



Innovative Learning and Teaching Context for Adaptive Expertise in the Twenty-First Century

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Abstract: This is a conceptual article on innovative learning/instruction setting for adaptive expertise. Currently, the dominant learning approach is socio-constructivist – where in learning process, a learner actively constructs knowledge in the existing social context through social interaction and recognition with others. Learning should be constructive, self-regulated, sensitive to context and collaborative. The intended expectation of learning in diverse disciplines is to achieve adaptive expertise and lifelong learning competences to allow learner later lives comfortably and resourcefully in different situations. Innovating learning and teaching environment become critical in order to provide the learner with knowledge and skills. This is a conceptual article which intends to share major issues on innovative learning and with relevant competences to face the significant changes taking place and challenges in the communities. Innovative learning environment should recognize the learner as the main actor in and owner of the learning process, encourages his active engagement and guide to understand his responsibilities as a learner. It should appreciate that learning is a social process. Further, it should also recognize learners' individual differences in learning process. It should strongly promote understanding in the areas of knowledge and disciplines that can be transferred to new situations in the community. Lastly, it should allow learner-centred and inquiry-based approaches.

Key Words: Learning, teaching, expertise, lifelong, environment

1. Introduction

The twenty-first century life is characterized by the globalization and its effects such as unemployment, income inequality, poverty, gender inequalities, cost sharing in different areas (reduction in government expenditures vital to the poor such as those on health, education, social safety nets, agricultural extension services and poverty reduction); scientific and technological revolution; climatic change and environmental degradation; and other human associated issues such as cultural and ethical decay, corruption, achievement of Sustainable Development Goals and conflicts/wars.

For a person to live sustainably and work in this global challenging and competitive environments, they must be prepared in the innovative environments to enable them to develop critical life and career skills (Morrison, McDuffie, & French, 2015). In other words, learners need to be sufficiently prepared with high level of adaptive, thinking and life skills to face the challenges of living and working

in a globalized, ever-changing, and technology driven society.

The new vision and innovation of instruction in schools underscore the importance of rethinking what is learnt and taught, how it is learnt and taught and how it is assessed. With reference to different literature, and studies, this conceptual paper discusses the twenty-first century skills, what to learn, how to learn, how to assess the process of learning as well as establish innovative learning/teaching contexts in the twenty-first century. This is a conceptual paper which intends to share major issues on innovative learning and instructional context for adaptive expertise in the twenty-first century. It has been prepared to bring important message from literature to those who are expected to most benefit from it – teachers, practitioners, and educational leaders.

1.1 Basics to Learning Process

It is through learning and teaching, a person acquires critical skills, knowledge, values and attitudes for essential life. UNESCO (2013) defines learning as the continuous

process by which people acquire life competences. De Corte (2010) has described learning as mindful and effortful involvement of learners in the process of knowledge and skill acquisition in interaction with the environment.

Learning is an active, adaptive and continuous process. This means, learners construct new concepts and competences on the basis of what they already know (De Corte, 2010) and learning is continuous throughout the life, from birth to death.

1.2 Twenty-first Century Learning Skills

The twenty-first century learning skills have been defined as the ability to collect, analyze and evaluate the useful, quality, relevance information and resources bring innovation in life (Pacific Policy Research Centre, 2010). They should be the ones that develop abilities that are necessary for success in a technological world (Dede, 2010) handle challenges of globalization. The learning skills in the twenty-first century have been clustered into: core subjects and themes; critical learning and innovation skills; life and career skills; and information, media, and technology skills (Pacific Policy Research Centre (2010). These skills should aim at promoting adaptive expertise and lifelong learning, which allow learners to adapt and be more responsive as the world around them.

