From Learning 1.0 to Learning 2.0
Key Concepts and Enablers

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Abstract: During the last few decades the learning sector have faced three fundamental changes; society is moving from the industrial age to the information age, understanding of adult teaching has evolved from pedagogy to andragogy, and technology is constantly providing new ways to support and enable learning. In this conceptual paper, these changes are introduced and discussed as key enablers of Learning 2.0. The important role of adult learning as key driver for Learning 2.0 is also argued and emphasised. Based on the analysis of the key enablers a two-dimensional classification is introduced. The classification is based on four archetypes of learning methods, formed according to how they utilise technology and apply learning theories. The archetypes are traditional learning, e-Learning, participatory learning, and facilitated learning communities. Analysis of these archetypes shows that together they are providing all learning types of the 70/20/10 model. The classification also demonstrates that e-Learning does not equal to Learning 2.0, but is one of the first steps in a journey from Learning 1.0 to Learning 2.0.

1 INTRODUCTION

During the last few decades learning sector have faced three fundamental changes. First, as a society, we are in the process of moving from the industrial age to the information age (Castells, 2011). Second, our understanding of teaching adults has evolved from pedagogy to andragogy (Knowles, 1970). Third, technology is constantly evolving in giant leaps providing new ways to support and enable learning. The growth of e-Learning during the last few years is reflecting the speed of the aforementioned changes. For instance in community colleges in the USA, technology enabled distance learning has increased over 32 percent from 2008 to 2013 (Lokken and Mullins, 2014).

In this paper, we will demonstrate that e-Learning is not equal nor synonym to Learning 2.0. Instead, we will show that it is one of the firsts steps in a journey from Learning 1.0 to Learning 2.0. We start by introducing the key concepts and enablers of Learning 2.0, followed by introduction of a two-dimensional framework to classify different learning and teaching methods. We will also argue and emphasise the important role of adult learning as a key driver for Learning 2.0.

2 LEARNING 2.0 ENABLERS

2.1 Changes in Society

As we are moving from the industrial age to the information age, our needs for learning are also changing. In the industrial age it was possible to work in the same occupation with the same employer for the whole adult life. The career started typically by applying for a school, followed by studying the pre-defined curricula and resulting to graduation for a vocation. The curricula was mainly same for all studying for the particular vocation regardless of individual interests.

In the information age the roles of employees are different from those in the industrial age. Roles are more individual and task specific than in the industrial age. This leads, naturally, to different learning and training needs. Indeed, we have witnessed shifting from teacher-centered to learner-

centered learning (Reigeluth, 2012) which takes into account individual learning needs.

Working in the information age requires constant learning of new skills and knowledge. This is called lifelong learning. The lifelong learning introduces new kind of challenges (Pantzar, 2004) to learning sector. Students are older as the percentage of adults is higher. Learning also takes place outside the classroom, typically in workplaces or at home. Using the previous case of communicty colleges as an example of growing number of adult students, 47 percent of distance education students were older than 26 years (Lokken and Mullins, 2014). Adult learners are different from traditional college students in many ways. For instance they are typically highly motivated to learn and strongly goal oriented (Cercone, 2008).

As the workforce is aging, one great challenge to solve is how to transfer the tacit organisation knowledge from senior staff to juniors. This challenge is discussed in the next sub-section.

2.2 Changes in Learning

Learning can be defined as a transfer of learner's state of mind to the state of mind with different cognitive beliefs (Koponen, 2009). Cognitive beliefs refers to learner's knowledge, values, and skills. Learning can occur by acting in reality (ibid., Mayer, 2011) or by learner's own thinking (Koponen, 2009). Acts in the reality leads to individual perceptions, experiences, and information about the reality, which affects learner's cognitive beliefs (ibid). This affection requires processing of the perceived information. Processing may, for instance, involve simply memorisation, or inductive or deductive reasoning (Felder and Silverman, 1988). As a result of the processing, the intended learning may or may not occur. Typically, in a teaching setting, learning does not occur totally as intended but result in a partial achievement of learning objectives.

As noted, learning is about change, and so is adult learning (Cercone, 2008). The science of teaching adults is called andragogy, which differs from the traditional teaching called pedagogy. Andragogy assumes that there are significant differences in learning characteristics between adults and children (Knowles, 1970). Adults have previous knowledge and experience on which they can build new knowledge, by relating the new information to it (Cercone, 2008).

