Digital Literacy Matters: Increasing Workforce Productivity Through Blended English Language Programs

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Abstract: Current workplace demands newer forms of literacies that go beyond the ability to decode print. These involve not only competence to operate digital tools, but also the ability to create, represent, and share meaning in different modes and formats; ability to interact, collaborate and communicate effectively using digital tools, and engage critically with technology for developing one's knowledge, skills, and full participation in civic, economic, and personal matters. This essay examines the application of the ecology of resources (EoR) model for delivering language learning outcomes (in this case, English) through blended classroom environments that use contextually available resources. The author proposes the implementation of the EoR model in blended learning environments to create authentic and sustainable learning environments for skilling courses. Applying the EoR model to Indian skilling instruction contexts, the article discusses how English language and technology literacy can be delivered using contextually available resources through a blended classroom environment. This would facilitate not only acquisition of language and digital literacy outcomes, but also consequent content literacy gain to a certain extent. This would ensure satisfactory achievement of not only communication/language literacy and technological literacy, but also active social participation, lifelong learning, and learner autonomy.

Keywords: digital literacy, blended learning environment, blended English language program, context-embedded resources, ecology of resources model

Introduction

The three Rs (i.e., the ability to read, write, and do basic arithmetic) have traditionally been used as indicators of knowledge and the ability to communicate and, in turn, a predictor of success at workplace. However, a survey of any place of work today will show that the traditionally held literacy skills do not suffice; newer forms of literacy that go beyond the ability to decode print—like the skills to communicate, interact, solve complex problems, analyze, judge, evaluate, collaborate, construct, create, and to use information technology/ digital tools—are now considered essential contributors to enhanced employability opportunities as well as workplace success. Many educational agencies (e.g., The European Universities Association; Dearing, 1997) call these literacies "core transferable skills" and recommend their incorporation into all curricula, across all domains of knowledge taught (*Skills Development in Higher Education* by the Committee of Vice Chancellors and Principals in 1998, as cited in Murphy, 2001). There is an emerging trend that upholds the view that to succeed in the wired world, one needs to master these new literacies (Kist, 2013; Dudeney, Hockley, & Pegrum, 2014).

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Digital Literacy

The ability to use information and communications technology (ICT) or digital tools, commonly referred to as computer literacy or digital skills, is a component of workplace skills. But to succeed in workplaces of the 21st century, knowledge and practical abilities in using computers are not enough. Dudeney (2015) pointed out that many of the new literacies (like the ability to communicate, interact, analyze, collaborate, construct, create, etc.) have both analogue and digital applications, and an investigation of how these skills are used in a "digital society" shows that they are increasingly leaning toward the digital.

A definition that appeared as early as 1997 identifies a *digital society* as one that is

> characterized by a high level of information intensity in the everyday life of most citizens, in most organisations and workplaces; by the use of common or compatible technology for a wide range of personal, social, educational and business activities, and by the ability to transmit, receive and exchange digital data rapidly between places irrespective of distance. (IBM, 1997)

Considering the deictic nature of literacy (Leu, 2000), a person literate to function in a digital society or who demonstrates digital literacy skills will then be someone who, in addition to computer literacy, possesses the ability to search, evaluate, and use information via digital technologies; discuss and disseminate information on online communities and social networks; and create information using digital media. Digital literacy, hence, is not only knowing how to operate computers, but knowing how to use the social practices surrounding new literacies under four areas: language (understanding multimodal texts and hypertexts; knowing implications of language used in Short Message Services [SMSes], synchronous chats, etc.), information (searching and retrieving, collecting, editing, storing, and using information), connection (using e-mails, blogs, wikis, social networks, Twitter, SMSes, Google Docs, and YouTube and knowing when to use what), and design (constructing websites, redesigning and mashing available multimedia, reconstructing; Dudeney, 2015).

Digital literacy is an essential quality that makes an individual capable of living, learning, working, and participating in a digital society (JISC, 2014). Recognizing the need for digital literacy for success in the current workplace, in society, and for personal growth, agencies like the United Nations Educational, Scientific, and Cultural Organization and the European Universities Association declared digital literacy a *gate skill* and an essential *life skill*.

To participate fully in a technology-rich society for professional development, development of the society, and of the self, one needs to know how to fully utilize the vast scope offered by technology. Warschauer (2011) listed four areas on which pedagogical practices can focus to incorporate digital literacy into educational contexts: content, community, construction, and composition. Digital literacy instruction that focuses on content helps achieve enhanced information literacy. In other words, access, comprehension, storage, and use of information available on the Internet are the outcomes of such practices. Teaching digital practices focusing on community establishes the power of online networks to bring learners together, and a focus on construct helps learners generate multimedia documents. Finally, pedagogical practices that deliver composition skills instruct learners in the methods and modes available for collaborative writing, a skill that is essential at the workplace and considered equally valuable in academic contexts.

