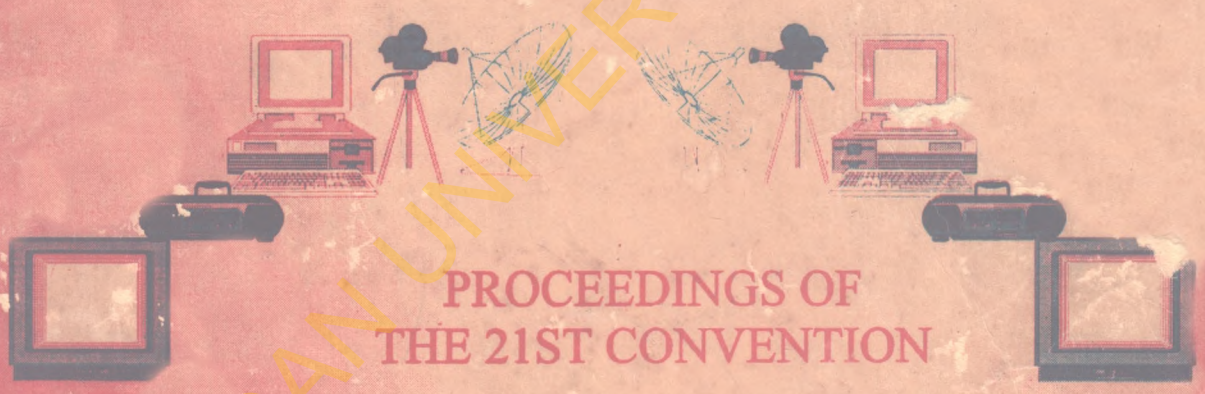
NIGERIA ASSOCIATION FOR EDUCATIONAL MEDIA AND TECHNOLOGY

NAEMT

MILLENNIUM CONVENTION



PROCEEDINGS OF
THE 21ST CONVENTION

(30TH August - 3rd September, 1999)

THEME:

EDUCATION, TECHNOLOGY AND COMMUNICATION IN THE 21ST CENTURY

NIGERIA ASSOCIATION FOR EDUCATIONAL MEDIA AND TECHNOLOGY (NAEMT)

21ST CONVENTION PROCEEDINGS
(THE MILLENNIUM CONVENTION)

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INSTRUCTIONAL MEDIA IN ENHANCING OCCUPATIONAL SAFETY/HEALTH IN ENGINEERING WORKPLACES: EXPERIENCE VERSUS QUALIFICATION

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Abstract

Accidents, the world over, have brought varieties of loss with diverse consequences that made them gain the attention of ILO. This paper has not only considered the concept of, and legal positions in occupational safety and health, but also the perception of instructional media as means of enhancing them in engineering workplaces. A total number of 100 workers were used for the study and the result reveals no significant difference between the qualified and less qualified workers, while significant difference existed between the experienced and less-experienced. It was deduced that accident rates reduction is possible through adequate provision and utilization of instructional materials in engineering workplaces.

Introduction

People do not so much cherish what they have until they have lost it. The contribution of an individual in an organisation is not truly valued until the person through an accident is hindered either temporarily or permanently from performing his duty.

It would take a careful mind to observe that the national economy is affected by a single accident as a result of repercussions it brings on general standard of living. This suggests that a society should therefore protect the safety and health of its members.

Hence this paper presents workers' perception on instructional media as means of enhancing safety and health in industries especially engineering workplaces.

Industrial Accidents: Causes and Classification

Accident refers to any occurrence (unplanned or unexpected) which may involve injury. They are end products of unsafe acts and conditions of work. Accidents are caused only when enough due care is not put into action to the extent of preventing them ever before they happen. Andreoni (1993) regards accidents as a disruption of a former physical or biological equilibrium.

Industrial accidents cover most ones reported in the industrial working places such as factory; mechanical; electrical; automobile; refrigeration and air condition; wood; metal fabrication and welding workshops; foundry and so on.

Consequences of accidents are said to include:
(a) Cost of treatment, (b) instantaneous loss of earnings during absence from work (c) loss of future earnings and career advancement (d) permanent afflictions (e) subsequent family economic difficulties (f) anxiety and detriment to the future of the family.

Repercussions on standard of living that make one accident to affect national economy include (i) increase in price of manufacturers products, (ii) decrease in gross national product, and (iii) additional expenses incurred to cover the cost of compensating accident victims and perhaps for the provision of safety measures.

Accidents do not just occur, they are caused. Under causes of accidents, three main factors identified are (i) technical equipment, (ii) the working environment and (iii) the worker. Cases of poorly designed machinery and lack of safety equipment are attributable to technical equipment while those of excessive noise, unsuitable temperature and poor ventilation belong to working environment. But all accidents are attributable to human failings all the same.

