

A Study of E-Waste Management in Relation to Awareness of College Students

Dr. Sindhu Bala
Reader and Head,
Deptt. of Education,
VMLG College, Ghaziabad
INDIA

Ms. Sukirti Goel
Associate Professor
Chet Ram Sharma College of Education,
Noida. INDIA
sukirtigoel@rediffmail.com

Abstract: "E-waste" is a popular, informal name for electronic products nearing the end of their useful life. The present study was conducted to know the awareness of college going students about existence, danger and management of E-waste which is the rapidly growing problems of the world. To find out the awareness of students regarding E-waste management, Survey method of research was used. A sample of 200 students including students of professional stream and non-professional stream was selected from different colleges of Noida city through Simple Random sampling technique. The self developed E-Waste Management Awareness Inventory (EWMAI) was used to collect the data. It was found that all the students irrespective of their stream are having awareness of existence of e-waste. But the students of professional stream are having more awareness of danger of e-waste than the students of non-professional stream and students of both the streams are unaware of proper e-waste management.

I. Introduction

Electronic waste or e-waste is one of the rapidly growing problems of the world. Electronic waste, popularly known as 'E-waste' can be defined as electronic equipments / products connects with power plug, batteries which have become obsolete due to:

- Advancement in technology
- Changes in fashion, style and status
- Nearing the end of their useful life.

The old electronic appliances such as computers, laptops, TVs, DVD players, mobile phones and mp3 players etc which have disposed by their original users come in the category of E-waste. The electronic goods are classified under three major heads:

- White goods: Household appliances
- Brown goods: TVs, camcorders, cameras
- Grey goods: Computers, printers, fax machines, scanners etc.

All above electronic appliances when become useless, come in the category of E-waste. Waste from the white and brown goods is less toxic as compared with grey goods. This new kind of waste is posing a serious challenge in disposal and recycling in both developed and developing countries. E-wastes are considered dangerous, as certain components of some electronic products contain materials that are hazardous, depending on their condition and density. The hazardous content of these materials pose a threat to human health and environment. E-waste contains toxic substances like Lead, Mercury, Cadmium and Polycyclic Aromatic Hydrocarbons (PAH) that have an adverse impact on human health

and the environment if not handled properly. Discarded computers, televisions, VCRs, stereos, copiers, fax machines, electric lamps, cell phones, audio equipment and batteries if improperly disposed can leach lead and other substances into soil and groundwater. Often these hazards arise due to improper recycling and disposal process used. Many of these products can be reused, refurbished, or recycled in an environmentally sound manner so that they are less harmful to the ecosystem.

Therefore it is needed that people should have awareness of E-waste management.

Objectives of research:

- To find out the awareness regarding existence of E-waste in college going students of professional and non-professional streams.
- To find out the awareness regarding danger of E-waste in college going students of professional and non-professional streams.
- To find out the awareness regarding E-waste management in college going students of professional and non-professional streams.

Hypotheses of research:

- There is no significant difference in the awareness regarding existence of E-waste in college going students of professional and non-professional streams.
- There is no significant difference in the awareness regarding danger of E-waste in college going students of professional stream with their non-professional counterpart.
- There is no significant difference in the awareness regarding E-waste management in college going students of professional and non-professional streams.

II. Methodology of Research

Research method:

To find out the awareness of students regarding existence, danger and E-waste management, Survey method of research was used.

Sample and Sampling Technique:

A sample of 200 students including students of professional stream (B.Tech., B.Ed.) and non-professional stream (B.A.,B.Sc.,B.Com.) was selected from different colleges of Noida city through Simple Random Sampling technique.

Tool used in research:

The E-Waste Management Awareness Inventory (EWMAI) was used to check the awareness of students regarding existence, danger and management of e-waste. The inventory contains 50 objective items. This was a self developed tool. The Reliability of the tool was established through test-retest method. The reliability coefficient is 0.89 and hence the tool is reliable one. The validity of the test was assessed on the basis of the judgment of the experts.

Statistical Techniques used:

Statistical measures such as Mean, SD and t-tests were used to interpret the obtained data.

Analysis and Interpretation of Data:

Objective 1:

To find out the awareness regarding existence of E-waste in college going students of professional and non-professional streams.

To achieve the above objective null hypothesis was formulated and critical test ratio was calculated. t-value of the scores of the awareness regarding existence of E-waste in college going students of professional and non-professional streams is 0.56 which is less than the table values at .05 and .01 level of significance and null hypothesis is accepted. It shows that there is no significant difference in the awareness regarding existence of E-waste in college going students of professional and non-professional streams.

Table-1

Comparison of awareness regarding existence of E-waste in college going students of professional and non-professional streams

Educational stream	N	Mean	SD	SE	SE _D	t-value
Professional	100	88.46	4.45	0.91	1.49	0.56*
Non-professional	100	87.63	5.83	1.19		

*No significant difference in the awareness regarding existence of E-waste at .05 level of significance.

Objective-2:

To find out the awareness regarding danger of E-waste in college going students of professional and non-professional streams.

To achieve the above objective null hypothesis was formulated and critical test ratio was calculated. t-value of the scores of the awareness regarding danger of E-waste in college going students of professional and non-professional streams is 6.77 which is greater than the table value at .01 level of significance and null hypothesis is rejected. It shows that there is significant difference in the awareness regarding danger of E-waste in college going students of professional and non-professional streams.

Table-2

Comparison of awareness regarding danger of E-waste in college going students of professional and non-professional streams

Educational stream	N	Mean	SD	SE	SE _D	t-value
Professional	100	88.04	5.20	0.75	1.23	6.77**
Non-professional	100	79.71	6.77	0.98		

**at .01 level there is significant difference in the awareness regarding danger of E-waste.

Objective-3:

To find out the awareness regarding E-waste management in college going students of professional and non-professional streams.

