Innovative Pedagogy for the Twenty-First Century Learners: Issues and Challenges for Teachers and Principals

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ABSTRACT

Ever since the emergence of a global movement that calls for a new model of learning for the twenty-first century, it has been argued that formal education must be transformed to enable new forms of learning that are needed to tackle complex global challenges. Literature on this topic offers convincing arguments for transforming pedagogy to better support attainment of twenty-first century skills. However, the challenges to teach these skills are largely overlooked. Experts realize that the 'transmission' or lecture model is highly ineffective for teaching twenty-first century competencies and skills, even though widespread use of this model still continues. In spite of worldwide agreement that learners need skills such as critical thinking and the ability to communicate effectively, innovate, and solve problems through negotiation and collaboration, pedagogy has seldom adapted to address these challenges. Rethinking pedagogy for the twenty-first century is as crucial as identifying the new competencies that today's learners need to develop. This article explores pedagogies and learning environments that may contribute to the development and mastery of twenty-first century competencies and skills, and advance the quality of learning.

Key Words : Pedagogy, Teacher, Learner, Competency, Twenty-first century

INTRODUCTION

The classroom is considered to be the original cultivator of true learning and the green house that nurtures talent and creativity. The dynamics between a teacher and a student define the essence of a classroom. A great teacher can transform the brick and mortar confinement and take students on a journey of pure learning, responding to their doubts and instilling an environment of curiosity and interactivity. Hence, to optimize the learning experience educational institutions all over the word are vying with each other to embrace innovative methods of teaching and learning.

Rethinking pedagogy for the twenty-first century is as vital as ascertaining the new competencies that the present day learners need to develop. Traditional approaches emphasizing memorization will not advance learners' critical thinking skills or autonomy. To cultivate the higher-order skills they now need, individuals need to engage themselves in meaningful enquiry-based learning that has genuine value and relevance for them personally and their communities. Real-world experiences merged with sustained engagement and collaboration offer opportunities for learners to construct and organize knowledge; engage in detailed research, enquiry, writing and analysis; and communicate effectively to audiences (Barron and Darling-Hammond, 2008).

According to Saavedra and Opfer (2012), learners must hone their skills and enhance their learning as a matter of urgency to be able to address persistent global challenges. However, in spite of worldwide agreement that learners need skills such as critical thinking and the ability to communicate effectively, innovate and solve problems through negotiation and collaboration, pedagogy

has not adapted to address these new challenges. The 'transmission' or lecture model still prevails as the dominant instructional approach in education throughout much of the world (Saavedra and Opfer, 2012). This approach typically leads to indifference, apathy and for most learners, boredom. Instead, learners need to dedicate time to interacting with mentors and peers and practicing and applying newly acquired skills and knowledge. New learning must be assessed and shared with peers through well-designed collaborative encounters that support individuals in adapting their learning to new problems and contexts. Without opportunities to practice and apply new knowledge in a variety of contexts, adaptation and integration of new knowledge will not be achieved. In other words, unless learning environments offer opportunities to communicate new knowledge and solve complex problems through collaboration, it will stifle creativity. All things considered, the 'transmission' model is highly ineffective for teaching twenty-first century skills.

Broad thinking around twenty-first century education acknowledges the need for new 'forms and functions' of learning to be added to worldwide education goals to boost the quality of learning. However, despite the prevalence of arguments for transforming pedagogy to better support the acquisition of twenty-first century skills, the question of how best to purposefully and explicitly teach these skills is largely overlooked (UNESCO-IBE, 2013).

Today's students are active learners rather than spectators. They view themselves as participants in creating information and new ideas (Lead beater, 2008). Accordingly, twenty-first century instruction is based on three pedagogical principles – personalization, participation and productivity (McLoughlin and Lee, 2008a). This framework allows learning through authentic real-world contexts, carrying out projects from beginning to end, and solving problems as they arise. Forming working relationships with teachers and partners in the community, and working collaboratively with peers will also contribute to productive learning experiences for learners worldwide (Bolstad, 2011).

