

IMPORTANCE OF COMPUTER-AIDED METHODS OF SCIENCE COMMUNICATION

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ABSTRACT

The 21st century has started with predictions and images being made of what the future holds. The book and its electronic form has been introduced into society through varied mediums such as audio books, e-mail, the Internet and Compact Discs or pen drives, to name but a few. The public learns about science and its applications by many different routes. These include newspapers, magazines, books, radio, television, the Internet, electronic news services and films. Each of these methods has different needs for optimum effectiveness, different strengths and different weaknesses.

Science communicators are individuals or groups of individuals working together aiding the spread of science to the common man. Individuals differ in their knowledge and understanding of science disciplines, their interests and even in details they seek to communicate. To ensure smooth science communication, science writers, journalists, scientists, physicians and individuals, together with the public must understand one another. Circumstances are varied worldwide and for effective communication to occur, the target group or groups must be kept in mind. Some of these methods may be physically demanding on the communicator, while others like computer aided methods are relatively speedier, precise and physically less demanding on science communicators.

This paper deals with the various methods of science communication; both conventional and non-conventional and the importance of computer aided methods in the ever evolving scenario in India.

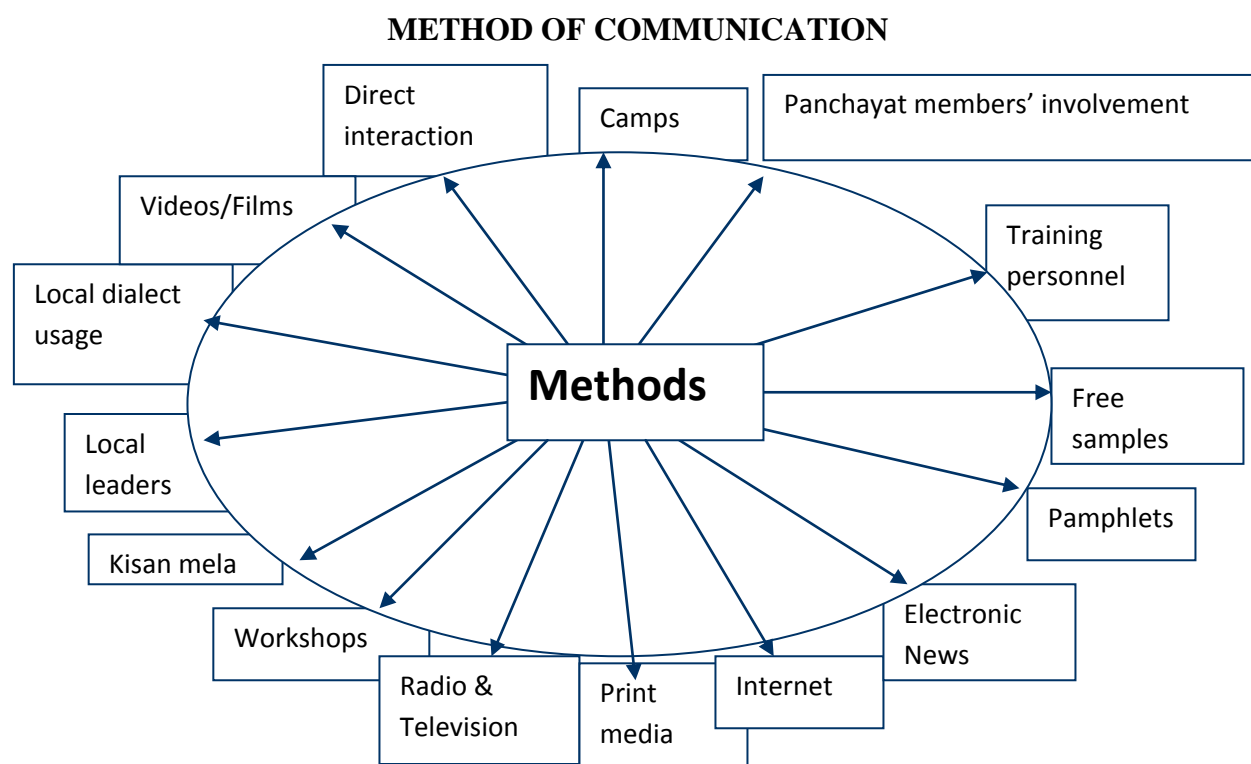
Key Words: Science communication, Digital, Electronic, Computer-aided, Communicator, India

INTRODUCTION

The 21st century is quickly progressing with predictions and images being made of what the future holds. The book and its electronic format has been introduced into society through mediums such as audio books, e-mail, the Internet and Compact Discs or pen drives, to name but a few. The public learns about science and its applications by many different routes. These include newspapers, magazines, books, radio, television, the Internet, electronic news services and films. Each of these methods has different needs for optimum effectiveness, different strengths and different weaknesses.

