the type of school, and demographic details like occupation of father, occupation of mother, sex, family income etc were also studied for the probable influence on work values.

METHOD

SUBJECTS

The participants were 110 students, 30 boys and 25 girls each, from two schools, one Government and one private. In India, as the students in the Government schools usually are from the lower middle and middle class and those attending a private school are usually from the uppermiddle class or upper class, it was felt that this differentiation would be helpful in differentiating the background and the value held by these students depending on the school. The students were in the final year of their schooling and it was felt that this group would have given some thought to their career after schooling, having quite crystallised occupational preferences. Both the schools were situated in the city of Chennai, in the State of Tamilnadu, India.

TOOLS

1. WORK VALUE SCALE BY T. VENKATESWARA RAO.

The scale consists of 45 items requiring forced choice responses. It measures 10 work values - economic work value, security work value, value placed on work conditions, value for having humanistic coworkers, social work value, status work value, independence work value, creativity work value, academic work value and value placed for working in a rural setting. etc. The scale has been found to have a high level of reliability and validity when tested on the medical student population. The scale has been used extensively in India for measuring the work values of students attending medical courses. . Test-retest Reliability coefficient was reported to be 0.81 (Rao 1974).

2. OCCUPATION PREFERENCE TEST SCHEDULE BY T.J. KAMALANABHAN.

The questionnaire contains 168 items measured on a four point Likert scale. It measures preferences for fourteen occupational classifications like Science professional and skilled. Business professional and skilled,

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Technical professional and skilled, Linguistic professional and skilled, Aesthetic professional and skilled, service professional and skilled, Outdoor and Clerical. It has been widely used (Kamalanabhan and Sunder, 1993) in the Indian context and the instrument was found to be reliable. Reliability coefficients ranged from 0.61 to 0.82 for the various dimensions.

DESIGN AND PROCEDURE

The study was based on an expost facto design. Data was collected in one sitting from the boys and girls from the school. To measure their work values and occupational preferences, the main variables, they were administered the Work value scale and the Occupational preference test schedule, which took them around one and half hours to complete. Information about other variables like occupation of parents and family income were treated as categorical and coded as either 1,2,3 or 4. Higher the value or level of the variable, lower the value of the coded number. Prior to the administration, an introduction about the study was given and specific test instructions of both the test were read out to them. Specific instructions were given to the students to state what occupation they personally liked to take up and what they looked for in a job, and not what was considered important in society, to bring down the social desirability of the responses.

RESULTS

It was decided to carry out a multiple regression analysis to find out if there is any relation between the work values, demographical variables and strength of occupational preference. All the variables, those that were continuous and those that were categorical were introduced simultaneously while feeding the data.

TABLE 1 SHOWS THE RESULTS OF THE MULTIPLIE REGRESSION ANALYSIS OF WORK VALUES AND DEMOGRAPHIC VARIABLES PREDICTING OCCUPATIONAL PREFERENCES AND ANALYSIS OF VARIANCE .

OCCUPATIONAL PREFERENCE	PREDICTOR VARIABLE	B	SEB	BETA	t	F
SCIENCE PROFESSIONAL	NIL				NS	NS
SCIENCE SKILLED MR = .61412 AR2 = .27776 SE = 6.218999	SEX OCCUPATION OF MOTHER ACADEMIC STATUS	-7.60705 1.61284 .48203 .60719	1.27514 .74564 .22721 .27838	-.51790 .19448 .25788 .25985	-5.966** 2.163* 2.122* 2.185*	3.79459**
TECHNICAL PROFESSIONAL MR = .54654 AR2 = .18680 SE = 6.41579	SOCIAL OCCUPATION OF MOTHER RURAL SECURITY	.48573 1.67091 .62864 .57417	.23555 .76924 .20947 .26377	.27534 .20724 .40442 .27571	2.062* 2.172* 3.001* 2.177*	2.66925**

OCCUPATIONAL PREFERENCE	PREDICTOR VARIABLE	B	SEB	BETA	t	F
TECHNICAL SKILLED MR = .55829 AR2 = .20185 SE = 6.69470	SEX OCCUPATION OF MOTHER RURAL	-3.61132 1.81052 .44313	1.37268 .80268 .21857	-.24010 .21320 .27066	-2.631** 2.256* 2.027*	2.83776**
OUTDOOR MR = .60891 AR2 = .27036 SE = 6.29348	SEX	3.09096	1.29042	.20901	2.395*	3.69256**
BUSINESS PROFESSIONAL	NIL				NS	NS
BUSINESS SKILLED MR = .53325 AR2 = .17015 SE = 6.69741	SEX RURAL	4.12955 .49882	1.37324 .21866	.27983 .31054	3.007** 2.281*	2.48996**
CLERICAL MR = 43908 AR2 = .06398 SE = 7.07229	SEX	-3.09144	1.45010	-.21069	-2.132*	1.49673 NS
LINGUISTIC PROFESSIONAL MR = .58883 AR2 = .24248 SE = 6.21648	SEX	-6.48122	1.27463	-.45208	-5.085**	3.32598**
LINGUISTIC SKILLED MR = .52696 AR2 = .16242 SE = 7.04459	SEX OCCUPATION OF MOTHER RURAL STATUS	-2.95088 2.16179 .50368 .67847	1.44443 .84463 .23000 .31534	-.19099 .24782 .29950 .27558	-2.043* 2.559* 2.190* 2.152*	2.40910**
AESTHETIC PROFESSIONAL MR = .60297 AR2 = .26202 SE = 6.2247	SEX INDEPENDENCE OCCUPATION OF MOTHER RURAL	-2.97163 .49777 2.10016 .44603	1.27633 .20359 .74633 .20323	-.20431 .26801 .25575 .28174	-2.328* 2.445* 2.814** 2.195**	3.58006**
AESTHETIC SKILLED MR = .58897 AR2 = .24266 SE = 5.94075	INDEPENDENCE OCCUPATION OF MOTHER RURAL	.42110 1.83844 .61342	.19430 .71228 .19396	.24066 .23764 .41189	2.167* 2.581* 3.167**	3.32833**

