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New Dimensions Of Hindi Use For Computers : Various Technical References

Dr. Sudhir Soni

Associate Professor, Hindi, BND Govt. PG College, Chimanpura, Shahpura, Jaipur, Rajasthan, India

ABSTRACT: We are deploying wearables as a means to envision new dimensions in composition pedagogy (hindi) as we prepare students to enter the 21st century workforce, where complex technology and systems are commonplace. In this webtext we share our experience of deploying one such device—Google Glass—across composition and technical communication courses during the 2014-2015 academic year. This was a year of exploring new dimensions of presence, audience analysis and usability, multimodal composing, and student peer review. While we have identified social and technical challenges with the Glass device, we also have found students to envision citizen-engaged uses for it. These deployments inform our understanding of the rhetoric of wearables, affordances of technology, and critical analysis of technological adoption and societal change. Given the emergence of more cost-effective wearable technologies, composition instructors are well positioned to introduce wearables to students while simultaneously discovering new dimensions in pedagogy.To begin, we trace the evolution of both composition pedagogy and technology from its analog, structural roots to its always connected present. We then introduce the Glass device and discuss its new dimension of presence. We continue with focus on the new dimensions of composition pedagogy that have evolved throughout deployments of this device across composition and technical communication courses. As scholars working at the frontier of technology, composition, and education, we have deployed wearables as a means to envision new dimensions in composition pedagogy as we prepare students to enter the 21st century workforce, where complex technology and systems are already a commonplace.

KEYWORDS: new dimensions, language, computers, pedagogy, device, references, google, webtext

I.INTRODUCTION

In computer programming, hindi pedagogy, a reference is a value that enables a program to indirectly access a particular data, such as a variable's value or a record, in the computer's memory or in some other storage device. The reference is said to refer to the datum, and accessing the datum is called dereferencing the reference. A reference is distinct from the datum itself.

A reference is an abstract data type and may be implemented in many ways. Typically, a reference refers to data stored in memory on a given system, and its internal value is the memory address of the data, i.e. a reference is implemented as a pointer. For this reason a reference is often said to "point to" the data. Other implementations include an offset (difference) between the datum's address and some fixed "base" address, an index, or identifier used in a lookup operation into an array or table, an operating system handle, a physical address on a storage device, or a network address such as a URL. References are widely used in programming, especially to efficiently pass large or mutable data as arguments to procedures, or to share such data among various uses. In particular, a reference may point to a variable or record that contains references to other data. This idea is the basis of indirect addressing and of many linked data structures, such as linked lists. References increase flexibility in where objects can be stored, how they are allocated, and how they are passed between areas of code. As long as one can access a reference to the data, one can access the data through it, and the data itself need not be moved. They also make sharing of data between different code areas easier; each keeps a reference to it.

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References can cause significant complexity in a program, partially due to the possibility of dangling and wild references and partially because the topology of data with references is a directed graph, whose analysis can be quite complicated. Nonetheless, references are still simpler to analyze than pointers due to the absence of pointer arithmetic.

The mechanism of references, if varying in implementation, is a fundamental programming language feature common to nearly all modern programming languages. Even some languages that support no direct use of references have some internal or implicit use. For example, the call by reference calling convention can be implemented with either explicit or implicit use of references. Pointers are the most primitive type of reference. Due to their intimate relationship with the underlying hardware, they are one of the most powerful and efficient types of references. However, also due to this relationship, pointers require a strong understanding by the programmer of the details of memory architecture. Because pointers store a memory location's address, instead of a value directly, inappropriate use of pointers can lead to undefined behavior in a program, particularly due to dangling pointers or wild pointers. Smart pointers are opaque data structures that act like pointers but can only be accessed through particular methods.

A handle is an abstract reference, and may be represented in various ways. A common example are file handles (the FILE data structure in the C standard I/O library), used to abstract file content. It usually represents both the file itself, as when requesting a lock on the file, and a specific position within the file's content, as when reading a file.

