



Rethinking Pedagogies to Develop Future Oriented Capabilities

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What you think of your learners informs your pedagogy



Learners are active meaning makers of their experiences



Learners learn in a variety of ways and undertake different pathways towards mastery and expertise



Learners need to learn how to solve difficult and messy questions

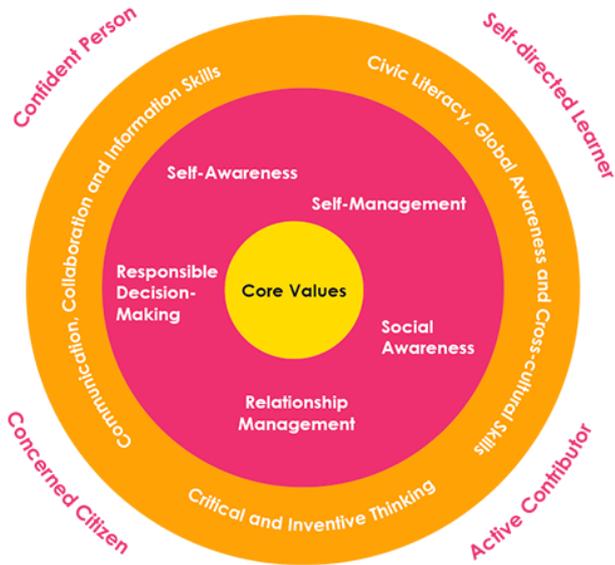
Introduction

In contemporary societies undergoing rapid changes, educational practices cannot focus solely on reproducing what is already known; they must also develop future oriented capabilities, to prepare people for a future that is largely for work and citizenship (Säljö, 2017). What are these future oriented capabilities and do employees in Singapore found to be 'book smart' but lacking in soft skills (Edwards, 2017; Brown, Lauder, & Sung, 2015) have them? If not, how can we as Adult Educators help them develop such capabilities? This article will offer some approaches and specific examples of applied pedagogies (i.e. problem based learning, teaching for understanding and project based learning) to help develop learners' future oriented capabilities.

Future oriented capabilities

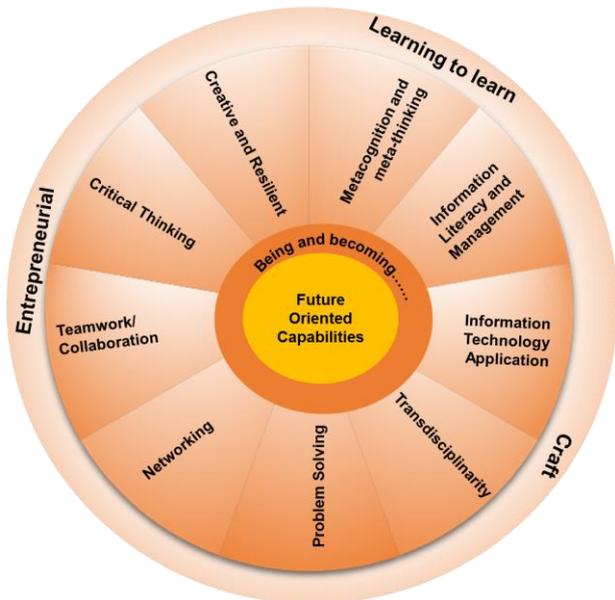
In recent years, education systems around the world have developed frameworks identifying the knowledge, skills and attitudes required for success in the 21st century. Similarly in Singapore, since 1997, a suite of 21st century curriculum initiatives were systematically introduced and refined to strengthen the preparation of Singapore's young people for the 21st century (Tan, Koh, Chan, Costes-Onishi, & Hung, 2017). Specifically, in 2010, the Ministry of Education (MOE) launched a 21st century competencies framework (as seen in Figure 1) to identify competencies that will help our pre-employment training (PET) learners to thrive in the fast changing world (Ministry of Education, 2010).

Figure 1: Framework for 21st Century Competencies and Student Outcomes



For adult learners, the following capabilities (Figure 2) have been identified from existing literature (Davies, Fidler, & Gorbis, 2011; Casner-Lotto & Benner, 2006; Today, 2017; Tan W. K., 2015; Carnevale, Smith, & Strohl, 2016; OECD, 2016) to be critical for success in the workforce.