The first classification of accidents was on the basis of causes. The causative classification presented by the Nigerian Federal Ministry of Employment (1989) has twenty causes, with the addition of lifting machinery not moved by mechanical power, and gassing to that of the International Labour Organisation (ILO) in 1923.

Occupational Safety and Health

According to ILO (1950), occupational health should aim at the promotion o physical, mental and social well-being of workers, and of departures from health caused by their working conditions; the protection of workers as their employment from risks resulting from factors adverse to health; the placing and maintenance of the workers in an occupational environment adapted to his physiological and psychological ability and, to summarise the adaptation of work to man and of each man to his job.

Occupational safety and health have to do with making and keeping the workers vigorous both physiologically and psychologically by making the working environment agreeable. Safety is ensured by securing, protecting and making workplaces free of danger. In essence occupational health and safety is concerned with health in its relation to work and the working environment (Thacker, 1991).

The degree of safety in the workplace changes with time as degree of risk may likely change with respect to the physical circumstances and human acts. Ways by which prevention of accidents can be achieved include change of sources of energy subjection of machines, tools and plants to safety approval and certification replacement of highly dangerous substances with less dangerous one.

Also, provision of appropriate working environment in terms of buildings and lighting; modification of working methods; careful selection of workers to prevent human errors; and provision of adequate professional and safety training before, during and after work. The use of various instructional materials would be of tremendous help to these ways and to ensure the sustained preventive effort of adjusting working to man.

The government, employers, workers and even the consumers' representatives are to set up national safety policies and to implement them through various activities. Okwulehie (1997) considered the role of government to include the area of manpower development, rule making, provision of infrastructure, and information dissemination.

The services of the inspectorate, through which the government fulfils its part, can be improved by the use of instructional materials especially in providing advisory services to industries, professional organisations and the general public on occupational safety and health.

Andreoni (1993) predicts the attainment of ultimate goal of the greatest safety against all risks at an earlier stage and with less effort if the national institution of different countries maintain a systematic exchange of experience among them and with the competent international organisation.

This actually can be achieved through provision and utilization of instructional materials. Information on endemic diseases and accidents from other countries can be printed on charts or made into handbooks. Video documentaries on such items could be played back at dining hall or conference relaxation rooms during lunch hours.

Legal Positions in Occupational Health and Safety in Nigeria

The incorporation of Nigeria into the British colonial empire in 1900 automatically roped the country into the laws and doctrines of equity applicable in England, but as time ticked by a corpus of laws which address health and hazard emerged.

Today employers are obligated to provide every necessary care to ensure the safety of their employees. This affects selection of competent (qualified and suitably experienced) workers, provisions of safe working conditions and personal supervision of the management on system of work.

According Falana (1997) protective legislations which deal with occupational safety and hazards, in Nigeria context, include the following constitution of the Federal Republic of Nigeria, 1979 as amended by the constitution (suspension and modification) decree 103 of 1993, Factories Act Cap 125, Workmen's Compensation Act Cap 470; labour Act Cap 198; Federal Environmental Protection Agency Act Cap 131.

Also, Harmful wastes (Special Provision Act) Cap 165 and Minerals Act. Okediran (1997) submits that Nigerian policies and laws have to an appreciable extent attempted to be consonant with international provision.

These legal provisions could be made available in handbooks to the workers' union to help better relationship, under the law, with their employers.

Instructional Media

These are possible channels through which information are conveyed from the sender to the receiver. They are broad range of resources which can be used to facilitate

effective and efficient communication (Abimbade, 1997).

Instructional media, can be categorized into audio media, visual materials, concrete materials, printed media and audio visual media. Examples of printed media include books, journals, newspapers, magazines, posters, handouts and programmed text.

Non-print media (projected) include films, slides, filmstrips, while non-projected ones include charts, flannel board, models, puppets, and realia. Audio tapes, radio, T.V., computers videotapes, compact disks are electronic media.

The writer is of the opinion that these instructional materials are capable of enhancing the quality of instruction and achievement of aims and objectives especially when they are judiciously selected and used at suitable positions in the industrial workplaces.

Previous findings (Bligh and Stanton, 1970, 1976) from researches on the effectiveness of various media like slides and multimedia packages have shown that the use of any media can positively affect the amount and quality of the relatively permanent change in behaviour or attitude that take place, the workplace inclusive.

Moreso, the quality of any workers' education course always depend on thorough preparation as well as the use of relevant support and materials during implementation of activity (Dia, 1991). The time devoted by inexperienced workers to do the task can be greatly reduced with the use of instructional media.

However, the use of 'literacy free' media of radio and television (Balogun, 1981) would be helpful in teaching illiterate or less qualified workers where books may be useless. Illustrations made on charts would do better.

In order to study the effect of this instructional media on the identified problems of experiences and qualifications on safety in workplaces a survey research was carried out.