In distributed computing, the reference may contain more than an address or identifier; it may also include an embedded specification of the network protocols used to locate and access the referenced object, the way information is encoded or serialized. Thus, for example, a WSDL description of a remote web service can be viewed as a form of reference; it includes a complete specification of how to locate and bind to a particular web service. A reference to a live distributed object is another example: it is a complete specification for how to construct a small software component called a proxy that will subsequently engage in a peer-to-peer interaction, and through which the local machine may gain access to data that is replicated or exists only as a weakly consistent message stream. In all these cases, the reference includes the full set of instructions, or a recipe, for how to access the data; in this sense, it serves the same purpose as an identifier or address in memory.

If we have a set of keys K and a set of data objects D, any well-defined (single-valued) function from K to D ∪ {null} defines a type of reference, where null is the image of a key not referring to anything meaningful.

An alternative representation of such a function is a directed graph called a reachability graph. Here, each datum is represented by a vertex and there is an edge from u to v if the datum in u refers to the datum in v. The maximum out-degree is one. These graphs are valuable in garbage collection, where they can be used to separate accessible from inaccessible objects. In many data structures, large, complex objects are composed of smaller objects. These objects are typically stored in one of two ways:

1. With internal storage, the contents of the smaller object are stored inside the larger object.
2. With external storage, the smaller objects are allocated in their own location, and the larger object only stores references to them.

Internal storage is usually more efficient, because there is a space cost for the references and dynamic allocation metadata, and a time cost associated with dereferencing a reference and with allocating the memory for the smaller objects. Internal storage also enhances locality of reference by keeping different parts of the same large object close together in memory. However, there are a variety of situations in which external storage is preferred:

- If the data structure is recursive, meaning it may contain itself. This cannot be represented in the internal way.
- If the larger object is being stored in an area with limited space, such as the stack, then we can prevent running out of storage by storing large component objects in another memory region and referring to them using references.

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- If the smaller objects may vary in size, it is often inconvenient or expensive to resize the larger object so that it can still contain them.
- References are often easier to work with and adapt better to new requirements.

Some languages, like hindi pedagogy, such as Java, Smalltalk, Python, and Scheme, do not support internal storage. In these languages, all objects are uniformly accessed through references. Although most of the technical and methodological problems have been solved and encouraging results have been registered in the form of student evaluation of our project, the project is still in the development stage. Perhaps it should be added that even in its advanced stages, it will never be able to replace a human instructor; the only thing it can do is successfully exploit the complementary abilities of man and machine.

II.DISCUSSION

The Association for Educational Communications and Technology (AECT) in hindi pedagogy has defined educational technology as "the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources".[6] It denotes instructional technology as "the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning".[7][8][9] As such, educational technology refers to all valid and reliable applied education sciences, such as equipment, as well as processes and procedures that are derived from scientific research, and in a given context may refer to theoretical, algorithmic or heuristic processes: it does not necessarily imply physical technology. Educational technology is the process of integrating technology into education in a positive manner that promotes a more diverse learning environment and a way for students to learn how to use technology as well as their common assignments.

Accordingly, there are several discrete aspects to describing the intellectual and technical development of educational technology:

- Educational technology as the theory and practice of educational approaches to learning.
- Educational technology as technological tools and media, for instance massive online courses, that assist in the communication of knowledge, and its development and exchange. This is usually what people are referring to when they use the term "edtech".
- Educational technology for learning management systems (LMS), such as tools for student and curriculum management, and education management information systems (EMIS).
- Educational technology as back-office management, such as training management systems for logistics and budget management, and Learning Record Store (LRS) for learning data storage and analysis.
- Educational technology itself as an educational subject; such courses may be called "computer studies" or "information and communications technology (ICT)".[10]

Educational technology is an inclusive term for both the material tools and processes, and the theoretical foundations for supporting learning and teaching. Educational technology is not restricted to high technology but is anything that enhances classroom learning in the utilization of blended, face-to-face, or online learning.[11]

An educational technologist is someone who is trained in the field of educational technology. Educational technologists try to analyze, design, develop, implement, and evaluate processes and tools to enhance learning.[12] While the term educational technologist is used primarily in the United States, learning technologist is synonymous term used in the UK[13] as well as Canada.