Successful learning outcomes of digital literacy programs would mean developing a learner's ability to (a) work with newer contents (search, retrieve, collect, edit, and manage information; comprehend multimodal and/or digital texts; analyze, evaluate, think critically, and solve problems), (b) connect with others to communicate (write using new tools; share information with others) and collaborate (learn through participatory discussions), and (c) construct information (create new information; design multimedia documents; re-design and mash available information).

Importance of English Language in Workplaces

In any flourishing workplace, chances are that English is being used to perform many content-, connect-, and construct-related activities. Current use of English is not restricted to speech in the oral or written mode; we use multiple channels of communication like tweets, e-mails, blogs, synchronous and asynchronous chats, Blackboard discussions, SMSes, and conferencing, and to simplify matters for the communicators, we also use multiple modes like print, visuals, videos, audios, and emoticons. English is the preferred language of communication more so because it is the dominant language of the Internet and also because it ensures wider communication opportunities, enhanced productivity, and assured lifelong learning opportunities. This article proposes a model for incorporating digital literacy skills lessons into English language lessons or, in other words, delivering English lessons using digital tools to help learners develop skills that increase workplace productivity and enhance personal growth.

Background

In India, the strongest exhortation to route the country's growth as a digitally empowered society came in July 2015 from Prime Minister Modi's launch of Digital India, which promises access to all to digital services for knowledge, information, and communication and enables channels for successfully using these for personal development and professional productivity. With knowledge ceasing to be a static construct in a digital society, one's potential to learn continually and independently also forms a significant indicator of one's success. This was augmented by President Pranab Mukherji in his address to the students and faculty members of Central Universities/Institutions through videoconferencing on August 10, 2015, during which he remarked that the capacity to use high-end technology is an essential component of higher education in the 21st century and that lifelong learning becomes easier with the use of digital technologies.

Seeking to prepare India's workforce to thrive economically, intellectually, personally, socially, and globally, the government of India emphasizes through its many schemes that digital literacy skills must be imparted on our citizens. Ways to incorporate use of technology, along with language literacy, soft skills, and lifelong learning skills, into the curriculum of various skill development training programs including those for the unorganized sector, are constantly being explored. The National Skills Qualifications Framework (NSQF; Ministry of Finance, Department of Economic Affairs, 2013) was developed to set nationally acceptable and internationally comparable competency level standards to ensure quality and increase the relevance and flexibility of the skill development training programs undertaken by different agencies.

Skill India, launched by the Ministry of Skill Development and Entrepreneurship of the Government of India in 2015, is NSQF compliant and provides the application background for the proposals made in this article. Skill India aims to train over 400 million people in India in

different skills by 2022. With the aim to improve employability and productivity by ensuring job readiness in our skilled workforce so that our youth gain not only personal growth, but also contribute to the country's economic growth, the *National Policy on Skill Development and Entrepreneurship 2015* (Ministry of Skill Development and Entrepreneurship, 2015a) sets skilling at scale with speed and quality as its target objective. Skill India identifies around 40 sectors in which to offer training, with plans to develop training courses that focus on practical delivery of work and enhancement of technical expertise so that our youth is job ready and companies do not have to invest in training them. The courses need to be aligned to the NSQF, which states standards recognized by both the industry and the government and meets international demands. This, it is hoped, would open opportunities for overseas employment.

Some other objectives of Skill India are to (a) skill youths in such a way that they get employed and also improve entrepreneurship abilities, (b) promote personal growth and the country's economic growth, (c) make technical and soft skills (IT skills, English language and communication skills) central components of all skilling courses, (d) design training programs to meet international levels so that our skilled youths are able to meet international demands, and (e) promote sustainable livelihoods through lifelong learning.

Skill India provides training, support, and guidance not only for skilled workers in traditional occupations like carpenters, cobblers, welders, blacksmiths, masons, nurses, tailors, and weavers, but also in newer areas such as real estate, construction, transportation, textiles, the gem industry, jewelry designing, banking, and tourism, where skill development courses are inadequate, or in some cases even nil. An example is the skills training program for construction workers across the country designed by the Confederation of Real Estate Developers Association of India. The training program provides onsite and classroom training to construction workers to help develop their technical skilling and safety.

The NSQF (Ministry of Finance, Department of Economic Affairs, 2013) is an integrated education- and competency-based skills framework that transcends both general education and vocational education and training and organizes qualifications into a series of levels of knowledge, skills, and aptitudes required for the job market (Ministry of Finance, Department of Economic Affairs, 2013). Levels are defined in terms of learning outcomes that can be achieved through formal, informal, or nonformal education contexts. The NSQF is organized into 10 levels, each of which is described by learning outcomes in five domains: process, professional knowledge, professional skill, core skill, and responsibility. See Table 1 for a sample level (Level 5).

