

## Chapter 9

# Multicultural Perspective on Smart Learning in Smart Cities

**Abstract** Although we have been able to develop a list of indicators that can measure the “smartness of a city”, the vision for each city must be different. It has to be created in a dialog with the local community, and take into consideration cultural and socio-economic context, including cultural traditions, local definition of well being, and governance style. The future of smart cities depends on whether we can educate a new generation of governmental, corporate, and community leaders who will know how to utilize information technology in implementation of said vision. It is important though to consider the fact that just equipping the schools with advanced technology is not enough. As the parameters for smart learning environment will be different for Beijing then for a small city in rural China, we need to build smart schools, with the model of such a school varying for different locations, is necessary. In this chapter we review some opinions on the role of multicultural perspectives on smart cities and smart learning expressed by scientists, government officials teachers, and students. This brief analysis may allow the reader not only to better understand the specificity of Chinese perspective on these concepts, but also the need of teachers training focused on cultural diversity, sustainable development and the role of ICT in governance of the school and smart city.

**Keywords** Smart cities · Smart schools · China · Cultural diversity · Teachers training · Education · ICT · UNSD goals

### 9.1 Introduction

As it was mentioned in previous chapters, for the last decade, two concepts became key terms in science, governance, politics, industry and education: sustainability and smartness. In many countries corporations are required to write annual sustainability reports, and sponsoring organizations look for sustainability components in all projects undertaken by local governments and NGO’s. The World Commission on Environment and Development defines sustainable development as:

...development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

This definition contains two key concepts (see: UN Documents: Our Common Future; Chap. 2: Towards Sustainable Development)

- Concept of ‘needs’, in particular the essential needs of the world’s poor, to which overriding priority should be given; and
- Idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs.

In 2015 the United Nations published 17 Goals for Sustainable Development as a new pathway for the world community after the Millennium Development Goals era. China declared readiness to participate in this ambitious plan (see the document published in 2015 by the Ministry of Foreign Affairs of the People’s Republic of China).

One of the objectives for Goal 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation) says: “*Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020.*” This statement reconfirms that the world already has entered the era of information and communication technology.

In this context another concept became equally popular, namely “smartness.” After IBM introduced the concept of the smart city, governments in numerous countries started to promote the idea of building smart cities initially understood as cities incorporating information technology in the governance of the city. Due to increasing energy demands and the ever-growing urban populations, ICT enabled energy efficiency initiatives. Smart Grids, Internet of Things, and other tools have been widely recognized as significant contributors to improving the quality of life in cities. Various aspects of these discussions on the concept of a smart city are discussed in other chapters of this book.

Last year Government of India introduced the 100 Smart Cities for India project. Since then numerous meetings took place during which scientists, members of the governments, and representatives of the corporate business attempted to clarify the vision of smart city, deciding which cities should become smart, and to make plans for implementation of this ambitious initiative (see Smart City Summit New Delhi, 2015, Mumbai 2016). Partnership between governments of USA and India regarding collaboration on 3 smart cities reinforced the efforts.

## 9.2 Three Perspectives on the Concept of a Smart City

According to Robinson (2013) the first step in creating a smart city is to define what a smart or smarter city means to all stakeholders. Shortly after the birth of the concept of a smart city, most people believed in possibility of creating a general

definition that would fit to each and every city around the world. The majority of initial typologies used in classifying smart cities were created from the perspective of the service providers. This perspective is based on two assumptions. The first assumption is that the planners of the city (scientists, corporate business, government officials, politicians, etc.) can create a vision of the city that will be accepted by its inhabitants. The second assumption represents developing and validating a government-centric typology for a smart city that reflects governmental bureaucratic functions, and already existing departments in governmental organizations.

According to Lee and Lee (2014) however, the functions of the smart city should be cross-referenced, so a particular service could be executed across different governmental departments. They are suggesting a citizen-centric typology of a smart city, where the vision of a smart city is developed as a result of the analysis of services needed by the citizens. According to this perspective the vision for a particular smart city must result from a dialog between all stakeholders: citizens, government officials, community organizations, and corporations that will implement this vision.