To achieve the above objective again null hypothesis was formulated and t-test was calculated. t-value of the scores of the awareness regarding E-waste management in college going students of professional and non-professional streams is 0.39 which is less than the table values at .05 and .01 level of significance and

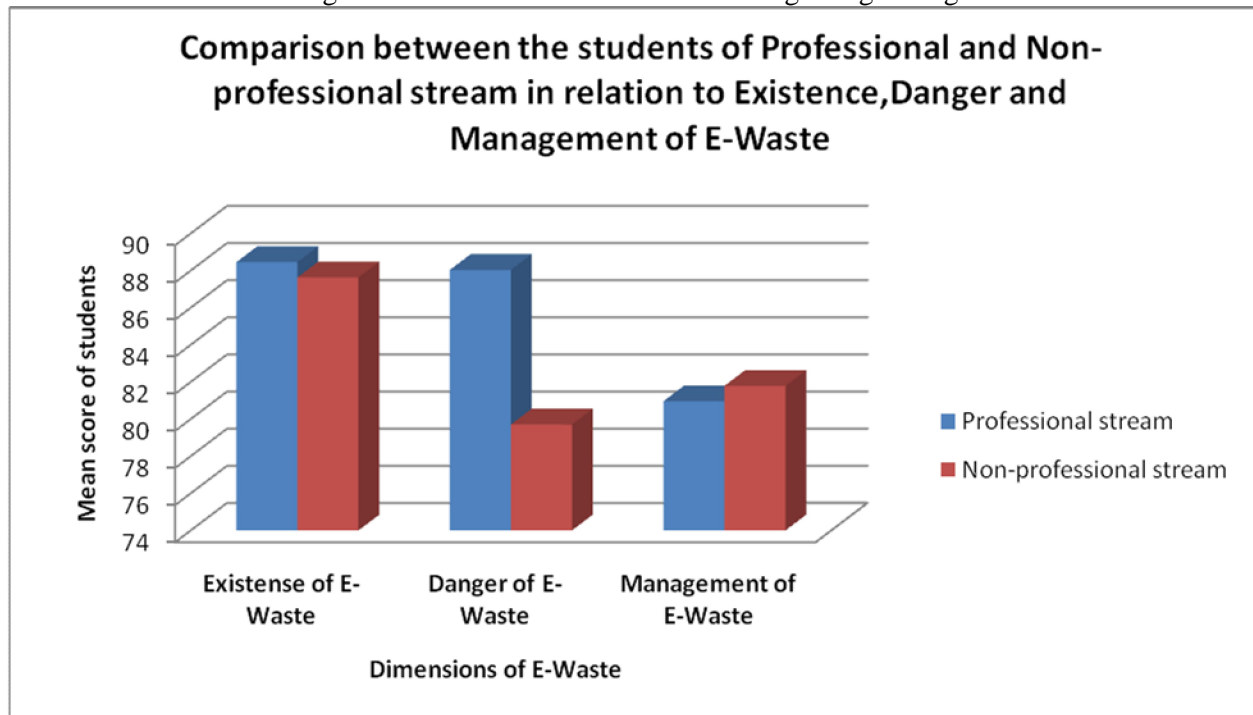
null hypothesis is accepted. It shows that there is no significant difference in the awareness regarding management of E-waste in college going students of professional and non-professional streams.

Table-3

Comparison of awareness regarding management of E-waste in college going students of professional and non-professional streams

Educational stream	N	Mean	SD	SE	SE _D	t-value
Professional	100	80.96	8.54	1.74	2.13	0.39**
Non-professional	100	81.79	6.00	1.23		

**at .05 level there is no significant difference in the awareness regarding management of E-waste.



III. Findings of Research

- There is no significant difference in the awareness regarding existence of E-waste in college going students of professional and non-professional streams. All the students are having awareness of existence of e-waste.
- There is significant difference in the awareness regarding danger of E-waste in college going students of professional stream with their non-professional counterparts. The students of professional stream are having more awareness of danger of e-waste than the students of non-professional stream.
- There is no significant difference in the awareness regarding E-waste management in college going students of professional and non-professional streams. All the students are unaware of proper e-waste management.

IV. Conclusion and Suggestions:

While the world is marveling at the technological revolution, countries like India are facing an imminent danger. E-waste of developed countries, such as the US, disposes their wastes to India and other Asian countries. A recent investigation revealed that much of the electronics turned over for recycling in the United States ends up in Asia, where they are either disposed of or recycled with little or no regard for environmental or worker health and safety. Major reasons for exports are cheap labor and lack of environmental and occupational standards in Asia and in this way the toxic effluent of the developed nations 'would flood towards the world's poorest nations. The magnitude of these problems is yet to be documented. However, groups like Toxic Links India are already working on collating data that could be a step towards controlling this hazardous trade. It is imperative that developing countries and India in particular wake up to the monopoly of the developed countries and set up appropriate management measures to prevent the hazards and mishaps due to mismanagement of e-wastes. Considering the severity of the problem, it is imperative that certain community based projects and management options is adopted to handle the bulk e-wastes.

On the basis of the results of the research it is clear that the current awareness regarding the existence and dangers of e-waste are extremely low and urgent measures are required to address this issue. Being a responsible citizen we can play a major role in e-waste management as donating electronics for reuse, which extends the lives of valuable products and keep them out of the waste management system for a long time. While buying electronic products, opting for those that are made with fewer toxic constituents, use recycled content, are energy efficient, are designed for easy upgrading or disassembly, use minimal packaging and offer leasing or take back options. The building of consumer awareness through public awareness campaigns is a crucial point that can attribute to a new responsible kind of consumerism.

V. References

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