Figure 2: Future Oriented Capabilities required of CET Learners



Future Oriented Capabilities	
Teamwork/ Collaboration	Build collaborative relationships with others and have the ability to work with diverse teams, negotiate and manage conflicts.
Critical Thinking	Ability to consider different perspectives and offer insights that may be outside standard responses.
Creative and resilient	Adapt and demonstrate "out-of-the box" and non-linear thinking to respond quickly to unique and unexpected situations.
Problem solving	Ability to identify complex problems and review related information to develop and evaluate options and implement solutions.
Networking	Access to exchange of knowledge, ability to build long-term relationships with people in a mutually beneficial way. Requires more than just communication skills.
Metacognition and meta-thinking	Ability to self-reflect on one's own learning and learning how to learn. Big picture thinking, seeking to understand the whole.
Trans-disciplinarity	Using knowledge across multiple disciplines to develop a holistic approach to solve complex challenges.
Information Literacy and Management	Ability to discover, use, discriminate and filter information for importance & relevance.
Information Technology Application	Ability to select and use appropriate technology to accomplish a given task and to problem solve.

What pedagogies to adopt?

How can we as Adult Educators help learners acquire capabilities needed to successfully navigate a complex and uncertain future in both work and life?

Rethinking pedagogies can be an effective way to develop learners' future oriented capabilities as they could be used to develop learners who are ready for change, able to adapt and to position themselves for future possibilities. To do so, educators will need to put the learners who are real-world problem solvers at the heart of learning.

Learners have different profiles and learn in a variety of ways, so the challenge for an educator is to discover which strategy is more effective in helping their learners construct an extensive and flexible knowledge base, develop effective problem-solving skills, cultivate self-directed, lifelong learning skills; become effective collaborators and peer instructors; and become intrinsically motivated to learn. The following offer some approaches and specific examples of applied pedagogies (Scott, 2015; Whitby, 2007; Chua, Foo, & Yang, 2016) that when reflected upon and discussed in depth, might well stimulate and facilitate learning experiences which will be relevant, engaging, timely and transformative for our adult learners.

1. **Pedagogies which promote problem solving capabilities**



Education must reorganize around each 'learner's journey as learners undertake different pathways towards mastery and expertise (Leadbeater & Wong, 2010). Therefore, 'one-size-fits-all' approach, a characteristic of traditional education approaches, is no longer relevant in the 21st century. Personalised and customized learning provides a more tailored learning experience for the learners, which begins with (1) an in-depth understanding of the needs of the learners, and then (2) providing relevant and challenging opportunities to enhance their learning and development. With personalized and customized learning, learners would be able to approach problems in their own way, grasp ideas at their own pace, and respond differently to multiple forms of feedback (Hampson, Patton, & Shanks, 2011). This cultivates greater learner autonomy and inspires them to take ownership of their own learning.

Problem based Learning

Rather than using didactic teaching where the learner is a passive recipient, educators can consider the use of problem based learning which is a constructivist approach that organises curriculum and instruction around carefully crafted "ill-structured" problems. With educators taking on the role as facilitators, learners can develop collaboration and communication skills as they work in teams to identify problems, formulate hypotheses, conduct data searches, perform experiments, formulate solutions and determine the best "fit" of solutions to the conditions of the problem, all of which are examples of future oriented capabilities. In Problem based learning, the educator is expected to model good strategies for thinking and learning and facilitate knowledge construction and skills mastery.

Example

In a marketing course, instead of getting the learners to state the specific steps in developing a marketing plan, educators can design a problem trigger for the learners to formulate their solution to. An example of a problem trigger as follows:

ABC Enterprise will soon start work on the construction of a fully operational hotel 'Changi Coast Hotel' in Changi. This hotel will have 50 rooms including 5 well appointed suites, conference and meeting facilities for small meeting groups of up to 100 participants in a theatre style seating, and a restaurant that can seat up to 100 diners at any one time. The hotel aims to achieve at least 50% average occupancy rate at a REVPAR (revenue per available room) of S\$120. Your team has been tasked to develop a strategic marketing plan that will enable Changi Coast Hotel to achieve its aim.