OCCUPATIONAL PREFERENCE	PREDICTOR VARIABLE	B	SEB	BETA	t	F
SERVICE PROFESSIONAL MR = .56414 AR2 = .20946 SE = 6.26218	SEX	6.18622	1.28400	.43759	4.818**	2.92540**
SERVICE SKILLED MR = .52025 AR2 = .15428 SE = 5.93310	SEX	2.54738	1.21652	.19671	2.094*	2.32558**
	SOCIAL	.47462	.21783	.29670	2.179*	

MR	=	Multiple correlation coefficient
AR2	=	Adjusted R2
SE	=	Standard Error
NS	=	Not significant
*	=	Significance at 0.05 level
**	=	Significance at 0.01 level

From the table it can be seen that for preferences for the Science professional and Business professional occupational categories, there are no significant predictors.

Sex (t = – 5.966, P < 01), occupation of mother (t = 2.163, P <.05) academic work value (t = 2.122, P < 05), and status work value (t = 2.185, P < 0.5) are the significant predictors (F = 3.79459, P < .01) for the preference for science skilled occupations. Preference for the technical professional occupations is predicted (F = 2.669255, P < .01) by social work value (t = 2.062, P < .05), rural work value (t = 3.001, P < .01), security work value (t = 2.177, P < .05) and occupation of mother (t = 2.172, P < .05). The three predictors (F = 2.83776, P < 0.1) of preference for technical skilled occupations are sex (t = – 2.631, P < .01), occupation of mother (t = 2.256, P < .05) and rural work value (t = 2.027, P < .05). Preference for business

skilled occupations such as salesman, purchase officer, auditor and insurance agent are also predicted (F = 2.48996, P < .01) by sex (t = 3.007, P < .01), and rural work value (t = 2.281, P < .05).

Occupations such as that of a librarian, interpreter and proof reader, categorised as linguistic skilled activities are preferred by the influence of sex (t = – 2.043, P < .05), occupation of mother (t = 2.559, P < .05), rural work value (t = 2.190, P < .05) and status work value (t = 2.152, P < .05), (F = 2.40910, P < .01). Independence work value (t = 2.445, P < .05), occupation of mother (t = 2.814, P < 01) rural work value (t = 2.195, P < .05) and sex (t = – 2.328, P < .05) are the predictors (F = 3.58006, P < .01) of the preference for aesthetic professional occupations like in fine arts such as that of a musician, painter and actor. The aesthetic skilled category is also

predicted by independence work value ($t = 2.167$, $P < .05$), Occupation of mother ($t = 2.581$, $P < .05$) and rural work value ($t = 3.167$, $P < .01$), ($F = 3.32833$, $P < .01$). Preference for the service skilled occupations like that of tourism guide, airline hostess etc which are more related to interactions with people are predicted ($F = 2.32558$, $P < .01$) by sex ($t = 2.094$, $P < .05$) and social work value ($t = 2.179$, $P < .05$).

Sex has been a very influential predictor for most of the occupations. It has been the only predictor for preference for outdoor activities ($t = 2.395$ $P < .05$, $F = 3.69256$, $P < .01$) clerical work ($t = -2.132$, $P < 0.5$), linguistic professional occupations ($t = -5.085$, $P < .01$, $F = 3.32598$, $P < .01$) and service professional occupations ($t = 4.818$, $P < .01$, $F = 2.92540$, $P < .01$).

High levels of academic proficiency is a basic requirement to prove one's work in the science skilled occupations where competition is the watchword. India being a developing country, professions of research scientists earn a lot of status in society. This could be a possible explanation to the academic work value and status work value being predictors for the preference of science skilled professions. These professions make use of technology for managing and improving quality of life which includes occupations like that of engineering, computer specialisation etc. Many forethinking youngsters are now concerned about how to employ these ideas in the rural settings which constitutes nearly 600 million people in 600,000 villages (Stern 1993), for the improvement of the quality of human life in the villages. As India is moving towards liberalisation and opening up of the economy, many employment opportunities are being generated in rural areas to provide employment and utilise unused manpower effectively, with schemes like Integrated Rural Development Programme, Training Rural Youth for Self Employment, Jawahar Rozgar Yojana, Nehru Rozgar Yojana etc. Financial assistance is being provided to youngsters to enable them to also become entrepreneurs and provide employment to local villagers (NDC 1993). This probably may be the reason for the influence of rural work value and social work value and security work value in preference for technical professional occupations. These occupations involve highly skilled activities by the individual himself involving craftsmanship like the work of an electrician, electronic technician, automobile mechanic etc. However, security work value does not predict for technical skilled occupations.

The world is becoming smaller with all places being connected to each other with the improving information technology. Youngsters may be having a need to provide a model of the urban life with it's comforts and securities and link the rural setting with it, with the help of business skilled activities that open up an idea of the commercial life and it's benefits to the rural population. This is more so because of the advent of technological revolution fast leaving an impact on villages also due to economic liberalisation of India.

The need to improve the rural setting by developing awareness by improving information availability to the underdeveloped areas with the use of language may be a reason for the rural work value to predict preference for the linguistic skilled occupations together with status work value, occupation of mother and sex. Though these occupations are not much sought after, they require some special skill that always earns

status and recognition in India, which is a land of flourishing languages and abundant literature, around 700 including dialects and 18 recognised official languages, according to the 1971 census (Myer 1995).