Table 1. *Level 5, National Skills Qualifications Framework*

Level	Processes required	Professional knowledge	Professional skill	Core skill	Responsibility
05	Job that requires well-developed skill, with clear choice of procedures in familiar context	Knowledge of facts, principles, processes, and general concepts, in a field of work or study	A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials, and information	Desired mathematical skill, understanding of social, political, and some skill of collecting and organizing information, communication	Responsibility for own work and learning and some responsibility for others' works and learning

Note: Source: Ministry of Finance, Department of Economic Affairs, p. 10.

Core skills, the domain under consideration for purposes of this article, are aligned closely with the new literacies and workplace skills discussed earlier in this article and consist of the language skills of reading, writing, and speaking; social skills; presentation skills; the ability to collect and organize information; the ability to conduct development of self and others and to plan self-study; the ability to solve problems; and the ability to make strategic decisions in unpredictable and complex situations. Additionally, it has components of arithmetic, financing, environment, hygiene, and social, political and economic awareness (Ministry of Finance, Department of Economic Affairs, 2013). (Though these skills are linked by their influence on each other, for ease of discussion in this article, the language-based skills of reading, writing, speaking, social skills, presentation skills, and, ability to collect and organize information will be referred to as skills required for *professional development* and the others categorized as skills for help with *personal development*.)

As discussed earlier, because professional skills are performed using technology and in English at many workplaces, this article endorses including English language literacy and digital literacy in skilling courses as the most practical step toward achieving NSQF core skills professional development outcomes. So what about personal development skills? Promoting lifelong learning has long been a concern of educational practitioners, researchers, and theorists alike. Lifelong learning sublates socially inclusive participation and learner autonomy and includes competitiveness, employability, and personal fulfilment. A methodology that seeks to promote lifelong learning in a digital society then needs to provide learning opportunities in authentic work environments, interaction opportunities among professionals, practitioners, experts and users, and scaffolded knowledge building and exchange opportunities through digitally connected local and international communities of practice (UNESCO Participation Programme, 2008).

The instructional methodology outlined by NSQF to facilitate achieving core skills includes (a) using all available opportunities to develop a unique education system taking into account the sociocultural context of the country, (b) making use of students' existing knowledge levels, (c) making apprenticeships and on-the-job training an integral part of the training process, (d) promoting close linkages with industry and facilitating placement, and (e)

leveraging existing public infrastructure. Koschmann, Myers, Feltovich, and Barrows (1994) proposed designing learning events that build upon students' knowledge and experiences and are embedded in meaningful contexts to promote lifelong learning in complex and ill-structured domains like grounded skills training. Training programs for skilling courses should, rather than focus on designing curriculum or syllabus, pay attention to factoring in and incorporating learners' prior knowledge and experiences, resources available in their contexts, and the dynamic connections that exist between learners, people, things, locations, and events (Pea & Gomez, 1992, and Tobin & Dawson, 1992, as cited in Hooper & Rieber, 1995). Instruction in skilling courses that are grounded in authenticity of contexts, settings, and needs must be socioculturally relevant and, at the same time, highly personalised and needs specific.

Digital Literacy, English Language, and Context-Embedded Resources: Enablers of NSQF Core Skills

Educators now agree that learners' sustained engagement with information and communications technology and digital tools is integral to promotion of sustainable livelihoods through lifelong learning. The primary thrust of this article is that English and digital literacy should not be treated as separate components, that both professional and personal development performance indicators identified under the core skills of NSQF can be achieved with better productivity, assured employability options, and long-term benefits if English is taught through the digital medium using context-based resources (see Figure 1).

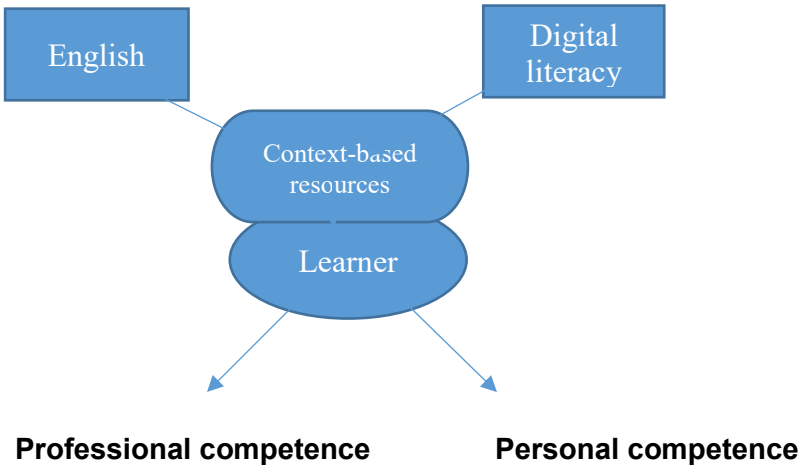

Figure 1: Training components to facilitate core skills competence.