Science communicators are individuals or groups of individuals working together aiding the spread of science to the common man. Individuals differ in their knowledge of science or of a particular discipline, their methods or techniques, interests and even in details they seek to communicate using both conventional and non-conventional methods. To avoid conflicts in science communication, science writers, journalists, scientists, physicians and individuals, together with the public- must be made aware for the need to understand one another.

Situations are varied worldwide and for effective communication to occur; the target group or groups must be kept in mind. According to the facilities available, the methods employed to share ideas may vary from place to place. While some of these methods may be physically demanding on the communicator, computer aided methods are relatively more speedy, precise and physically less demanding on the person sharing a view or idea.



Nutshell: Effective Science Communication Methods

1. Direct interaction and response
2. Camps
3. Videos/Films
4. Local dialect usage
5. Kisan mela
6. Nukkad Nataks/Street Theatre
7. Role of local leaders/ translators
8. Local leaders/ Panchayat members involvement
9. Workshops
10. Radio and Television
11. Print media: newspapers, magazine and books
12. Internet
13. Electronic News Services
14. Pamphlets
15. Free samples
16. Training personnel in science communication

DISCUSSION

Here is a brief summary of the five principal elements of science communication common in daily life across India: Each of these methods of science communication has different capabilities in terms of what it can deliver in words, pictures, sound, motion and so on. We take these elements for granted, but their presence or absence make a considerable difference to what each method can achieve.

1. **Spoken word:** Again, words convey very specific meaning. And, with spoken words, the way in which they are spoken also conveys meaning.
2. **Written word:** Words convey very specific meaning. Written words can be read at a pace that suits the reader, who can backtrack and re-read any passages if necessary.
3. **Still images:** Images can convey meaning more directly than words and are more easily memorable. Still images can be viewed at a pace to suit the viewer, who can backtrack and review an image if necessary.
4. **Moving images & Street Plays:** Again, images are more direct and memorable than words. Moving images can obviously show motion more effectively than still images, including body language. Importantly, moving images attract attention.
5. **Non-verbal sounds:** Music is capable of creating a powerful emotional response and ambient sound and sound effects are a necessary ingredient of realism

These five principal elements of science communication in India are no doubt effective in their own conventional way but modern computer aided science communication serves to make them more effective, precise and less cumbersome. Through these computer aided methods communication can be more specific to the needs of different communities or target groups. These methods are time saving and can be communicated to a far larger audience/ group of persons who need not be located in one specific place, region, state or country.

COMPUTER AIDED SCIENCE COMMUNICATION

1. Crucial factors:

- Availability of Computer literate persons
- Availability of Computers
- Training facilities at reasonable prices
- Starting from lowest levels preferably

2. *Mediums Of Communication:*

1. E-mail
2. Chatting
3. Power point presentations
4. Graphic imaging
5. Interactive CD's DVD's
6. Digital Libraries
7. Robots
8. Specific programmes
9. Use of multimedia
 - Use of internet
 - CD's
 - DVD's
 - Pen drives
 - Fax
10. Internet telephony
11. Electronic Newsletters
12. Scanning
13. Animation/ cartoons
14. Computer games
15. Satellite mediated broadcasts
16. Digital photography
17. Advertisements

BENEFITS OF COMPUTER AIDED SCIENCE COMMUNICATION

1. Effective communication
2. Speedy communication
3. Precise communication
4. Field of medicine
5. Self reliance
6. Better communication skills
7. Increased progress
8. Increased /greater work efficiency
9. Self employment
10. Increased awareness
11. Exchange of ideas
12. Improved implementation and methodology
13. Improved financial implications
14. Improved life styles
15. Individuals benefited
16. Families benefited
17. Villages benefited
18. Communities benefited
19. State benefited Beneficiary becomes link in knowledge propagation
20. Countries benefited

Conclusion

Education, learning and communication are no longer restricted to reading and writing, or speaking, listening and acting. The computer, worldwide is being used as an interactive tool working in conjunction with the technology already available in the rest of society. This includes all aspects of the electronic media. It could be argued that computer aided communication as we know it will never replace the traditional methods of science communication or by various other electronic mediums.

It is not a question of replacing the already existing communication methods but developing and utilising knowledge to increase levels of science literacy and understanding in society. This communication method with all its related aspects must supplement the already existing communication structures in existence today.

As a tool of communication, computers with the electronic media appear to have more potential on education in future years. The fundamental reason for this, in a child's eye, is that they are simply more interesting and enjoyable. After the initial frustration when trying to grasp new concepts and applications available from a computer rather than a book, this new format is more motivating and stimulating for a child who would prefer to persist with a computer than with the next chapter in a book. Communication methods have to move with the advancements that are happening outside the school, village or city to satisfy human minds of the 20th century. Humans are no longer interested in being passive receivers but seek a more involved approach to stimulate their already influenced minds.