The aesthetic professional occupations include occupations in fine arts such as that of musician, painter and actor. The aesthetic skilled category includes occupations like that of an illustrator, photographer, florist, beautician etc. Both are predicted by the work value of independence work value, rural work value and occupation of mother. One more predictor for the former is sex. Independence in work is an essential prerequisite for aesthetic activities and this work value being a predictor for the aesthetic activities, is obviously explained. Sex is the other predictor for aesthetic professional activities. This finding is in line with that of Nelson (1964) who went on to add that girls want to do more of artistic work, work with children and do hairdressing. Preference for the service skilled occupations like that of a tourism guide, airline hostess etc. which are more directly related to interactions with people are predicted by Social work value which is the value for helping people. The other predictor is sex.

Keeling and Tuck (1979) had reported that men achieve the highest score on investigative, enterprising and realistic dimensions while women achieve the highest summary codes of social, artistic and conventional dimensions.

Sex has been a very influential predictor for most of the occupations. The results lend support to the finding of Tyer Edwins (1979) that nursing and education being service activities attract a disproportionate number of

women while the physical sciences are primarily chosen by men. Boys have a greater preference for science skilled, technical skilled, clerical, linguistic professional, linguistic skilled and aesthetic professional occupations. Girls seem to have a greater preference for outdoor, business skilled and service skilled activities. The fact that boys prefer science and technical occupations and girls prefer outdoor activities lends support to the factor physical science vs outdoor, evolved by Athanasou (1980) from the Brook's interest categories. Very few girls pursued career in science and technology as a result of various social cultural attitudes (Working group, 1981).

Sex role stereotyping in occupations is slowly fading away. It can be observed from the fact that the girls have a higher preference for outdoor activities that include agriculture, forestry, etc and boys preferring more of linguistic and aesthetic professions. These findings disconfirm the conclusion of Bloch (1980) that interests show a traditional trend with girls preferring more of aesthetics. In the Indian context, Shanthamani and Hafeez (1970) had found that among high school leaving students a great majority disliked clerical jobs, professional and certain skilled jobs. Only a small percentage of students preferred teaching and semi-professional and skilled jobs. Jobs related to agriculture were liked the least.

Occupation of mother is a significant predictor of preferences for science skilled, technical professional, technical skilled, linguistic skilled, aesthetic professional and aesthetic skilled professions. Women being employed these days, makes them more aware of the various avenues and opportunities that are available which helps them to influence

and guide their children. The above mentioned occupations provide greater employment opportunities and a reasonable status in society. Hoffman (1979) cited that adolescent daughters of working mothers are more independent, more outgoing and better adjusted than daughters of non-working mothers. Hence, it will not be a mistake to emphasise the beneficial influence of employed mothers.

Among the various work values, the Academic work value predicts preference for Science skilled occupations only. Cook in 1962 had arrived at a classification of occupations based on prestige in India - engineer, doctor, military officer which have in common high salary potential, advanced education and high social status. In this study, the status work value predicts for the preference for the Science skilled and Linguistic skilled occupational categories only. Now, the situation seems to be different. The Social work value predicts for preference of Technical professional and service skilled occupational categories. The Rural work value predicts preferences for Technical professional, Technical skilled, Business skilled and Linguistic skilled occupations. Security work value predicts for Technical professional occupational category only. Finally, the Independence work value predicts for Aesthetic professional and Aesthetic skilled occupations.

CONCLUSIONS

It can be observed from this study that work values influence occupational preferences among students. Work values, like value placed on working in a rural setting., status work value, independence work value, security work value, social work value and

academic work value influence occupational preferences. However, work values like value placed on work conditions, value for having humanistic co-workers, economic work value and creativity work value do not predict preferences for any of the occupational preferences measured in this study. Preferences for the science professional and business professional occupational categories are not influenced by any of the work values or demographic variables. Occupation of mother and sex are significant predictors of occupational preferences. Type of school, family income and occupation of father do not contribute to any occupational preference.

It can be seen from this study that a definite pattern of specific work values exclusively influencing certain occupational preferences is not seen. So, it can be concluded that the type of work values which an adolescent evolves through his experiences can, together with the situation and opportunities prevalent in the environment go on to determine his or her occupational preference. The findings of this study do not show a definite trend and confirmation of the expectancy model (Brief et al 1979) that stresses on the importance given to obtaining different possible outcomes found in different occupations, such as achievement opportunities, chance to benefit others, social relations, pay, benefits, security and supervisory relations etc that are synonymous with the work values measured in this study. However, the self-efficacy perception model (Hackett and Betz 1981) that shows the importance of personal expectations of self-efficacy in relationship to performance requirements in an occupational area may be an explanation to the sex differences found in occupational preferences, as found in this study. The finding of Janis (1969) of how the

process of occupational choice evolves by evaluating the positive and negative outcome of each alternative, by evaluating the outcomes like utilitarian gain or loss to self, utilitarian gain or loss to others, social approval or disapproval and self approval or disapproval, explains the lack of a definite relationship between specific work values and specific occupational preferences. As mentioned earlier, work values though important, need not be the sole determinants of occupational choice. The factors in the environment, the experiences, the perceptions of the adolescent of both his or her own capabilities and how he or she thinks that they will fit into the required mould of job requirements, in other words, self-efficacy perception will contribute to occupational preferences. One limitation of this study is that it is constrained by a not too large sample size and by just one geographical sample.

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APPRAISING THE CONTRIBUTIONS OF TECHNICAL EDUCATION PROGRAMME IN THE NIGERIAN SOCIETY

EBONINE, E.C.