Above all, studies have found that learners are more successful at acquiring new competencies when they build strong metacognitive abilities, reflect objectively on new concepts learned, and integrate that information with their existing knowledge and skills. Once new learning is integrated into existing 'ways of knowing', creativity and originality are natured new cognitive habits are established. This also enhances critical thinking (Lai, 2011).

Metacognitive development is also encouraged by problem-based learning activities that require peer collaboration. The process of collaboration provokes learners to consider new uses for knowledge with their peers and develop new insights for future application (NZME, 2007).

Twenty-first century pedagogy must employ innovative and research-supported teaching strategies, learning technologies and real-world applications (Saavedra and Opfer, 2012). There are different ways to master these skills and competencies in the present day. In this article I would like to articulate on some of the specific pedagogies and perspectives that will promote in mastering the skills and competencies needed to successfully navigate a complex and uncertain future.

Focusing on quality:

The issue of quality and learning outcomes is back on the world's education agenda. Despite the numerous opportunities offered by the global, internet-based economy, there is still a critical need for universal access to quality education and visionary leadership (Cisco Systems, 2009). The Sustainable Development Goal on education for 2030 aims to 'Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all' based on four priority areas: (i) expanded access to quality learning for all, (ii) attention to the quality of education, including content and relevance, (iii) a greater focus on equity and (iv) gender equality with a renewed focus on enhanced access for girls and women to post-basic and post-secondary education in safe and supportive learning environments. Fundamentally, quality learning requires highly competent and committed teachers employing active pedagogies (UNESCO-IBE, 2013). To achieve these goals, nations must 'ensure that there is an adequate supply of well-trained and motivated teachers and school leadership; improve teachers' training, conditions of service and deployment; and offer ample professional development opportunities' (UNESCO and UNICEF 2013a).

Foster participation:

Participatory learning is neither unusual nor new to today's learners, but instead a familiar way for them to socialize and learn. Gone are the days when people learned

and worked in isolation. Today, people regularly take part in online communities where they share opinions, critique ideas, swap insights and comment on each other's plans and aspirations (Davidson and Goldberg et al., 2009). Social media have transformed teaching and learning environments. Camera phones make sharing experiences with others in virtual space almost instantaneous. With the advent of Instagram, Flickr and Twitter, reports on learners' latest experiences are uploaded and remain open for public comment. As such, learners are accustomed to having a voice. McLoughlin and Lee (2007) emphasize the contributions that social media can make to learners' desires to participate and connect with others. They also recognize that social media can support personally meaningful learning through connection, collaboration and shared knowledge building.

Personalized and Customized Learning:

The twenty-first century education will require more personalized learning with an emphasis on supporting rather than stifling creativity. Redecker *et al.* (2011) stresses that "personalization has implications for what, how and where we teach". Personalized learning is not an 'add-on' but a different way to undertake educational endeavours and includes peer-to-peer self-organized learning (Leadbeater, 2008). With personalized learning, individuals approach problems in their own way, grasp ideas at their own pace and respond differently to multiple forms of feedback (Hampson, Patton and Shanks, 2011). Effective twenty-first century teachers create regular opportunities for learners to select the types of experiences they want to further their own learning. This cultivates greater learner autonomy and inspires individuals to take control of their learning (Hampson, Patton and Shanks, 2011).

Emphasis on Project and Problem-Based Learning:

Today's learners face a difficult, uncertain and complex future. Accordingly, the education that they receive must equip the learners with the skills they need to face new challenges. McLoughlin and Lee (2007) highlight the effectiveness of giving learners control over and responsibility for their learning. This is the main concept behind project and problem-based learning and is central to twenty-first century pedagogy. With project and problem-based learning, students learn by designing and constructing actual solutions to real-life problems (Cornell University, 2014a). According to Trilling and Fadel

(2009) effective project learning has five key characteristics:

a. Project outcomes are tied to curriculum and learning goals.

b. Driving questions and problems lead students to the central concepts or principles of the topic or subject area.

c. Learners' investigations and research involve enquiry and knowledge building.

d. Learners are responsible for designing and managing much of their learning.

e. Projects are based on authentic real-world problems and questions that students care about (Trilling and Fadel, 2009).