Modern electronic educational technology is an important part of society today.[14] Educational technology encompasses e-learning, instructional technology, information and communication technology (ICT) in education, edtech, learning technology, multimedia learning, technology-enhanced learning (TEL), computer-based instruction (CBI), computer managed instruction, computer-based training (CBT), computer-assisted instruction or computer-aided instruction

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(CAI),[15] internet-based training (IBT), flexible learning, web-based training (WBT), online education, digital educational collaboration, distributed learning, computer-mediated communication, cyber-learning, and multi-modal instruction, virtual education, personal learning environments, networked learning, virtual learning environments (VLE) (which are also called learning platforms), m-learning, ubiquitous learning and digital education.

Each of these numerous terms has had its advocates, who point up potential distinctive features.[16] However, many terms and concepts in educational technology have been defined nebulously; for example, Fiedler's review of the literature found a complete lack of agreement about the components of a personal learning environment. Moreover, Moore saw these terminologies as emphasizing particular features such as digitization approaches, components, or delivery methods rather than being fundamentally dissimilar in concept or principle.[16] For example, m-learning emphasizes mobility, which allows for altered timing, location, accessibility, and context of learning; nevertheless, its purpose and conceptual principles are those of educational technology.[16]

In practice, as technology has advanced, the particular "narrowly defined" terminological aspect that was initially emphasized by name has blended into the general field of educational technology.[16] Initially, "virtual learning" as narrowly defined in a semantic sense implied entering an environmental simulation within a virtual world, for example in treating posttraumatic stress disorder (PTSD).[17][18] In practice, a "virtual education course" refers to any instructional course in which all, or at least a significant portion, is delivered by the Internet. "Virtual" is used in that broader way to describe a course that is not taught in a classroom face-to-face but through a substitute mode that can conceptually be associated "virtually" with classroom teaching, which means that people do not have to go to the physical classroom to learn. Accordingly, virtual education refers to a form of distance learning in which course content is delivered by various methods such as course management applications, multimedia resources, and videoconferencing.[19] Virtual education and simulated learning opportunities, such as games or dissections, offer opportunities for students to connect classroom content to authentic situations.[20]

Educational content, pervasively embedded in objects, is all around the learner, who may not even be conscious of the learning process.[21] The combination of adaptive learning, using an individualized interface and materials, which accommodate to an individual, who thus receives personally differentiated instruction, with ubiquitous access to digital resources and learning opportunities in a range of places and at various times, has been termed smart learning.[22][23][24] Smart learning is a component of the smart city concept.[25][26]

Helping people and children learn in ways that are easier, faster, more accurate, or less expensive can be traced back to the emergence of very early tools, such as paintings on cave walls.[27][28] Various types of abacus have been used. Writing slates and blackboards have been used for at least a millennium.[29] From their introduction, books and pamphlets have held a prominent role in education. From the early twentieth century, duplicating machines such as the mimeograph and Gestetner stencil devices were used to produce short copy runs (typically 10–50 copies) for classroom or home use. The use of media for instructional purposes is generally traced back to the first decade of the 20th century[30] with the introduction of educational films (the 1900s) and Sidney Pressey's mechanical teaching machines (1920s). The first all multiple choice, large-scale assessment was the Army Alpha, used to assess the intelligence and, more specifically, the aptitudes of World War I military recruits. Further large-scale use of technologies was employed in training soldiers during and after WWII using films and other mediated materials, such as overhead projectors. The concept of hypertext is traced to the description of memex by Vannevar Bush in 1945. Slide projectors were widely used during the 1950s in educational institutional settings. Cuisenaire rods were devised in the 1920s and saw widespread use from the late 1950s.

