

Quadrant-I (e-Text)

Details of Module and its structure

Module Detail	
Subject Name	Education
Course Name	ICT in Education
Course Code	EDU504
Module Name/Title	Web 2.0 for creating constructivist learning environment; Technology for pedagogical innovations: web quest, project based Learning, virtual tours, MOOC and flipped classroom; Assistive technology for special needs and inclusion: tools, processes, ICT and universal design for learning (UDL)
Module Code	IIE013
Pre-requisites
Learning Outcomes	After going through this lesson, the learners will be able to: <ol style="list-style-type: none">1. Make use of Web 2.0 for creating constructivist learning environment1. apply technology for pedagogical innovations and make use of tools and processes of assistive technology for special needs and inclusion2. evaluate ICT and universal design for learning (UDL) to make use of it in appropriate situation.
Keywords	ICT, MOOC, Flipped Classroom, web 2.0, web quest, project based learning, virtual tours

2. Development Team

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1 INTRODUCTION

Technology is all pervasive in life in general and in school education in particular. It has changed the way education is planned, transacted and assessed. ICT has revolutionarised the field of education. Web 2.0 tools such as wikis, blogs and social networking sites have facilitated collaboration and sharing between users and thereby extending the teaching-learning process beyond the formal classroom teaching hours and learners can learn as per their convenience. Assistive technology has made inclusion possible for learners with special needs. In this module, we shall be discussing the role of technology in school education for collaboration and knowledge construction, sharing, empowering learners with special needs, and for pedagogical innovations.

2 WHAT IS WEB 2.0?

The term was invented by Darcy DiNucci in 1999 and later popularized by Tim O'Reilly and Dale Dougherty at the O'Reilly Media Web 2.0 Conference in late 2004 (Graham, 2005; O'Reilly, 2005; Stickland, 2007; DiNucci, 1999). According to Tim O'Reilly (2006, cited in Wikipedia, 2008) asserted: "Web 2.0 is the business revolution in the computer industry caused by the move to the internet as platform, and an attempt to understand the rules for success on that new platform" (< http://en.wikipedia.org/wiki/Web_2.0 >).

Web 2.0 has made Web content creation easier in the form of blogs, wikis, digital media uploading websites, and new types of online social networking websites. Recent advancements in Web 2.0 Software has enabled people to

participate as Web content creators. Websites where users are participants in Web content creation have brought an increasingly robust social nature to Web 2.0 that has built upon the spirit of online communities formed in the beginning of the World Wide Web.



Fig 1: Web 2.0 is characterized by hardware and software that facilitate internet content creation and sharing (From: <https://en.wikiversity.org/w/index.php?curid=36767>)

3 UNDERSTANDING CONSTRUCTIVISM

Constructivism is a learning theory based on scientific observation and research and explains how people learn (Dogra, 2010). They construct their own knowledge of the world around them through reflection on their experiences (Dogra, 2010). When we are faced with new knowledge, we tend to relate it to our previous experiences and either modify our ideas or discard the new information. In the process we tend to create new knowledge by asking questions, explaining and assessing what we already know (Dogra, 2010).

Constructivism as applied to education is a more recent development derived from the work of development psychologist Jean Piaget (1973) and Russian psychologist Lav Vigotsk y (1978). Its underlying principles are also influenced by the developmentalist ideas of the French philosopher Jacques Rousseau and later the theories of John Dewey, G Stanley Hall and Arnold Gessell.

National Curriculum Framework (2005) on Constructivist Approach

In this path breaking document by NCERT, the constructivist approach and its implications for practice have been brought out in great detail. Some of the key principles are summarized below:

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- In the constructivist perspective, learning is a process of construction of knowledge.
 - Learners actively construct their own knowledge by connecting new ideas to existing ideas on the basis of materials/ activities presented to them (experience).
 - The structuring and restructuring of ideas are essential features as the learners' progress in learning.
 - The engagement of learners, through relevant activities, can further facilitate in the construction of mental images of the relationships (cause-effect)
 - Collaborative learning provides room for negotiation of meaning, sharing multiple views and changing the internal representative of external reality.

