Changing, developing & ongoing learning
Creating a 21st Century Educator
Horace Spencer, an English philosopher, once asked a question over 100 years ago in an essay titled 'What knowledge is of most worth?' Of course this question resonates even today, though the context within which it is asked has changed dramatically. It has been argued that in the world we live in today, transformed as it is by the forces of globalization and rapid advances in technology — requires new kinds of learning and new forms of knowledge for student success. Scholars across the spectrum (from Cohen to Zhao) have argued that current approaches to educating our youth have been largely unsuccessful in preparing students for the changes and challenges of the future. Schooling, according to this perspective, has remained impervious in many ways to the changes that have occurred in the world due to the knowledge economy. In addition, new technologies, such as the Internet, offer dramatically and potentially transformational opportunities for teaching and learning. As Joel Rose (2017), co-founder and CEO of New Classrooms Innovation Partners, wrote in an article in The Atlantic, 'The Information Age has facilitated a reinvention of nearly every industry except for education.'

In order to provide a better understanding of what is worth knowing for today's students, we conduct a study of expert perspectives to answer this question. We analyzed 15 key documents (complete list available at puyamishita.com) from the literature on 21st Century knowledge frameworks, and — through that analysis — developed a set of overarching categories to offer a coherent integrative framework of what teaching and learning means in the 21st Century. We call this the 3 x 3 model of 21st Century learning. In this article we briefly describe this model and some implications for educators as we seek to create better learning environments for our students.

THE 3 x 3 MODEL OF 21ST CENTURY LEARNING

Our analysis of 15 key documents related to 21st Century learning indicated a convergence onto nine key domains — which in turn could be seen as falling under three broad categories (see right). The three broad categories are: Foundational Knowledge, Meta Knowledge, and Humanistic Knowledge. Each category represented a different realm of knowledge as seen in the figure opposite. Each of these overarching categories and the subcategories are described in greater detail opposite.
In summary, we say that our review of 13 of the most significant 21st Century knowledge frameworks has led to new conclusions and a new categorization of three overarching categories with three corresponding sub-categories. It is also clear that each of these major categories can be seen as being what we need to know; how we act on that knowledge; and the values we bring to our knowledge and action. It is important to note that these three categories (with three sub-categories) do not function as discrete categories of knowledge but as complimentary categories that support and inform one another.

Given this synthesis of expert views, an important question that emerges is how does it compare with the practitioners' view on the ground? Despite what the experts say and believe, the actual implementation of new approaches to teaching and learning in today's schools and classrooms will be determined by the beliefs and knowledge of the practitioners themselves. To answer this question, we developed and implemented a survey to compare the practitioner mindset with that of the experts, inquiring their views on the skills and challenges facing them in the 21st Century (Makuta & Mehata, 2018).

Teachers and practitioners cited challenges that were associated mostly with humanistic knowledge (44%), followed by foundational knowledge (39%) and meta knowledge (9%). In terms of skills that they find to be most important, almost 21% of the important skills focused on Digital/ICT literacy (foundational knowledge).

The second highest set of skills were found in communication and collaboration (meta knowledge) at 29%, closely followed by problem-solving (meta) at 23%. The least frequently occurring skills were creativity (humanistic knowledge) at 13%, (meta) and life and job skills (humanistic knowledge). Overall, on a scale of 1 (least important) to 10 (most important), meta knowledge was rated to be the most important in 21st Century learning by the participants, followed by humanistic knowledge, and finally foundational knowledge, which was rated the least important.

Based on the two studies, our analysis indicates a paradox in how we think about knowledge in the 21st Century. On the one hand, this synthesis is consistent with past approaches toward teaching and learning, suggesting that, at some level, nothing really changed. That is, not all the knowledge and skills...
represented in these 21st Century frameworks are unique to this century. The world of the future will continue to depend on specialized knowledge (or domain knowledge) and high-level cognitive skills (such as creativity and critical thinking). These skills, rather than being novel to the 21st Century, are skills that are required for successful learning and achievement in any time, including but not limited to the 21st Century. Additionally, interpersonal skills (such as life skills, leadership, and cultural competence) have also been important in the past, and will continue to be in the future.