ABSTRACT

Since the inception of formal technical education programme with its laudable goals in Nigeria about 50 years ago, some enviable achievements have been recorded in many fields. It is in the light of this highly welcome development that the x-ray analysis of the Nigerian society with respect to technological development before and after the introduction of formal technical education programme is presented in this paper. It highlights the major contributions the programme has made so far.

The paper also presents the key problems still hindering the programme as well as recommendations that would greatly enhance it in the country if accepted and well implemented.

INTRODUCTION

There have been tremendous changes in virtually every aspect of Nigerian life since the inception of formal vocational/technical education in the country about 50 years ago. Since then, the economy has grown and relatively strengthened to an extent that it bears only a little resemblance to the pre-technical education economy. Many industrial establishments have sprung up and technical manpower fairly available.

In recent times, there have also been great improvements in health, agricultural, commercial, political and the general science and technology sectors. Thanks to the technical education programme.

The plight of the Nigerian society in the pre-technical Education Era (Before 1950).

A comparative analysis of the picture of the Nigerian society before and after the introduction of technical education would reveal without doubts that the country is today really developing technologically.

Naturally, Nigeria is abundantly endowed with many resources, but yet by then used to suffer on a continuous basis acute shortage of basic necessities. She is blessed with one of the most innovative population on the African continent, but yet when making national policies and blue prints used to copy from others and lose sight of local circumstances. The country is gifted with excellent river systems and fertile land for

agriculture, but yet used to depend on importation of food from other countries. However, a reasonable percentage of the population then were in agriculture and still agricultural productivity was low mainly due to the farmers' inaccessibility to modern science, its applications and its frame of mind. This situation made Nigeria a dumping ground for the products of more advanced countries of the world.

The country is also greatly endowed with many mineral resources such as petroleum, tin, coal, columbite, lead, zinc to mention but a few; and among these petroleum is the most popular. In the pre-technical education era, these mineral resources were explored, exploited and managed by foreign companies under certain mining agreements. The raw materials were sold cheaply to foreign countries (mostly the technologically advanced countries of Eruorpe and America). These raw materials were processed in these countries and the finished products were imported by Nigerians at staggering prices. Consequently, the benefits accruing from the country's mineral resources almost fully remained on the hands of the foreign countries and only a very small proportion of the proceeds was left for Nigeria - and thus Nigeria was poor in the midst of plenty.

Apart from the extreme and helpless dependence on the outside world for essential goods and exploitation of the masses by the multi-national corporations and their capitalist agents during the period, Nigeria had a problem of data collection on her resources. The existing statistical data on population, resources, towns and cities were very unreliable, low in quality and incomprehensive for any detailed study.

TECHNICAL EDUCATION AND ITS AIMS IN NIGERIA

In as much as the western type of education was introduced about 1840 in Nigeria, there was no technical training institution until about one hundred years later. For a good length of time, technical education was an aspect of education regarded as the concern of individual Government department rather than an integral part of the educational system.

It was in the process of searching for solutions to the pre-technical education problems that Nigeria embraced technical education as a major way out. The dream materialised between 1946 and 1950 when organised formal technical education was introduced.

'What is this technical education?'

The national policy on Education (1981) defines technical education as that aspect of education which leads to the acquisition of practical and applied skills as well as basic scientific knowledge. Some experts on the field define it as 'education for industry and covering a wide range of institution subjects and standards of attainment'. Others hold the view that technical education is that education that helps to prepare students for occupational employment on completion of relevant courses.

Vocational/technical education involves the acquisition of skills and competencies that can help an individual to function effectively in industries and commercial occupations. It consists of groups of planned experiences that are integrated to give the individual practical skills, competencies, self-expression and

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self-direction through the teaching of marketable skills such as hand-crafts, electronics, typing, welding, auto-mechanics, fashion designing etc. No wonder then Nigeria has laudable goals and objectives for technical education programme.

The overall aims and objectives of the programme as stated in the Nigerian National Policy on Education include:

(i) To provide trained manpower in applied sciences, technology and commerce particularly at sub-professional grades.

(ii) To enable our young men and women to have an intelligent understanding of the increasing complexity of technology.

(iii) To provide the technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development.

(iv) To give training and impart necessary skills leading to the production of craftsmen, technicians and other skilled personnel who will be enterprising and self-reliant.

(v) To provide people who can apply scientific knowledge to the improvement and solution of environmental problems for the use and convenience of man.

(vi) To give an introduction to professional studies in engineering and other technologies.

For these lofty goals to be achieved, the Government has in recent times placed emphasis on technical education programme.

THE CONTRIBUTIONS OF TECHNICAL EDUCATION IN NIGERIAN SOCIETY SINCE ITS INCEPTION.

A good analysis of the situation and level of National development in Nigeria before and after the introduction of formal technical education programme shows that the programme has made some significant contributions technologically, commercially, economically and even politically.

In technological sector, the impact of technical education is very glaring. Nigeria now manufactures a lot of products that she used to import from other countries during the pre-technical education era. Such items include some vehicles and machine spare-parts, electric cables and wires, glasses, vehicle tyres, plastic materials, building materials, drugs, agricultural products etc. Recently, the Government placed embargo on the importation of these items because they are now produced locally. This confirms that technical manpower and material resources are now reasonably available.

On training of technical personnel particularly at sub professional level, some achievements have also been recorded. The availability of road-side auto-mechanics, machine and watch-repairers, radio and television repairers, electricians, vulcanisers, graphic artists, welders, carpenters, fashion-designers etc in both cities and villages clearly testify that there is gradual advancement in technology education in the country. There are highly trained personnel for professional fields in sciences and technology too, thus Nigeria can now boast of many engineers, surveyors, architects, pharmacists, doctors, nurses etc.

