

Change Without Brain

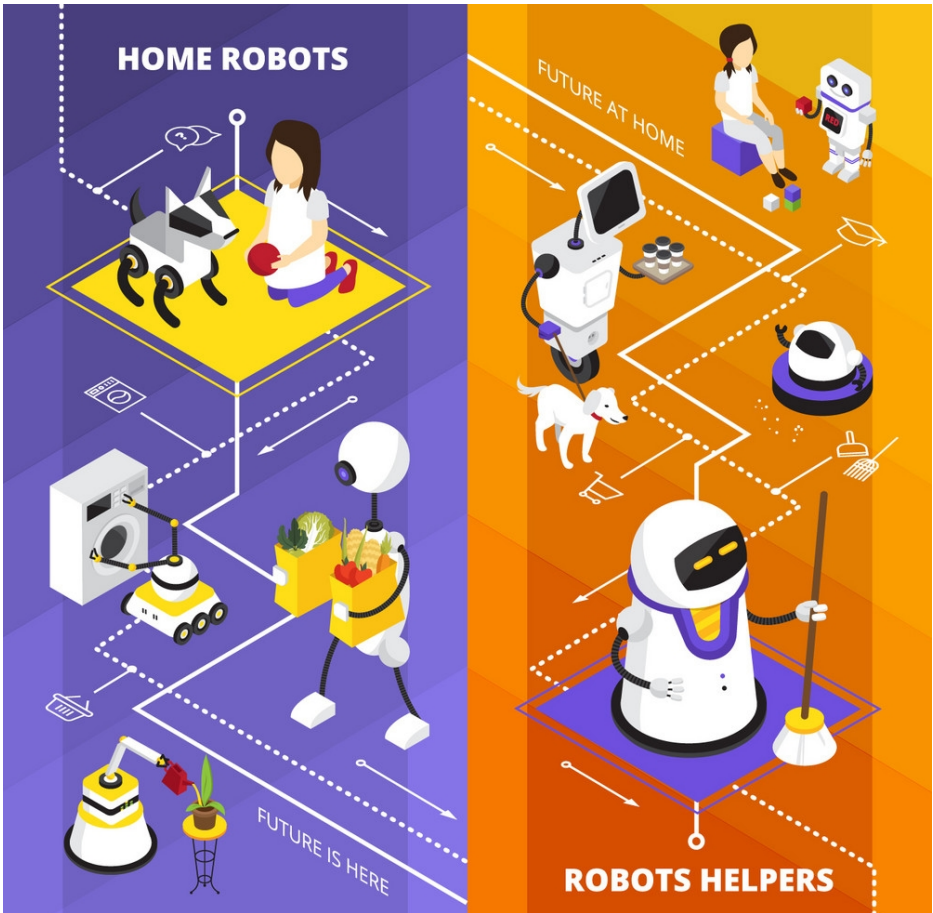
Volume 1

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*Will Robots inherit the earth?
Yes, but they will be our Children.
- Marvin Minsky*

Acknowledgement

We may not be living on Mars or traveling to work using jet packs, but there's no doubt the coming decade will bring many exciting technological advances. We're privileged to be living in a time where science and technology can assist us, make our lives easier and rethink the ways we go about our daily lives. The technology we're already exposed and accustomed to has paved the way for us to innovate further and this list of current and future technologies certainly have the potential to change our lives even more.

Digital technologies are currently shaping and transforming whole societies. Increasing access to data and digital technologies empower people. However, the digital divide still exists, and it plays out along different dimensions. By 2030, I envision an inclusive world where divisions have been reduced - especially the gender divide. For this to work, we need to make sure three things happen.

First, strengthening digital technologies skills and lifelong learning to include everyone, notably women and low-income individuals. Second, we will need to tackle risks like cybersecurity risks and the misuse of information. Third, we will need to use the digital technologies such as Artificial Intelligence and Machine Learning to help us addressing collective challenges like improving healthcare and curing diseases. Applying these policies will lead to better lives for all - notably women and low-income groups.

