ICT FOR INCLUSIVE EDUCATION

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"If special children are unable to move towards education, the education should go towards them"- Swami Vivekananda

ABSTRACT

ICT has touched our lives in numerous ways. Can you think of an area which is left untouched by it? ICT is now used almost in all areas from entertainment to emergency services, from education to weather forecast. ICT has completely changed our lives and the way we do things. Application of ICT for people with disabilities is one of the areas that is gaining a lot of attention. We can capitalize on the potential of ICT for improvement of life situation or quality of life of marginalized groups including persons with disabilities. ICT can act as a very important and powerful tool to reduce barriers and increase participation of such persons in education, employment as well as living as valued members in the community. Inclusion provides opportunities to participate in all social activities on equal basis. ICT can be one of the means to enhance learning by improving access and participation; hence we can ensure equity and quality accessibility for all diverse students in regular classrooms. This would ultimately encourage equality in education. ICT play s a vital role in helping children with special needs to be independent and feel confident with classroom activities. We should take ICT as a tool for including students with special educational needs in classroom activities rather as an end itself. In this unit, we shall discuss the concept of inclusive practices in the classrooms, the use of ICT in facilitating such practices. Also we will critically examine various opportunities and challenges in the use of ICT.

Introduction

Ranu teaches Science in class 9 in Bhopal. She has in her class two children with special needs, Zamuna and Koshish, who are hearing impaired. Once while working in her kitchen garden, she could see a pair of earthworms in a pot. Incidentally, she was planning for the next day a lesson on 'Farmers' Friend Earthworm' and was in a dilemma about how to ensure active involvement of Zamuna and Koshish in the lesson. Initially, she thought of carrying the earthworms with her to the class. But she realized that she would be missing these two friends who made her kitchen garden as their home. Just by seeing the earthworms, children cannot understand how earthworms dig the soil to make it good for the plants. By weighing all alternatives, she decided to make a small movie with the help of her mobile phone. Ranu finally made a short movie and presented the same over an LCD projector along with her lesson. To her surprise, it was not only Zamuna and Koshish benefitted, the whole class was benefitted by the movie. Just think how

Ranu used 'multimedia' to make her lesson inclusive. She thought it was a small effort; but it was a great work. For inclusive classroom, you need to use assistive technology. This technology helps individuals with disabilities function more like those without disabilities by helping to bridge the gap between what people can do and what they may need to do. In this Unit, we shall discuss the role of ICT in an inclusive classroom and how various ICTs can be used in teaching learning processes. Besides ICT, we shall address the need of Assistive Technology (AT) in the classroom.

Objectives:

The main outcome of this course is to enable the teachers/students to implement digital technologies in their practices of teaching, learning and assessment in order to create a fun and engaging environment, helping them:

- To develop competences regarding applying digital education activities and techniques in different formal settings in order to encourage inclusion
- To understand the dimensions of incorporation/integration, identity and belonging
- To develop communication, collaboration, presentation, problem-solving, negotiation, critical & creative thinking skills;
- To share best practices and transfer knowledge and methods between different cultural zones and different learner ages regarding successful inclusive approaches using digitalization
- To develop the teachers/students' competences of ensuring harmonious group building (taking into account diversity challenges) and transforming the class as a group into a team
- To develop better understanding of their own competence as teachers and to develop creative digital strategies for dealing with inclusion challenges in their own schools and classrooms
- To develop tools (a digital game, an E-portfolio, digital stories) about ways of applying technology in education for different age groups
- To enable teachers/students' to find at least 5 activities and techniques for their own teaching context in order to boost the motivation of their students;
- To increase participants' confidence in using web 2.0 social media tools;
- To gain inspiration to apply digital technology in the classroom
- To help teachers understand the students' different realities and how to better integrate them in the classroom
- To supply tools that will help create bonds between the students and the teacher in a way that every student feels included
- To identify limiting & negative beliefs and transform them into positive and supporting ones
- To improve interpersonal relationships
- To introduce new tools & resources within the classroom to foster well-being – Reduce early school leaving
- To acquire understanding of the various forms of cyber-bulling and knowledge about impact, risk and long-term effect of victims and bullies, learning how to create strategies on how to deal with and eliminate them