In agriculture, technical education has contributed immensely as well and as such importation of food items in the country is almost a thing of the past. Many people now engage in agriculture mainly at sub sustained level, and a few practice large scale farming applying modern scientific methods of agriculture and consequently productivity is encouraging. The Government on its part has some demonstration farms and sells fertilizers, pests and disease-controlling chemicals to farmers at relatively cheap prices. The end result is that Nigeria now depends on herself for food.

There have been some improvements in our industrial sector also. The raw materials from our mineral resources and agricultural products are these days used for manufacturing in our own local industries. In the country, now, many industries including petro-chemical, agro-based, pharmaceutical and very many other manufacturing industries have been established, and the technology for operation as well as the management of the industries are fully on the hands of the Nigerians. Over-exploitation of the country's natural resources by the technologically advanced countries is by this development minimised.

Furthermore, technical education has exposed Nigerians to the use of computer system for storage of collected statistical data and information both in the private and public establishments. This has gone a long way to improve the quality and quantity of data on our resources, population etc. Nowadays, computer science is one of the major courses offered in our technical institutions especially at higher levels. In view of its great importance the Government and some private institutions orgainise computer classes for private individuals popularly referred to as 'Computer Programme'.

Technical education is so 'interest-stimulating' that every Nigerian wants to be educated at least to an average level. This is probably because of the practical skills and competencies it teaches. No wonder many adults who were not opportuned to enjoy formal education now register for Adult Education programme Classes. This is a special type of educational programme designed by the Government and voluntary organisations to give this category of individuals basic formal education and technical skills. It is the intention of the Federal Government of Nigeria that before the year 2000, every Nigerian will be educated, and thus we often see on the advertisement columns of the local newspapers and magazines and also hear over the radios and televisions 'Education for all in the year 2000'.

Technical education has also improved our health sector. The availability of Government and private hospitals and health centres with medical personnel, nurses and midwives in most cities and towns is a clear evidence. People now enjoy fairly adequate medical services and occasionally seminars and symposia are organized on health hazards, like education, 'Health for all in the year 2000' is also a common slogan in the country.

To sum up technical education has had a dramatic impact on every aspect of Nigerian life. The country has not only improved on the areas already discussed but has also attained some reasonable heights in commercial, economic and political sectors. Despite the global economic recession, Negeria's economy has relatively strengthened probably because she is now enjoying a lion

share of the proceeds from her resources particularly petroleum. In recent times too, the political image of the country has to some extent brightened as plans for transition to lasting democratic Government in 1998 have reached an advanced stage. The widely echoed and re-echoed transition programme testifies this.

In a nutshell, the level of national development in Nigeria today is a mirror reflection of her level of technical education.

PROBLEMS AFFECTING TECHNICAL EDUCATION IN NIGERIA

Despite the immense contributions of technical education since its inception in the country, it is still beset with many problems which are now presented in this paper.

1. Inadequate funding: Most other problems affecting the programme centre directly or indirectly on poor funding. This problem has a lot of chain reactions in our technical institutions. Such problems as inadequate hostel accommodation, infrastructural facilities, laboratories and workshops and even non-payment of staff salaries and benefits regularly are all attributed to poor funding.

2. Shortage of manpower: Technical education requires highly trained technical teachers. It is regrettable and unfortunate that up till now the country does not have enough qualified teachers for some important technical courses.

3. Inadequate learning facilities and equipment: Generally, our technical institutions are not provided with adequate learning facilities. Thus in some institutions there are only few classroom blocks, poorly equipped libraries, laboratories and workshops.

4. Irregular electricity and water supply: This problem is felt more in technical institutions that cannot afford electricity generating plants and sinking bore holes for electricity and water supplies. Such institutions depend fully on the services of the Nigerian Electric Power Authority (NEPA) and the water corporation Board for the supply of electricity and water respectively, but unfortunately, these are never supplied regularly by these bodies. Technical education suffers greatly as a result of irregular electricity and water supply because some of the equipment for the programme require electric power supply to operate. In addition, this problem has been one of the major causes of students' unrest.

5. Political instability and Poor Leadership: In less than 37 years of independence Nigeria has passed through more than seven military administrations and only two civilian administrations. There has been a number of successful and unsuccessful coups leading to high political instability and poor leadership. Under this political dispensation what we often experience is misplacement of priorities in the public sector and undue emphasis on vague objectives and projects. Consequently important projects and programmes including technical education are left to suffer, and in some cases neglected or totally rejected.

6. Poor Maintenance Culture: Poor maintenance culture inherent in Nigerians affects our technical education in no small measure. This ugly attitude is experienced at all levels and that is why many of our roads, post and telecommunication systems and some other property of the Government are in a deplorable state.

In a good number of our technical institutions, there are many dilapidated and abandoned buildings, vehicles and buses, machines and other important equipment meant for technical education programme.

RECOMMENDATIONS

In view of the above problems hindering our noble technical education programme some lasting solutions should be sought for as a matter of urgency. On this note the following recommendations are made:

(i) Sufficient fund allocation should be made for technical education by both the Federal and State Governments yearly. Since the running of the programme requires a lot of money which the Government alone may not cope with, some private and voluntary organizations should be involved in the funding.

In full support of this idea, Okeke (1995) said 'funding of technical education seeks the active participation of banks, industries, multi-national companies, wealthy individuals, philanthropic organizations, trade unions, alumni associations, parent-teachers associations etc.

(ii) Technical institutions should be regularly supervised. This will not only improve the effectiveness of the programme, but will also ensure that the money budgeted for it is properly utilised.

(iii) The Government should establish more technical institutions to create more opportunities for people to acquire technical knowledge and skills. In service training opportunities should also be created for technical staff to up-grade their knowledge.