We need philosophical stands that facilitate to prepare constructive, self-regulated, collaborative learners to live in different contexts (De Corte, 2010). As De Corte (2010) points out, socio-constructivist philosophical stand currently fits in learning process in twenty-first century, where in learning process, a learner actively constructs knowledge in the existing social contexts through social interaction and recognition with others. One and foremost strategy in our education system should be to prepare citizens with competences to solve problems and create good living places. Competent citizens with adaptive expertise (De Corte, 2010; Goff, 2012) automatically are able to address socio-economic, socio-cultural, technological, and environmental challenges and live comfortably.

2. Literature Review and Studies

2.1 How to Learn and Teach: Philosophical underpinning

According to De Corte (2010), in the twenty-first century, the dominant philosophical stand is the concept of socio-constructivist. In socio-constructivist point of view, knowledge is actively constructed by learners in the existing social context through social interaction and recognition with others (De Corte, 2010; Goff, 2012). This means that the concept of constructivist learning is characterized by

activeness of learners in knowledge construction, cooperation and self-regulation in learning that takes place in the real context (Schreurs & Dumbraveanu, 2014). On this understanding, as discussed by De Corte (2010), effective learning should be in an innovative environment, which offers constructive, self-regulated, contextual and collaborative nature of learning.

From socio-constructivist point of view, *constructive learning* is associated with the core element of the constructivism theory and construction of knowledge by learners, in which learners acquire new competences building on their prior knowledge and experiences (Schreurs & Dumbraveanu, 2014). *Self-regulated learning* is learning which allows the learners to set learning objectives with self-flexibility and self-determination, self-motivation and self-reinforcement, and self-assessment in learning process (De Corte, 2010; Goff, 2012; Schreurs & Dumbraveanu, 2014). *Contextual learning*, In constructivism learning, means that learning process has to include real life situations (De Corte, 2010; Goff, 2012; Schreurs & Dumbraveanu, 2014). The learners interact with the real environment to develop social and interpersonal skills and knowledge in a particular context.

The collaborative nature of learning is central to socio-constructivist point of views of learning (De Corte, 2010; Goff, 2012). Collaborative learning implies that learning is a shared activity where learners, teachers, peers and other people in a learning community construct knowledge collaboratively and through social interactions (De Corte, 2010; Goff, 2012; Schreurs & Dumbraveanu, 2014). This means the learners acquire shared concepts, knowledge, skills and attitudes.

2.2 What to Learn and Teach: Adaptive expertise and lifelong competences

Learning quality outcomes are often defined in terms of mastery across three areas of knowledge, skills and dispositions which make competences in learners. Education researchers and practitioners are aware that the intended expectation of learning in diverse disciplines is to achieve adaptive expertise and lifelong learning competences to allow learners later, by applying the acquired competences, live comfortably and resourcefully in different situations (De Corte, 2010; Goff, 2012).

Adaptive expertise or competences are the competences gained by learners which enable the learners to flexibly and creatively involve in solving challenges and create good living places in different situations (De Corte, 2010, p. 45). This goes beyond acquiring mastery or routine expertise in discipline; rather, it involves continually expansion of the ability of flexibility and adaption in environment and change as per demands of the living context.

The concept of *lifelong learning* has been described as the continuous building of competences during one's life, that occurs through experiences faced throughout the lifetime. As DeCorte (2010) proclaims, the concept of lifelong learning is continuous throughout the lifespan. This means that competences in early life stages set the base for lifelong learning in the next life stage. Additionally, the concept of lifelong learning does not take place only in formal settings like schools, colleges and universities, but in many other different places, including non-formal and informal learning contexts (DeCorte, 2010).

2.2 Learning and Teaching Approaches: Learner-centred and inquiry-based

For enabling the learners to acquire adaptive expertise or competences, innovative learning and teaching should consider learner-centred and inquiry-based approaches, among others, as important approaches to learning.