Translating constructivism to classroom situation, it usually means encouraging students to use active techniques to create knowledge. Once the students have been able to “create” knowledge it means that students should be able to talk and understand the changes they have felt in their own learning process. As a teacher in a constructivist teacher, one should constantly encourage students to assess how the learning activity is helping them shape their own learning. Instructional tools like problem-solving and inquiry based learning are available with the teacher to help students formulate and test their ideas. Constructivism motivates the learners to learn in a collaborative learning environment. According to Daniel (2003), Collaborative learning environments, whether virtual or temporal, are developed on the assumption that knowledge is a complex entity that is shaped by social context, not a simple product to be transmitted or shared. In simpler words, we can understand that complexity of knowledge is better understood when the participants are able to share knowledge not as facts but as the sum total of their experiences in terms of their social, cultural and intellectual experiences.

Drawing from the constructivist paradigm it is observed that in a constructivist classroom, learning is:

- Constructed
- Reflective

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- Collaborative
 - Inquiry based
 - Evolving

As Piaget (1928, 1932) pointed out, collaborative learning has a major role in constructive cognitive development. His theory is consistent with the other popular learning theories (Vygotsky, 1978 and Fox, Karen, Thomas & Funaro, 1990) in emphasizing the importance of collaboration. Piaget felt that the interaction between peers is equally shared. This is in contrast to adult-child and teacher-student interactions where the former influences the latter and latter is not allowed to follow his/her natural learning process.

4. WEB 2.0 TOOLS FOR PROVIDING CONSTRUCTIVIST LEARNING ENVIRONMENT

There are many Web 2.0 tools for social networking, collaboration, content sharing in terms of photo sharing or document sharing or video sharing. Some of these tools find a mention in the text given below:

1. **Blogs:** John Barger coined the term “weblog” in 1997 (Blood, 2000). A weblog is essentially a web page ‘logging’ hyperlinks to websites which a web-surfer finds interesting. The term weblog was later truncated to “blog” (Merholz, 2002). Much of the pedagogic use of blogging is grounded in Vygotsky’s theory (Ferdig, 2004). Blogs are web pages that are frequently updated by either an individual or a group of people. Apart from having the ability to share information and knowledge, blogs also give opportunity to the readers to comment and share on the information in the blog; it also allows the author of the blog to reply to the comments. The blog automatically arranges all posts (web pages) written by the author chronologically. It also allows the author to classify the posts based on categories.

Edublogs offer opportunities to students to express their ideas in a social plane. When other students comment on these ideas, it helps in social construction of knowledge and meaning making. Scaffolding of the meaning making process, carried out through commenting, can further enhance learning (Huann, John and Yuen, 2005).

A teacher can use a blog in further extending classroom teaching. Ms. Usha teaches science in class VI. Usha was teaching Chapter 3: Fibre to Fabric, in which students learnt about different types of fibres. While discussing plant fibres, she explained how fibre crops are grown and then fibres are processed to convert them into fabric. Her students had a lot of questions and views about different types of plant fibres and how they are processed, but as Ms Usha couldn't spend as much time as she wished in the classroom hours, she decided to collect a few videos of how different plant fibres are grown, climatic conditions required, type of soil needed and then how each type of plant fibre is processed into a fabric. Ms Usha presented all this information in her class blog and students who didn't get an opportunity to speak during the classroom discussion also had an opportunity to present their views in front of everyone.

2. **Wiki:** The word "wiki" is not an acronym but rather (according to Ward Cunningham, currently at Microsoft Corporation, who coined the term) "a [Hawaiian word] used as an alliterative substitute for quick, to avoid naming this [software] quick - Web" (Educause, 2005). The name has now entered the Internet lexicon, along with other Web-based terms, such as blogs and podcasts (Educause, 2005).

Wikis are simple websites that allow their users to create and edit content (Grant, 2006). Different wiki services offer different features, although they commonly include the ability to compare previous versions of a page, discuss issues prior to making changes and track who edited what and when (Grant, 2006). Probably the most well-known public wiki is Wikipedia (www.en.wikipedia.org accessed on 21 October, 2018), an online encyclopaedia. In a Wikipedia, a group operates and knowledge of a group is always greater than an individual and creators are users too.

The wiki is gaining traction in education, as an ideal tool for the increasing amount of collaborative work done both by students and teachers. Students might use a wiki to collaborate on a group report, compile data or share the results of their research, while teachers can

use the wiki to collaboratively author the structure and curriculum of a course, and then wiki can serve as part of each person's course materials.