The Government should establish apprenticeship scheme especially in the areas of wood work, metal work, mechanics, electronics, fashion designing etc to ensure that skilled and self-reliant personnel are available.

(iv) Our technical institutions should be provided with adequate infrastructural facilities and well equipped laboratories, workshops and libraries.

(v) The Government should ensure that our technical institutions are provided with access roads, regular electricity and water supplies. To make these possible, every institution should have a stand by electricity generating plant to avoid over-dependence on the services of the Nigerian Electric Power Authority, and water bore holes should be sunk in every technical institution.

(vi) Politically, Nigeria should borrow a leaf from the more advanced countries of the world where the system of Government is mainly democracy. Under this system, important projects and programmes for national development such as technology education are well planned and implemented. By this, our military

officers are advised to retire from the administration and concentrate on the work of 'Defence' which they are trained for, thereby giving way for democratic Government under which effective technical education will be fully implemented.

(vii) Finally, Nigerians should have a change of attitude towards Government property. A common saying by individuals here is 'everybody's business is no one's business'. Thus, people even those at the helm of affairs hold the view that Government property belongs to no one and as such should not be cared for. This accounts for the deplorable conditions of a good number of Government and technical institutions' property.

Consequent upon this barbaric understanding, it is recommended here that both the Government, school administrators and private individuals should endeavour to imbibe good maintenance culture on our resources, roads, school building and equipment, vehicles and buses etc.

CONCLUSION

From the contributions of technical education programme presented in this paper, it is now clear that the programme is not only for the acquisition of technical skills in various fields but also a master key for national development. It is indeed the life-wire for technological growth of any society.

With this in our minds, the programme therefore should not be seen as the concern of the Government alone, but rather the concern of all Nigerians and hence requires the concerted efforts of the Government, public and private orgainisations and well meaning individuals to succeed. We still have the opportunity and resources to fully realise the laudable goals of the programme, and it will be unwise and great loss if we do not make our hay while the sun shines.

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INDIAN ECONOMIC GROWTH AND ITS RELATION WITH TECHNICIAN EDUCATION: 1951 — 1995

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ABSTRACT

The relationship between enrolment/ output of polytechnics and the country's economic growth has been found to be positive. The data present the growth trend in the phenomena analysed.

Human Resource Development is one of the contributors for economic growth of any nation. In the educational ladder of India polytechnics which produce technicians occupy a central place for the industrial development of the economy. In view of the demands on this subsystem the Government of India is now implementing a World Bank Assisted Technician Education Project covering most of the states in this last decade of 20th century to enable technicians contribute their mite for our prosperity.

We have so far implemented eight five year plans for our economic growth and industrial development got its prominence even in the early stages of our economic planning during II plan (1956-61) which was based on Prof.P.C. Mahalanobis growth model.

Johannsen and Page (1995) say that a technician is a "person employed to use his or her skills within a laid down framework.... traditionally between craftsmen and technologist in workplace hierarchy". Such middle level functionaries hold a diploma in a particular branch of engineering/technology.

The polytechnic system's growth and its relationship with economic growth registered show a direct correlation. This paper projects the relative growth in the number of technicians turned out by polytechnics and their role in economic growth.

The country's economic growth is measured in terms of the increase witnessed in real income per · capita. Dewett (1985) reports that economic growth means the "increase in per capita income of the country at constant prices". In India at present the real per capita income is measured at 1980-81 prices.

The polytechnic subsystem in particular connected with technician output acts to promote the stock of human capital. Harbison and Myers (1964) state that the "stock of human capital indicates the level of human resources development which has been achieved by a country; the rate of human capital formation indicates the rate of improvement". The expansion of technician education facilities resulted in substantial quantitative improvement as detailed below.

TABLE 1: Enrolement, Outturn of Polytechnics and Real Per Capita Income of India

Year	Enrolment in Polytechnics	Diploma Holders Produced	Real Per Capita Income (Rs.)
1951	6,216	2,626	1,126.9
1961	26,525	10,349	1,350.3
1971	33,154	17,699	1,519.6
1981	61,114	35,487	1,630.1
1991	1,17,835	65,326	2,222.2
1995	1,66,456	65,849	2,449.2

A glance at the data reveal the following:

1. The enrolement and outturn of polytechnics witnessed maximum growth in the decade 1951-61.

2. Economy registered highest growth between 1981 and 1991.

3. The value of Spearman's rank difference correlation coefficient between enrolment in polytechnics and real per capita income is .5 reflecting positive association.

4. The computed correlation coefficient between outturn of polytechnics (diploma holders turned) and real per capita income is .2 showing direct nexus.

In effect this piece of evidence suggests that the technician education subsystem is promoting as well as contributing to the economy's progress all these years. As such this direct relation confirms the belief that increased human capital formation is a contributory factor for achieving economic growth. It is also desirable to verify the nexus of other systems of education in contributing to the growth of the economy. From this positive relation one cay say that the resources spent on technician education has a direct bearing with India's economic growth ever since planned economic development commenced in 1951.

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THE NEED FOR PRACTICAL LEARNING IN NIGERIAN SCHOOLS

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ABSTRACT

School leavers in Nigeria cannot apply their skills, knowledge and know-how has been identified as a major problem facing technological development in the country. As long as this is the case, Nigeria can never take off technologically. The researcher has designed this study to investigate the need for practical learning in Nigeria with a view to recommending practical solutions to this all-important problem.