- To develop e- learning competences about recognizing and prevention cyber-bulling
- To develop the needed knowledge and competences to prevent all forms of bullying and cyber-bulling in education and school settings
- To develop ICT competences about applying technology in different educational settings in order to improve the motivation and the creativity of the students and to ensure the progress of every child;
- To promote European cooperation in the field of education within the framework of the Erasmus+ program by partnership building

Importatance of topics NEP- 2020 &ncfse 2022-23

Every child has the right to education according to the limits of his capacity, whether that capacity be small or great. So every child is welcomed and valued regardless of ability or disability. RTE act 2009 has made elementary education a fundamental right of every child .Our schools and classrooms need to reflect this social, constitutional and legal right of every child to be included in the educational processes and practices. To achieve this goal of education, curriculum should be flexible. This calls for appropriate modification in conventional curriculum models.NEP- 2020 & NCFSE 2022-23 also emphasizes the need of inclusive curriculum keeping in view the diversity of learners. Within the context of facilitating entry and retention of learners with & without special needs, flexible approaches become necessary. This refers to introducing creative strategies to introduce inclusive learning environments along with systemic changes in teacher preparation. Diversity among learners demands appropriate mechanisms that facilitate optimal learning through curriculum adaptations that includes need based teaching strategies, inclusive TLMs and flexibility in evaluation methodology. Curricular adaptations aim to facilitate learning in every possible manner to maximize learning or to provide opportunities in such a way, where all children can learn including children with disabilities.

Inclusive Education is an attitude-

- It means the doors to schools, classrooms and school activities are open to every child and they are afforded every opportunity to be includedwith their non-disabled peers.
- The focus is on giving every child the help she needs to learn.
- "Inclusion works when teachers believe that all children can learn." DayleTimmons
- Inclusion is changing the rules of the game so that everyone can play and everyone can win.

A few types of exceptional children

- Mentally Retarded
- Visually Impaired
- Hearing Impaired
- Gifted Children
- Physically Handicapped
- Learning Disabled

Principles for the inclusion of disabled children in schools

- Zero rejection

- All the disabled children have the equal right to learn and benefit from education and co-curricular activities.
- It is the school which has to adjust according to the needs and requirements of the disabled children.
- To provide for the training of regular teachers.
- To provide for vocational training suitable according to their abilities at higher and senior secondary level.
- To promote awareness and realization in the community for the education of the disabled children.

Continuum of inclusive education-

- Full time placement in regular classroom.
- Full time placement in the regular classroom with special education consultations.
- Full time placement in regular classroom with provision of itinerant educator.
- Full time placement in regular classroom with a resource room and resource teacher.
- Education in special class in general schools.

Instructional strategies and compensatory support devices –use of ICT

For physically handicapped

- Adjustable furniture
- Wheel chairs, Crutches
- Removing structural barriers
- Standing frames

For blind children

- Braille
- Mobility sticks
- Yellow path
- Audio aids and recordings
- Concrete objects to teach shape, size, weight, thickness etc. near to real experiences through touch, smell and hearing.
- Teacher should be more verbal.
- Talking books and calculator
- Making them familiar with the directions
- Providing for auditory cues in games and sports.

For hearing impaired:

- Hearing aid
- Action oriented situations like dramatization for teaching emotional concepts.
- Use of visual aids like transparencies, chalk board, flash cards, handouts of classroom instructions
- Lip reading.
- Placing the child in the front row.
- Providing speech trainer

For mentally retarded (slow learners):

- Concrete objects for teaching different concepts real life like situations
- Making repetitions.
- Activity based learning rather than seat based learning.
- Limit the distractions as much as possible
- Providing the content in easy language with a lot pictures

Learning disability-

- The National Joint Committee for Learning Disabilities (NJCLD) defined "Learning disability as a generic term refers to a heterogeneous group of disorders manifested by significant difficulties/errors/delays in the acquisition/performance and use of listening, speaking, reading, writing, reasoning or mathematical abilities" (Hammil, Leigh, McNutt and Larsen, 1981).A learning disability is a problem that affects how a person receives and processes information. People with learning disability may have trouble with any of the following:
- Reading
- Writing
- Doing math
- Understanding directions
- Learning disabilities are common.