3. **Podcasting:** It is the practice of using the internet to make digital recordings of broadcasts available for downloading to a computer or mobile device. Podcasting can be used for various purposes such as:
- remedial support can be provided to students through specially designed need-based lessons;
 - teachers can encourage students to create their podcasts in order to share their learning experiences with students of their school or other schools;
 - creating a podcast can help students to develop several important skills such as conducting research, writing and then speaking effectively, managing time, improving vocabulary and gaining confidence etc.
 - podcasting can especially help those learners who are auditory learners;

5 TECHNOLOGY FOR PEDAGOGICAL INNOVATIONS

1. **WebQuest:** A WebQuest, "is an inquiry-oriented activity in which most or all of the information used by learners is drawn from the Web (Dodge, 1995). A WebQuest is an inquiry-based activity where students are given a task and then provided access to on-line resources so as to complete the task. It is a way of delivering a lesson on the web. WebQuests are usually used to either begin or finish the lesson. WebQuests have educational value from a student's point of view due to their motivational power, their capacity to promote reasoning abilities and to offer cooperative learning opportunities (March, 2005). WebQuests add advantages from a teacher's and a curriculum point of view (Mentxaka, 2004). In the former case the author argues that WebQuests facilitate teachers' job in the classroom, as they themselves guide students' work and facilitate the introduction of the Internet in the classroom. In fact, when using WebQuests, teachers do not teach in the sense of transmitting (in a more or less teacher-centred way)

knowledge to the students; they just take the role of students' learning facilitators. In the latter case, WebQuests foster the development of cooperative and problem solving abilities. Students can work in small groups while solving WebQuests while cooperating with each other and try to compete with other groups. WebQuests would prepare students to work cooperatively, as well as to collaborate and to compete in their future working lives (Carvalho, 2002).

- 2. Project-based Learning (PBL):** Project-based learning is used by teachers in their classrooms for fostering critical thinking and application and construction of new knowledge. Students are given or encouraged to choose real-world problems to stimulate their critical thinking and sustain the high levels of engagement required to acquire and apply new knowledge. Children complete their project work in classrooms using ICT. They select and then evaluate sources of information and collect data, analyse it while processing it by techniques like tabulation, making calculations and plotting a graph. While summarising the findings, they may suggest ways for further improving the process and results. Therefore, later a new methodology may be used for arriving at the new outcomes. This is how knowledge is applied and new knowledge is constructed. Students learn to work together while solving problems.
- 3. Virtual Tours:** A virtual tour is a simulation of an existing location, usually composed of a sequence of videos or still images. Multimedia elements such as sound effects, music, narration and text may also be used in a virtual tour. Capturing a full motion video of a location is known as a 'Video Tour'. In a video tour, a person moves through the entire location. Using a video camera, the location is filmed at a walking pace while moving continuously from one point to another throughout the subject location. (https://en.wikipedia.org/wiki/Virtual_tour).
Let us take an example here. A Science teacher and Geography teacher collaborate for class VII and plan a task for the students. Students are divided into collaborative groups and have to make decisions on the two tasks given:

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- what kind of clothes you need to carry when visit given areas?
 - what kind of food materials will be available when you visit given areas?

Before deciding on the tasks, both the teachers selected appropriate videos and uploaded their links for different groups on the computer network. Students were expected to go through the appropriate videos meant for their groups and study the climatic conditions throughout the year and decide the clothes to be carried during a particular part of the year (woollen/cotton). The second part of the task is to find out the crops grown keeping in mind the climatic conditions and subsequent food choices. Later student groups can either make a presentation or submit a group report.

4. **MOOCs:** MOOC is an acronym for Massive Open Online Course (Decker, 2014). Massive means enrollment of extremely large number of students from all over the world. Open means anybody having access to internet can enroll irrespective of their prior learning. It can also mean that, at least initially, courses were free to anyone interested in registering. Even open can also mean open access, that means content is not only free and available to all, but holds at most a Creative Commons licensing status so that the content can be downloaded, saved, and even adapted for one's own purposes (with credit to the developer). Online is the means of content delivery, and Course implies that there is some traditional convention of how a course operates, such as requiring enrollment, a start and end date, instructor-developed content delivered to the learner, and some means of assessment (Decker, 2014).