BACKGROUND OF THE STUDY

Learning has been defined as a relatively permanent change in behaviour that occurs as a result of a prior experience (Agusiobo, 1993). To gestalt psychologists, cognitive learning involves perception, reorganisation and modification of insight. Most stimulus-response psychologists see learning as an acquisition of a connection between a stimulus and a response which did not previously exist. The outstanding implication of these definitions is that learning is both an active and a passive process which goes on within the learner. Practical learning therefore is that type of learning (cognitive, affective, and psychomotor) which the learner can transfer into actual practice subsequently. What an individual learns and how much of it he learns depends largely on the method of instruction. The teacher's role is to arouse the learner's interest to participate fully by putting into practice what has been learnt theoretically. It is by so doing that what has

been learnt can be more permanent and functional for our day-to-day activities.

This is not so with Nigerian school leavers. Rather Nigerian artisans who have not received any form of formal education appear to be more practical. For instance, road-side mechanics can easily repair broken down vehicles, fabricate some vehicle parts that are scarce and even model some engine blocks. These our trained professional engineers cannot do but their foreign counterparts can do them very easily. This is enough evidence to suspect that something is missing in our type and process of learning. The improper implementation of the 6-3-3-4 system of education pointed out by Odunukwe, (1995) is an attestation of this.

As a result of this learning disability (discrepancy between ability and achievement) associated with our educated professionals, Nigerian employers and even Nigerian Governments (state and Federal) prefer expatriates with same or even less

qualification in the same discipline when practical jobs are involved. A research finding by Mbah (1995) revealed that many Nigerian school leavers apply for jobs in areas outside their fields of specialisation for economic reasons. A medical doctor would want to become a local Government chairman or a customs officer; an engineer would want to be an oil marketer, a professional teacher would want to become a banker, and so on.

Nigeria is famous for producing oil-palm products but up till now there has not been any improvement on the traditional method of harvesting the fruits by climbing with native ropes and cutting down with cutlass. This is not only crude and hazardous but shameful.

Why cannot these specialist engineers on strength of materials for instance, research into and produce the type and strength or materials appropriate for constructing such ropes to avoid further disasters or even think of alternative methods of harvesting the fruits. Could this lack of practical learning be attributed to the content of our curriculum, method of instruction or conditions of service of school leavers? Worst still, the Federal Government has abolished private practice for all civil servants. This has eliminated extension of practice after normal office hours and has therefore reduced perfection and efficiency which often accompany practice. The long term effect of this is reduction of the economic power of the civil servant especially in this time of economic recession.

OBJECTIVES OF THE STUDY

The objectives of this study include:

- investigating why Nigerian school leavers cannot apply their knowledge, skills and know-how

- recommending proposals for solving the problem

METHODOLOGY:

Being a survey research, survey design was used for data collection.

TARGET POPULATION:

The population for this study included all the lecturers and students in tertiary institutions in Anambra State of Nigeria.

SAMPLE:

The sample of the study consisted of 360 students and 60 lecturers randomly selected from three of the 6 tertiary institutions in Anambra State as shown in Table 1.

TABLE 1: Distribution of Lecturers, Students and Tertiary Institutions used for the Study

Name of Tertiary Institution & Location	Number of Lecturers	Number of Students
Federal Polytechnic, Oko	20	120
Anambra State Polytechnic, Uli	20	120
Nnamdi Azikiwe University, Awka	20	120
TOTAL	60	360

INSTRUMENTATION:

Two questionnaires were constructed for data collection, one for lecturers and one for students because the population was large, widely distributed and the respondents literate.

Some questionnaire items appeared for both lecturers and students. These questionnaires were validated by some experts in technical education and psychology.

DATA COLLECTION

The two questionnaires were personally administered by the researcher and collected back on the spot to ensure 100% return.

DATA ANALYSIS

The data for this study were responses to the questionnaire items which were administered to 360 students and 60 lecturers. Mean scores were used to treat the data. From the responses, a study sheet was prepared and the frequency of the opinions of the respondents extracted. Weights were assigned to the various response categories in the following manner.

RESPONSE	WEIGHT IN POINTS (LIKERT SCALE VALUES)
Strongly Agree (SA)	4
Agree (A)	3
DISAGREE (D)	2
STRONGLY DISAGREE (SD)	1

The Likert scale values (4, 3, 2, 1) were added and divided by 4 to get the critical mean value as shown below:

$$\frac{4+3+2+1}{4} = \frac{10}{4} = 2.5$$

This 2.5 was the critical mean value. Any variable with a mean score equal to or above the critical mean was accepted and anyone with a mean score below it was rejected as a contributory factor to lack of practical learning.

FINDINGS

Analysis of the data collected revealed that

1. Method of instruction presently used in tertiary institutions in Nigeria is not adequate for practical learning.

2. Improper training of students by unskilled and insufficiently qualified teachers militates against practical teaching.

3. Work-study programmes and vacation job in relevant fields of study should be introduced and properly monitored for effectiveness.

4. Unemployment and underemployment have no effect on practical learning.

5. Choice of careers by students without guidance and career choice for students by their parents militate against practical learning.

6. Poor conditions of service and the present poor economic situation in the country adversely affect our skills and know-how as materials to work with are not available.

7. There is need for functional guidance counsellors in our secondary schools. A student with the right aptitude for a chosen career can easily apply his learnt skills and knowledge, all things being equal.