2.3 Learner-centred approach

For the learners to acquire adaptive/lifelong competences, innovative learning and teaching should provide the room for learner-centred approaches (Goff, 2012; Istance & Dumont, 2010; Schreurs & Dumbraveanu, 2014). This allows learners active involvement in learning through inquiry pedagogical approaches. An innovative learning context is important for all learners to excel in learning in a learner-centred approach. Such a context, which accommodates a learner-centred approach, should be able to facilitate: Competence-based learning; cooperative learning; service learning; home-school partnerships; personalized, relevant, and contextualized learning; and open-walled learning (Goff, 2012; Istance & Dumont, 2010).

2.4 Inquiry-based approaches

In an innovative learning environment, learners are provided with opportunities to develop higher-order cognitive skills and find answers or reasons for problems. An innovative learning environment should enable a learner to develop an inquiring mind and sensitivity to problem solving. One important context for this is to emphasize meaningfully inquiry-based approaches in the learning/teaching process in which learners are actively and sustainably engaged in the construction of knowledge through participation and collaboration in projects and problem-solving activities (Baron & Darling-Hammond, 2010). Learners learn more deeply when they highly engage in the process and see the application of classroom knowledge to real-world problems. The relevant approaches that can be described as inquiry-based include problem-based learning, project-based learning and design-based learning (Baron & Darling-Hammond, 2010).

Problem-based learning is described as an inquiry-based approach in which learners learn about through collaborative

problem solving, i.e., reaching a solution or clarifying a problem by interacting with peers and teachers (Christiansen, Kuure, Mørch & Lindström, 2013). This means that learners acquire shared knowledge in which they develop skills for critical thinking, information seeking, and knowledge sharing. As cited by Christiansen et al. (2013), the goals of problem-based learning are to help the learners develop flexible knowledge, problem identification and problem-solving skills, self-directed learning, and effective collaboration skills.

Project-Based Learning is an inquiry approach in which learners carry out their own learning through inquiry in different project activities (Bell, 2010). Additionally, in project-based learning, learners learn accountability; time management; collaboration, negotiation and communication; and learning responsibility, independence, and discipline (Bell, 2010). As to problem-based learning, project-based learning helps the learners develop flexible knowledge, critical thinking, problem identification and problem-solving skills, self-directed learning, and effective collaboration skills.

Different pedagogical approaches are important in developing adaptive expertise or competences. Goff (2012) has identified three broad pedagogical approaches in an innovative learning environment to develop adaptive and lifelong expertise or competencies:

- *Guided Learning*: The teachers take an active role to decide what to learn, how to learn, how to assess learning, and how to provide feedback and rewards. Learners are seen as passive in learning processes as all learning activities are planned and organized by teachers.
- *Action Learning*: The learners play much more active roles in determining what to learn than in guided learning. Learners may take action in planning and organizing learning with minimal guidance of instructors.
- *Experiential Learning*: In this, learners are main actors and owners of the learning process. It is not managed by instructors and characterized by the absence of predetermined objectives. Real-life experiences of learners determine objectives. What is learnt is determined by context, learners' motivations, the others with whom they come in contact, discoveries made, etc. It is a result of the activities in which people are involved in interactions.

However, there is not only one unique or best approach of leading to success; rather an eclectic approach (combination of approaches) is effective. Therefore, a balanced or integrated of guided, action and experiential learning approaches may be effective in the acquisition of adaptive

expertise and lifelong learning. Such a balance or integration may allow structure and guidance by the teachers and opportunities for active participation, collaboration, self-regulation and self-determination by learners in learning/teaching process. Teachers should take active role of formative assessment and provide feedback on learning process including "expressive outcomes" (unintended results that may occur in a variety of situations outside classrooms).

2.5 Formative Assessment in Learning and Teaching Process

It is important to design formative assessment to provide teachers and students with feedback about learning/teaching process (OECD, 2008). Formative assessment is essential; it can help both learners and teachers to check up their strengths or weaknesses in learning enhance and seek sustainable ways for strong learning/teaching processes. This means that formative assessment should guide both learners and teachers in learning by providing continuous feedback to both learners and teachers on the learning/teaching process (Goff, 2012). In this, five key questions are fundamental: What are the learners' learning? How are the learners learning? Where are the learners in their learning? Where are the learners going? What needs to be done to get them here?