MOOCs help teachers in continuing their education and updating themselves with latest technologies and theories. The most popular and well-designed MOOC providers are Coursera, Edx and Udacity. Some of the MOOCs worth mentioning here are:

- **Common Core in Action: Math Formative Assessment:** This six-week online course provided by the New Teacher Center via Coursera provides opportunities for participants to learn the tools and skills

needed to implement the Common Core State Standards in a math classroom. Teachers learn how to engage students as active learners, plan instruction and making students learn to express reasoning. Participants choose from 60 classroom challenges, complete an initial assessment and continue formative assessments to continuously monitor achievement.

- Using the Next Generation Science Standards for Students' Deeper Understanding: A four-week online professional development course is offered by Rice University (via Coursera) which equips educators with capabilities to amalgamate scientific and engineering design practices in the classroom. This course is designed for science teachers having at least three years of teaching experience.
- Mastering Language for the Common Core State Standards: Stanford University Online (via Class Central) offers this online course for those educators who want to meet the language demands of students during content instruction.

5. **Flipped Classrooms:** Flipping is defined as a pedagogical model in which the typical lecture and homework elements of a course are reversed (Educause, 2012). Short video lectures are prepared by teachers and then posted online or selected from online repository or open resources. Learners can see the video at home and can get an idea about the concept to be taught. Class time then can be devoted for discussions which could be among the learners or between the learners and the teacher, project work, problem solving, doing exercises or attempting questions of worksheets. This flipped approach increases student engagement in learning. Flipping the classroom means learners arriving 'warmed up' to a teaching session having already engaged in the content and therefore, in theory, more capable to engage in meaningful discussions about the nature and requirements of the specific learning tasks. Learners appreciate the flexibility of 'flipped' classroom. Online videos help in delivering the main content and this strategy helps students to work ahead. The flipped model puts more of the responsibility for learning on the shoulders of students while giving

them greater drive for experimentation. These student initiated activities, and student communication becomes the determining dynamic of a session devoted to learning through hands-on work.

6 ASSISTIVE TECHNOLOGY FOR SPECIAL NEEDS AND INCLUSION

Equal opportunities to all being the mandate, the role of inclusion in school system becomes very important. With increasing demands for inclusion, schooling and education both need to be restructured accordingly. Students with special needs are still being educated with their peers therefore mainstream schools are expected to accommodate a diverse group of students with a variety of needs. Daily school work expects teachers to make use of different approaches for inclusion of children and young people into mainstream schools along with identification and recognition of their special education needs. Based on the needs of this diverse student population, learning goals, the teaching methods and means of assessment need to be realigned by the teacher community.

ICT can play an important role in catering to the diverse needs of the learners especially with disabilities and language issues. ICT provides a range of assistive technology tools -- hardware and software, known as Assistive Tools/Technologies (ATs) which enable many learners with physical, sensory and learning difficulties to overcome their barriers with autonomy, willingness and self-esteem. An assistive technology device is “any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized is used to increase, maintain, or improve functional capabilities of a child with a disability” [Technology Related Assistance to Individuals with Disabilities Act of 1988 (Tech Act)]. AT helps the differently abled to accomplish their tasks easily and to lead an independent life. It provides wide support ranging from communication to mobility, assisting many learners to engage with learning, thus democratising access and eliminating exclusion.

Selection of an assistive technology for a person is done keeping in mind his strengths, weaknesses, interests, experiences and special abilities. Another important consideration is the setting/situation. Therefore, selection of an

assistive technology must be done keeping in mind the specific individual, the setting and the task(s) to be performed.

Assistive technology devices can be grouped into three categories: low-tech, mid-tech and high-tech devices.

Low-tech devices are easily available, easy to use, pocket friendly and their use requires little or no training whereas Mid-tech devices are complex and often require use of a battery. As compared to low-tech and mid-tech devices, high-tech devices are most complex having digital or electronic components and therefore their use requires training.

1. **Low-Tech Devices:** As discussed earlier also, low-tech devices are inexpensive as well as beneficial to the students but the selection of low-tech devices must be done keeping in mind the needs of the students. Most of these low-tech devices are portable, easy to use and pocket friendly. For example, use of a rubber pencil grip for writing by students having a poor motor control can do wonders. It also makes them comfortable because they mix with other students doing writing work using pencils. They are not treated differently by giving certain different devices for writing. Using the pencil grip is far less likely to embarrass the student than using an awkward piece of equipment, especially if all of the other students are writing with pencils.