While there are those who do not appreciate the fact that evolution is taking place, changes are inevitable. The interest and amazement in the older generation is clearly more visible as they have been able to see the transition slowly develop. Persons using computer aided electronic mediums gain confidence through interactive communication, linking text, sound and images both moving and still to proactively encourage a child to 'want' to succeed and progress.

It could be argued that there is no point in teaching persons I.T. skills in a country like India where a large percentage of the population lives in rural areas, especially if there is no access to a computer apart from in the classroom. This would be the most unwise as they would probably be among the greatest beneficiaries of computer aided communication. Whether acceptable or not, these skills are now the fundamental soul of our urban culture. These skills will never be wasted but in future life- be developed upon to gain a greater understanding, to contribute to the progress of the nation.

References

- Amichai-Hamburger, Y. (2002). Internet and personality. *Computers in Human Behavior*, 18(1), 1-10.
- Brandon, David P., and Andrea B. Hollingshead. "Collaborative learning and computer-supported groups." *Communication Education* 48.2 (1999): 109-126.
- Burgoon, J.K., Bonito, J.A., Bengtsson, B., Cederberg, C., Lundeberg, M., & Allspach, L. (2000). Interactivity in human-computer interaction: A study of credibility, understanding, and influence. *Computers in human behavior*, 16(6), 553-574.
- Chesebro, J.W. (1999). Communication technologies as symbolic form: Cognitive transformations generated by the internet. *Communication Quarterly*, 47(3), Q8.
- Cohen, J. (1996). Computer mediated communication and publication productivity among faculty. *Internet Research*, 6(2/3), 41-63.
- Hales, K.D. (2009). Information and Communication Technologies and You: Multimedia Relationship Maintenance. *AMCIS 2009 Doctoral Consortium*, 22.
- Kimball, L., & Rheingold, H. (2000). How online social networks benefit organizations. *Rheingold Associates*.
- Kraut, R., Kiesler, S., Boneva, B., Cummings, J., Helgeson, V., & Crawford, A. (2002). Internet paradox revisited. *Journal of social issues*, 58(1), 49-74.
- Lea, M., O'Shea, T., Fung, P., & Spears, R. (1992). 'Flaming' in computer-mediated communication: Observations, explanations, implications. Harvester Wheatsheaf.
- Martin, T.E., Scott, J., & Menge, C. (2000). Nest predation increases with parental activity: separating nest site and parental activity effects. *Proceedings of the Royal Society of London B: Biological Sciences*, 267(1459), 2287-2293.
- Matheson, K., & Zanna, M.P. (1988). The impact of computer-mediated communication on self-awareness. *Computers in Human behavior*, 4(3), 221-233. **204** Man In India
- Ogunseye, O.S., Adetiloye, P.K., Idowu, S.O., Folorunso, O., & Akinwale, A.T. (2011). Harvesting knowledge from computer mediated social networks. *VINE*, 41(3), 252-264.
- Olaniran, B.A. (1994). Group performance in computer-mediated and face-to-face communication media. *Management Communication Quarterly*, 7(3), 256-281.

O'sullivan, P.B. (2000). Masterclass. Lumbar segmental 'instability': clinical presentation and specific stabilizing exercise management. *Manual therapy*, 5(1), 2-12.

Parks, M.R., & Floyd, K. (1996). Making friends in cyberspace. *Journal of Computer-Mediated Communication*, 1(4), 0-0.

Perse, E.M., & Ferguson, D.A. (2000). The benefits and costs of web surfing. *Communication Quarterly*, 48(4), 343-359.

Rice, R.E., & Love, G. (1987). Electronic emotion socioemotional content in a computer-mediated communication network. *Communication research*, 14(1), 85-108.

Scardamalia, M. & Bereiter, C. (1992). Collaborative knowledge building. In E. DeCorte, M.C. Linn, H. Mandl, & L. Verschaffel (Eds.), *Computer-Based Learning Environments and Problem Solving* (pp. 41-66). Berlin: Springer-Verlag.

Short, J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications*.

Spears, R., & Lea, M. (1992). *Social influence and the influence of the 'social' in computer-mediated communication*. Harvester Wheatsheaf.

Spitzberg, B.H. (1983). Communication competence as knowledge, skill, and impression. *Communication Education*, 32(3), 323-329.

Spitzberg, B.H. (2000). A model of intercultural communication competence. *Intercultural communication: A reader*, 9, 375-387.

Spitzberg, B.H., & Hoobler, G. (2002). Cyberstalking and the technologies of interpersonal terrorism. *New media & society*, 4(1), 71-92.

Sproull, L., & Kiesler, S. (1986). Reducing social context cues: Electronic mail in organizational communication. *Management science*, 32(11), 1492-1512.

Sproull, L., & Kiesler, S. (1991). Computers, networks and work. *Scientific American*, 265(3), 116-123.