Types of Learning Disabilities

- Dyspraxia
- Dyslexia
- Dysgraphia
- Dyscalculia
- Auditory Processing Disorder
- Visual Processing Disorder

Identification of learning disabilities: Academic problems

- Reverses letters or symbols too frequently while reading, for example, b as d, saw as was, etc.
- Reverses numbers too frequently while reading or writing, for example, 31 as 13, 6 as 9, etc.
- Poor in mathematical calculations
- Problems in accurate copying from common sources like a book or a blackboard, even though vision is normal
- Writes letters or words either too close or too far (spacing problems)
- The child appears to comprehend satisfactorily but is not able to answer the questions.

Classroom design modifications for an Inclusive class.

1. Students who are able to lip read or not able to see should be placed in front rows.
2. Classroom should be well lit without glares and shadows.
3. Make children with disabilities sit with competent peer.
4. Remove sources of excessive noise from the classroom.
5. Speak and write on the blackboard simultaneously.
6. Put posters and displays in the classrooms at eye level of students.
7. Provide adequate furniture for meeting the special needs of children.
8. Eliminate sharp objects from wall.
9. Assist the visually impaired with good colour schemes.
10. Have flexible time schedule.

Methodology

The main methods will be through practical training, exercises, role-playing, cooperative work, various activities and discussions. The content is based on „learning by doing" combined with "reflection upon action". The teaching-learning, training course has a holistic approach:

- Experiencing: different educational settings, different digital education methods and tools Wordwall, Quizlet, Flipgrid, Cloud tools – Google Suite, Designing Crosswords & Quizzes, Mind Maps & Word Clouds, Avatar etc.)
- Reflecting: on the methods and its impacts, on the power and limits of digital and inclusive education, on building a pedagogical process etc.
- Transferring: to the own reality of participants, in order to improve ways of working with their students
- Sharing: different perceptions, current situations and experiences.
- Developing: the building capacity of the participants (to be transferred to their students) by including them in the decision process of the training course designing
- Lessons learnt and best practices on digital and inclusive education in school activities

Daily schedule:

Days	Module	Details of activities and methodology
Day 1,2	Culture and interculturality	Course introduction – introductory meeting, explanation of practical arrangements, presentation of timetable, information about course venue. Needs and expectations evaluation Intercultural games. Working in an international project – how to communicate and connect. Connection between culture and inclusion. Icebreakers Team building: working with colleagues and parents – practical exercises followed by a debate. Cultural and group values. Stereotypes and prejudices about ICT in the classroom Games, methods and tools for improving communication between the participants Cultural Isla/Lisbon/Larnaca etc. – project tour exploring exterior manifestations of culture
Days 3,4	Digital tools for inclusion	Communication (assertive, aggressive, passive), Empathy and mirroring. Non-verbal communication in the work environment and in the classroom. Adapting communication to the age group. Games for improving communication. Videos for inclusion Online tools stereotypes and prejudice How to foster students' motivation, participation and creativity through non-formal, informal, experiential and e-learning activities. Developing trust and self-esteem for excluded individuals. Identification and prevention of cyber bullying. Preparation for implementing various ICT tools, applications and web platforms.Using Plickers, QR Codes, building escape rooms using Google forms, Goosechase, Jeopardy games, Wordwall, Quizlet, Flipgrid. Cloud tools – Google Suite Designing Crosswords & Quizzes Mind Maps & Word Clouds Creating an Avatar Using digital apps in outdoor settings Personalised digital tools sharing: participant's choice!
Day 5	Audio and video. Digital tools to ensure progress for each student	Digital tools and methods to strengthen teamwork, effective cooperation and to support the integration of every child Using digitalization to improve inclusion and to ensure progress for each student Audio/video project based on the learner's realities Podcasting & Recording Audio for online use Online learning – principles and good practices.