Let us discuss some of the commonly used low-tech devices that can help in mainstreaming students with disabilities:

- Use of *sticky notes* and *removable highlighter* tape can be made by students or teachers so as to highlight important words or sections of the text.
- Students who face a difficulty in answering questions can make use of *whiteboards* or *chalkboards* for writing responses.
- Pictures convey more than words and use of books displaying *pictures meant for frequently used messages* can help students who cannot communicate verbally.
- Students need to understand the importance of time-management during involvement in different activities for which they can be provided *timers*.

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- Students facing vision impairments, can be given access to line magnifiers, which enlarge a line of text.
 - Students with physical disabilities face a lot of problem in maintaining their posture so they can make use of *Seat cushions* for this purpose.
2. **Mid-Tech Devices:** Mid-tech devices offer many of the advantages discussed above under low-tech devices. Mid-tech devices are pocket friendly and do not require any extensive training. They are portable. offer many of the advantages of low-tech devices. Let us discuss some of the commonly used mid-tech devices that can help students with disabilities:
- Reading may not be an easy task for many of these students with disabilities therefore they can be provided with *CD players* along with *audiobooks* to allow them to simultaneously listen to text while reading books. This helps in better understanding.
 - Students can practice reading aloud with the help of *digital audio recorders*.
 - *Amplification systems* can be used for students with hearing impairments.
 - *Specialised calculators* (with large displays or speech output) for students with vision impairments.
 - *Hand-held talking dictionaries* for students having difficulty with reading or spelling.
3. **High-tech Devices:** These are more complex devices and the personnel using these devices requires training. Examples of some of these high-tech devices include:
- Electric wheelchair
 - Mouse alternatives
 - Keyboard alternatives
 - Screen readers
 - Screen magnifiers
 - Digital hands-free headsets

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- Computers with specialized software for voice recognition or for magnification
 - Bluetooth integration

7 ICT and Universal Design for Learning (UDL)

David Rose, Anne Meyer along with other colleagues at the Center for Applied Special Technology (CAST) are responsible for coining the term *Universal Design for Learning* (UDL). The basis of UDL is grounded in emerging insights about brain development, learning, and digital media (Rose & Meyer, 2002). They observed that the disconnect between an increasingly diverse student population and a "one-size-fits all" curriculum would affect drastically the desired gains in academic achievement.

CAST's philosophy of UDL is embodied in a series of principles that serve as the core components of UDL:

- Multiple means of representation which makes acquisition of knowledge and information easier;
- Multiple means of expression can provide different alternatives to students to show what they know;
- Multiple means of engagement to capitalize on diverse interests of students and provide enough challenging opportunities so that get motivated to learn.

8 SUMMARY

In this module, we discussed about different Web 2.0 tools like wikis, blogs and podcasting in school education. Web 2.0 tools can be used for collaboration, sharing and construction of knowledge in classroom teaching-learning process. We also touched role of various pedagogical innovations such as WebQuests, Project-based learning (PBL), virtual tours, MOOCs and flipped classrooms. Assistive technology for empowering the learners with special needs, was also discussed in this module. Universal design for learning (UDL) also finds an important mention in this module.

Quadrant-III - (Learn More / Web Resources / Supplementary Materials):

Books, articles, research papers, journals, case studies etc.:

Blood, R. (2000). Weblogs: a history and perspective. Retrieved 12 August, 2007 from http://www.rebeccablood.net/essays/weblog_history.html

Carvalho, A. (2002). WebQuest: desafio colaborativo para professores e para alunos. *Elo*, 10, 142-150.

Daniel, B. (2003). Social Capital in Virtual Learning Communities and Distributed Communities of Practice. *Canadian Journal of Learning and Technology*. Volume 29(3), Fall 2003.

Dogra, B. (2010). Constructivist Classroom Activities for Biology Learning. *Journal of Indian Education*. Vol. XXXVI, No. 2, ISSN 0377-0435 7.

Ferdig, R. E., & Trammell, K. D. (2004). Content delivery in the 'Blogosphere' [Electronic version]. *T.H.E. Journal*, February 2004. Retrieved February 01, 2005, from <http://www.thejournal.com/magazine/vault/articleprintversion.cfm?aid=4677>

Fox, B. A., and Karen, L. (1990). *Collaborative cognition. Report from Linguistics Department*, University of Colorado, Boulder.