### 9.3 Cultural Context and a Vision of Smart City

At one of the international conferences, a community organization reported how they wanted to create a computer center in a remote village in one of the developing countries. They put all the computers on mules and traveled for few days to reach the village. When they arrived they left mules and the computers at the edge of the village, and went to meet with the elders. They told the elders “we have brought you something that will totally change the quality of life in your village. Please go to the edge of the village, and you will find everything there.” The elders went to see what was brought, and they took all the mules. That was what they really needed.

This particular situation illustrates why understanding of the cultural context of a city is important for creating of a relevant vision of smartness for this city. The plans for a smart city must always begin with full understanding of the needs of the community, as only in this context one can design a project that will meet needs specific for a given community.

Things, however, may get complicated for a few reasons. First, objectively there may exist a need in a community, yet its members are not really fully aware of it. For example, there may be a need to improve hygiene, as lack of it creates a lot of health issues, but the citizens are not aware of it, as for centuries they have been developing patterns of behavior not meeting our modern health standards.

There is also another important aspect of this situation, and it is illustrated by the following case. A community organization wanted to build a computer center in a village located high in the mountains. They went there with all technology equipment and disappeared for few months. When they came back everybody was asking why they had stayed in this village so long. They answered: “It took us

3 days to teach people how to use computers, but it took us five months to convince the villagers that they need them!”

This example illustrates that even if we bring to the table some commonly accepted standards for quality of life, it may take a lot of educational efforts to convey to members of a particular community that they should follow those standards. Planners of a smart city should first carefully analyze needs of the city and its citizens, and in the case they find needs that are still not recognized by the city, they should work with the community until the message is accepted. This process may become complicated when a community is culturally diversified. With the increasing migration of people, we may have at the same city people with different systems of values, diversified life styles, and understanding of the role of community.

## 9.4 Cross-Cultural Communication

According to Martin and Beltran (2006) “*Our society is multicultural due to the fact that diverse manifestations of cultural identities live together within it, in addition to it being so due to immigration. Within the society, school education should teach that cultures do not challenge each other but they mutually complement and enrich each other*” (p. 11).

For example, if you visit any city in California, USA, you will find there people from India, Vietnam, Korea, China, and from many African countries. They create their own enclaves, which can be seen as cities within a city. A good example could be “China Towns” in San Francisco or Los Angeles. One can still find people living there who do not speak English, and organize their whole life within the Chinese community speaking only Mandarin. With the new wave of immigrants coming from the Middle East and Africa to Europe, most of the cities in European countries are facing a similar problem.

You may see a big cultural diversity also in many African countries. For example, according to National Geographic in Nigeria only there are more than 250 ethnic groups, including Hausa and Fulani (29%), Yoruba (21%), Ibo (18%), Ijaw (10%), Kanuri (4%), Ibibio (3.5%) and Tiv (2.5%.) The same is in many South American countries, such as the population of Peru, which is composed of Amerindian (45%), Mestizo (37%), White (15%), black, Japanese, Chinese, and other (3%).

What about China? According to Simon (2015) China may appear to outsiders as a country with one language and culture. Such notion is obviously wrong, as China is also a very diverse nation. The Chinese government officially recognizes 56 ethnicities, and many of them have their own language. Besides the dominating Hun ethnicity there are numerous minorities that differ in their customs, names, food preferences, most common sports, etc. Some of the Chinese minorities have

cultural traditions rooted in Russia, Korea or Mongolia. Since Deng Xiaoping launched his reforms in 1978, 278 million Chinese workers have moved from villages to cities, greatly accelerating China's growth. Although this trend seems to recently end, as a consequence of this migration China is facing similar problem as cities in USA and Europe. There is a new journal **Cultural Diversity of China** discussing various aspects of this issue, edited by Peter van der Veer and published on the Internet by De Gruyter.

The author of this chapter recalls that at one of the training workshops for facilitators of parent education, organizers presented a video clip illustrating a family meeting of two white American parents with their two teenage children. The issue under discussion was how to avoid constant conflicts between the teens about using clothes that belong to the other sibling, entering the room without notice, etc. The suggested solution was that children should always ask whether they could take something that belongs to the other sibling, and in the case of violating this rule they should pay a \$5 fee.

At the workshop there were many participants of Asian origin. One of them, a woman from Korea, stepped out and said: "How dare you to impose on us your bizarre individualistic values; what does it mean, 'this is my shirt, or this is my room'. Everything at home is ours. We are a community, and the only thing we can discuss here is how should we use community property in an organized way." Asian participants warned that if this particular clip and similar ones were not removed for the program, they would simply boycott it.