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“I fear the day that technology will surpass our human interaction. The world will have a generation of idiots.”

– Albert Einstein



CHAPTER 1

Digital Learning

The education field looms on the horizon of positive disruption. New technologies promise to make it easier and faster for students to learn. A recent poll reveals that 75% of educators believe that digital content will replace textbooks by the year 2026, and there are more remarkable technologies on the way. In fact, choosing which innovations to bring into the classroom is somewhat of a challenge for educators.

Virtual Reality (VR) is one extraordinary technology that teachers are deploying in the classroom. Mobile EdTech is another resource that's emerging in the field. Educators are also experimenting with gamification – a teaching resource that turns learning into a videogame. This tool entices learners by challenging them to complete work in order to reach a new level. To date, this framework has succeeded in engaging young learners.

In other areas, developers have created educational software that presents reading materials based on students' comprehension level. In addition, today's students have access to many part-time and certificate online learning programs. Not only are these resources available for K-12 learners, but they extend through university levels as well.

Online Education Is Growing

In fact, there is a growing trend toward online access to educational content and learning resources. Now, more than ever, there is a wealth of available online learning opportunities. Part of the appeal of online classes is that they're convenient. Students can take lessons at home 24 hours a day, seven days a week, and thanks to a rapidly growing catalog of available content, they can learn about nearly any topic that piques their interest. In 2017, online learning was a disruptive force in education. Now, education leaders

recognize that learning demands are going through a process of transformation. Resultantly, educational content developers are shifting their focus toward the learning needs of the future.

What Lies Ahead for The Next Generation of Learners in Education

Students in the classrooms of tomorrow can look forward to working with exciting resources, such as robotic kits that educators used to teach coding. Also, educators have grown weary of traditional standardized testing frameworks. Now, digital testing is emerging as an empowering resource that allows educators to track student performance and measure learning improvement over time. Furthermore, institutions can leverage Artificial Intelligence (AI) to develop customized student learning solutions based on test results. Crowdsourced tutoring is another new concept that's emerging in education. This fledgling practice, also called micro-tutoring, is in its infancy. Mindfulness and behavioral help will be critical to ensure students' success. Technological innovations also promise to help educators improve learning outcomes for students with autism spectrum disorders (ASD). Technology is in high demand to improve learning outcomes and ensure everyone can get a quality education.

The Growing Need for Mindfulness and Wellness in Education

There is a big need for mindfulness and wellness practices in classrooms. People need balance and resources to help them succeed. We will see more resources and education devoted to helping kids and people take care of themselves. Using technology to balance creativity with thinking can help educators and students improve their overall health, focus, and productivity. This will provide students with needed social, emotional and mental support. Education in wellness and opportunities to learn meditation, yoga and focus techniques will add tremendous value to the new generations. Building healthy relationships with students is an important part of the role of educators. Teachers take on the responsibility of providing guidance and ensuring that students have a safe place to learn.

In today's evolving world, more teachers recognize the need to understand that students may have personal issues that can interfere with learning as well as their overall well-being. Teaching mental health in schools and the workforce can be extremely valuable. Resultantly, there's a growing movement to practice mindfulness in the classroom and consider the outside influences that may affect student behavior.

Teachers practice mindfulness by providing purposeful, non-judgmental attention with sincere empathy. For many educators, the ability to practice mindfulness with students must start with self-care. By taking care of themselves, teachers are better equipped to provide today's students with the attention that they need. Mindfulness training helps educators develop a clear understanding of students' choices, influences, and language and teaches self-care. With this training, educators are better equipped to nurture a safe and supportive learning environment for students.

Keep Learning and Educating Yourself

The idea of implementing technology in the classroom is not new. However, technology has taken off in the classroom in relatively recent years. As the field matures, emerging firms promise to deliver exciting new resources for learners. While the direction of EdTech is unclear, analysts forecast that this promising field is in its very early beginnings. No doubt, all education will continue to be valuable and necessary. Students and people will need to continue to adapt to technology, continue to want to learn, and continue to stay motivated in their own self-development.