Project and problem-based learning is ideal instructional model for meeting the objectives of twenty-first century education, because they employ the 4Cs Principle – critical thinking, communication, collaboration and creativity.

Encouraging Collaboration and Communication:

Collaboration is a twenty-first century trend that shifts learning from teacher or lecture-centered settings to collaborative settings. Collaborative learning is a broad term for a 'variety of educational approaches involving joint intellectual effort by learners, or learners and teachers together. In most collaborative learning situations, learners work in groups of two or more, mutually searching for understanding, solutions, or meanings, or creating a product' (Smith and MacGregor cited in Barkley, Cross and Howell Major, 2014). Intentional design, co-labouring of group members and meaningful learning are three essential components of collaborative learning.

The collaborative learning environment encourages learners to express and defend their positions, and generate their own ideas based on reflection. They discuss their ideas with peers, exchange different points of view, question others, seek clarification, and participate in higher-order thinking such as managing, organizing, critical analysis, problem resolution, and the creation of new learning and deeper understanding.

What makes this approach particularly appealing is that all members of the group are responsible for teaching their peers and managing questions and clarifications. In other words, learners are responsible for each other's learning as well as their own (Srinivas, cited in Laal, Laal and Khattami-Kermanshahi, 2012). Collaborative learning embodies free thinking with the end goal being to create

new knowledge. Collaborative learning also leads to the development of metacognition, improvement in formulating ideas, and higher levels of discussion and debate. It teaches learners to monitor each other, detect errors and learn how to correct their mistakes. Overall, collaborative learning improves student participation in formative assessment (self, individual and group assessment) and increases attendance (Laal *et al.*, 2013; Trilling and Fadel, 2009).

Engaging and Motivating Learners:

Independent learning requires motivation. Here in the teacher has a great role in motivating learners and finding ways for them to build intrinsic motivation. According to Malone and Smith, motivation is based on developing the interest of learners, maintaining their involvement and encouraging confidence in their abilities to perform a specific task (Malone and Smith, cited in Meyer *et al.*, 2008). Active participation in high-level strategizing and decision-making can also help learners to acquire attributes in high demand in the twenty-first century, such as social responsibility, cross-cultural sensitivity and emotional intelligence (Facer, 2011).

Growing calls for pedagogical innovation reflect the view that twenty-first century learning will become a process of knowledge creation managed through personalized modes of learning and individualized teacher support. In this context, creativity and originality on the part of teachers and learners will be highly valued and must be fostered (Paavola and Hakkarainen, cited in McLoughlin and Lee 2008a).

Cultivating Creativity and Innovation:

Creativity and innovations are necessary competencies needed in knowledge societies. Yet one question remains – do educators have the courage to disrupt conventional wisdom and encourage learners to improvise and pursue innovations that matter the most? In today's economy, innovations emerge from improvisational teams (Sawyer, 2006). Creativity is deeply social, with most creative insights typically emerging from collaborative and creative circles. McLoughlin and Lee (2008a) argue however that the ultimate goal of learning is to stimulate learners' capacities to create and generate ideas, concepts and knowledge. To this end, there is a need for meaningful learning experiences that tap into and expand learners' creativity, not extinguish it (Robinson, 2006). Teachers can play a key role by

encouraging, identifying and fostering creativity (Saavedra and Opfer, 2012, p. 17).

Use of Appropriate Learning Tools:

The transformation of pedagogy goes beyond the idea that new technologies will produce new forms of learning and new competencies. While technological developments play an important role in learning and can create new and unprecedented opportunities, technology alone cannot ensure a successful learning experience (Davies *et al.*, 2011). There are many different instructional tools available to teachers to stimulate learning and help learners create new knowledge in collaboration with their peers.