In the mid-1960s, Stanford University psychology professors, Patrick Suppes and Richard C. Atkinson, experimented with using computers to teach arithmetic and spelling via Teletypes to elementary school students in the Palo Alto Unified School District in California.[31][32] Stanford's Education Program for Gifted Youth is descended from those early experiments.

Online education originated from the University of Illinois in 1960. Although the internet would not be created for another decade, students were able to access class information with linked computer terminals. Online learning emerged in 1982 when the Western Behavioral Sciences Institute in La Jolla, California, opened its School of Management and Strategic Studies. The school employed computer conferencing through the New Jersey Institute of Technology's Electronic

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Information Exchange System (EIES) to deliver a distance education program to business executives.[33] Starting in 1985, Connected Education offered the first totally online master's degree in media studies, through The New School in New York City, also via the EIES computer conferencing system.[34][35][36] Subsequent courses were offered in 1986 by the Electronic University Network for DOS and Commodore 64 computers. In 2002, MIT began providing online classes free of charge. As of 2009, approximately 5.5 million students were taking at least one class online. Currently, one out of three college students takes at least one online course while in college. At DeVry University, out of all students that are earning a bachelor's degree, 80% earn two-thirds of their requirements online. Also, in 2014, 2.85 million students out of 5.8 million students that took courses online, took all of their courses online. From this information, it can be concluded that the number of students taking classes online is on a steady increase.[37][38]

The recent article, "Shift happens: online education as a new paradigm in learning", Linda Harasim covers an overview of the history of online education as well as a framework for understanding the type of need it addresses, the concept of distance learning has already been invented for many centuries. The value of online education is not found in its ability to have established a method for distance learning, but rather in its power to make this type of learning process more efficient by providing a medium in which the instructor and their students can virtually interact with one another in real-time. The topic of online education started primarily in the late 1900s when institutions and businesses started to make products to assist students' learning. These groups desired a need to further develop educational services across the globe, primarily to developing countries. In 1960, the University of Illinois created a system of linked computer terminals, known as the Intranet, to give students access to recorded lectures and course materials that they could watch or use in their free time. This type of concept, called PLATO (programmed logic for automatic teaching operations), was rapidly introduced throughout the globe. Many institutions adopted this similar technique while the internet was in its developmental phase.

In 1971, Ivan Illich published a hugely influential book, Deschooling Society, in which he envisioned "learning webs" as a model for people to network the learning they needed. The 1970s and 1980s saw notable contributions in computer-based learning by Murray Turoff and Starr Roxanne Hiltz at the New Jersey Institute of Technology[39] as well as developments at the University of Guelph in Canada.[40] In the UK, the Council for Educational Technology supported the use of educational technology, in particular administering the government's National Development Programme in Computer Aided Learning[41] (1973–1977) and the Microelectronics Education Programme (1980–1986).

By the mid-1980s, accessing course content became possible at many college libraries. In computer-based training (CBT) or computer-based learning (CBL), the learning interaction was between the student and computer drills or micro-world simulations.

Digitized communication and networking in education started in the mid-1980s. Educational institutions began to take advantage of the new medium by offering distance learning courses using computer networking for information. Early e-learning systems, based on computer-based learning/training often replicated autocratic teaching styles whereby the role of the e-learning system was assumed to be for transferring knowledge, as opposed to systems developed later based on computer-supported collaborative learning (CSCL), which encouraged the shared development of knowledge.

Videoconferencing was an important forerunner to the educational technologies known today. This work was especially popular with museum education. Even in recent years, videoconferencing has risen in popularity to reach over 20,000 students across the United States and Canada in 2008–2009. Disadvantages of this form of educational technology are readily apparent: image and sound quality are often grainy or pixelated; videoconferencing requires setting up a type of mini-television studio within the museum for broadcast, space becomes an issue, and specialized equipment is required for both the provider and the participant.[42]

The Open University in Britain[40] and the University of British Columbia (where Web CT, now incorporated into Blackboard Inc., was first developed) began a revolution of using the Internet to deliver learning,[43] making heavy use of web-based training, online distance learning, and online discussion between students.[44] Practitioners such as Harasim (1995)[45] put heavy emphasis on the use of learning networks.