On the other hand, our framework suggests that, though the overarching knowledge bases that are required may not have changed, the specifics of how these ideas are instantiated in learning contexts may have changed. This is particularly due to changes in technology, and the pressures of globalization. We do not go into the ramifications of each of these categories due to reasons of space (interested readers can go to the first author’s website).

This framework provides us with some specific recommendations for teachers and teacher educators. In brief, we point to four key suggestions:

**IMPLICATIONS FOR TEACHERS**

1. Disciplinary knowledge and domain knowledge are as important as ever, and will continue to be so well into the foreseeable future. Educational systems remain fundamentally based on disciplinary knowledge and as such require teachers adequately trained, and proficient in the disciplines.

2. Knowing the technology is important, but knowing when to use technology and why to use technology is more important. Knowing when to use a particular technology for activities such as collaboration, or why to use a certain technology for acquiring specific disciplinary knowledge is a vastly more important, transferable, infinitely relevant type of knowledge, one that will not quickly become antiquated with ever changing technological trends.

3. Technological advances of the 21st Century have brought us closer together, and at the same time, further apart. Advances to technology and infrastructure have made physical proximity optional, not only in education but in fields like business and medicine as well, and made availability for interaction effortless. As a result of the increased opportunity for interaction, across countries and around the world, teachers need to know how to foster cultural competence, emotional awareness, and leadership skills, to foster not only interactions, but meaningful relationships.

4. Though this framework does not directly speak to teaching and learning and the role of the teacher, it does indicate that these changes in technology can allow for greater personalization of learning, as well as some shifts in the traditional hierarchical relationships that are the standard in today’s learning contexts. The fact that teachers have a greater responsibility to cover a range of areas—what students know, how they act on that knowledge, and the values that we bring to the process—indicates that they have to bring the learner into the process in a more active manner. The exact implications of this will vary from context to context but it is something that needs to be considered as we look at educator training and practice.

We see this analysis as being a significant contribution to the discussion on 21st Century skills. Our emergent categorization scheme gives us a ‘big picture’ of what we mean when we say 21st Century learning. Clearly the demarcation between the three categories (and the subcategories) is not clear-cut—there are overlaps between them, but our emergent framework does provide a clear view of the field—one that had been dominated by multiple, seemingly conflicting perspectives.

The perspective we are arguing for values all aspects of 21st Century learning—foundational, humanistic, and meta. To achieve a harmony between these three, especially in this technology-driven 21st Century learning, it is critical to remind ourselves that while creativity and innovation need to be supported in classrooms, they should not undermine the
importance of disciplinary and cross-disciplinary knowledge. In fact, creativity, collaboration and critical thinking cannot happen without disciplinary or cross-disciplinary foundations. Finally, the humanistic perspective provides a lens and a set of broader values that allow us to be purposeful as we decide what foundational knowledge is to be emphasized, and how we act on that knowledge.

It is clear to us that as 21st Century educators, we need to first step away from the hype surrounding new technologies and Internet resources to understand that in some ways the goal of schooling and education has not changed. It is still about instilling ways of thinking in learners that are tightly connected to disciplinary ways of knowing embedded within a humanistic world view. The mere presence of Information and Communication Technology (ICT) and the immediate availability of information does not mean that these forms of knowledge are obsolete. New tools and technologies do provide us with new and innovative ways of acquiring and transmitting such knowledge, but they do not fundamentally change the goals and purposes of education.

Our analysis indicates that this seeming paradox of ‘nothing has changed’ and ‘everything has changed’ provides us a way forward. It suggests that though the 21st Century is different from previous times it does not mean that our core roles (to know, to act, and to value) have changed. So, in that sense, there is no contradiction between what we have been doing as educators in the past and what we do today (and in the future). That being said, it also indicates, even as we hold on to these core ideas, we have to continually shift and come up with newer ways of instantiating them. Though the way knowledge is represented and acted upon may change, the core idea of what we do as educators has not.