		Digital stories in education for facilitating inclusion. Midterm evaluation
Days 6,7	Outdoor Blogs	What is inclusion? The inclusive school and the inclusive society. Understanding exclusion. Coaching tools for young people with fewer opportunities: zone of fulfillment, values, wheel of life, comfort zone. Sources of conflict in inclusion. Approaches to conflict. Basics: Understanding the problem. Conflict management and handling styles. Using European School Education Platform for finding suitable methods for implementing ICT in the classroom Blogs and websites : Uses & Learning Potential Designing a Blog, website. Group work: the project's Blog/Website
Day 8	Digital methodology	Study visit to a local institution which is applying digital and inclusive education methods. Dissemination of previous European projects made by all partners. Collaborative digital tools Digital tools in evaluation.
Day 9	Evaluation and dissemination	Dissemination and valorization activities planning. Using European certification tools: Europass Mobility certificate, upgrading the Europass Language Passport and Europass Skills Passport Project evaluation. Certification ceremony.

Role of ICT in developing competency & skills for teachers& students

Inclusive classroom

You have already read the Course BES 128, in which we have discussed on how to create an inclusive school and deal with special needs of children. International policy and legislation on the rights of persons with disabilities is strongly in support of children with disabilities receiving their education in an inclusive, rather than segregated, school setting. Children with diverse needs including disabilities are the valued members of the school community. Teachers can facilitate a positive environment in the school that respects inclusiveness and provides equal opportunities to the children with special abilities, from varied social backgrounds and diverse learning needs. Hence, inclusive classroom promotes learning of all children, with special abilities, with various social backgrounds and with diverse learning needs. The present system advocates that where possible, children with disabilities are accommodated in inclusive schools. This promotes cost-effectiveness and leads to a more inclusive society. ICT is one of many supports that can enable the realization and implementation of inclusive education. ICT has a major role to play in enabling educational authorities, teachers, students and parents to move towards a more inclusive educational system.

Role of ICT in inclusive classroom

When we consider using ICTs for students with special needs, then it is very important to ensure that the technology can be used by them. That means- it has to be accessible. Accessible ICTs are the wide range of assistive and mainstream technologies and formats that can enable students with a disability to enjoy an inclusive education. Accessible ICTs also include assistive technology (AT) which can be defined as a "piece of equipment, product system, hardware, software or any service that is used to increase, maintain or improve functional capabilities of individuals with disabilities." A person's ability to use technology may be impaired due to various physical, sensory, emotional or cognitive disabilities. One common feature of accessibility is the small tactile node, or 'dot', found on the '5' key on most keypads for computers and telephones. By finding the '5' key by touch, anyone can locate the other numeric keys without looking at it. Accessible ICTs hold the potential to enable students with disabilities to receive education and become independent in social and economic life of their communities. Moreover, they provide equitable learning opportunities through enabling communication with teachers and fellow students. They also provide access to learning materials, so that students are able to do the course work, assignments and appear for examinations. In general, accessible ICTs:

• Enable greater learner autonomy;

• Unleash hidden potential for those with communication difficulties;

• Enable students to demonstrate achievement in ways which might not be possible with traditional methods; and

•Enable tasks to be tailored to suit individual skills and abilities

The wide variety of accessible ICTs are currently available and can help to overcome reduced functional capacity. Accessible ICTs, therefore, include:

• Mainstream technologies - such as computers that contain in-built accessibility features;

• Accessible formats- also known as alternate formats - such as accessible HTML (HyperText Markup Language), DAISY (Digital Accessible Information System) books but also include 'low-tech' formats such as Braille.

• Assistive technologies (AT) - such as hearing aids, screen readers, adaptive keyboards etc. AT is a "piece of equipment, product, system, hardware, software or a service that is used to increase, maintain or improve functional capabilities of individuals with disabilities.