People as individuals have also different learning (and teaching) styles. Inductive learning style involves inductive reasoning; observations,

measurements, etc. are processed to generalities and rules (Felder and Silverman, 1988). For example, one could notice that when the door handle is turned and pulled, door opens. As a result of noticing that multiple doors do open in similar way, one could generalise that doors open by turning and pulling handle. Opposite to this, deductive learning style involves deductive reasoning; rules and generalities are deduced to consquences (ibid). Using the same example above, the teacher tells the general rule directly (i.e. doors open by turning and pulling the handle). One can learn that as long as it is a door, it opens as the rule describes. Induction is a natural human learning style whereas the latter one is a natural teaching style (ibid, 1988).

The famous 70/20/10 model of learning have received a lot of attention in organisations during the past few years. It originates from a survey by Lombardo and Eichinger (1996), where they researched organisations' top-management's learning habits. According to the study, effective managers learned 70 percent from though jobs, 20 percent from other people (usually from their bosses), and 10 percent from the courses and reading. Currently the percentages of the model are referring to learning in workplace, social learning (including coaching and mentoring), and traditional class-room learning, respectively. However, to authors' knowledge, the model has not been scientifically proven.

Traditional learning refers to learning resulting from the usage of the traditional teaching methods. These methods have remained almost unchanged since the time of Plato's Academy. Co-operative (or social) learning refers to the instructional strategies where learners work together in groups to help each other to learn (Slavin, 2011). Learning in the workplace, or by working, refers to the learning by acting in a Community of Practice (CoP). CoP can be defined as a group of people sharing a concern for something they do, but also as a learning to do it better by regular interaction (Wenger, 2011).

The process model of learning at work by Järvinen and Poikela (2001) illustrated in Figure 1 explains the dynamic learning processes of CoPs. The model states that individual learning occurs through *concrete experience*, *reflective observation*, *abstract conceptualisation*, and *active experimentation*. As it can be noted, these are following the definition of learning introduced earlier. On the group level, learning occurs for instance by *learning by doing*, which is linked to the *active experimentation* of the individual level. Learning in organisation level occurs for instance by *institutionalising the knowledge* resulting from the group level *learning by doing*. This

CE = Concrete Experience
RO = Reflective Observation
AC = Abstract Conceptualization
AE = Active Experimentation

SE = Sharing of Experience
RC = Reflecting Collectivity
CK = Combining New Knowledge
LD = Learning by Doing

IF = Intuition Formation
II = Intuition Interpretation
IK = Integr. of Interpreted Knowledge
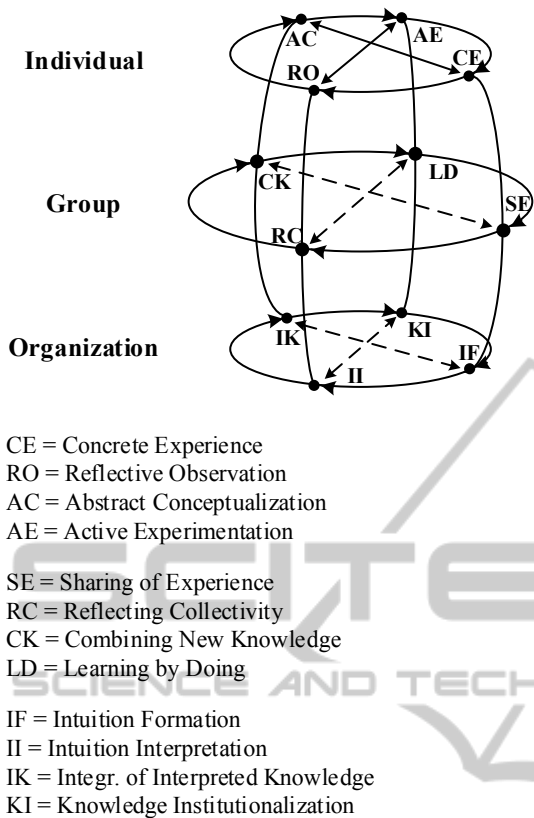KI = Knowledge Institutionalization

Figure 1: The process model of learning at work (Järvinen and Poikela, 2001).

means that organisation level learning is linked to group level learning same way than group level learning is linked to individual level learning. This observation implies that organisations can only learn (indirecty) through individuals. On the other hand the learning is bidirectional, implying that individuals may also learn from organisations.