Methodology

A sample of 100 workers from target population was selected from engineering workplaces in Ibadan. The workplaces included mechanical, electrical engineering, wood, automobile, metal fabrication, and refrigeration and air-condition workshops. The respondents included supervisors, engineers, technicians and industrial trainees.

Hypotheses:

1. There is no statistically significant difference between the mean perception scores of highly experienced and less-experienced workers.
2. There is no statistically significant difference between the mean perception scores of highly qualified and less-qualified workers.

Instrumentation

Workers' perception of the use of instructional media as means of enhancing occupational safety and health were measured using 30 item questionnaire which employed a five point likert scale. The instrument contained equal number of positive and negative items. Experts were consulted for the validation of the instrument.

Administration

The workers' perception questionnaire were administered to 100 workers in selected engineering workplaces. Supervisors and workshop heads also helped in administering the questionnaire.

Results:

The workers' perception questionnaire was analysed by assigning scale values to responses. For positively structured items strongly agree (4), agree (3), undecided (0), disagree (2), strongly disagree (1). (Nworgu, 1986).

The t-test formula was used to test the two hypotheses at 0.05 level of significance.

In Table 1 the t-value, observed to be 8.2 was found significant at $P<0.05$. This implies that the hypothesis was rejected, showing that there was significant difference between the perception of the highly experienced and the less experienced workers in those engineering workplaces.

- Less experience (below 6 years)
- Highly experienced (6 years and above).

Hypothesis 1

Table 1: mean scores, standard deviation and t-values of highly experienced and less experienced workers in engineering workplaces.

Variable	N	X	S.D	t	df	t-sig.
Less experienced	54	129.3	29.2	8.2	90	0.005
High experienced	38	112.6	45.8			

Hypothesis II:

Table 2: Mean score, standard deviation and t-values of highly qualified and less qualified workers in engineering workplaces.

Variable	N	X	S.D	t	df	t-sig.
Less qualified	36	121.8	33.3	0.082	96	0.78
High qualified	62	123.3	38.9			

* Less qualified = Lower than city and Guides cert., Highly qualified = from C&G up to Ph.D.

The t-value, observed to be 0.082 was found to be significant at $P<0.05$. The implication is that the hypothesis was accepted. Hence, there is no significant difference between the perception of the highly qualified and the less qualified workers, on the use of instructional media as means of enhancing occupational safety and health in engineering workplaces.

Discussions, Conclusion and Recommendation

Results from the hypotheses tested showed the following:

a) That there is significant difference between the perception of highly experienced and less experience workers on the use of media as means of enhancing safety and health in engineering workplaces.

b) That there is no significant difference between highly qualified and less qualified workers on the perception of instructional media as means of enhancing occupational safety and health in engineering workplaces in Ibadan.

From the findings, highly experienced workers perceived the use of instructional media as means of enhancing occupational safety and health in engineering workplaces. The less experienced responded otherwise and in fact as though waste of resources despite the fact that a large proportion of their time is concerned with aspects of how to do the task rather than dealing with the demands of the task (Fu, 1985).

Obviously, those who have seen accidents happened, and perhaps what great loss that accompanied them, scored instructional media as being very important. This indicated that workers' experience is a contributory factor to accident causation (ILO, 1991). Such instructional media as charts, video are good aids by which safety and health can be improved (Olasunkami, 1998).

In the contrary both highly qualified and less qualified workers perceived alike the use of instructional media as means of enhancing occupational safety and health in engineering workplaces. The implication is that both literate and illiterate, qualified and less-qualified workers can be safety and health through various instructional media. Only the literate would benefit from the print, textual media (Balogun, 1981).

The absence of good instructional media has caused situations whereby under-skilled or less qualified workers generated numerous direct and indirect costs, such as poor quality work and extra supervisory time (Fu, 1995). The use of charts, watching of instructional video and others would be very useful aids for both groups of the workers.

Also, instructional media should be employed in training adequate number of health

and safety officers who would help the country in the proper enforcement of (occupational safety and health) legislation. Industries should provide suitable instructional media for in-plant training to complement other types of training to make desired behaviour(s) more realistic.

Information about industrial accidents: new technologies and hazards that go with their transfer, and other relevant ones should be made readily and consistently available through instructional media to workers in workplaces.

Implications for Industrial Education and Instructional Design Technology

With the evolvement of new technologies and scientific innovations, it is expected that the safety of the operators, workers and other users of tools and equipment in engineering workplaces would be given a good attention. This would help upkeep the soundness of the workers' health and prolong service life of both human resources and equipment.

Consequently, great loss that results from accidents would be appreciably reduced. Information from the study poses challenge to instructional media designers most especially in designing materials for safety in different engineering workplaces.

However, every worker should endeavour to make proper use of the instructional materials as they are made available to them by their employers. These shall contribute more than ever in bringing drastic reduction to accident rates in our engineering workplaces.

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