In its training guide "ICTs in Education for People with Special Needs", UNESCOs Institute for IT in Education outlines 3 mains roles for the use of accessible ICTs in education:

• Compensation uses – technical assistance that enables the active participation in traditional educational activities such as reading or writing;

• Didactic uses – the general process of using ICTs to transform approaches to education. Many ICTs can be used as a didactical tool to enable a more inclusive learning environment;

• Communication uses – technologies that enable communication – often referred to as alternative and augmentative communication devices and strategies.

A meta-study carried out by the British Educational Communications and Technology Agency (BECTA, 2003) on the use of accessible ICTs showed the following benefits to all stakeholders involved in education, including students, teachers and parents.

Specific benefits for students:

• Computers can improve students' independent access to education

• Students with special educational needs are able to accomplish tasks working at their own pace.

• Visually impaired students, using the Internet, can access information alongside their sighted peers.

• Students with profound and multiple learning difficulties can communicate more easily.

• Students using voice communication aids gain confidence and social credibility at school and in their communities.

• Increased ICT confidence amongst students motivates them to use the Internet at home for schoolwork and leisure interests.

Benefits for teachers and non-teaching staff:

• Reduces isolation of teachers working for children with special educational needs by enabling them to communicate electronically with colleagues.

• Supports reflection on professional practice via online communication.

• Improves skills for staff and a greater understanding of assistive technology used by students

• Enhances professional development and effectiveness of the use of ICT with students through collaboration with peers

• Materials already in electronic form (for example, from the Internet) are more easily adapted into accessible resources such as large print or Braille.

• Use of voice communication aids encourages parents to have higher expectations of children's sociability and potential level of participation.

Use of ICT in inclusive classroom

ICTs offer a great potential to support lifelong learning for all groups of students, including those who have special needs. The application of ICTs enhances independence, integration, and equal opportunities for such people and in this way they facilitate their inclusion in society as valued, respected, and contributing members.Inclusive classroom or school is a very important component of inclusive society.

Why should you use ICT in inclusive classroom? Let us reflect on some examples:

Examples

Example 1: Those with hearing impairment cannot access explanations, instructions and feedback which are provided through the voice. Correspondingly, due to the exclusive use of audio format, they cannot receive feedback on their actions/performances.

Example 2: Those with low vision may also encounter problems if some facilities such as larger fonts/icons and high contrast between foreground and background are not provided by the application. If such features are not built in the program, then that particular ICT is of no use to such students. **Example 3**: Those with motor or visual impairments cannot access the program by using the keyboard. If any other alternative input devices are not provided, then their access is restricted and becomes of no use.

ICT for Inclusive Classroom ICT, in principle, could be useful to all students but actually it is not entirely accessible for a wide number of those with specific disabilities. In addition, it lacks full compatibility with the available Assistive Technologies. Hence, it leaves most of the encountered problems as unsolved. The use of such educational products (which are not fully accessible) in the classrooms prevents students with special needs from using the same materials as their schoolmates. It also limits their educational opportunities and finally contributes to their 'exclusion'. The choice of suitable educational software and appropriate assistive technologies appears to be vital to avoid discriminations among the roles of students and the teachers. While making this choice, you should, bear in mind that educational resource must meet the needs of all students with no exclusion.Severalsoftware,gadgets and web based tools are now available which make teaching learning process easier in inclusive classroom. Some of them are listed in the following Box-1.