The key to expanding organisation's knowledge is the joint creation of knowledge by individuals and organisations (Nonaka, 1994). To unleash the tacit organisation knowledge, learning must be managed accordingly. For instance the methods like apprenticeship, direct interaction, networking, and action learning including face-to-face social interaction, are supporting transferring of the tacit knowledge (Haldin-Herrgard, 2000).

2.3 Changes in Technology

Technology has evolved rapidly in the last few decades, enabling new ways for delivering instruction and for learning. One major effect of the evolvement of the technology is that it made possible to deliver content to wider audience. This started with slideshows, video tapes, diskettes, CD-ROMs, static internet pages, etc. Later, Learning Management Systems (LMSs) enabled two totally new computer based communication channels; asynchronous and synchronous (Ebner, 2007). E-mail and discussion forums are examples of the former channel, and on-line chat an example of the latter one. This type of instruction delivery using digital devices is called e-Learning (Clark and Mayer, 2011). In a broad sense, e-Learning refers to both content and instructional methods utilising digital channels.

Moving from teacher-centered learning to learner-centered learning fosters a need for individualised learning content (Reigeluth, 2012). Indeed, contributing factor for this paradigm shift for the past two decades has been technology (Aslan and Reigeluth, 2013).

Typically, when new technology enters the educational scene, the interest about its effects to insctructional practices are high (Reiser, 2001). After a while, however, the interest towards the new technology will cease. As an example, the LMS market has shown marks of consolidation and maturing during the last few years as the smaller LMS providers have disappeared from the market (Lokken and Mullins, 2014).

One of the latest technology innovations has been Massive Online Open Courses (MOOCs), which can reach a tremendous number of students. For instanse in 2012 the "Circuits and Electronics" course by edX had 155 000 students all around the world (Breslow et al., 2013).

Gamification is a recent phenomenom where game mechanics are used to make learning and instruction more fun (Kapp, 2012). It motivates to succeed but also reduces the sting to failure (ibid). This is likely promoting adults to learn as adult learners should be actively involved in the learning process (Cercone, 2008).

3 FROM LEARNING 1.0 TO LEARNING 2.0

In this section we will propose a two-dimensional classification, seen in Figure 2, for categorising different learning and teaching methods. The horizontal axle represents the evolution of learning theories and instructional methods, whereas the vertical axle represents the evolution of technology.

The lower-left quadrant, Learning 1.0, is named as *Traditional Learning*. For the purpose of the study, we define Learning 1.0 as a traditional learning which
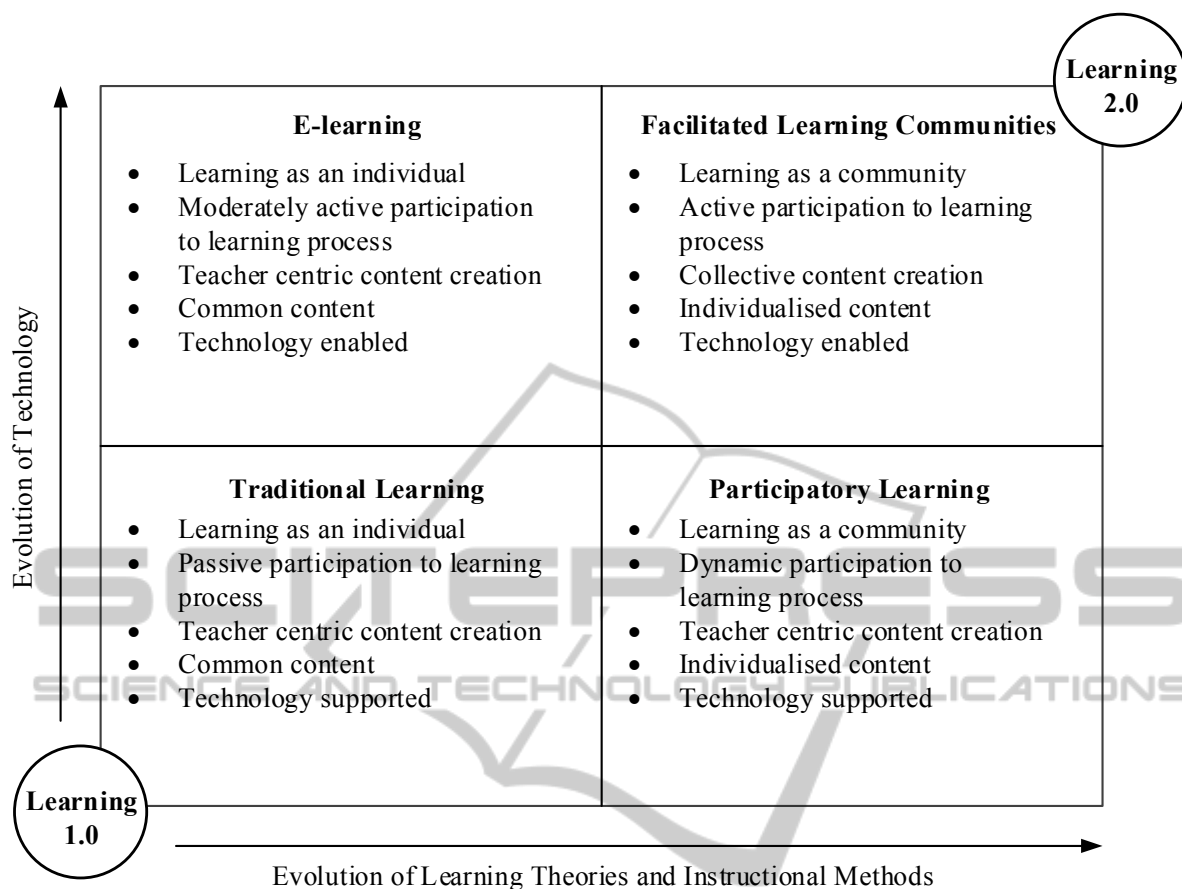
Figure 2: Classification of Learning and Teaching Methods.