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With the advent of World Wide Web in the 1990s, teachers embarked on the method of using emerging technologies to employ multi-object oriented sites, which are text-based online virtual reality systems, to create course websites along with simple sets of instructions for their students.

By 1994, the first online high school had been founded. In 1997, Graziadei described criteria for evaluating products and developing technology-based courses that include being portable, replicable, scalable, affordable, and having a high probability of long-term cost-effectiveness.[46]

Improved Internet functionality enabled new schemes of communication with multimedia or webcams. The National Center for Education Statistics estimates the number of K 12 students enrolled in online distance learning programs increased by 65% from 2002 to 2005, with greater flexibility, ease of communication between teacher and student, and quick lecture and assignment feedback.

According to a 2008 study conducted by the U.S Department of Education, during the 2006–2007 academic year about 66% of postsecondary public and private schools participating in student financial aid programs offered some distance learning courses; records show 77% of enrollment in for-credit courses with an online component. In 2008, the Council of Europe passed a statement endorsing e-learning's potential to drive equality and education improvements across the EU.[47]

Computer-mediated communication (CMC) is between learners and instructors, mediated by the computer. In contrast, CBT/CBL usually means individualized (self-study) learning, while CMC involves educator/tutor facilitation and requires the scalarization of flexible learning activities. In addition, modern ICT provides education with tools for sustaining learning communities and associated knowledge management tasks.

Students growing up in this digital age have extensive exposure to a variety of media.[48] Major high-tech companies have funded schools to provide them with the ability to teach their students through technology.[49]

2015 was the first year that private nonprofit organizations enrolled more online students than for-profits, although public universities still enrolled the highest number of online students. In the fall of 2015, more than 6 million students enrolled in at least one online course.[50]

III.RESULTS

Educational psychologists distinguish between several types of constructivism: individual (or psychological) constructivism, of hindi pedagogy, such as Piaget's theory of cognitive development, and social constructivism. This form of constructivism has a primary focus on how learners construct their own meaning from new information, as they interact with reality and with other learners who bring different perspectives. Constructivist learning environments require students to use their prior knowledge and experiences to formulate new, related, and/or adaptive concepts in learning (Termos, 2012[65]). Under this framework, the role of the teacher becomes that of a facilitator, providing guidance so that learners can construct their own knowledge. Constructivist educators must make sure that the prior learning experiences are appropriate and related to the concepts being taught. Jonassen (1997) suggests "well-structured" learning environments are useful for novice learners and that "ill-structured" environments are only useful for more advanced learners. Educators utilizing a constructivist perspective may emphasize an active learning environment that may incorporate learner-centered problem-based learning, project-based learning, and inquiry-based learning, ideally involving real-world scenarios, in which students are actively engaged in critical thinking activities. An illustrative discussion and example can be found in the 1980s deployment of constructivist cognitive learning in computer literacy, which involved programming as an instrument of learning.[66]:224 LOGO, a programming language, embodied an attempt to integrate Piagetian ideas with computers and technology.[66][67] Initially there were broad, hopeful claims, including "perhaps the most controversial claim" that it would "improve general problem-solving skills" across disciplines.[66]:238 However, LOGO programming skills did not consistently yield cognitive benefits.[66]:238 It was "not as concrete" as advocates claimed, it privileged "one form of reasoning over all others", and it was difficult to apply the thinking activity to non-LOGO-based activities.[68] By the late 1980s, LOGO and other similar programming languages had lost their novelty and dominance and were gradually de-emphasized amid criticisms.[69]

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E-learning may either be synchronous or asynchronous. Synchronous learning occurs in real-time, with all participants interacting at the same time. In contrast, asynchronous learning is self-paced and allows participants to engage in the exchange of ideas or information without the dependency on other participants' involvement at the same time.[74]