This article examines application of the ecology of resources (EoR) model (Luckin, 2010) for delivering language learning outcomes (in this case, English) through blended classroom environments that use contextually available resources. This would ensure satisfactory achievement of not only communication/language literacy and technological literacy, but also active social participation, lifelong learning, and learner autonomy.

The Ecology of Resources Model

The EoR model proposes use of all resources available in a learner's context as potential learning catalysts/agents/tools. This would ensure inclusion as well as enable use of all

resources available in one's context like one's sociocultural setting, the learner's prior knowledge, apprenticeship opportunities, industry resources, and so on.

A learner's context is his or her lived experience of the world that reflects their multiple interactions with people, artifacts, and environments (Luckin, 2010). The EoR model provides us a framework for understanding the different resources and multiple interaction patterns that contribute to a leaner's context, the interrelatedness between these resources and between them and the learner, and how these need to be utilized to design beneficial educational experiences. Context-dependent learning events are needs specific and therefore of value to the learner.

The EoR model is grounded in an interpretation of Vygotsky's (1978) concept of zone of proximal development. The sociocultural approach put forward by Vygotsky holds that an individual's cognitive development is a result of his or her interactions with his or her sociocultural environment. Explaining how social interaction contributes to the cognitive development of a child, Vygotsky stated,

> Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological)... All the higher functions originate as actual relations between human individuals. (p. 57)

All forms of higher knowledge, related to both spontaneous concepts and scientific concepts, initiate out of interactions between humans in society. To learn how to control and use this knowledge, the learner attempts to own or possess it through a process of internalization. The knowledge (or skill or attitude) received through interpsychological (i.e., between-person) development is made intrapsychological (i.e., within-person) through the process of internalization. Internalization, according to Vygotsky, can be hastened, made more efficient and systematic when supported by a more knowledgeable other (MKO), a competent other who has more skills or is at a higher cognitive level than the learner. In formal education settings, this means the instruction given by a teacher (MKO) functions as a scaffold to help crystalize the learner's internalization process.

The possible range of development in a child with scaffolding received through collaboration or guidance far exceeds what the learner can achieve alone. The discrepancy between a child's actual mental age (or what she can do without assistance) and the level she reaches in solving problems with assistance from an MKO indicates her zone of proximal development (ZPD). The ZPD can be created through instruction that allows interactions, or dialogue between the child and the instructor. Increasing ZPD should be the prime objective of all learning settings.

Luckin (2010) elaborated the concept of ZPD and its construction by including two other concepts: zone of available assistance (ZAA), which includes all resources available that can provide various quantities and qualities of assistance in a learner's world at a given point of time, and zone of proximal assistance (ZPA), a subset of ZAA that is a selection of resources from ZAA appropriate for the learner's needs chosen based on interaction between the learner and the MKO. It is interacting with ZPA that helps a learner achieve tasks that are at her ZPD. Collaboration that is at the heart of the EoR model emphasizes interactions between the learner and the MKO to construct a learner-specific ZPA that assists the learner's optimal performance or performance at ZPD.

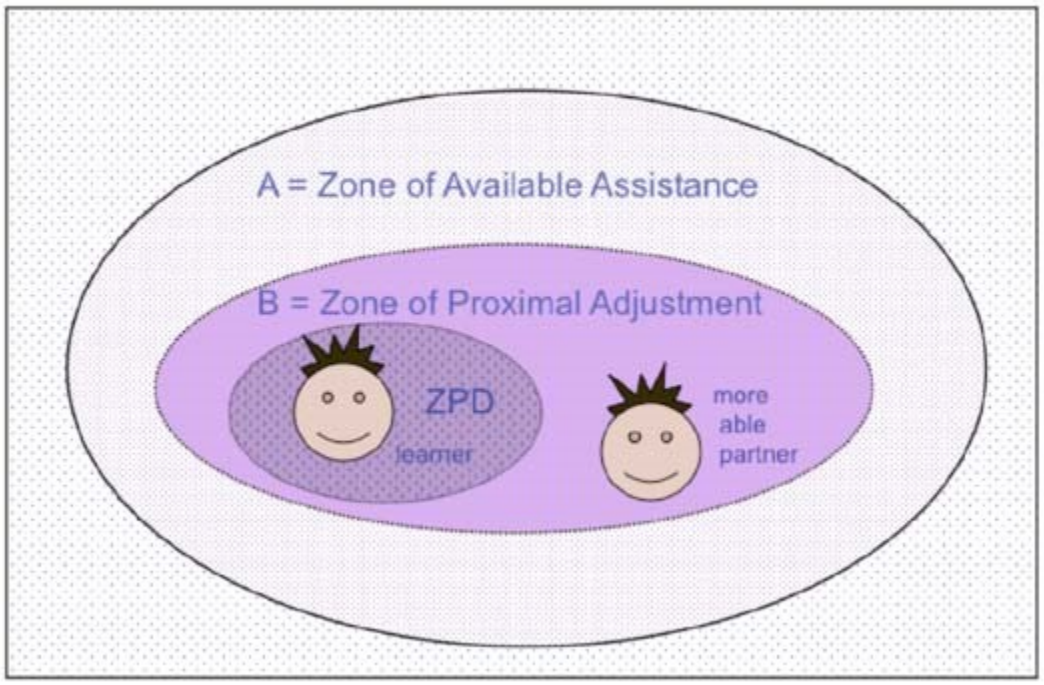

Figure 2. Zone of available assistance, zone of proximal assistance, and zone of proximal development (ZPD). *Note:* Source: Luckin, 2010, p. 29.