Strategic Questioning:

An effective technique to engage learners is questioning. Asking probing questions can foster curiosity and teaching learners to ask questions gives them practical tools to decipher challenging content. Certain appropriately challenging and engaging questions stimulates discussion and leads to critical thinking. Questions encourage learners to explore and redefine their understanding of key concepts.

Capitalize Learners' Interest in Mobile Technologies:

Interaction with digital technologies is now commonplace among young people. However, mobile technologies still play only a minor role in education. When used appropriately, technologies can offer multiple forms of learning, rather than functioning as mechanisms to replace teachers. According to Solis the use of mobile technology has the potential to improve the dynamics of learning. However, the key is to view technology not as the sole solution, but as an enabler within a culture of learning and collaboration. (Solis, 2014)

UNESCO (2013a) notes that initiatives which transform mobile devices into tools for learning, and which support equitable opportunities for students who cannot afford them, generally provide affordable solutions to educational challenges. Research by Redecker and his friends suggests that a mix of different technologies will transform learning by offering a diversity of learning activities, tools and materials, and by providing tools that enable continuous monitoring, and support diagnostic, formative and summative assessment (Redecker *et al.,* 2011). Future learning processes will inevitably take place in environments in which learners select their own modes

of learning and bring personal technologies into education. Mobile devices will facilitate learning by reducing the boundaries between formal and informal learning.

Today, a wide array of software devices and applications has been used for educational purposes. However, as Prensky (2012) points out, 'it is not the tools themselves that we need to focus on, but rather the products, creativity and skills that the tools enable and enhance' (Prensky, 2012). In the twenty-first century learning environments, teachers will need to transform their roles from 'content conveyors to content curators' (Institute for the Future, 2013).

Make the Most of Social Media:

Using social media in traditional education and training appears to be a promising strategy for facilitating and improving learning opportunities (Redecker and Punie, 2010). Facer states that social media can be used as a means to implement pedagogical strategies that support, facilitate, enhance and improve learning processes (Facer, 2009). Additional research by Redecker and his companions suggests that using social media in learning promotes pedagogical innovation by encouraging teaching and learning processes based on personalization, collaboration and changing interaction patterns between and among learners and teachers (Redecker *et al.*, 2009).

The use of cloud capacity to access networks and ensure continuous connection to knowledge, resources, people and tools on demand will soon be taken for granted. Cloud computing in combination with personal mobile technologies will make it easier for people to manage their own information systems and social networks, rather than accessing them via institutions or other providers (Facer, 2012).

Today's digital tools and social media make it possible to transcend classroom borders and integrate resources (e.g. scientific data, library collections, video and film archives) into the curriculum from across the globe. As noted earlier, instruction that emphasizes real-world context facilitates the transfer of learning from school to life.

Designing Relevant and Real-World Learning Activities:

To ensure effectiveness, any curriculum must be relevant to the lives of students (Mansilla and Jackson, 2011; Perkins, cited in Saavedra and Opfer, 2012). Learning activities that are prepared to connect student experiences to real-world problems will transform their focus. The article on Partnership for 21st Century Skills echoes this point: 'when students realize the connection between what they are learning and real-world issues that matter to them, their motivation soars, and so does their learning' (The Partnership for 21st Century Skills, 2007b). More active learning, more relevant curricula, more real-world learning and better-trained teachers will improve the quality of education overall and increase student engagement (Redecker and Punie, 2010).

Using real-world contexts is a key component of twenty-first century learning and instruction. According to the Partnership for 21st Century Skills (2007), research suggests that 'when teachers create meaningful learning activities that focus on the resources, strategies and contexts that students will encounter in adult life, absenteeism rates fall, cooperation and communication grow, and critical thinking skills and academic performance improve' (The Partnership for 21st Century Skills, 2007b).

Teach Meta cognitive Skills:

Metacognition is thinking about one's thinking. It refers to the processes used to plan, monitor and evaluate one's understanding and performance. It reflects an individual's critical awareness of how they think and learn, and their assessment of themselves as a thinker and learner. Metacognition is not solely an intrinsic talent; it can be taught and cultivated. Teachers can cultivate a metacognitive culture that promotes greater learning by helping the learners to identify their confusion, asking them what they find confusing and acknowledging their difficulties, and offering learners explicit instructions on how to think in a metacognitive fashion.

