

OVERVIEW

Objective: to unpack what we mean by 21st century skills, introduce pedagogical principles that address these skills, and show that strategies based on these principles are congruent to differentiated learning. Therefore, in ensuring we use differentiated teaching-learning in our classrooms, we are addressing both present needs and capacities of students, while also helping them develop the skills and mindsets they need for the future.

SITUATION

21 century = Uncertainty + Opportunity. 21st century as era of constant & accelerating change

MISSION

Understand future-centric education. Given this emerging future – what kinds of skills and mindsets will our students need in their future – what is the 21st century personality?

Build adaptive-creative mindsets – individuals who are FLEXIBLE, OPEN, RESILIENT, PRECISE - People who succeed in contexts of constant, rapid change.

STRATEGY

Use adaptive-creative pedagogy principles as guidelines to understanding the importance of differentiated instruction:

1. **MULTI-MODAL: Increase the number of modes of learning.** Use visual, aural, textual, kinesthetic, numerical ways of presenting and exploring information. *sensing*
2. **EMBODIED: Hands-on whole body involvement;** movement, active manipulation and building of information rather than passive reception of information
3. **EXPERIENTIAL & REAL-WORLD: Connect learning with real world** and communities of the students. The more relevance they can draw between the world inside the classroom and the real world they live in, the more engaged they become.
4. **COLLABORATIVE: Include opportunities for working together in diverse groups.** This develops 21st century learning and working support skills like listening, coherent communication, sharing, empathy, thinking interdependently
5. **REFLECTIVE: Include multiple modes for reflection** to develop metacognition, self-awareness, error checking, and independence in learning.
6. **COGNITION-AFFECT LINK: Enhance high engagement and open minds** through processes that engage students in positive emotions (wonder, awe, fun, curiosity, passion) while challenging them at high cognitive levels.

APPROACHES THAT ARE ROOTED IN THIS PEDAGOGY?

1. Project based learning
2. Portfolio based learning
3. Play based learning
4. Arts Integration

All of these approaches use most or all of the adaptive-creative pedagogy principles and differentiated teaching-learning.

SITUATION: What does the future hold?

The 21 century is a paradoxical and fluid time

It is a time of great unpredictability, uncertainty, increasing diversity but high inter-connectivity.

Globalization is a powerful phenomena that has brought nations and cultures into closer and complex interaction. There is increased economic dependency, social and cultural interaction, and an intensification of the total human impact on the bio-sphere. All of this is being enhanced and accelerated by technological developments, especially in information and communication technologies. Globalization in short has created an inextricably linked human network within which we live and work.

John Donne's sermon from the 17th century that "no man is an island" is especially true today in the 21st century. Living in the 21st century depends on having the skills, values, and mindsets that enable us to succeed in inter-dependent and complex settings that are constantly and rapidly changing. It is no longer enough to just know that other people do things differently; we must be able to communicate and work with these differences, and do so in peaceful and effective ways.

This emerging world therefore holds many challenges and at the same time many opportunities.



The Chinese word for crisis has two characters that mean "danger" and "opportunity". This is a good symbol of the way the world is for our students as they move into their futures.

On the one hand, most past experiences are useless in predicting how things will be in the future. This unknown poses risks and potential danger. This can be frightening.

On the other hand, this constantly emerging newness means there are many opportunities waiting if we only had mindsets tuned to openness, discovery, and transforming potential into reality. This can be liberating.

MISSION

“... it is impossible to foretell definitely just what civilization will be twenty years from now. Hence it is impossible to prepare the child for any precise set of conditions. To prepare him for the future life means to give him command of himself.”

John Dewey 1897 p.78

“[W]e're living in times of massive unpredictability. ... Nobody has a clue what the world's going to look like in five years, or even next year actually, and yet it's the job of education to help kids make sense of the world they're going to live in.

Sir Ken Robinson, 2009

“... the illiterate of the 21st century will not be those who do not know how to read and write; they will be those who cannot learn, unlearn, and re-learn.”

Alvin Toffler, 1983

In all the different aspects of the 21st century, the chief factor driving all else is the constant and accelerating change. John Dewey spoke of the impulse to learn throughout one's life. This attitude has never been more important than it is now. Whether our students feel limited and afraid of this rapidly changing world or see their interaction with the world as challenging but full of opportunities depends on the mindsets we nurture.

It is therefore our charge as educators to cultivate a double vision. We must prepare students TODAY for success in career and life in a FUTURE that for the most part is unpredictable. While we help students master skills and content knowledge, are we also helping them develop mindsets that equip them to be resilient in the face of change, to have agency in navigating challenges and opportunities, and most importantly to be learners for life?

To prepare our students to embody these qualities – and therefore to succeed in their future - means that we must integrate the development of adaptive-creative mindsets in each student.

