3G: The third generation of mobile phone standards and technology. The most significant feature of 3G mobile technology is that it supports greater numbers of voice and data customers—especially in urban areas—and higher data rates at lower incremental cost than 2G.

Advanced Audio Coding (AAC): A standardized encoding scheme for digital audio, which is used as the default audio format of Apple’s iPhone, iPod, iTunes.

Activity Theory: Activity theory originated as a dialectical materialist psychology developed by Vygotsky and his students in the Soviet Union in the beginning of the twentieth century. It rejects the isolated human being as an adequate unit of analysis, insisting on cultural and technical mediation of human activity. The unit of analysis accordingly includes technical artifacts and the cultural organization that the human being is both determined by and actively creating (Bertelsen & Bodker, 2003, p. 298)

Ajax: Ajax (asynchronous JavaScript and XML) is a group of inter-related Web development techniques used for creating interactive Web applications. A primary characteristic is the increased responsiveness and interactivity of Web pages achieved by exchanging small amounts of data with the server “behind the scenes” so that the entire Web page does not have to be reloaded each time the user performs an action. This is intended to increase the Web page’s interactivity, speed, functionality, and usability, which seem to be considered as essential qualities in designing mobile learning contents.

Augmented Reality: Augmented reality, the reality overlaid with virtual reality, and virtual reality, in which representations of the real world have been embedded and contextualized, is enabling interactions both in real and virtual spaces. For instance, Lonsing (2004) suggests that an augmented reality system generates a composite view in real time, a combination of a real scene
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viewed by a user and a virtual scene generated by a computer, where the real scene is submerged with additional information in order to enhance the perception of the user.

**Behaviorism:** A philosophy of psychology based on the proposition that all things which organisms do—including acting, thinking and feeling—can and should be regarded as behaviors, that is, it is the term that explains human behaviors with simple responses of an organism to stimuli. For instance, Skinner believed that behavior is sustained by reinforcements or rewards, not by free will (Skinner, 1976). Therefore, traditional classroom learning environments are designed on the principles of the behaviorist view of learning and knowing. They are organized with the goal of students acquiring a maximum accumulation of organized information and procedural knowledge (Greeno, Collins, & Resnick, 1996) and Noam Chomsky (1967) criticized behaviorism for giving a description of the stimuli and responses solely in terms of observable behaviors.

**Blended Learning:** The term used to describe learning or training events or activities where e-learning, in its various forms, is combined with more traditional forms of training such as “classroom” training. It is now encompassing mobile learning technologies in its broadest definition, for instance, as a way to deliver learning contents prior to actual face-to-face lectures at a course or program.

**Camera Phone:** A mobile phone that has a camera built-in, so MMS (see multimedia messaging service) may be enabled.

**Collaboration:** A structured, recursive process where two or more people work together toward a common goal—typically an intellectual endeavor that is creative in nature—by sharing knowledge, learning and building consensus (*copied from Wikipedia*). With respect to education, it is widely believed that, regardless of the subject matter, students working in groups tend to learn more of what is taught and retain it longer than when the same content is presented in other instructional formats. That is, learning can be even more effective when learners can converse with each other, by interrogating and sharing their descriptions of the world.

**Constructivism:** Developed during the 1960s and 70s and inspired by the rise in cognitive theories of learning (Bruner, 1966, 1986, 1996). It depicts that learners are constructing their own knowledge by testing ideas and approaches based on their prior knowledge and experiences, actively applying these to a new situation and constructively integrating the new knowledge gained with pre-existing intellectual constructs. Therefore, the commitments and practices that the teacher or other educational resources should support would be the creation of suitable learning situations and settings, rather than the organized (or pre-defined) contents to deliver.

**Context Awareness:** A term which seeks to deal with linking changes in the circumstance or environment with computer systems. Context-aware learning systems adapt according to the location of use, the collection of nearby people, hosts, and accessible devices, as well as to changes to such things over time. For this reason, mobile devices have been paid much attention for sensing and collecting their physical information in the context of use.

**Contextual Learning:** Occurs in close relationship with actual experience, allowing, for instance, students to test theories or contents delivered in classroom through real world applications (real problem-solving). This approach to learning and teaching assumes that the mind naturally seeks meaning in context—that is, in relation to the person’s current environment—and that it does so by searching for relationships that make sense and appear useful. In conjunction with various context awareness technologies, it is highly possible to anchor teaching in students diverse life-contexts.
**Distributed Learning Environment:** Distributed learning is an instructional model that allows instructor, students, and content to be located in different, non-centralized locations so that both instruction and learning occur independent of time and place. The distributed learning environment can be designed in combination with traditional classroom-based courses, with traditional distance learning courses, or it can be used to create wholly virtual classrooms, so it allows one to learn something at a distance from the traditional education providers (institutes and universities).