Summary of Study Sheet Showing Calculation of Means ($\bar{x}$) From Lecturer's Responses

Questionnaire Item Number	Strongly Agree	Agree	Disagree	Strongly Disagree	Total Number of Responses	Mean ($\bar{X}$)
1	$28 \times 4 = 112$	$18 \times 3 = 54$	$10 \times 2 = 20$	$4 \times 1 = 4$	60	$\frac{190}{60} = 3.17$
2	$35 \times 4 = 140$	$18 \times 3 = 54$	$2 \times 2 = 4$	$5 \times 1 = 5$	60	$\frac{202}{60} = 3.37$
3	$32 \times 4 = 128$	$21 \times 3 = 63$	$4 \times 2 = 8$	$3 \times 1 = 3$	60	$\frac{202}{60} = 3.37$
4	$10 \times 4 = 40$	$18 \times 3 = 54$	$21 \times 2 = 42$	$11 \times 1 = 11$	60	$\frac{147}{60} = 2.45$
5	$18 \times 4 = 72$	$30 \times 3 = 90$	$7 \times 2 = 14$	$5 \times 1 = 5$	60	$\frac{101}{60} = 1.68$
6	$23 \times 4 = 92$	$20 \times 3 = 60$	$13 \times 2 = 26$	$4 \times 1 = 4$	60	$\frac{182}{60} = 3.03$
7	$29 \times 4 = 116$	$27 \times 3 = 81$	$3 \times 2 = 6$	$1 \times 1 = 1$	60	$\frac{204}{60} = 3.40$
8	$27 \times 4 = 108$	$21 \times 3 = 63$	$9 \times 2 = 18$	$3 \times 1 = 3$	60	$\frac{192}{60} = 3.20$
9	$16 \times 4 = 64$	$30 \times 3 = 90$	$8 \times 2 = 16$	$6 \times 1 = 6$	60	$\frac{176}{60} = 2.93$
10	$23 \times 4 = 92$	$17 \times 3 = 51$	$14 \times 2 = 28$	$6 \times 1 = 6$	60	$\frac{177}{60} = 2.95$
11	$5 \times 4 = 20$	$25 \times 3 = 75$	$8 \times 2 = 16$	$22 \times 1 = 22$	60	$\frac{133}{60} = 2.22$
12	$25 \times 4 = 100$	$30 \times 3 = 90$	$5 \times 2 = 10$	$0 \times 1 = 0$	60	$200 = 3.33$

Summary of Study Sheet Showing Calculation of Means ($\overline{X}$) From Student's Responses

Questionnaire Item Number	Strongly Agree	Agree	Disagree	Strongly Disagree	Total Number of Responses	Mean ($\overline{X}$)
1	$53 \times 4 = 212$	$191 \times 3 = 573$	$85 \times 2 = 170$	$31 \times 1 = 31$	360	$\frac{986}{360} = 2.74$
2	$170 \times 4 = 680$	$90 \times 3 = 270$	$59 \times 2 = 118$	$41 \times 1 = 41$	360	$\frac{1109}{360} = 3.08$
3	$99 \times 4 = 396$	$161 \times 3 = 483$	$73 \times 2 = 146$	$27 \times 1 = 27$	360	$\frac{1052}{360} = 2.92$
4	$27 \times 4 = 108$	$183 \times 3 = 549$	$96 \times 2 = 192$	$54 \times 1 = 54$	360	$\frac{903}{360} = 2.51$
5	$60 \times 4 = 240$	$93 \times 3 = 279$	$123 \times 2 = 246$	$84 \times 1 = 84$	360	$\frac{849}{360} = 2.36$
6	$104 \times 4 = 416$	$156 \times 3 = 468$	$77 \times 2 = 154$	$23 \times 1 = 23$	360	$\frac{1061}{360} = 2.95$

Summary of Mean Scores of the Variables Affecting Practical Learning In Nigeria

	QUESTIONNAIRE ITEM/VARIABLE	MEAN SCORE	
		LECTURERS	STUDENTS
1.	Theoretical teaching method	3.17	
2.	Inadequate training of school leavers while in school	3.37	
3.	Absence of work-study programmes in the educational system	3.37	2.74
4.	Absence of vacation job for students in relevant fields		3.08
5.	Unemployment	2.45	
6.	Underemployment	1.68	
7.	Choice of careers by students without guidance	3.33	2.92
8.	Career choice for students by their parents		2.51
9.	Absence of functional guidance counsellors in secondary schools	3.03	2.36
10.	Poor conditions of service of civil servants	3.40	
11.	Unqualified and unskilled teachers	3.20	
12.	Lack of aptitude for a chosen career	2.95	2.95
13.	Present curricula	2.22	
14.	Absence of private practice by civil servants	2.93	

RECOMMENDATIONS

In the light of the above findings, the following recommendations are proposed.

1. Industrial training should be extended to all fields of study where hitherto none is in existence.

2. Private practice by government workers should not only be legalised but made compulsory for workers to make them perfect, efficient and effective in their jobs as well as to boost their economic power. In the long-run, this can make charges for their services cheaper than those of other practitioners who are fully on their own since their salaries are there to augment. For instance:

- Medical doctors should have private hospitals.

- Pharmacists should have medicine stores.

- Engineers should establish relevant workshops and get involved in contract jobs.

- Teachers in groups should establish evening schools for school dropouts and those preparing for certificate examinations.

- Psychologists should establish clinics for deviants.

Nurses should establish private maternity homes and so on.

3. Only sufficiently trained and qualified personnel should be employed to teach in tertiary institutions (a minimum of holders of Master's degree from recognised universities).

4. Vacation jobs during long holidays should be introduced.

5. Functional guidance counsellors should be employed to guide students properly because any mistake at that stage remains almost permanent.

CONCLUSION

In this study an attempt has been made to identify some of the factors frustrating practical learning in Nigeria; In addition, some remedial proposals have been recommended. That Nigerian school leavers cannot apply their skills, knowhow and knowledge like their foreign counterparts appears to be a function of our present learning process, method of instruction, and poor guidance among other variables. Measures that can guarantee proper training of students while in school and continuous practice in relevant fields upon leaving school can alleviate the sorry situation.

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