Let's hear from other individuals on this topic...



Dr. Rabindranath Lenka
Director
&
Mrs. Kunmun Singh
Assistant Professor

In India, explosion of knowledge along with COVID-19 as the pandemic have had the effect of fast-tracking many of the digital interventions including Digital India initiative. In fact, schools, colleges, universities and technical and professional institutions have started conducting digital and online learning platforms. Pedagogies that incorporate digital learning are becoming popular day by day. There are a plethora of tools and resources digital and online that are used to create and enhance a digital learning environment.

In the true sense of the term, digital learning is meant to enhance the learning experience rather than replace traditional methods altogether. In our country, parents, teachers and resource persons are on the way of facilitating digital and online learning as the innovative ways of teaching and learning. Digital India is a flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy. Digital learning is the part of the process.

Meaning of Digital Learning

Digital learning is any type of learning that is accompanied by technology or by instructional practice that makes effective use of technology. It encompasses the application of a wide spectrum of practices including blended and virtual learning. Digital Learning is sometimes confused with online learning or e-learning.

In other words, digital learning encompasses the combination of any of the following:

- Adaptive learning

- Blended learning
- Classroom technologies
- E-textbooks
- Learning analytics
- Learning objects
- Mobile learning
- Computer Aided Learning
- Personalized learning
- Online learning (or e-learning)
- Virtual Learning, etc.

Thus, use of mobile technologies and computer applications are fundamental to digital learning.

Digital Learning and Related Terminologies

Online Learning: Simply online learning is the learning by accessing available online resources. Thus, it is associated with the provision of electronic contents available on a computer/mobile device. It might involve the use of the internet and use of online facilities. Online learning can also be done through programs or apps installed on the personal devices of learners or participants.

E-Learning: E-learning is the process of using electronic technologies for teaching-learning processes in which the learning activities take place either entirely or partially online. They can be conducted by means of electronic media without the use of the Internet.

Web-based Learning: Similarly, another terminology is the web-based learning that refers to the e-learning or online learning. It essentially includes learning online through the courses that are offered on the internet. Emails, webinars, live lectures and videoconferencing are all possible through use of internet. Such a learning enables all the participants

to give their views on a topic and then discuss them further by accessing pages on the web, accessing the web pages and hyperlinks and by getting information on the net.

Advantages of Digital Learning in India

Digital learning and e-learning are gradually becoming familiar with increased digital initiatives and technological interventions. In the field of socio-educational scenario, both have completely transformed the way in which learning is imparted to students and teaching-learning interactions. Unlike the traditional chalk and talk methods of teaching, digital learning and e-learning make learning simpler, easier, interesting, enjoyable and effective.

However, both are advantageous to students, teachers, parents, community members, administrators, counsellors, research scholars and all others who are directly or indirectly linked with the teaching-learning processes. The learners of today are not mere crammers and passive listeners. They want relevant, mobile, self-paced, and personalized contents by accessing the digital sources and learning the digital contents. Their needs are fulfilled with the online modes of learning digitalization of the teaching-learning processes. The advantages of both digital learning and e-learning are as follows:

Door of Learning is Open for All: The digital and online methods of learning are best suited for everyone. With the advancement of science and technology, computerized system of learning and digital revolution has led to remarkable changes in the contents, processes and pedagogy of learning. Today's pedagogy is the digital and online pedagogy. Besides the learners and teachers even the housewives are comfortable in learning digitally and online.

Access to Updated Contents: Digital learning in India has revolutionized the content and process of learning and education at different levels. A prime benefit of learning online and learning digitally is that it makes sure that you

are in synchronization with modern learners by accessing contents digitally and online whenever.

Quick Delivery of Lessons: Digital learning is a way to provide quick delivery of lessons. In comparison to the traditional classroom teaching methods, digital mode has relatively quick delivery cycles. Lessons start quickly and wrapped up in a single learning session. Also, the learners can define their own speed of learning instead of following the speed of the whole group.