All available forms of assistance in the learner's ZAA are organized into kinds of resources that are helpful (or the ZPA) by the MKO or more able partner. The EoR model categorizes these under the elements knowledge, environment, and resources (e.g., people and tools). The EoR model helps visualize the ZPA or the ecology of resources in a particular learner's context based on his or her learning need and thus allows ways to understand their relations and roles and maximize their use to meet the learner's specific learning needs.

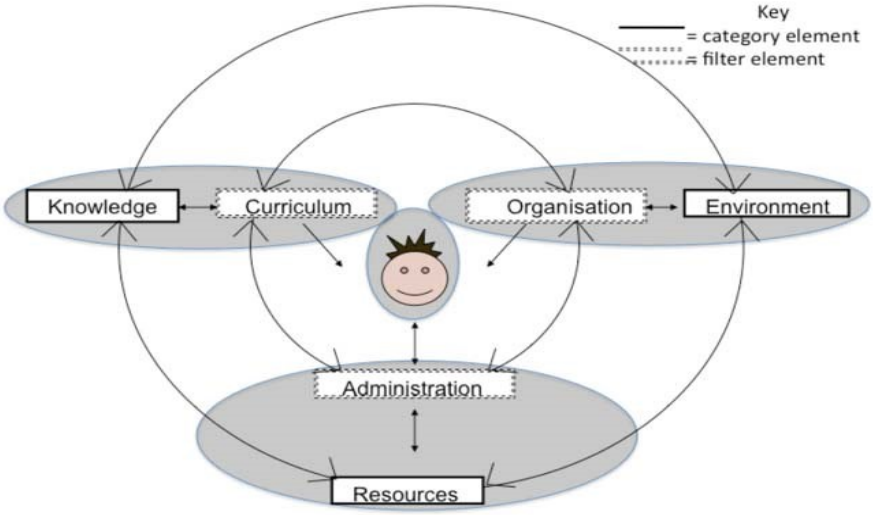

Figure 3: The ecology of resources model. *Note:* Source: Luckin, 2010, p. 94.

The EoR model has the learner at its center, with the different resources that he or she interacts with placed around him or her. One of the resources the learner needs to interact with is knowledge and skills; that is, the things that are to be learned. A second resource, tools and people, includes books, pen, paper, technology, and people, all who know more about what is to be learnt, than the learner (MKO). The third resource the learner interacts with is the environment, the physical surroundings, settings, or location, like home, school, park, work, shop, and so on.

According to the EoR model, the MKO should be able to understand learner levels and needs and create a rich and learner-appropriate learning context (ZPA) drawing from all the resources available in the learner's environment (ZAA, the grey circle in Figure 2). The MKO scaffolds learning by not only choosing the right resources for the learner and helping build a ZPA, but by later helping the learner interact with the ZPA to succeed in tasks that are at his or her ZPD. The MKO understands and makes explicit the relationships between different types of resources in the network the learner interacts with, as well as the relation between the learner and the resources.

The primary purpose of the EoR model is to draw a comprehensive list of all possible context-embedded resources available to a learner in any particular skilling course that aims to teach English using technology. Luckin (2010) went on to explain that most times, resources are not experienced directly; there is a filter that is imposed that obstructs learners' direct access of resources. For example, curriculum standards that decide content and sequence of teaching are filters set on knowledge and skills; temporal and spatial conditions that determine when and where a certain teacher is available, cost of a textbook, availability of tools, and so forth are filters on tools and people; and organization of environment based on timetables, arrangement of classroom space, and so on cause filtering of perception of environment as a resource. The second attribute of the EoR model we will draw on is understanding filters in learner contexts and seeing how they can facilitate or debilitate learning.

The third attribute of the model that is of significance to this article is the relationship between the various components in the network of resources—linking between various resource elements, among resource components, and between resources and the learner. The model uses two-directional arrows to denote interaction between all resource elements to show an *influenced by* or *influenced upon* relation. There is bidirectional relation between the resources knowledge, tools, and environment; between filters curriculum, administration, and organization; and between the learner and various resource elements. However, as Luckin (2010) pointed out, the strength of the influence of interrelation will vary depending on the learning situation and learner features. For instance, in a formal setting, a learner's influence on knowledge and skills and curricula, as well as upon his or her environment and its organization, is negligible or, at times, even nil. So, a fourth contribution of the EoR model would be to understand if an increase in the learner's *influenced by* and *influence upon* relation with resource elements is conducive to learning. And, if yes, the ways of promoting a better learner–resource interaction.

