DISABILITY SPECIALIZATION (C)

SEMESTER - IV

C15 - TECHNOLOGY AND EDUCATION FOR CHILDREN WITH VISUAL IMPAIRMENT

Credits: 4 **Internal: 40 marks**

Hours/Week: Theory-4hrs **External: 60 marks**

Total: 100 marks

Introduction:

Technology in the form of adaptive and assistive devices, plays a crucial role in the educationof the visually impaired. This course brings into sharp focus the need and importance of suchtechnologies both for the practicing teachers and the visually impaired learners. Whilehighlighting the significance of addressing the users point of view/feedback and involvingmainstream professionals in developing required technologies, the course also dwells upon onhow best students with visual impairment get access to the printed text/material.The course also acquaints the student-teachers with various devices for making the teachinglearning process for important school subjects meaningful, exciting and rewarding for all concerned. The educational needs of children with low vision and related technological perspectives are addressed, too, along with critical contributions of computer-aided learning and interventions. In short, the course focuses on making transaction of curriculum for blind and low vision students, a really enjoyable and worthwhile experience. It needs to be studied in conjunction with course Code C14 of the curriculum.

Course Learning Outcomes:

At the end of the course, the student-teachers will be able to

- relate the concept and nature of educational technology and ICT for children with visual impairment;
- acquire knowledge of the concept and nature of adaptive technology and explain their underlying principles and techniques;
- familiarize with print-access technologies for children with visual impairment;
- use assistive technologies for the visually impaired children with reference to the classroom learning; and
- plan for computer-based teaching-learning processes.

Unit 1: Introducing Educational and Information Communication Technology

Educational Technology-Concept, Importance, and Scope -Difference between Educational Technology and Technology in Education - Special Significance and Goals of Technology for the Education of children with Visual Impairment - Information and Communication Technology (ICT) - Concept and Special Significance for teaching-learning of the visually impaired - ICT and the UN Convention on the Rights of Persons with Disabilities.

Unit 2: Adaptive Technologies

Concept and Purposes - Basic Considerations--Access, Affordability, and Availability - Addressing User's Perspectives in Developing Adaptive Technologies - Roles of IIT's and the Scientific Community; - Universal/Inclusive Design - Concept, Advantages, and Limitations.

Unit 3: Access to Print for the Visually Impaired

Screen Readers with Special Reference to Indian Languages; Magnifying Software,and Open Source Software - Braille Notetakers and Stand-alone Reading Machines - Braille Translation Software with Particular reference to Indian Languages and Braille Embossers - On-Line Libraries and Bookshare - Daisy Books, Recordings, and Smart Phones.

Unit 4: Assistive Technologies for the Visually Impaired with Reference to SchoolSubjects and Low Vision

Mathematics: Taylor Frame, Abacus, Geo Board, Algebra and Maths Types, Measuring Tapes, Scales, and Soft-wares for teaching Maths. - Science: Thermometers, Colour Probes, Scientific and Maths Talking Calculators, Light Probes, and Weighing scales and Soft-wares for teaching Science. - Social Science: Tactile/Embossed Maps, Charts, Diagrams, Models of Different Types, Auditory Maps, Talking compass, and GPS - Low vision devices: Optical, Non-Optical and Projective - Thermoform and Swell Paper technology and Softwares for developing tactilediagrams

Unit 5: Computer-Aided Learning

Social Media - Creation of Blogs - Tele-Conferencing - Distance Learning and ICT – e-Classroom: Concept and Adaptations for Children with Visual Impairment.

Course Work / Practical / Field Engagement

Any three of the following

- Prepare a list of devices for Mathematics and Science available for the visuallyimpaired in one special school and one inclusive school
- Write a short list of hints and suggestions you will offer to the scientific communityfor motivating them to develop adaptive technologies for the visually impaired
- Make a short report (in about 500 words) on the advantages and limitations as wellas sources of availability in respect of any print-access technology indicated in Unit3
- Make a case study of a student with low vision at the secondary stage, indicatingclearly his educational needs and how you can address them
- Prepare a report on the possibilities and prospects available for the visually impairedstudents through the use of computers
- Prepare a short note (in about 400 words) on various aspects of a classroom andhow it could be made accessible to the visually impaired

Suggested Readings

- Biwas, P. C. (2004). Education of children with Visual Impairment: in inclusiveeducation. Abhijeet Publication, New Delhi.
- Bourgeault, S. E. (1969). The Method of Teaching the Blind: The Language Arts.American Foundation for the Overseas Blind, Kuala Lumpur.

- Chaudhary, M. (2006). Low Vision Aids. Japee Brothers, New Delhi.
- Lowenfeld, B. (1973). The Visually Handicapped Child in School. John DayCompany, New York.
- Mani. M.N.G. (1997).Amazing Abacus. S.R.K. Vidyalaya Colony, Coimbatore.
- Mukhopadhyay, S., Mani, M.N.G., Roy Choudary, M., &Jangira, N.K. (1988).Source Book for Training Teachers of Visually Impaired. NCERT, New Delhi.
- Proceedings: Asian Conference on Adaptive technologies for the Visually Impaired(2009).Asian Blind Union, New Delhi.
- Punani, B., & Rawal, N. (2000). Handbook for Visually Impaired. Blind Peoples'Association, Ahmedabad.
- Scheiman, M., Scheiman, M., & Whittaker, S. (2006). Low Vision Rehabilitation: apractical guide for occupational therapists. Thorefore Slack Incorp, New Jersy.
- Scholl, G. T. (1986). Foundations of the education for blind and visually handicappedchildren and youth: Theory and Practice. AFB Press, New York.
- Singh, J. P. (2003). Technology for the Blind: Concept and Context. KanishkaPublication, New Delhi.
- Vijayan, P., &Gnaumi, V. (2010). Education of Children with low Vision. KanishkaPublication, New Delhi.
- Fatima, R. (2010). Teaching aids in mathematics; a handbook for elementary teachers.Kanishka Publication, New Delhi.
- Hersh, M.A., & Johnson, M. (2008). Assistive Technology for Visually Impaired andBlind People. Springer, London.
- Sadao, K. C., & Robinson, N. B. (2010). Assistive Technology for young children: creating inclusive learning environments.Paul H Brooks, Baltimore.

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