takes place in a traditional setting, such as in a class room, where instruction is provided by the teacher. When providing instruction, teacher uses technology merely to support the learning, for instance to deliver the content using video projector and PowerPoint slideshow. The teaching style of the traditional method is deductive.

The upper-left quadrant is named as *E-Learning*. E-learning and Personal Learning Environment (PLE) are providing new channels for delivering content, but also a way for students to participate to learning process. Content is still created by the teacher, but students can communicate with the teacher for instance to ask clarification for certain parts of the content. As such, we regard e-Learning as a traditional learning method enhanced with technology.

The lower-right quadrant is named as *Participatory Learning*. Participatory learning advances traditional learning by introducing new learning methods. The learning content is created by the teacher, but learning occurs in communities. As people are actively participating and receiving

feedback from each other, their role in the learning process are high. Learning as a community allows students to specialise to subjects that are interesting to them. Learning style is mostly inductive. However, the usage of technology is on the same level with the traditional learning.

The upper-right quadrant, Learning 2.0, is named as *Facilitated Learning Communities*. Learning in facilitated communities combines the evolution of technology and learning theories. The biggest difference to other learning methods is the level of participation and role of students. What makes the difference is that as users do in the Web 2.0 (O'Reilly, 2005), learners are adding value by producing content themselfs. As such, the learning style is inductive. Therefore we can define Learning 2.0 as a technology enabled learning taking place in the teacher facilitated community. Learning occurs inductively by interacting with other members of the community and by co-creating the content. Typical to Learning 2.0 is the gamification of the learning. However, gamification is not just badges, points, and rewards Kapp, 2012). At best, gamification allows students to

simulate real-life actions and learn from working experience.

In regards to 70/20/10 model, it can be argued that traditional and E-learning provides the 10 percent of the learning. Participatory learning provides the 20 percent, as learning as a community provides feedback to its members. The remaining 70 percent is provided by the facilitated learning communities, where students co-create content for instance by sharing their experiences and best practices learned by working.

4 CONCLUSIONS

Learning 2.0 is a modern learning method utilising advancements from both technology and learning theories. In this paper, we introduced and discussed the three major enablers of Learning 2.0; changes in society, changes in learning, and changes in technology. We also introduced a two-dimensional classification consisting of four archetypes of learning methods.

Authors are not arguing that any of the introduced archetypes are superior to other *per se*. Instead, we argue that each method are suitable for learning, and that the method should be selected according to learning needs. For example, reading and writing are so abstracts that they can only be learned by traditional method (Engeström, 2014).

The modern era of information age has changed the pace how workforce is required to learn in order to keep up-to-date. They need to learn new skills and knowledge all the time – often regardles of the place and time. Workforce consists of adults and thefore it can be argued that the adult learning is the key driver for Learning 2.0.

Authors are encouraging researhers and practitioners to use the classification while studying the learning and teaching methods. One possible direction for future research is to assess and compare the learning outcomes of each archetype of learning methods.

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