Community leaders and government officials may face a situation similar to the one described above, when there are conflicting value systems between groups representing different ethnicities. Without understanding differences between cultural backgrounds of community members, community leaders will not be able to bring these people to one table to work together on common issues. According to Robinson (2013) one of the seven steps of developing a smart city is enabling communities to make developing "smartness" a self-sustaining process. However enabling communities that are culturally diversified may become a real challenge for governmental planners, as the process requires understanding the cultural background of all stakeholders, as well as the importance of communication among them.

Elliott et al. (2016) presented a list of 10 myths that prevent collaboration across the cultures. One of them says "*cultural competence is something we each pick up, with time, by working with persons who are different from ourselves.*" This is not true, as cultural competence is a skill that requires substantial effort to learn. As the authors indicate, "*working with someone from a different ethnic tradition does not necessarily lead to uncovering differences in expectations, communication styles, and values.*" Another myth is that "*an agency should choose a representative from a minority community to represent community's interest to the agency.*" This is also not true. According to the authors each community already has a leadership structure, so the agency should rather establish working relationships with elderly in this community, than relay on opinion of a particular member.

## 9.5 Role of Education in Development of Smart Cities: Concept of Smart Schools

As we may see in discussions on smart cities, participants often refer to the issue of education. To make newly created smart cities sustainable, we have to educate a new generation of governmental officials and community leaders who will understand the vision of a smart city. We need to educate a new generation of businesses managers who will incorporate into their philosophy social responsibility, and the value of sustainable development. Finally, we need to educate a new generation of community members, who as citizens will collaborate with each other and with the government on all issues related to city life. Most importantly though, we need to educate a new generation of global citizens who will understand the issue of cultural diversity, as well as importance of communication between people with different cultural backgrounds.

Introduction of the concept of a smart school was almost a natural consequence of the discussions about the role of information technology in the development of smart cities. The concept of smart schools has an interesting history. In 1984, David Perkins and his colleagues from Harvard University presented an experimental educational program utilizing ICT, known since then as a Project Zero (currently David Wilson is the director of the project and principal investigator). The project is based on two principles:

1. *Learning is a consequence of thinking, and good thinking is learnable by all students.*
2. *Learning should include deep understanding, which involves the flexible, active use of knowledge.*

Initially, it was assumed that it would be enough to create a smart school by equipping schools with computers, and giving to each child a cell phone or tablet. Technology was supposed to give children access to information, and allow communication between students and teachers.

Educationalists quickly realized, however, that although providing students with information is a necessary factor in changing these students' behavior, it is definitely not a sufficient one. All psychologists agree that although obtaining information is a necessary factor for behavioral change, there is much more that needs to follow. First, recipients must believe that the information is true, what relates to the credibility of resources. Then they have to be motivated to apply this information in practice, which usually depends on whether information is compatible with their system of values as this determines importance of information. It also depends on whether they believe that applying of this knowledge will be successful. Cognitive psychologists say "*We don't see things as they are; we see them as we are!*" what very well explains the fact that our reality and value assumptions often determine how we evaluate information. Of course, recipients must also know how to apply this information, and this knowledge must be transformed into skills by practice.

All of the above listed rules apply not only to students, but first and foremost to teachers, who must understand the principles of smart schools and believe that they accurately describe the goals of education. They have to be motivated to implement them, and finally, know how to do it. Here is where knowledge not only about the school subject, but also ICT and developing of relevant practical skills plays a significant role.

In 2010 UNICEF organized a conference in Paris on the Future of Universities, with participation of ministers of education and university presidents from many countries. One of the shared conclusions of the conference was that providing information would no longer be a goal of education. In the era of information technology we need to teach students how to find, evaluate, and apply information.

Motivation is involved at each of these steps. Students have to be motivated to find information (the fact that something is published on the Internet does not mean that everyone knows about it), they must be motivated to evaluate it, and finally, they must have motivation to apply it in everyday life. Simply providing information may not at all affect the motivational system. What is needed is the right learning environment that can appeal to emotions and motivational systems, such as in-service and collaborative learning, interactions with the teachers, relevant feedback, etc.