Box-1: ICT for Inclusive Classroom: Some Examples

Technology also addresses the necessity to cover a wide range of content in a short amount of time by minimizing the need to take curriculum at a slower pace. Students with special needs may benefit from technologies that assist them as well as allow them to keep pace with their peers. For example, a student with dyslexia who might normally struggle with a reading passage, could benefit from reading the text while listening to an audio recording through headphones. By

providing audio, visual, or concept-mapping supports while introducing new concepts, teachers reduce the need for review and remediation after the initial instruction. There are several technologies that can be used in inclusive classroom. Some are discussed here:

Digital textbooks, eBooks, and Audio-books

Digital textbooks (both online and CD-based) offer options for accessing the same content at different levels of complexity. The digital format offers an advantage over traditional textbooks because digital publications can incorporate time-based and interactive media directly within the text. CD-based digital textbooks provided by textbook publishers, offer a variety of features, including pronunciation guides, text-to-speech, and vocabulary support, as well as features that allow the reader to change the formatting of the text to improve readability.Many digital textbooks allow students to hear the text. This feature supports students with learning disabilities who benefit from the ability to hear and view the text simultaneously.

Cast udl Book Builder

Some learning situations may require further customization not possible via prefabricated content. In these situations, the teacher must seek tools for enhancing text as opposed to already enhanced text. One of the tools is the CAST UDL Book Builder(http://bookbuilder.cast.org/),a free digital book database and book

- Games and gaming
- Mobile phones
- Art packages
- Using sound
- Satnav
- Visualisers
- Podcasting
- Digital animation
- IPods and iPads
- Story boarding
- Dance mat technology
- Digital storytelling
- Wikis
- Online reading schemes

Builder. Developed and hosted by the Center for Applied Special Technology (CAST), Book Builder helps educators “create, share, publish, and read digital books that support diverse learners according to their individual needs, interests, and skills.” The database and the tool integrate a number of technologies like ‘screen-reading software’ to make content accessible to students with learning disabilities, yet at the same time ‘integrating functionality’, it engages the reader through the use of built-in avatars who pose questions and offer ideas as the students read.

Digital poster

Displays, like those created using Glogster EDU (http:// edu.glogster.com/) and incorporate media elements like images, videos, audio recordings, and drawings with text. Students, who are gifted or thrive on creative freedom, find engagement and challenge in such a format; whereas students with learning disabilities find support in the options for expression. For a thorough discussion of using digital posters in the classroom, see the article “Digital Posters: Creating with an Online Canvas

VoiceThread

Voicethread (http://voicethread.com/) is an online platform where students can respond to a topic using text, audio, video, or images. The variety of options makes it possible for students with learning disabilities to contribute to the presentation using the method that works best for them. The option to record an oral response, rather than delivering it 'live' in class, benefits students who need time to compose their thoughts, as well as students who have speech disorders like stuttering. In an example of a picture book of poetry for class III, students have commented with both text and audio You may refer to the article 'Using VoiceThread to Communicate and Collaborate' for a thorough explanation on how to use 'VoiceThread' with students

Digital storytelling

Digital storytelling projects, in which students tell fictional or true stories, are another example of differentiating product by student interest: Each learner draws on his or her background or interest to provide the content for the product. Digital stories can be created in a range of formats, including pure audio, image slideshows with static text, image slideshows with voiceovers, and pure video. The options that prioritize audio over text benefit students who have difficulty with writing. (The University of Houston offers a useful introduction to using digital storytelling in the classroom,

Support for Evaluation: Rubistar

In order to succeed on any class project, all students need the support in terms of clear guidelines. But students with special needs may need additional support to stay on task and complete each step in completing a project. Creating separate rubrics for students who have different skill sets, can provide the appropriate level of support for such students. For example, an oral presentation rubric might include a criterion like, "Share multiple drafts with teacher," to remind students with organizational/procedural issues of importance of viewing the final presentation as a series of tasks. Web-based tools like Rubistar, a free rubric generator, can help teachers easily create a master rubric and then adapt it for students with special needs.

Understanding assistive technology

On a daily basis, most of us independently engage in a wide range of important and fulfilling activities. Most of the time we accomplish these activities with ease without thinking about the steps involved in accomplishing them. For an individual with a disability, these activities can be difficult, time consuming, and sometimes even not possible without personal assistance or 'assistive technology'. In such cases, assistive technology has a great role to play. What do you understand by 'assistive technology'? Read carefully the following four statements:

• A student with a disability,

• Who wants to perform an activity,

• Using a technology or device,

•Within a context or an environment.