For learners to use metacognition successfully, they must be taught explicitly about the concept and its language. As Weimer (2012) notes, it is terribly important that in explicit and concerted ways we make students aware of themselves as learners. We must regularly ask, not only 'What are you learning?' but 'How are you learning?' We must confront them with the effectiveness (or ineffectiveness) of their approaches.

Building the Right Relationships for Learning:

Right relationships for the sake of learning are gaining prominence in the twenty-first century. New learning experiences will be collaborative, project or problem-based, and supported by relationships that allow

students to practice new competencies of collaboration and communication until they master these skills (RAND Corporation, 2012).

Quality learning and teaching are based on powerful relationships that are built on mutual respect and trust. Leadbeater emphasizes that learners need relationships that will motivate them to learn (Leadbeater, 2008). Motivating someone requires building trust, confidence and capability. Real learning happens when they are supported by the right set of relationships that motivate, engage, care about and reward them. This sort of relationships gives opportunities to learners to actively participate in learning and co-create new knowledge.

Highlighting Learner-Centered Models:

Twenty-first century learning must be relevant, engaging, effective and learner-centric (Vockley M and P21, 2007). It is therefore essential to replace outmoded 'closed classroom' models of teaching and learning, which emphasize delivery of information by an instructor and/or from a textbook, with new more learner-centric models (McLoughlin and Lee 2008a,). Tailoring learning pathways to the characteristics and aspirations of individual learners will undoubtedly demand significant organizational changes in schools (Furlong and Davies, 2012; ISC-I, 2004). Learners also need to take responsibility for their own learning. This will create better interest and ownership for their learning.

Promote Learning Without Borders (Anytime and Anywhere):

The emergence of learning spaces beyond classrooms and schools, and growing recognition of the importance of learning and relearning outside the formal education and training system, offer learners many new options (Taddei, 2009). The meaningful use of new technologies in the home may also increase opportunities for learner-driven forms of learning (Furlong and Davies, 2012).

People should be able to learn anytime and anywhere. Memorization of facts and procedures alone will not be enough in a knowledge society. Sawyer (2008) maintains that educated graduates will need a deeper understanding of complex ideas and the ability to work in global teams to generate new ideas, new theories, new products and new knowledge (Sawyer, 2008).

In the present day mobile devices and new technologies will make learning possible anywhere and

at any time. It is also necessary to learn to adapt to extreme scales and making it possible to offer highly personalized courses yet having the capability to reach many more learners when needed. There is a need to create new incentives and to encourage learners to engage in 'learning without constraints and without borders'. Today's learners must recognize that learning and relearning can occur outside classrooms and schools throughout their lives.

Encouraging Lifelong Learning:

Lifelong learning framework is something that needs to be encouraged. One needs to understand the importance of learning each day, both formally and informally. People will face various learning challenges throughout their lives. There is every possibility of including learning to organize multiple sources of information, learning to learn from experience and deal with the social dimensions of knowledge formation, learning to self-regulate time and effort to learn, learning to forget and to un-learn whenever necessary, and learning to make room for new knowledge (Carneiro, 2007). The availability of lifelong learning will provide pathways to learning that we could only imagin before. Indeed, perceptions about the value of education are expected to change as lifelong learning makes access to education much easier and people's dreams of achievement are progressively realized (Carneiro, 2007; P21, 2013).

Redefining Teachers Roles And Functions:

High-quality teachers are the strongest influence on learner achievement. Many factors contribute to a learner's academic performance, including individual characteristics and family experiences. But research consistently suggests that, among school-related factors, teachers matter most. When it comes to learner performance on reading and math tests, a teacher is estimated to have two to three times the impact of any other school factor (RAND Corporation, 2012).