Less Impact on Environment: Digital learning and e-learning are the paperless way of learning. As such, they protect the environment to a large extent. From research studies, it has been found that distance-based learning programs consume less paper and less power as compared to traditional campus-based educational courses. That means, both digital learning and e-learning are highly eco-friendly, time and energy saving.

Consistency: Consistency is another feature of digital learning and e-learning as they enable the educators and learners to get a higher degree of coverage to communicate the message in a consistent way for their target audience. This ensures that “all learners receive the same type of training with this learning mode”.

Scalability: Learning is scaled up with digital and e-resources. Both digital learning and e-learning help in “creating and communicating new training, policies, concepts, and ideas. Whether it is for formal education or entertainment, e-learning is very quick way of learning”.

Effectiveness: Digital learning in India is cost effective, time effective and content effective. Both digital learning and e-learning have a positive influence on an organization’s profitability. It makes it easy to grasp the content and digest it resulting in improved scores on certifications, tests or other types of evaluation. Enhanced ability to learn and implement the new processes or knowledge are the signs of effectiveness.

Frequency and Comprehensiveness: Unlike the traditional classroom teaching, digital and online learning helps in accessing the contents for unlimited number of times. This is especially required at the time of revision and examination. In traditional form of learning, repetition is a challenge which is quite easy and interesting in digital learning and e-learning.

Reduced Costs or Cost Effective: Digital learning and e-learning are cost effective as compared to the traditional forms of learning. Learning through this mode happens quickly and easily. Hence, training time is reduced with respect to trainers, travel, course materials, and accommodation. This is what we call cost effectiveness that helps in enhancing the profitability of an organization and economic use of learning materials.

Scheduling Flexibility: In digital and online learning, students can have increased and easy access to their study material from whichever place they are located. This enables both students as well as teachers to move around without any restriction and impact on their education. Such a flexibility gives them the liberty to attend their class without worrying about their work schedule. Just a mere desktop, computer/laptop and a good speed internet connection will assist them in excelling in their academics and learning digitally as well as worldwide.

Conclusion

Learners in India are in full swing in implementing the digital and online learning. E-learning is increasing its demands inside and outside the classrooms. There are a variety of ways by which digital and online learning contribute and aid the students in enriching their knowledge and building the knowledge network. Despite some limitations, digital and e-learning is accepted as an emerging demand and usual practice in the field of learning and education.

All these reflect the successful application of technology in the field of education and pedagogy. Thus, digital learning and e-learning are beneficial to students, teachers and others because of the aforesaid advantages. As

such they are becoming quite popular and appreciated by learners all over the world. It is a royal road for learning globally and digitally.

Ms. Kalpana Jain
Assistant Professor

Digital knowledge refers to an individual's ability to find, evaluate, and compose clear information through writing and other media on various digital platforms. Digital knowledge is assessed by an individual's grammar, composition, typing skills, and the ability to produce text, images, audio, and designs using technology. The American Library Association (ALA) defines digital knowledge as "the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills".

While digital knowledge initially focused on digital skills and standalone computers, the advent of the internet and the use of social media has caused some of its focus to shift to mobile devices. Like other expanding definitions of literacy that recognize cultural and historical ways of making meaning, digital knowledge does not replace traditional knowledge forms. Instead, it builds upon and develops the skills that form the foundation of conventional forms of knowledge. Digital knowledge should be a part of the path to knowledge. Digital knowledge is built on the expanding role of social science research in the field of knowledge and concepts of visual literacy, computer literacy, and information literacy.

Overall, digital knowledge shares many defining principles with other fields that use modifiers in front of literacy to define ways of being and domain specific knowledge or competence. It has become widespread in settings of higher education and has been used in both national and international standards.