A technology or device with these four components is called ‘assistive technology (AT)’.

Many students with disabilities require ‘assistive technology’ to participate in and benefit from their educational programs. A range of assistive technology solutions is available to support student performance, achievement, and independence in the following areas:

• Academics and learning aids,

• Aids to daily living,

• Assistive listening and environmental aids for the hearing impaired and deaf,

• Augmentative communication,

• Computer access,

• Leisure and recreation,

• Seating,

• Positioning,

• Mobility, and

• Vision.

Using assistive technology in inclusive classroom

Assistive technology has the capacity for increasing student independence, increasing participation in classroom activities and simultaneously facilitating academic improvement of students with special needs, providing them the ability to have equal access to their school environment. Assistive technology is often discussed by technology levels as being high, middle, or low-tech. A low-tech assistive technology option is usually easy to use, has low cost and typically does not require a power source. Mid-tech assistive devices are also easy to operate but typically require a power source. The high-tech device is usually complex and programmable, and usually includes items that require computers, electronics or microchips to perform a function. An example of the application of technology could range from having a voice input word processor (high-tech) to a student using an adapted pencil grip (low-tech) to assist during writing. Another view of assistive technology focuses on the levels in applying the assistive technology personally, developmentally, or instructionally necessary. Of these three, the most important to a teacher is instructionally necessary level. The personally necessary level is concerned with assistive technology devices that are for the use of an individual student, and the

suggestion and evaluation of such devices are left to experts. Developmentally necessary assistive devices can be shared among individuals. These devices help meet an educational need based on a developmental delay, which ideally would be improved, thereby eliminating the need for the item in an individual's future. The instructionally necessary devices are the devices that assist in the instructional process at a course or grade level, and this level has important implications for the classroom teacher. This modification or technology applications would not need to accompany the student as he/she progresses to the next course or academic level, and instead the assistive technology device could remain at the teacher level.

Conclusions

Classroom In this topic, we have discussed the role of ICT in an inclusive classroom and how various ICTs can be used in teaching learning. In general, accessible ICTs

(a) Enable greater learner autonomy,

(b) Unleash hidden potential for those with communication difficulties,

(c) Enable students to demonstrate achievement in ways which might not be possible with traditional methods,

(d) Enable tasks to be tailored to suit individual skills and abilities.

Technology also addresses the necessity to cover a wide range of content in a short amount of time by minimizing the need to take curriculum at a slower pace. Students with special needs may benefit from technologies that assist them as well as allow them to keep pace with their peers. There are several technologies which can be used in inclusive classrooms.

Many students with disabilities require 'assistive technology' to participate in and benefit from educational programs. A range of technology solutions are available to support student performance, achievement, and independence in the following areas: academics and learning aids, aids to daily living, assistive listening and environmental aids for the hearing impaired and deaf, augmentative communication, computer access, leisure and recreation, seating, positioning, mobility, and vision. Assistive technologies are more personal to special children and help to bridge the gap between normal and special children.

References

1.ABLEDATA: AbleData - Your source for assistive technology information from http://www.abledata.com/

2.BECTA ICT Research (2003) What the research says about ICT supporting special educational needs (SEN) and inclusion. Available athttp://research.becta.org.uk/upload-d ir/downloads/page_documents/research/wtrs_motivation.pdf

3.European Agency for Development in Special Needs Education,(2001).Information and Communication Technology (ICT) in special Needs education (SNE). Available at http://www.european-agency.org/publications/ ereports/

4.Technology and Social Change (TASCHA) group, University of Washington. Technology for employability in Latin America: Research with atrisk youth & people with disabilities page 86 http://cis.washington.edu/files/2009/ 11/tascha_ict-employability-latin-america_2009-10.pdf

5.UNESCO Institute for Information Technologies in Education, (2006). ICTs in Education for People with Special Needs, available at http://www.iite.ru/pics/ publications/files/3214644.pdf

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