The adaptive-creative mindset is rooted in:

- **ADAPTIVITY - PROTECTS AND ENABLES FLOURISHING.** This set of skills and dispositions have to do with persistence, tolerance of stress, and coping and adjusting to change and turbulence. While these are actions of strength, there are at the same time defensive. Adaptivity can be found in two main capacities:
 - **FLEXIBILITY:** imaginative response to external conditions and barriers; shifting, adjusting to emerging unpredictable and unstable contexts.
 - **RESILIENCE:** flourishing in spite of adversity; high tolerance for turbulence
- **CREATIVITY – OPENS PATHWAYS TO FLOURISHING.** These skills and dispositions are more internally generated and proactive. They have to do with approaching, reaching out, giving, sharing, and connecting with the world.
 - **OPENNESS:** imaginative response to internal impulses of wonder, curiosity, and giving, mindful attention and sense-making through multiple senses, hope
 - **PRECISION:** critical thinking, design thinking, innovation, accuracy, truth.

STRATEGY

How do we nurture this adaptive-creative mind?

The adaptive-creative mindset is critical for human flourishing. If we only were adaptive, we would be in survival mode. But the adaptive-creative interaction of skills creates a generative or productive dimension to adaptation. We do not merely put up with change and learn to tolerate and live with it. Instead, we perceive change as an invitation to have agency and develop new pathways for ourselves and our communities.

IN THE CLASSROOM

Adaptive-creative pedagogy primarily consolidates research based on:

- Costa & Kallick's theory of Habits of Mind
- Marzano's Dimensions of Learning
- Howard Gardner's theory of Multiple Intelligences
- Mihalyi Csikszentmihalyi's Flow or Optimal Engagement theory
- Martin Seligman's notion of Flourishing.

ADAPTIVE-CREATIVE PRINCIPLES IN DIFFERENTIATING LEARNING

1. **MULTI-MODAL: Increase the number of modes of learning.** Use visual, aural, textual, kinesthetic, numerical ways of presenting and exploring information. *sensing*
2. **EMBODIED: Hands-on whole body involvement;** movement, active manipulation and building of information rather than passive reception of information
3. **EXPERIENTIAL & REAL-WORLD: Connect what is bring learned with the real world** and communities of the students. The more relevance they can draw between the world inside the classroom and the real world they live in, the more engaged they become.
4. **COLLABORATIVE: Include opportunities for working together in diverse groups.** This develops 21st century learning and working support skills like listening, coherent communication, sharing, empathy, thinking interdependently
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Examples and resources for applications of adaptive-creative pedagogy

ARTS INTEGRATION & MULTIPLE INTELLIGENCES

<http://www.pz.harvard.edu/index.cfm> - **Project Zero** was founded by Howard Gardner, the originator of the Multiple Intelligences theory. The project is located at the Harvard Graduate School of Education, and explores how to build learning communities of reflective and independent learners who are engaged in deep learning across both the humanities and the sciences. Many of their projects integrate the arts as critical tools for developing thinking through multiple ways of knowing and learning.

<http://www.pz.harvard.edu/tc/index.cfm> - **Example of a current project: Artful Thinking** – with public schools in Michigan. The program integrates visual art and music into classroom teaching across the curriculum to help students develop content mastery as well as thinking abilities. Mastering the art form itself is therefore not the main intention. The program is used with K-6 grade teachers, but is planned to be eventually used in all grades.

<http://www.davidlazeargroup.com/whatismiq.htm> - Website by David Lazear, author of *Outsmart Yourself*, a book about learning styles based on Gardner's theory of multiple intelligences. There are some good explanations of multiple intelligence on this website.

PORTFOLIO BASED LEARNING

<http://www.ukcle.ac.uk/resources/personal-development-planning/portfolios/one/> In portfolio based learning, students explore a topic and are required to demonstrate their learning through evidence they gather in a portfolio. The approach is based on experiential learning theory, in which experience must lead to reflection, analysis and synthesis of new information with one's own knowledge, and application of new knowledge in experiential projects or situations.

PLAY BASED LEARNING

<http://www.instituteofplay.org/> - **The Institute of Play** is not really about the kinds of play we associate with little children. Instead it takes play very seriously as a critical mode of learning and innovation. The Institute was founded in 2007 to “activate 21st century citizens who engage deeply with the world” through game-based approaches to learning that are strong, interdisciplinary, and rigorous. The Institute started a public school in New York City called [Quest to Learn](#) that re-imagines schooling for the 21st century. The curriculum offers experiential, complex challenges that engage students in knowledge sharing, reflection, and discovery.