Contextualizing Digital Knowledge

Digital Knowledge has its origin in developing "information-seeking" competence within an emerging context of technology-based information needs. After introducing mass production and automation in agriculture and industry, the change towards standardized production occurs in services and

mainly in communication, information, and knowledge professions. Governments worldwide, aware of the consequences of the developing global information economy, are implementing critical public policies for integrating digital information and communication (IC) tools in daily activities. The investment is not only in establishing information and communication infrastructure, software, and cultural content but, more fundamentally, in training people. As digital technology mediates access to all information more and more, and most people work primarily with information and knowledge, it has become crucial to assess the challenges that emerge with digital knowledge.

Digital Knowledge has initially been understood as equivalent to technological literacy in a technologically centered approach. The implied assumption was that technology is introducing change in society and that individuals need to master the technical tools to be able to adjust to these changes.

Even when Digital Knowledge integrates a thorough understanding of literacy, in terms of competences, empowerment, and critical reflection, it still considers information as it has been produced within the culture of print: stabilized and structured portrayal of reality, attainable via texts (alphabetical and numerical) read, elucidated and bestowed meaningfully by actors, validated by recognized academic institutions and professions, and with media and multimedia representations for amusement, distraction or practical use.

The Nature of Digital Knowledge

Digital knowledge is knowledge not only accessed but also partially processed via digital tools. The utilization of various tools of technology to access information such as databases, digital libraries, or simply the Web has emerged the need to cope with immeasurable quantities, with significant complexity levels, accessible at incredible speeds. Data needs to be dispatched in picoseconds and gigabits. Knowledge skills needed include

knowing how to gather vast amounts of information from varied sources, knowing how to select and synthesize it, interpreting it, and evaluating it, considering diverse cultural context and formatting. Because the human mind cannot deal with significant quantities of symbols simultaneously, technological tools become necessary to organize such complex information in readable patterns. Designing tools to process information data to extract substantial elements required the description of usually implicit knowledge construction processes.

The Digital Knowledge Revolution

At present, knowledge is quite often associated with the notion of revolution. Revolutions need not always be bloody, chaotic, and destructive. But they are invariably disruptive, cleaving links that hold institutions together, tumbling established presumptions about reality, and de-validating supreme power structures. Such a revolution is occurring in the knowledge landscape and becoming digitally literate involves dealing with the fundamental changes developing in the way people relate to knowledge.

History of Digital Knowledge

Digital Knowledge is often talked about in the background of its forerunner media literacy, which began in the United States and the United Kingdom due to the rise of advertising in the 1960s, and war propaganda in the 1930s, respectively. Manipulative messaging and the increment in various forms of media further distressed educators. Educators began to promote media literacy education to teach individuals how to judge and access the receiving media messages. The ability to criticize digital and media content allows individuals to identify biases and evaluate statements independently.

Danah Boyd emphasizes the significance of critical media literacy, especially for teens. She advocates that necessary media literacy skills are the first step in determining prejudices in media content like online or print advertisements. Technical skills and expertise in navigating computer systems further help individuals in evaluating the information self-reliantly.

Barriers in the acquisition of technical skills and computer knowledge set forth limits for individuals in fully participating in the digital world. For individuals to assess digital and media messages individually, they must exhibit digital and media literacy competency. Renee Hobbs developed a list of skills that demonstrate digital and media literacy competency.

Digital and media literacy includes examining and comprehending the meaning of messages, judging credibility, and assessing the quality of digital work. A digitally knowledgeable individual becomes a socially responsible member of their community by spreading awareness and helping others find digital solutions at home, work, or on a national platform.

Digital Knowledge doesn't just pertain to reading and writing on a digital device. It also comprises of knowledge of producing other forms of media, like recording and uploading a video.

Digital Divide

Digital divide implies the disparities among people - such as those living in developed and developing world concerning access to and the use of information and communication technologies (ICT), particularly computer hardware, software, and the internet. Individuals within societies that are short of economic resources to build ICT infrastructure do not have adequate Digital Knowledge, which means their digital skills are limited.