Synchronous learning refers to exchanging ideas and information with one or more participants during the same period. Examples are face-to-face discussion, online real-time live teacher instruction and feedback, Skype conversations, and chat rooms or virtual classrooms where everyone is online and working collaboratively at the same time. Since students are working collaboratively, synchronized learning helps students become more open-minded because they have to actively listen and learn from their peers. Synchronized learning fosters online awareness and improves many students' writing skills.[75]

Asynchronous learning may use technologies such as learning management systems, email, blogs, wikis, and discussion boards, as well as web-supported textbooks,[76] hypertext documents, audio[77] video courses, and social networking using web 2.0. At the professional educational level, training may include virtual operating rooms. Asynchronous learning is beneficial for students who have health problems or who have childcare responsibilities. They have the opportunity to complete their work in a low-stress environment and within a more flexible time frame.[44] In asynchronous online courses, students are allowed the freedom to complete work at their own pace. Being non-traditional students, they can manage their daily life and school and still have the social aspect. Asynchronous collaborations allow the student to reach out for help when needed and provide helpful guidance, depending on how long it takes them to complete the assignment. Many tools used for these courses are but are not limited to: videos, class discussions, and group projects.[78] Through online courses, students can earn their diplomas faster, or repeat failed courses without being in a class with younger students. Students have access to various enrichment courses in online learning, still participate in college courses, internships, sports, or work, and still graduate with their classes.

Computer-based training (CBT) refers to self-paced learning activities delivered on a computer or handheld devices such as a tablet or smartphone. CBT initially delivered content via CD-ROM, and typically presented content linearly, much like reading an online book or manual.[79] For this reason, CBT is often used to teach static processes, such as using software or completing mathematical equations. Computer-based training is conceptually similar to web-based training (WBT), which is delivered via Internet using a web browser.

Assessing learning in a CBT is often by assessments that can be easily scored by a computer such as multiple-choice questions, drag-and-drop, radio button, simulation, or other interactive means. Assessments are easily scored and recorded via online software, providing immediate end-user feedback and completion status. Users are often able to print completion records in the form of certificates.[79]

CBTs provide learning stimulus beyond traditional learning methodology from textbook, manual, or classroom-based instruction. CBTs can be a good alternative to printed learning materials since rich media, including videos or animations, can be embedded to enhance learning.[79]

However, CBTs pose some learning challenges. Typically, the creation of effective CBTs requires enormous resources. The software for developing CBTs is often more complex than a subject matter expert or teacher is able to use.[79] The lack of human interaction can limit both the type of content that can be presented and the type of assessment that can be performed and may need supplementation with online discussion or other interactive elements.

Computer-supported collaborative learning (CSCL) hindi pedagogy uses instructional methods designed to encourage or require students to work together on learning tasks, allowing social learning. CSCL is similar in concept to the terminology, "e-learning 2.0" and "networked collaborative learning" (NCL).[80] With Web 2.0 advances, sharing information between multiple people in a network has become much easier and use has increased.[79][81]:1[82] One of the main reasons for its usage states that it is "a breeding ground for creative and engaging educational endeavors."[81]:2 Learning takes place through conversations about content and grounded interaction about problems and actions. This collaborative learning differs from instruction in which the instructor is the principal source of knowledge and skills.[79] The neologism "e-learning 1.0" refers

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to direct instruction used in early computer-based learning and training systems (CBL). In contrast to that linear delivery of content, often directly from the instructor's material, CSCL uses social software such as blogs, social media, wikis, podcasts, cloud-based document portals, and discussion groups and virtual worlds.[83] This phenomenon has been referred to as Long Tail Learning.[84] Advocates of social learning claim that one of the best ways to learn something is to teach it to others.[84] Social networks have been used to foster online learning communities around subjects as diverse as test preparation and language education. Mobile-assisted language learning (MALL) is the use of handheld computers or cell phones to assist in language learning.