PROJECT BASED LEARNING

http://www.bie.org/about/what_is_pbl - **The Buck Institute for Education (BIE)** focuses on project based learning as an authentic, strongly student-centered educational response to the needs of 21st century learners. Project based learning is an extended inquiry process to explore a complex challenge. This learning process is collaborative, demands critical thinking skills, and engages students in experiential, multi-modal, authentic discovery and communication work. This website has a clear and comprehensive explanation of project-based learning as congruent to 21st century skills.

<http://pbl-online.org/> - **Project Based Learning Resources.** This website has good guidelines and resources for projects at middle and high school levels. The Design Your Project section has educational standards-based project guidelines and resources teachers can use.

ACTIVE LEARNING USING TECHNOLOGY

<http://www1.prometheanworld.com/server.php?show=nav.1889> **ActivLearning:** this is a commercial company that has developed active learning methods that use technology to facilitate the teaching and learning. They have some videos and case studies of schools that have used interactive technology to enhance the teaching-learning process.

<http://www.classroom20.com/> This is a social networking site for teachers who are interested in Web 2.0, social media and other technology that enables differentiation and real-world integration in classrooms. It is a free, community supported network of teachers – there are currently over 60,000 members from 188 different countries - who exchange ideas and help each other explore and learn about the many different tools that help change the way we teach and learn. This community is also active in organizing webinars and conferences to share ideas.

FLIPPED CLASSROOMS

<http://www.knewton.com/flipped-classroom/> - The flipped classroom is a new approach where the teacher “flips” the normal teaching-learning process around. Traditionally, the teacher uses classroom time to teach, and students do homework on their own. In a flipped classroom, the teacher presents the material to students before class using pod-casting, wikis, and other social networking tools. Students explore these materials at home or with friends; class time is used to practice, apply, and explore the content learned. The teacher therefore gets to interact with and support students during the critical parts of learning, when the thinking, exploring, discovering, and problem-solving is happening.

<http://usergeneratededucation.wordpress.com/2011/06/13/the-flipped-classroom-model-a-full-picture/> - This site explains the flipped classroom model, with clear diagrams on the learning processes and benefits of this approach, and some good links and videos for more information.

<http://vodcasting.ning.com/> - **Flipped Classroom Network.** This is a social networking site for educators interested in exploring how to do flipped classroom teaching. Joining this site will put you in touch with others with a similar interest to share ideas and help each other.

References with Notes

Bolton, Gavin. (1984). *Drama as education: An argument for placing drama at the centre of the curriculum*. London: Longman.

Process drama is a teaching methodology that was developed by educators in the United Kingdom, primarily Dorothy Heathcote, Brian Way, and Gavin Bolton. Process drama does not use scripts. Rather it is a dramatic way of exploring issues, themes, ideas by dramatizing them through a collaborative, improvisational process. The teacher's role is critical in facilitating and participating with students in the dramatic process.

Costa, Arthur, & Kallick, B (2008). *Learning and leading with habits of mind: 16 essential characteristics for success*. Alexandria, VA: Association for Supervision and Curriculum Development

Habits of Mind are mindsets and values that enable us to work effectively and intelligently in the face of adversity and the unknown. They are therefore critical aspects of the 21st century personality. See the Institute for Habits of Mind that was established by Costa and Kallick - <http://www.instituteforhabitsofmind.com/> that also has links to international chapters that provide training and resources on Habits of Mind.

Csikszentmihalyi, Mihalyi. (1990). *Flow: The psychology of optimal experience*. NY: Harper & Row.

Mihalyi Csikszentmihalyi is one of the founders of positive psychology. His theory of flow explains how people are optimally engaged in an activity and experiences great absorption and fulfillment. The principles of adaptive-creative pedagogy increase the chances of this level of engagement in teaching and learning.

Dewey, John (1897). My pedagogic creed. *School Journal*, 54. 77-80.

This set of clear and coherent statements was written in 1897 and are powerfully relevant today, if not more relevant as we move into the creative knowledge economy. Dewey was a strong advocate of democracy and the way schools had a fundamental mission to nurture the kinds of minds and hearts that would support and further democracy. While his writings speak to us from so long ago, they are amazingly pertinent to educational issues as we move into the 21st century and a globalized mode of living and working. <http://archive.org/details/MyPedagogicCreed> This link is to a recording of *My Pedagogic Creed* as recorded and edited by students the University of Illinois's Music Education Technology class

Drucker, P. F. (1999). *Management challenges for the 21st century*. Oxford, UK: Butterworth-Heinemann.

Gardner, Howard. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.

Gardner, Howard. (1999) *Intelligence reframed: Multiple intelligences for the 21st century*. New York: Basic Books.

Gardner, Howard, & Seana Moran. (2006). The science of multiple intelligences theory: A response to Lynn Waterhouse. *Educational Psychologist*, 41(4). 227–232.