**Edutainment:** A form of entertainment designed to educate as well as to amuse. Edutainment typically seeks to instruct or socialize its audience by embedding lessons in some familiar form of entertainment: television programs, computer and video games, films, music, Web sites, multimedia software, and etc. It is widely believed to give a basis for teaching in a more efficient and faster way (edited from Wikipedia).

**Electronic Learning (E-Learning):** Another way of teaching and learning. In its broadest definition, e-learning includes instruction delivered via all electronic media including the Internet, intranets, extranets, satellite broadcasts, audio/video tape, interactive TV, and CD-ROM (Govindasamy, 2002, p. 291).

**Engagement (Participatory Engagement):** Refers to a conceptual approach to engage students in the construction of knowledge that embodies complex concepts, necessitates collaboration, and contextualizes learning within contexts. Rather than directly presenting instructional treatments, the goal from this perspective is to establish rich environments that encourage explanation and discovery, nurture reflection, and support students in the carrying out of practices that embody personally meaningful and practically functional representations (Barab, Hay, Barnett, & Squire, 2001 p. 48; Lave & Wenger, 1991).

**Field Trip:** A group excursion for the purpose of firsthand observation, as to a museum, the woods, or a historic place. Recently, practitioners in education technology have developed various types of **virtual field trips** that are designed to be more entertaining and educational. These include the simple, such as a photo tour of a famous museum, to extremely detailed and high-tech field trips that offer video and audio segments to make the visit more interactive.

**Flow Experience:** The mental state of operation in which the person is fully immersed in what he or she is doing, characterized by a feeling of energized focus, full involvement, and success in the process of the activity, proposed by psychologist Mihaly Csikszentmihalyi (1990). In education, there is the concept of overlearning which seems to be an important factor in this technique, in that Csikszentmihalyi states that overlearning enables the mind to concentrate on visualizing the desired performance as a singular, integrated action instead of a set of actions (copied from Wikipedia).

**Framework (Theory and Architecture):** The specification of a few broad principles of design from a general perspective, where particular features are left. In contrast, a ‘theory’ develops a framework, adding some data structures or mechanisms for explaining and understanding the nature of the phenomenon. Furthermore, an “architecture” encompasses both theory and framework.

**Game-Based Learning:** An approach to use games (especially, video games) as learning tools. With the widespread interest in games by teenagers or adults, it employs games as an engaging and effective instructional medium to integrate them into the learning process. Prensky (2000) explains how those principles can be leveraged in learning activities.
Global System for Mobile Communications (GSM): A digital mobile telephone system that is widely used in Europe and other parts of the world. GSM uses a variation of time division multiple access (TDMA) and is the most widely used of the three digital wireless telephone technologies (TDMA, GSM, and CDMA).

Global Positioning Systems (GPS): A U.S. space-based radionavigation system that provides reliable positioning, navigation, and timing services to civilian users on a continuous worldwide basis, freely available to all. For anyone with a GPS receiver, the system will provide location and time. GPS provides accurate location and time information for an unlimited number of people in all weather, day and night, anywhere in the world.

Hand-Held Devices: Pocket-sized computing devices, typically comprising a small visual display screen for user output and a miniature keyboard or touch screen for user input. In the case of the personal digital assistant (PDA) the input and output are combined into a touch-screen interface. Smartphones and PDAs are popular amongst those who require the assistance and convenience of a conventional computer, in environments where carrying one would not be practical (edited from Wikipedia.org).

High Speed Downlink Packet Access (HSDPA): A new protocol for mobile telephone data transmission, especially for 3G mobile network.

Interaction: In this book interaction means any mutual or reciprocal communication between a user (learners or educators) and technology (computers or mobile devices), whether it is direct or indirect. In particular, interactive technology has greatly changed in meaning with the advent of extended computer or mobile device use in the education domain in the last decades. For example, WebCT™ provides an online proprietary virtual interactive learning environment for e-learning.

iPods (podcasting): A portable digital media player designed by Apple Computer™. iPods have a reputation for being user-friendly and quality design features, such as a “touch wheel” which is a centrally-placed circular disk designed for one-hand operation. Many versions of new iPods include features like a calendar, address book, to-do list, alarm clock with sleep timer, games, and text reader. Several universities have employed iPods as an instructional medium using the ‘Podcasting’ technology which prepares and distribute audio files using RSS (see real simple syndication) to subscribed users.

Learning Activity: The essence of a learning activity is that it must have one or more learning outcomes associated with it. Learning outcomes are what the learners should know, or be able to do, after completing the learning activity; for example, understand, demonstrate, design, produce, appraise. For instance, pop quizzes in classroom are to present students with a learning activity to test the knowledge of the contents delivered by posing questions.

Learning Experience: Creating of the practical knowledge, feeling, understanding and incidents which impact a learner’s perception of all the learning activities that are being performed by the learner. To harness effective learning experiences, education providers should consider learner’s needs, desires, beliefs, knowledge, skills, and perceptions.

Learning Management Systems (LMS): A term used to describe software tools designed to manage user learning interventions, for example, WebCT™ or Blackboard™.