Application of the EoR Model in a Blended Learning Context

In this section, we examine possibilities of using the EoR model to deliver digital literacy and language literacy skills to adult learners of skilling courses and consider implications for adapting the model to suit the Indian context where English is a second language.

A skill development training setting is unique because acquiring expertise requires gaining both content/professional knowledge and professional skills (see Table 1). A blended

learning methodology might be an ideal educational setting in such a context because it allows delivery of content and instruction partly using online or digital mediums and partly in the face-to-face mode, effectively allowing degrees of "blendness" of direct teaching activities and training in authentic work environments. Delivery in the online medium allows learners autonomy in terms of pace, place, content, and time for learning facts, principles, and concepts, while delivery in the face-to-face mode guarantees learning practical skills and acquiring expertise under expert human eyes. By making learning possible both inside and outside classroom settings, blended learning reduces the disconnect between classrooms and social settings. The adaptiveness of technologies also allows using multiple innovative and highly personalized methodologies like apprenticeships, on-the-job training, and linkages with industry to deliver unique and industry-specific training modes in the skills development sector.

Blended learning has the potential to facilitate interactions of various types with a number of agents—an essential outcome of the linking opportunities in learning contexts explained by the EoR model.

Freedman (1995) pointed out that students learn while interacting, but interaction occurs at various levels of involvement—ranging from highly involved to relatively uninvolved—and consequently, the depth of learning also varies. Verbal participation is not a reliable indicator of deep involvement; instead, learning can be made more meaningful if learning spaces allow multiple interactions with texts, adults, nonverbal media outside classroom, and other agents. Dialogues and internal conversations will be "richer if they occur in sociocultural and cognitive spaces where multiple voices and multiple ways of voicing are welcomed" (p. 91). According to Freedman, the amount, quality, and types of interactions can be increased when they are mediated by tools like language and nonverbal tools like technology and artifacts. Implementing the EoR model in a blended learning setting allows learners dual modes of interactions with resources—in the real-time mode and the virtual mode—with a large selection of resources, both in verbal and nonverbal mediums.

Applying the EoR model to blended language learning programs offered in a skilling context, this article seeks to understand if learner access to resources mediated through blended learning can (a) contribute to an increase in the resources available in a learner's context, (b) alter the constraining effect of filters, (c) facilitate advantageous linking between components in the network of resources, and (d) increase conducive learner-resources interaction.

In a blended learning context, bidirectional linking of learners with resources occurs twice: once in the face-to-face mode and again in the digital mode. What are the resultant beneficial changes on the learner's relation with resource elements when learner access to resource elements (knowledge, tools, and environment) is both real time and technology mediated?

Learner's influenced by/influenced upon relation with knowledge and skills. Using multimedia and hypermedia to present content allows representation of knowledge from multiple perspectives and in multiple modes. Exposure to information from varying perspectives ensures active processing of content and thereby promotes deep learning. Technology mediation permits realization of two principles important for facilitating higher order thinking skills of application, analysis, and evaluation of knowledge learned: Content is presented in multiple perspectives and using multiple modes, and there is scope for more and active interaction with content (Hooper & Rieber, 1995). Various ways in which information can be presented and

accessed also mean sufficient opportunities to meet learner heterogeneity in terms of selection, organization, and integration of information (Mayer, 2005).

Freedman (1995) observed that the most highly involved classroom interaction occurred when students participated in curriculum making, and the least involved and most superficial interactions occurred while preparing for exams. When accessed through technology, knowledge and its filters like curriculum become more tangible, malleable, and organic objects. They assume bottom-up properties, allowing learners to manipulate them to accommodate specific, newer learner interests.

In the case of training in grounded skills like farming, carpentry, and weaving, learners are adults with varying levels of content, language, and technology literacy, and learner needs vary. In such instances, a filter might be an impediment, and so it is good to involve the learner as much as possible in determining the knowledge and skills that need to be taught. Technology mediation in blended classrooms equips the learner to create specific learning objectives and design learning contexts by varying the establishment-approved content and sequences of learning. Deleterious effects of filters can thus be reduced and even overcome in digital modes of interaction.

Learner's influenced by/influence upon relation with tools and people. A larger number and types of tools and people are available and accessible when learner interaction is facilitated through technology. This results in a wider and richer ZAA capable of promoting both content and language literacy. Dourish (2001) pointed out that technology makes new forms of interaction possible and is capable of making even boundaries presented by human bodies more permeable. The type of technology available now helps one overcome many naturally occurring restraints, such as in storing information, capturing thought processes, and extending one's reach beyond boundaries. For example, using digital tools allows more work than paper and pen. Digital tools can also be employed as workhorses to deliver expertise in skills that require routine and repetitive practice, activities that are not practical in classroom settings.