2. **Pedagogies which promote critical thinking**



Meaningful learning occurs when the learner sees the relevance to his/her learning in real life (Brown, Collins, & Duguid, 1989) and is able to contextualise the use of knowledge and skills (Chee, 2014). Learning 'about' things does not enable learners to acquire the skills they will need to be future oriented (Smith, Sheppard, Johnson, & Johnson, 2005). Learners need to learn how to ask critical questions and solve difficult and messy questions, by developing a deep understanding of key concepts and processes that will help them understand how experts frame problems, make decisions and cope with unique situations.

Teaching for understanding

Teaching for understanding is a pedagogy which leads learners towards a thought-provoking approach when dealing with a topic, such as explaining, finding evidence in examples, generalizing, applying, making analogies, and representing the topic in new ways (synthesizing) (Blythe, 1998). The example below illustrates the use of assessment to assess performance holistically, including the qualities of what it means to “be” a pharmacist.

Example

To assess learners’ proficiency in prescription assessment in a Pharmaceutical Compounding module, instead of getting the learners to explain the purposes of the different medication, educators can get the learners to give a list of medications and provide rationale for the choice of medications that will be prescribed to a pregnant lady who has been diagnosed with severe diabetes (a case study approach). As part of a holistic approach, performance assessment could also include learners’ ability to communicate clearly, effectively and appropriately to the patient. This would contribute to the development of future oriented capabilities such as communication skills in our learners.

3. Pedagogies which encourage collaboration and communication



Communication capabilities such as clearly articulating ideas through speaking and/or writing are closely related to collaboration capabilities, such as working effectively with diverse teams, making compromises to accomplish a common goal, and assuming shared responsibility for collaborative work. Work teams are effective when team members are able to identify and communicate points of connection (shared goals, priorities, values) that transcend their differences and enable them to build relationships and to work together effectively (Davies, Fidler, & Gorbis, 2011). The development of these communication and collaboration capabilities can be developed through a variety of pedagogies to enhance holistic performance.

Project based Learning

Project based Learning (PBL) is a pedagogy where learners design their own project with workplace application in mind or on solving a problem originating from their work. Blending in work-based elements in the project will allow learning to be authentic, contextual and relevant (Institute for Adult Learning, 2016). PBL also offers opportunities for personalization, because it affords learners with an opportunity for in-depth investigation of topics through the use of complex projects with embedded learning issues and outcomes.

As learners work on their projects in teams, there is an implicit demand for them to communicate and collaborate, apply what they know, and what they have learnt, to co-construct personally-meaningful artefacts, products or other deliverables that are representations of their learning. With sufficient time and resources, learners are able to produce polished projects that are steeped in expertise. In project based learning, the educator is expected to guide the inquiry process and facilitate knowledge construction as well as clarify and explain the goals and expectations of the tasks that are to be completed. Assessment should address not just the project, but the team’s performance. This can include self and peer assessment.

Problem based learning uses a problem to coach and trigger learning. The nature and scope of the problem can be scaled according to the desired learning outcomes. Unlike problem based learning, project based learning uses a project to coach and trigger learning, and is typically more extensive in scale in that there is an expectation for learners to apply and demonstrate their know-how through the creation of polished deliverables which are representations of expertise learnt.

Example

In an Aerospace Engineering module, instead of teaching and assessing the learners on the different aerospace engineering theories, the educators can get the learners to work on a semester long project which is to produce an airfoil prototype for lab testing. This project will allow learners to not only deepen their theoretical knowledge but also develop other future oriented capabilities (e.g. collaboration, transdisciplinarity, critical thinking, etc) progressively through the weeks and culminate in a polished deliverable.

Conclusion

Educators need to understand learners as active meaning makers of their experiences. What this entails is the need for us as educators to purposefully design and incorporate opportunities or activities that will bring about a collaborative learning environment in which learners can acquire the knowledge and skills needed to successfully navigate a complex and uncertain future, regardless of the pedagogies that we have chosen to support and drive our curriculum. This paper therefore provides some suggestions in which educators might explore pedagogies relevant to their learners who require holistic approaches to address problems encountered in complex environments.