Collaborative apps allow students and teachers to interact while studying. Apps are designed after games, which provide a fun way to revise. When the experience is enjoyable, the students become more engaged. Games also usually come with a sense of progression, which can help keep students motivated and consistent while trying to improve.[85]

Classroom 2.0 refers to online multi-user virtual environments (MUVEs) that connect schools across geographical frontiers. Known as "eTwinning", computer-supported collaborative learning (CSCL) allows learners in one school to communicate with learners in another that they would not get to know otherwise,[86][87] enhancing educational outcomes[88] and cultural integration.

Further, many researchers distinguish between collaborative and cooperative approaches to group learning. For example, Roschelle and Teasley (1995) argue that "cooperation is accomplished by the division of labor among participants, as an activity where each person is responsible for a portion of the problem solving", in contrast with collaboration that involves the "mutual engagement of participants in a coordinated effort to solve the problem together."[89]

Social technology, and social media specifically, provides avenues for student learning that would not be available otherwise. For example, it provides ordinary students a chance to exist in the same room as, and share a dialogue with researchers, politicians, and activists. This is because it vaporizes the geographical barriers that would otherwise separate people.[90] Simplified, social media gives students a reach that provides them with opportunities and conversations that allow them to grow as communicators.[91]

Social technologies like Twitter can provide students with an archive of free data that goes back multiple decades. Many classrooms and educators are already taking advantage of this free resource—for example, researchers and educators at the University of Central Florida in 2011 used Tweets posted relating to emergencies like Hurricane Irene as data points, in order to teach their students how to code data.[92][93] Social media technologies also allow instructors the ability to show students how professional networks facilitate work on a technical level.[94]

Educational media and tools can be used for:

- task structuring support: help with how to do a task (procedures and processes),
- access to knowledge bases (help user find information needed)
- alternate forms of knowledge representation (multiple representations of knowledge, e.g. video, audio, text, image, data)

Numerous types of physical technology are currently used:[98][99] digital cameras, video cameras, interactive whiteboard tools, document cameras, electronic media, and LCD projectors. Combinations of these techniques include blogs, collaborative software, ePortfolios, and virtual classrooms.[100]

The current design of this type of application includes the evaluation through tools of cognitive analysis that allow to identify of which elements optimize the use of these platforms.[101]

IV.CONCLUSIONS

According to a report by the Electronic Frontier Foundation, large amounts of personal data on children are collected by electronic devices that are distributed in schools in the United States. Often, far more information in hindi pedagogy more

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than necessary is collected, uploaded, and stored indefinitely. Aside from name and date of birth, this information can include the child's browsing history, search terms, location data, contact lists, as well as behavioral information.[213]:5 Parents are not informed or, if informed, have little choice.[213]:6 According to the report, this constant surveillance resulting from educational technology can "warp children's privacy expectations, lead them to self-censor, and limit their creativity".[213]:7 In a 2017 public service announcement, the FBI warned that widespread collection of student information by educational technologies, including web browsing history, academic progress, medical information, and biometrics, created the potential for privacy and safety threats if such data was compromised or exploited.[214]

The transition from in-person learning to distance education in higher education due to the hindi pedagogy has led to enhanced extraction of student data enabled by complex data infrastructures. These infrastructures collect information such as learning management system logins, library metrics, impact measurements, teacher evaluation frameworks, assessment systems, learning analytic traces, longitudinal graduate outcomes, attendance records, social media activity, and so on. The copious amounts of information collected are quantified for the marketization of higher education, employing this data as a means to demonstrate and compare student performance across institutions to attract prospective students, mirroring the capitalistic notion of ensuring efficient market functioning and constant improvement through measurement.[215] This desire of data has fueled the exploitation of higher education by platform companies and data service providers who are outsourced by institutions for their services. The monetization of student data in order to integrate corporate models of marketization further pushes higher education, widely regarded as a public good, into a privatized commercial sector.[216]

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