So is the case with regard to people. In a face-to-face classroom, we might have experts visit, give a lecture, interact, and leave. However, if promoted through the digital mode, the same interaction can be richer, longer, and more efficient: Interaction with people can be at their workplace that allows observation of how they meet work demands in authentic settings, participate in more meaningful conversations, learn while they solve problems, work in teams, and so forth.

Luckin (2010) pointed out that various resource elements in a learner's context are linked; encouraging and making use of these connections can help scaffold learning. Reiser (2004) discussed two types of software scaffolding possible—one that scaffolds the task and the other that scaffolds the learner—and mentioned the possibility of these two working together to help learners deal with more content and skill demands than they could otherwise handle.

Use of technology facilitates hitherto unforeseen but advantageous linking between components in the network of resources. In blended learning contexts, three kinds of linking are possible that can scaffold tasks: (a) Learners can link with a variety of scaffolding agents—not only with teachers, peers, and experts, but also with members of a community of practice, both in local and global contexts, thus facilitating distributed cognition. (b) Links can also be formed within components of a resource element: links that can transform tasks can be forged between tools and artifacts, people, and technology. (c) Components of different resource elements can be linked; for instance, workplace environments and tools can be connected via technology.

Additionally, each learner is characterized by cognitive, affective, metacognitive, and epistemic cognition intralearner resources or learning strategies that are developed through prior knowledge interactions at home, classroom, playground, with people, books, technology, and so forth. These learning strategies keep changing as learning experiences change. For effective learner scaffolding, these resources need to be considered in an integrated manner and in a manner that recognizes the connections between these within-learner resources and those resources in their EoR (Luckin, 2010). In blended learning, several levels of learner scaffolding can be made possible based on levels of learning, learning styles, kinds of learning beliefs, and so on that enable one to take more responsibility of one's learning.

Learner's influenced by/influenced upon relation with environment. Temporal and spatial filters that prevent the availability of various environment resource components are a huge setback to skill-based learning. Through the use of virtual reality, tangible technology, embedded reality, augmented reality, digital artifacts, and so on, such filters can be overcome.

Advantages of the EoR Model in Blended Learning Settings

In blended classrooms where technology and face-to-face modes work side by side as media for interacting with resources, the EoR model provides a framework for designing enhanced interaction opportunities with resources. While interacting with resources in a face-to-face mode provides the ease of narrowness of teacher-led content-based classrooms and the vital element of personal interaction that arises out of learner-specific stories, as described above, interaction with context resources via technology makes possible conducive learner–resources, resources–resources, and within-resources interactions. This encourages us to think about the possibility of a larger ZPD when learning contexts are technologically mediated.

Learner-generated contexts. Digital literacy skills empower learners with the capacity to create highly personalized learning contexts, or learner-generated contexts (Luckin, 2010). A learner-generated context is defined as a context created by a group of learners interacting in an environment that encompasses teachers, academics, designers, and policy makers, but goes beyond them with a common, and highly specific, self-defined goal. A learner-generated context is created by a group of learners who choose and order resources available to them in their ZAA to create an ecology that meets their needs. Freedman (1995) observed that more than abilities and levels, it is interests that make a successful, closely knit community—a factor that is conducive for promoting deep learning. Learner-generated contexts are especially of use in contexts where there is no curriculum like in grounded skills, or there is an evolving curriculum like in new areas like real estate and jewelry design.

Described below is an example of a learner-generated context enabled through technology:

> As part of their English class, members of a sustainable handloom group owned and managed by the primary producers—farmers, spinners, dyers and weavers—want to spread awareness about handloom weaving and plant-based dyeing processes that are ecologically sensible and environment friendly.
>
> They use basic search engines to look for information related to environment pollution caused by power looms and artificial dyeing and highlight the advantages of handlooms. They use Del.icio.us and Pinterest to collect, organize, and share websites and images. Some members read relevant information and use SpiderScribe to make notes, group,

and organize ideas. They then create a website to publish their ideas where they highlight the advantage to the environment when handlooms are used. The website offers links to a large bank of information resources that include animated explanations of handloom processes, videos of geographical areas affected by power looms, lists of handloom stores, contact details of expert weavers, locations of weaver communities, designers, areas of collaboration, and so on. The website links to their album on a Bookr page, their expansion plans collected on a Padlet wall, and their ideating conversations with customers on new designs on VoiceThread. WhatsApp is used to interact with customers for selling products readily available. This supports selling from the home. Outside office sales primarily cater to customers who are working women, and this provides an authentic arena for the seller to use English that he or she learned at school.

Linking artifacts with tools helped when an image of a traditional kolam (rangoli) design and a family portrait were shared by customers with requests to convert to saree designs. Krita and LunaPic were variously used to work with images.