Learning Outcomes: Take the measure of the knowledge, skills, and abilities the individual student possesses and can demonstrate upon completion of a learning experience or sequence of learning experiences (e.g., course, program, and degree).
**Life-Long Learning:** Allows people to continually enhance their knowledge to address immediate problems and to participate in the process of professional development, facilitating learning at different times and places. Mobile learning appears to be a promising approach to enable this life-long learning in context and analysis of real world problems with the use of mobile devices and applications to better support the learning process.

**Media Richness Theory:** Explains the relationship between characteristics of a communication medium and communication activities (Daft & Lengel, 1986). According to Daft and Lengel's theory, media richness is a function of (1) the medium's capacity for immediate feedback, (2) the number of cues and channels available, (3) language variety; and (4) the degree to which intent is focused on the recipient. The greater social presence of a medium creates a greater immediacy and warmth of the communication, because of the greater number of channels.

**Mobile Phone (or Cellular Phone):** Uses a network of short-range transmitters, often in an automobile, located in overlapping cells throughout a region, with a central station making connections to regular telephone lines. It is also called cellular phone (edited from The American Heritage Dictionary of the English Language)

**MMS (Multimedia Messaging Service):** A mobile telephone messaging system that allows sending multimedia messages such as images, audio, video and rich text.

**Mobile Learning:** Wikipedia puts it that “Learning that happens across locations, or that takes advantage of learning opportunities offered by portable technologies.”

**Participatory Simulation:** Allows the learner to understand the course content better through participation/practice. Through this active participation, the learner can discuss and get the correct answer, consequently understand what they have learned better, for example (Colella, 2000)

**Personal Digital Assistants (PDAs):** Hand-held computers, which have been used for organizing personal schedules or an address book, and running office programs (e.g., spreadsheets, word processor). Newer PDAs are similar to Smartphones in that they allow one to access the Internet via Wi-Fi or carrier mobile phone networks, but tend to have a larger form factor.

**Really Simple Syndication (RSS):** A family of Web feed formats used to publish frequently updated content such as blog entries, news headlines or podcasts (edited from Wikipedia)

**Scaffolding:** An instructional method or process by which a teacher provides temporary support to learners to help bridge the gap between what the learner knows and can do and what he or she needs to accomplish in order to succeed at a particular learning task, like training wheels when learning to ride a bicycle, that scaffolding is gradually taken away over time until the learner is able to perform the skill on their own, with no support.

**Semacode:** Use two dimensional barcodes that support and complement development of the concept of using mobile phones as devices for seamless information gathering and exchange. Its tagging system is an open system with the SDK software tools available for educational purposes.

**Short Text Messaging Services (SMS):** A feature available in most mobile phones, that lets users receive and send short text messages from 150 to 160 characters to other mobile phones. On Nokia™ phones, users can even receive new ringing tones or background logos in an SMS text message.

**Situated Learning:** A general theory of knowledge acquisition that is based on the notion that learning occurs in the context of authentic
activities (Lave & Wenger 1991). Other researchers have further developed the theory of situated learning. Brown, Collins & Duguid (1989), for instance, emphasize the idea of cognitive apprenticeship: “Cognitive apprenticeship supports learning in a domain by enabling students to acquire, develop and use cognitive tools in authentic domain activity. Learning, both outside and inside school, advances through collaborative social interaction and the social construction of knowledge.” Brown et al. also emphasize the need for a new epistemology for learning—one that emphasizes active perception over concepts and representation.

**Virtual Learning Environment:** A software system designed to help teachers by facilitating the management of educational courses for their students, especially by helping teachers and learners with course administration. The system can often track the learners’ progress, which can be monitored by both teachers and learners. While frequently thought of as primarily tools for distance education, they are most often used to supplement the face-to-face classroom. Recently, learning inside a 3D virtual immersive workspace (e.g., Second Life™) has been paid more attention for a future VLE, in conjunction with its virtual reality, environment and course management systems.

**Wi-Fi:** An acronym for wireless fidelity and is meant to be used generically when referring of any type of 802.11 network, whether 802.11b, 802.11a, dual-band, and so forth.

**Working Memory:** A system for temporarily storing and managing the information required to carry out complex cognitive tasks such as learning, reasoning, and comprehension. It is considered as the bottleneck of human information processing, thereby making a stronger implication on learning activities and outcomes.

**Ubiquitous (Pervasive) Computing:** A post-desktop model of human-computer interaction in which information processing has been thoroughly integrated into everyday objects and activities. As opposed to the desktop paradigm, in which a single user consciously engages a single device for a specialized purpose, someone “using” ubiquitous computing engages many computational devices and systems simultaneously, in the course of ordinary activities, and may not necessarily even be aware that they are doing so. Therefore, it seeks to embed computers into our everyday lives in such ways as to render them invisible and allow them to be taken for granted.

**REFERENCES**


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