Although the roles of teachers in the digital age of learning are still evolving, teachers and other learning professionals remain central, no matter how education is conceptualized (UNESCO, 2013b). However, the role of teachers in the twenty-first century must move away from imparting knowledge, towards guiding, discussing and measuring the progress of learners (Hampson *et al.*, 2011; Sawyer, 2006).

Twenty-first century teachers will not be proficient

in every topic on the curriculum, but must become experts in figuring out, along with their students, 'how to do something, how to find out something or how to use something to do something new'. A key part of their role will be to model confidence, openness, persistence and commitment for learners in the face of uncertainty (Bull and Gilbert, 2012).

Innovative Teacher Education:

Pre-service teacher education programmes must also shift their orientation to twenty-first century principles of teaching and learning. Redecker *et al.* (2010) maintain that twenty-first century teacher education must place greater emphasis on instructional design, team-building, facilitating learning and new ways to foster creativity and innovation.

For teachers educated in a twentieth century view of schooling, these are new approaches, and ones that do not naturally build on prior experience. Adopting twenty-first century pedagogy requires teachers to rethink their reasoning about what they teach and why, and to rethink who they are as teachers. It requires them to 'resituate themselves professionally, not as a traditional teacher, but as a highly skilled advanced learner' (Saavedra and Opfer, 2012).

Conclusion and Future Issues:

This article addressed many possible forms of learning in the digital age and the various pedagogies that support learners in acquiring new capabilities and abilities to tackle twenty-first century challenges. Education need to prepare learners to tackle collaborative problem-solving scenarios that are persistent and lack clear solutions. Real-world challenges are highly complex. Learners need to reflect on their ideas, sharpen their analytical skills, strengthen their critical and creative thinking capacities and demonstrate initiatives that will transform themselves and the community.

Today in the world there are many factors that affect the way that learners are educated. Various methods of learning and teaching are followed by various countries. But the challenges before each one of them is to prepare learners to face the problems of this world. In the present system of education learners are missing out on experiences that will prepare them for more satisfying lives and productive work. Nations are also losing opportunities to prepare youth for citizenship, and economies are suffering from lack of innovations.

The twenty-first century has immense potential to reaffirm the role of education with a view to equipping young and old learners to address complex societal, economic and environmental issues. The transformation from teacher-led learning to self-directed learning to self-determined learning will provide learners with a range of competencies and skills needed to succeed in modern global societies.

The augmented speed at which new developments are evolving will demand that young people quickly recognize the importance of lifelong learning. Re-skilling and updating competencies will enable learners of all ages to adapt to new expectations in the twenty-first century workplace and life. A comprehensive and flexible curriculum needs to be followed by education providers. Participation, collaborative learning, personalized learning, project-based learning and real-world contexts will prepare the new learners for greater growth. The commitment of educators to lifelong learning, through ongoing professional development, professional learning communities and mentoring, will form the foundation of this new pedagogy.

Twenty-first century learners can expect to be part of a culture that values participation with ample opportunities to initiate, produce and share one's creations. They will be expected to communicate and collaborate in a variety of contexts, engage in peer-to-peer learning and develop as global citizens. Through applying learner-centered pedagogy such as problem, inquiry and project-based learning, students will gain insights, understanding, increased capacities and confidence by tackling real-world questions and problems.

The twenty-first century pedagogical innovation must equip learners with the skills and competencies to function in a digital culture, using media and informal pathways to enrich their learning and develop essential forms of literacy. Teachers will require meaningful support and time to exploit available resources and tools to create tailor-made learning experiences that are motivating and engaging, yet efficient, relevant and challenging. Traditional educational institutions must experiment with alternative structural formats and strategies for learning and teaching that respond more flexibly to individual learners' needs and changing world scenario.

The roles of schools in the future and their capacity to radically transform people and society remain uncertain. Nations must acknowledge the many reasons why twenty-first century learning must be different. They

must give up petty issues and critically evaluate traditional education to determine whether schools are living up to current expectations. Every nation has its own vision of what a twenty-first century education should look like. Innovations that produce successful learning in one nation can have a ripple effect as other nations adopt and adapt these methods for their own use.

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