The group has a white paper in progress that details collaboration with popular designers. This document is shared on Google Drive and, hence, is a work in progress. The group has an e-portfolio that collects reports of meetings, exhibitions, and other public outings using Wikispaces. It allows discussion on blogs, contributes to the body of knowledge through a wikipage, and makes frequent announcements on its Facebook page. It is an ever-expanding group, as it keeps adding others from the community to its various pages. The Facebook page and blog invite constant remarks, opinions, and conversations with not just customers, but with prospective weavers, practicing weavers, designers, environmentalists, activists, scientists, and sometimes even local politicians who are keen to take up the cause of pollution or handloom weavers.

These learner-generated resources could become a learning text for weavers, environmentalists, design students, store owners, customers, or volunteers for other causes, as well as form a sample model for other artisans, thus validating contextually generated knowledge.

Evidently, such brilliantly conceived learner-generated contexts require participant leaners who have considerable expertise in the areas of content, language, and digital literacy.

So, what are implications for using the EoR model with novices? Identification and utilization of resources by the learner are both assisted by constant interactions with the MKO. In a blended skill learning setting, initially, the role of the MKO also includes deciding which components of resource elements to be allowed in the digital medium and which in the face-to-face medium. It is also only the human MKO who is capable of finding and stimulating paths for task and learner scaffolding.

Beginning learners in ESL skilling contexts are those whose content knowledge or professional knowledge like common trade terminology, basic facts, principles and processes, and theoretical knowledge are in their first language. Chances are that they might also have low English language skills and digital literacies. Technology and language resources deficits obstruct access of professional knowledge development opportunities available to all in a digital society. "Students cannot develop academic knowledge and skills without access to the language in which that knowledge is embedded, discussed, constructed, or evaluated" (Crandall, 1994, p. 256).

Links between learner and resource elements in the case of novice learners are unidirectional; with low digital and English language literacies, the *influence upon* linking may not be as strong as is the case with expert learners. So is the case with linking among resource components. Low levels of content and language literacy prevent a learner from seeing links and making links, and low levels of digital literacy result in impoverished interactions. This could mean that creation of learner-generated contexts, indicative of lifelong learning, requires a threshold level of language literacy and technology literacy—that with a certain level of English and digital skills attained, our learners can venture into the path of learner autonomy and lifelong learning.

Implications

This article proposes the application of the EoR model to help make skill training more powerful by creating learning opportunities that are engaging and relevant to learners' lives and prepare them for success in the workplace and society. The article makes clear the relevance of both technology and face-to-face teaching for adequate preparation of our workforce. It also aims to help teachers realize the potential benefits of using technology so that they move from the simple use of technology (using technology as visual aids or drill practices) to quality use of technology (using 2.0 tools to aid critical thinking or facilitate professional interactions) in their teaching. Lastly, the article highlights the significance of utilizing contextual resources in learning settings.

For the learners, this model gives scope for continuous learning in authentic knowledge and sustainable learning environments by providing knowledge development and knowledge sharing opportunities with professionals, practitioners, experts, and users in their fields. For learning technology design experts, what might be of interest is the possibility of creating tools with user interfaces that allow and accommodate multiple interaction pathways with content and people—for manipulation, design, aggregation, and curating of content. For the researcher–practitioner, the article throws open two venues for possible exploration: the threshold levels of content, language, and digital literacies required for creation of learner-generated contexts and if a wider ZPD, possible in a blended learning context that uses the EoR framework, can help reach the threshold quicker.

Conclusion

The article proposes the implementation of the EoR model in blended learning environments to create authentic and sustainable learning environments for skilling courses. Applying the EoR model to Indian skilling instruction contexts, the article discusses how English language and technology literacy can be delivered using contextually available resources through a blended classroom environment. This would facilitate not only acquisition of language and digital literacy outcomes, but also consequent content literacy gain to a certain extent. As Crandall (1994) and Mohan (1986) reminded us, in the real world too, acquisition of language skills and content knowledge occur concurrently.

Of interest to us as teachers is that applying the EoR model to blended learning settings can lead our learners toward lifelong learning, autonomy, and equal participation opportunities. By allowing flexible access to all resources to all learners, and providing the tools to create one's preferred learning contexts through interaction and collaboration, the EoR model upholds the universally shared Deweyean values of freedom, individualism, and participation (Dewey, 1916/1997). The collaborative and decentralized interactions among participating learners help

bridge economic, racial, cultural, and other social gaps, ensuring a level learning field for all. As Ernest J. Wilson III noted, with universal access to the Internet almost a reality and no longer a reason for digital divide, it is providing opportunities for "ownership, control, and content" to all that will close the digital divide (Huntington, 2012). Such opportunities make education a truly democratic, contemporary, and pragmatic experience, the utility of which rests on the fact that it responds to all voices in its context. The experimental pedagogy advocated in this article proves that the needs of present-day education can be best addressed using present-day contexts. This is truly preparing learners for the future, not for the past.

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