Digital Knowledge and digital access have become an increasingly important competitive differentiator for individuals using the internet meaningfully. Increasing Digital Knowledge and access to technology for people left out of the information revolution are of common concern. Jen Schradie discusses the impact of social class on Digital Knowledge in her article "The Great Class Wedge and the Internet's Hidden Costs," creating a digital divide.

Digital Equivalents

Digital workflows for traditional media have primarily superseded, but not supplanted their analog equivalents. Computers' ability to perfectly

replicate, backup, and revert changes in digital documents significantly lowers the cost of mass production and the economic penalty for making an error while doing work. In many cases, digital methods are inadequate to completely process work, as in removing flashing from CNC models, entailing the persistence of some analog skills. In other cases, an amount of imperfection in execution is desirable to achieve a aesthetic as in wabi-sabi, which a machine may have difficulty automatically producing

Analog Skill Digital Equivalent Notes

Painting Bitmap Editing

Illustration Vector Graphics

Drafting CAD

Composition Word Processing

Compositing Digital Compositing

Film Editing Digital video editing

Typesetting Digital typesetting, LaTeX

Formatting Markup Languages

Printing Printer

Wood and Metalworking CNC

Silk screening and Block Printing Offset printing, Photolithography

Weaving Automated Loom

Animation Computer-Assisted Animation, 3D Modeling

Audio Mixing Digital Audio Mastering

Academic and pedagogical concepts

Digital Knowledge is a part of the computing subject area alongside computer science and information technology in academia. Given the many varied implications that Digital Knowledge has on students and educators, pedagogy has responded by emphasizing four specific models of engaging with digital mediums. Those four models are text participation, code-breakage, text analysis, and text usage.

These methods present pupils (and other learners) with the capability to fully engage with the media and enhance the way the individual can relate the digital text to their lived experiences.

21st century skills

Digital Knowledge requires specific skill sets that are interdisciplinary. Warschauer and Matuchniak (2010) have listed three skill sets, or 21st-century skills, that individuals need to master to be digitally literate: information, media, technology; learning and innovation skills; and life and career skills. Digital Knowledge is composed of different literacies; because of this fact, there is no need to search for similarities and differences. Some of these are media literacy and information literacy.

Aviram & Eshet-Alkalai contend that there are five types of literacies encompassed in the umbrella term Digital Knowledge.

1. **Photo-visual literacy:** the capability to read and deduce information from visuals.
2. **Reproduction literacy:** the capability to use digital technology to create a new piece of work or combine existing elements of work to make it your own.
3. **Branching literacy:** the capability to successfully navigate in the non-linear medium of digital space.
4. **Information literacy:** the capability to search, locate, assess, and critically evaluate information found on the web and on-shelf in libraries.
5. **Socio-emotional literacy:** the social and emotional aspects of one's presence online, whether it may be through socializing, and collaborating, or only consuming content. Applications of Digital Knowledge.

In education

Digital technology has affected the way in which material is taught in the classroom. With the utilization of technology rising over the past decade, educators are altering traditional teaching forms to include course material on concepts relating to Digital Knowledge. Educators have also adopted social media platforms to communicate and share ideas. New standards

have been established as digital technology has strengthened classrooms, with many classrooms designed to use smartboards and audience response systems to replace traditional chalkboards or whiteboards. "The development of Teacher's Digital Competence (TDC) should begin in initial teacher training and sustain throughout the following years of practice. All this with the aim of using Digital Technologies (DT) to improve teaching and professional development".

Digital writing

Digital writing is focused on the impact technology has had on various writing environments; it is not merely the process of employing a computer to write. Educators approving digital writing argue that it is necessary because "technology fundamentally changes how writing is produced, delivered, and received."

Teaching digital writing goals to students increasing their ability to produce a relevant, high-quality product instead of just a standard academic paper. One of the aspects of digital writing is the use of hypertext or LaTeX. In opposition to printed text, hypertext invites readers to explore information in a non-linear fashion.