References

- Barkley, E. F., Cross, K. P., & Major, C. H. (2005). *Collaborative Learning Techniques: A Handbook for College Faculty*. San Francisco: Jossey-Bass.
- Blythe, T. (1998). *The Teaching For Understanding Guide*. San Francisco: Jossey-Bass.
- Brown, J. S., & Duguid, P. (2000). *The Social Life of Information*. Boston: Harvard University Press.
- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational researcher*, 18(1), 32-42. Retrieved January 3, 2017
- Brown, P., Lauder, H., & Sung, J. (2015). *Global Value Chains and the Future of Higher Skills: evidence from Singapore and implications for the UK*. London: UK Commission for Employment and Skills.
- Carnevale, A., Smith, N., & Strohl, J. (2016). *Recovery: Job Growth and Education Requirements through 2020*. Washington, DC: Georgetown University.
- Casner-Lotto, J., & Benner, M. (2006). *Are they really ready to work? Employers' perspectives on the basic knowledge and applied skills of new entrants to the 21st century U.S. workforce*. USA: Human Resource Management.
- Chee, Y. (2014). Intentional learning with educational games: A Deweyan reconstruction. *Australian Journal of Education*, 58(1), 59-73.
- Chee, Y. S. (2014). Intentional learning with educational games: A Deweyan reconstruction. *Australian Journal of Education*, 58(1), 59-73.
- Chua, Y. H., Foo, E., & Yang, S. (2016). Getting to the Heart of Instructional Strategies Used in RP. *Education Review*, 1-6.
- Cope, B., & Kalantzis, M. (2015). *A Pedagogy of Multiliteracies: Learning By Design*. London: Palgrave Macmillan.
- David, J. H., & Howland, J. (2003). *Learning to solve problems with technology: a constructivist perspective*. Upper Saddle River, New Jersey: Pearson Education .
- Davies, A., Fidler, D., & Gorbis, M. (2011). *Future Work Skills 2020*. Palo Alto, California: Institute for the Future for University of Phoenix Research Institute.
- Edwards, A. (2017, March 20). *Rethinking Learning for a High-Skills Economy*. Unpublished Manuscript. Singapore: Institute for Adult Learning.
- Hampson, M., Patton, A., & Shanks, L. (2011). *10 ideas for 21st century education*. London: Innovation Unit. Retrieved May 26, 2017
- Institute for Adult Learning. (2016). *Blending Classroom with Work and Technology*. Singapore: Institute for Adult Learning.
- Knowles, M. (1984). *Andragogy in Action*. San Francisco: Jossey-Bass.
- Leadbeater, C., & Wong, A. (2010). *Learning from the extremes*. San Jose: Cisco Systems Inc. Retrieved May 26, 2017
- Ministry of Education. (2010). *21st Century Competencies*. Retrieved May 29, 2017, from Ministry of Education Singapore: <https://www.moe.gov.sg/education/education-system/21st-century-competencies>

- OECD. (2016). *Skills Matter: Future results from the survey of adult skills*. Paris: OECD Publishing.
- Pacific Policy Research Centre. (2010). *21st Century Skills for Students and teachers*. Honolulu: Kamehaeha Schools, Research and Evaluation Division.
- Saavedra, A. R., & Opfer, V. D. (2012). *Teaching and Learning 21st Century Skills: Lessons from the Learning Sciences. A Global Cities Education Network Report*. New York: Asia Society. Retrieved May 29, 2017, from <http://asiasociety.org/files/rand-0512report.pdf>
- Säljö, R. (2017, March 20). *Learning as design and performative action: Symbolic technologies and challenges for education in the 21st century. Unpublished Manuscript*. Singapore: Institute for Adult Learning.
- Scott, C. L. (2015). *The Futures of Learning 3*. Paris: United Nations Educational, Scientific and Cultural Organization.
- Smith, K. A., Sheppard, S. D., Johnson, D. W., & Johnson, R. T. (2005). Pedagogies of Engagement: Classroom-Based Practices. *Journal of Engineering Education*, 94(1), 1-15.
- Tan, J., Koh, E., Chan, M., Costes-Onishi, P., & Hung, D. (2017). *Advancing 21st Century Competencies in Singapore*. Singapore: Asia Society. Retrieved May 29, 2017
- Tan, W. K. (2015, August 11). *NTUC outlines its vision of a future-ready Singapore workforce*. Singapore: Questex.
- Today. (2017, April 16). *What skills does Singapore need for the future economy*. Singapore: Today News.
- Vella, J. (2002). *Learning to listen, Learning to Teach: The Power of Dialogue in Educating Adults*. San Francisco, CA: Jossey-Bass.
- Whitby, G. B. (2007). Pedagogies for the 21st Century. *ACEL 2007 International Conference*. Sydney: ACEL International Conference. Retrieved May 29, 2017

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