2.6 Principles for Creating an Innovative Learning Context

Literature has shown different principles to guide the creation of innovative learning and teaching environments for the twenty-first century. The following are some core principles:

Learners at the centre: Innovative learning and teaching environment should recognize the learners as the main actors and owners of the learning process and encourage their active engagement (Goff, 2012; Istance & Dumont, 2010). Learners are the central players in the environment and therefore activities centre on their cognition and growth (Goff, 2012; Schneider & Stern, 2010).

Thus, the design of learning activities should allow active engagement and exploration of learners with minimal guidance in learning. This calls for the combined or integrated inquiry-based approaches, including guided, action and experiential approaches as well as competence-based, open-walled, co-operative, and service learning.

The innovative learning and teaching environment should aim to develop self-regulated learners, who:

- Develop meta-cognitive skills to monitor, evaluate and optimize the attainment and application of knowledge (Goff, 2012; Schneider & Stern, 2010);
- Regulate their emotions and motivations during the learning process (Boekaerts, 2010; DeCorte,

2010);

- manage study time well, set higher specific and proximal goals and monitor them, set higher standard for satisfaction and become more self-efficacious (DeCorte, 2010).

Social nature of learning and teaching: Innovative learning and teaching environment should recognize that learning is a social activity and therefore, actively encourages well-organized co-operative learning (Goff, 2012; Istance & Dumont, 2010). According to De Corte (2010) knowledge construction occurs throughout processes of interaction, negotiation and cooperation. The design of learning and teaching environments is effective when it considers and allows interactions of learners with other peers, educators, community members and other nonhuman resources in the learning context.

Recognizing Emotions and motivations of learners: The learning and teaching professionals in innovative learning environment should consider the learners' motivations and the key role of emotions in achievement (Goff, 2012; Istance & Dumont, 2010).

Recognizing individual differences: The innovative learning and teaching environment should recognize individual differences among the learners, in terms of interests, motivation, prior knowledge, and socio-economic/cultural backgrounds (Goff, 2012; Istance & Dumont, 2010).

Assessment for learning: The innovative learning and teaching environment should have formative assessment consistent with learning expectations that emphasize on formative feedback in learning (Goff, 2012; Istance & Dumont, 2010). It is important to design formative assessment to provide teachers and students with feedback about learning/teaching process (OECD, 2008). Formative assessment is essential, it can help both learners and teachers to check up their strengths or weaknesses in learning and seek sustainable ways for strong learning/teaching processes. This means that formative assessment should guide both learners and teachers in learning by providing continuous feedback to both learners and teachers on the learning/teaching process.

Building horizontal connections: Learning and teaching environments should strongly promote horizontal connectedness across areas of knowledge and subjects as well as to the community and the wider world (Goff, 2012; Istance & Dumont, 2010). If well-constructed, such structures provide understanding that can be transferred to new situations - a critical competence in the twenty-first century.

3. Conclusions and Recommendations

For meeting the twenty-first century demands, as Istance and Dumont (2010) inform, an innovative and effective learning environment should be one that recognizes learners as main actors and owners of a learning process; learning as a social

process and it is achieved through social interaction and collaboration; learners' motivation, attitudes, emotions and interests should be incorporated in planning learning; learners individual differences in terms of interests, motivation, ability, and prior knowledge; and formative assessments and feedback as part and parcel of learning process.

Innovative learning and teaching environment should enhance collaboration, learner-centred and inquiry-based approaches to prepare constructive, self-regulated, critical thinking, co-operative, community service provider and self-reliant citizens. It should also make lifelong learning possible in different formal, non-formal and informal contexts. Additionally, as the learners live digitally every day, it should be equipped with quality information, communication and technology (ICT) tools and other digital materials to meet the pace of the global rapid development of science and technology.

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