In Society

Digital Knowledge is necessary for the correct use of various digital platforms. It becomes essential to be digitally literate always to think one step ahead when utilizing the digital world.

With the emergence of social media, digitally literate individuals now have a significant voice online. Websites such as Facebook and Twitter, and personal websites and blogs, have enabled a novel type of journalism that is subjective, personal and is representative of a global conversation that is connected through its community of readers.

These online communities encourage group interactivity among the digitally sound. Social media also aids users in establishing a digital identity or a "symbolic digital representation of identity attributes."

In the workforce

The 2014 Workforce Innovation and Opportunity Act (WIOA) defines Digital Knowledge skills as a workforce preparation activity.

In the modern world, employees are supposed to be digitally knowledgeable, having full digital competence. Digitally literate ones are more likely to be economically secure, as many jobs stand in need of working knowledge of computers and the internet to perform basic tasks.

White-collar jobs are today performed primarily on computers and portable devices. With technology becoming affordable and more readily available, more blue-collar jobs have required Digital Knowledge.

In entrepreneurship

The acquisition of Digital Knowledge is also essential when it comes to starting and growing new ventures. The emanation of the World Wide Web and digital platforms has led to a plethora of new digital products or services that can be bought and sold.

Entrepreneurs are at the forefront of this advancement, using digital tools or infrastructure to deliver physical products, digital artifacts, or internet-enabled service innovations.

Global impact

International initiatives like the Global Digital Knowledge Council (GDLC) and the Coalition for Digital Intelligence (CDI) have also highlighted the need for, and strategies to address, Digital Knowledge globally.

The CDI, under the umbrella of the DQ Institute, created a Common Framework for Digital Knowledge, Skills, and Readiness in 2019 that gestates

eight domains of digital life (identity, use, safety, security, emotional intelligence, communication, literacy, and rights), three levels of maturity (citizenship, creativity, and competitiveness), and three elements of competence (knowledge, attitudes and values, and skills; or, what, why, and how).

The UNESCO Institute for Statistics (UIS) also works to create, assemble, map, and evaluate common frameworks on Digital Knowledge across multiple member states worldwide.

The importance of digital knowledge

Digital knowledge can effectively and critically navigate, evaluate, and create information using a range of digital technologies.

Although literacy is based upon mastering a series of technical and cultural skills, such as reading, writing, numeracy, and media proficiency. The evolving digital technologies are new approaches to knowledge, new knowledge architectures, new knowledge ethics, new accountability requirements, and assessments. These new emerging issues for education will be described as part of the ongoing digital knowledge revolution.

Happiest Minds Digital Knowledge Hub solution, empowered by an advanced content management system mCaaS™, remodels the complete knowledge creation, classification, structuring, sharing, utilization, and auditing cycle. It serves to bring together data, people, and processes to improve the way work gets done.

Categories / tools of Digital Knowledge

Digital Awareness

Digital Footprint

Digital Security

Diversity

Accessibility

Social Digital

Twitter

Face-book

Google Hangouts/Collaborate Ultra

LinkedIn / Academia.edu / Research Gate

Digital Collaboration & Sharing

Blogging

Wikimedia

Copyright

Open Educational Resources

Video (YouTube/Video/Media Hopper)

Audio (Podcasts/Sound Cloud)

Digital Play and Experimentation

Geo-location Tools

Augmented & Virtual Reality

Online Games & Learning Tools

Different Uses of Digital Knowledge:

e-Community Broadcasting: Community Broadcasting of services for the communities' benefit, especially in the rural India & South Asian Countries.

e-Agriculture & Livelihood: Introduction and integration of ICT to generate novel opportunities for the masses and add effectiveness & efficiency in livelihood creation.

e-Business & Enterprise: Innovations in the Business space are having the best/creative implementation & optimized business model, which can be set as an example in India and South Asia.

e-Culture & Heritage: Preservation and presentation of cultural heritage in agreement with the present & future challenges initiated to create awareness in the local communities.