Huizinger, J (2000). *Homo Ludens: A study of the play-element in culture*. (3rd edition) London: Routledge. Electronic reproduction. Palo Alto, Calif. : eLibrary, 2005. Accessed through Honnold Mudd Library, Claremont Graduate University. (Original work published 1938).

Levine, Mel (2002). *A mind at a time*. New York: Simon & Schuster.

This book is based on the fundamental recognition that different minds learn differently. Levine uses neurodevelopmental evidence to show how eight critical neurological systems (attention, memory, language, spatial ordering, sequential ordering, higher thinking, and social thinking) are all inter-dependent. Based on this he provides a “road map for parents and teachers, enabling them to observe as children develop and mature through their school years the unfolding of important mind functions that play a leading role in school performance (and in career success)” (p. 15).

Lipman-Blumen, J. (2000). *Connective leadership: Managing in a changing world*. NY: Oxford University Press.

Jean Lipman-Blumen has a very useful concept of how the world has shifted from industrial, modern, production—based economy to a post-industrial, postmodern, knowledge based economy. Her notion of connective leadership clarifies the mindsets needed for successfully navigating the 21st century and underlie many of the principles of adaptive-creative pedagogy.

Marzano, R., Marzano, J. S., & Pickering, D. J. (2003). *Classroom management that works: Research-based strategies for every teacher*. Alexandria, VA: Association for Supervision and Curriculum Development.

Robert J. Marzano has had great success in consolidating and translating educational research and theory into strategies for practical application in the classroom. His website offers free resources, webinars, as well as research reports on his instructional strategies. <http://www.marzanoresearch.com/site/default.aspx>

McCaslin, N. (2000). *Creative drama in the classroom and beyond*. 7th edition. NY: Addison Wesley Longman.

This is a practical book that helps educators integrate process drama and creative methods into classroom teaching, including using drama in special education curricula. The book also looks at multicultural contexts that emphasize cultural diversity. There are sample lesson plans and suggested activities and journal writing sections for each chapter for cooperative and reflective teaching.

Morgan, H. (1996). An analysis of Gardner's theory of multiple intelligence. *Roeper Review* 18, 263-270.

Neelands, J., & Goode, T. (2000). *Structuring drama work: A handbook of available forms in theatre and drama* (2nd ed.). Cambridge, England: Cambridge University Press.

Nunley, Kathie (2006). *Differentiating the high school classroom*. Thousand Oaks, CA: Corwin Press

Kathie Nunley is an educational psychologist who brings her classroom teaching experience, especially in mixed-abilities teaching, and brain research together. This book shows how to address challenges in differentiating high school instruction through examining student learning styles, providing choices, and using multiple assessment approaches.

Robinson, K. (2001). *Out of our minds: Learning to be creative*. Oxford, UK: Capstone Publishing.

Ken Robinson is one of the foremost advocates of integrating the development of creative skills in curricula. He sees the development of an innovative spirit as the key to economic survival and a better life quality. This book explains why being creative is not just a desirable thing but vitally important in the 21st century.

Robinson, K. (2009) Why creativity now? A conversation with Sir Ken Robinson. *Educational Leadership*, 67(1), 22-26.

Sawyer, R. K. (2000). Improvisation and the creative process: Dewey, Collingwood, and the aesthetics of spontaneity. *Journal of Aesthetics and Art Criticism*, 58 (2), 149-161.

Sawyer, R. K. (2003). *Group creativity: Music, theatre, improvisation*. Lawrence Erlbaum Associates

Seligman, Martin (2011). *Flourish: A visionary new understanding of happiness and well-being*. Free Press.

Martin Seligman is the co-founder of the field of positive psychology, along with Mihaly Csikszentmihaly. His concept of “flourishing” explores how we achieve a life of well-being and meaningfulness. This concept has five factors: positive emotion, engagement, relationships, meaning, and accomplishment. This work has been applied to education that focused on strengths. See <http://www.flourishingschools.org/index.htm> as well as <http://pospsyched.wordpress.com/> for more information.

Toffler, A. (1970). *Future Shock*. NY: Random House.

Tomlinson, Carol. (2001). *How to differentiate instruction in mixed-ability classrooms*. 2nd edition. Alexandria, VA: Association for Supervision and Curriculum Development

"a differentiated classroom provides different avenues to acquiring content, to processing or making sense of ideas, and to developing products so that each student can learn effectively" (Tomlinson, 2001, p. 1).

http://www.weac.org/Home/Parents_Community/differ.aspx. Here is a good article by Mary Anne Hess at the website of the Wisconsin Education Association Council. It sums up differentiated instruction and has some further links to resources.