Kraus, S. D. & Lowe, C. (Ed.) (2014). *Invasion of the MOOCs: the promises and perils of massive open online courses*. Anderson, South Carolina: Parlor Press.

March (2005). What WebQuests are (really). Available from: http://bestwebquests.com/what_webquests_are.asp (accessed 20/02/2016)

Mentxaka, I. (2004). WebQuest: internet como recurso didáctico. *Alambique*, 40, 62-70.

Merholz, P. (2002). Play with your words. Retrieved Jun 20, 2005, from peterme.com, <http://www.peterme.com/archives/00000205.html>

NCERT (2005). National Curriculum Framework 2005 Retrieved on 24 Jan., 2017 from <http://www.ncert.nic.in/html/pdf/schoolcurriculum/framework05/prelims.pdf>.

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Piaget, J. (1928). *Judgment and Reasoning in the Child*. London: Routledge & Kegan Paul.

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- Rose, D. H., & Meyer, A. (2002). Teaching every student in the digital age: Universal Design for Learning. Retrieved July 12, 2007, from the Association for Supervision and Curriculum Development
<http://www.cast.org/teachingeverystudent/ideas/tes>.
- Vygotsky, L. S. (1978). *Mind in Society: the development of higher mental processes*. Cambridge: Harvard University Press.
- Thomas, J. W., and Funaro, G. M. 1990. A multi-media, computer-based model for learner-directed, collaborative problem-solving. In Woolf, B., et al., eds., *Working Notes of 1990 Spring Symposium Series on Knowledge-Based Environments for Learning and Teaching*, 68 -- 71. Stanford University.

Links to web sites giving additional readings, Wikipedia, blogs, open source content etc.:

http://en.wikipedia.org/wiki/Web_2.0

https://en.wikipedia.org/wiki/Virtual_tour

<http://www.doe.mass.edu/sped/assistive/AccessToLearning.pdf>

<http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html> 4

<https://library.educause.edu/resources/2005/7/7-things-you-should-know-about-wikis>

<https://edublog.net/wp/2005/09/26/weblogs-in-education-a-literature-review/>

<http://webquest.org/>

Quadrant-IV: (Self-Assessment)

True and False Statements with answers:

1. Facebook is a social networking application.
2. Swayam is Indian attempt to run MOOCs.
3. Assistive technologies help only the visually challenged learners.
4. Web 2.0 has facilitated collaboration and sharing among users.
5. Different disabilities require different assistive technologies.
6. The main idea of UDL is to overcome disconnect between an increasingly diverse student population and a "one-size-fits all" curriculum.
7. Wikipedia is the most well-known online encyclopaedia
8. Edx is one of the most popular MOOC provider

Multiple Choice Questions:

9. Constructivist learning provides (Tick whichever is not applicable):
 - (a) scope for negotiation of meaning
 - (b) opportunity to share multiple views
 - (c) scope for changing the internal representative of external reality
 - (d) all of the above
10. "Weblog" term was coined by
 - (a) Darcy DiNucci
 - (b) David Rose,
 - (c) John Barger
 - (d) Anne Meyer
11. Tick the odd one out:
 - (a) Sticky notes
 - (b) Whiteboards
 - (c) Screen readers
 - (d) Timers
12. MOOC (Tick the incorrect answer)
 - (a) is an acronym for Massive Open Online Course
 - (b) courses are open for all
 - (c) enrolment is in large numbers
 - (d) certification is free
13. Mid-tech devices are (Tick the correct answer)
 - (a) Digital audio recorders
 - (b) Seat cushions

(c) Mouse alternatives

(d) Screen Magnifiers

14. Examples of Web 2.0 tools (Tick the odd one out)

(a) Blogs

(b) Wikis

(c) Podcasting

(d) WebQuests

15. Assistive technologies help learners overcome

(a) Physical disabilities

(b) Sensory disabilities

(c) Learning disabilities

(d) All of the above

Answers: 1 True. 2.True 3.True 4.True 5.True 6.True 7.True 8.True 9.(D) 10
(C). 11.(C) 12.(D)13. (A)14. (A) 15. (D)