As we agreed, the main purpose of smart schools is to educate a new generation of leaders and citizens for a sustainable smart city. This notion resulted in the idea that smart schools should not only create the right learning environment and utilize information technology, but also provide clusters of knowledge and skills that traditionally have not been a part of school curriculum, but are important from the perspective of sustainability. As a result of the numerous discussions on smart learning, it was suggested suggest that smart schools should add to their curriculum activities leading to knowledge and skills in the following areas:

- Sustainability and environment;
- Non-violent conflict resolution;
- Ethical governance;
- Global partnerships;
- Vision and development of a smart city;
- Systems approach to complex problems;
- Social work.

These ideas have already found their resonance in a few recently created projects. In the year 2015 the Global Network for Sustainable Development (GNSD), a project developed by the Global Institute of Sustainability at Arizona State University (USA) and the corporation Sustainability Transition Consulting (SusTranCon) presented a proposal for creating a model of a smart school for India. Its implementation, however, met with some challenges. The major one was related to the fact that to make any changes in the curriculum, a school must receive approval from a relevant governmental unit. This process can become very complicated and time consuming. Similar challenge exists in governmental schools in

USA; therefore for the project on our model of smart schools for the USA, we choose the organization of charter schools (Imagine Schools) as they are more independent as regard to curriculum and class activities. In discussions with school principals in India, the alternative solutions to adding new subjects to the curriculum were suggested, namely incorporating the above listed content into already existing curricula for various subjects, or to organizing extra-curricular activities.

An example of such extracurricular activities could be the project Peace Clubs for Sustainability, PCS, initiated by of Mahatma Gandhi Shodh Sansthan (MGSS), a Community Based Organization (CBO) from India. It will be officially launched in New Delhi during the inter-faith and multicultural celebration between the 25th to the 30th of January, 2017. The Peace Club for Sustainability project is a significantly modified version of Sustainability Clubs created by GNSD, as well as by UNESCO Clubs established by UNESCO in schools around Asia and the Pacific. The mission of MGSS is to establish the nonviolent and inclusive society by educating a new generation of community leaders and citizens prepared for building peace in their communities, countries, and the world. Activities of these clubs will introduce students to knowledge about sustainability. Governance, partnerships, vision of smart cities, as well as to the system approach to complex problems.

## 9.6 Important Lessons from the Malaysia Smart School Project

It is interesting that the most compelling and complex experiment on implementation of the smart school concept has been introduced not in one of the so-called developed countries, but in Malaysia. The Smart School vision came out of a brainstorming session held at the Ministry of Education in 1996. Officials from the MDC, the Ministry of Education and industry representatives produced a Conceptual Blueprint of Smart Schools. They then appointed a consortium of seven Malaysian companies and three multinational companies, in a project management role (please see: Smart School Project Team 1997).

It was the first partnership of its kind for a national education project. In support of this initiative, the Government invested in the development of Malaysia's ICT infrastructure, to enable new technology to be used in the selected schools. Dr. Mahathir Mohamad, one the coordinator of the project, said at lunched of the program:

We are examining our education system to create a curriculum where people learn how to learn so they can continue their education throughout the rest of their lives. The measure of success in 2020 will be the number and quality of our people who can add value to information.

The Malaysia project defined smart school as *“a learning institution that has been systematically reinvented in terms of teaching-learning practices and school*



*management in order to prepare children for the Information age.*” The assumption was that students should develop in smart schools 21st century skills such as:

- Technology and Media Literacy
- Learning and Innovation Skills
  - Creativity and Innovation
  - Critical Thinking and Problem Solving
  - Communication and Collaboration
- Life and Career Skills.

The main characteristic of a smart school according to Malaysia project should be:

- Student-centered teaching and learning;
- Students that exhibit higher order thinking skills;
- Teachers and Administrators who are skillful in using ICT in daily tasks;
- Teachers who are innovative and creative in using ICT as an enabler and accelerator for better teaching and learning;
- Schools that have smart partnerships with various agencies.

The project has been introduced into 4 phases (see: Bahagian Teknologi Pendidikan, Kementerian Pelajaran Malaysia 1996).

- Pilot phase (1999–2002) conducted in 88 schools selected nationwide;
- Post-Pilot Phase (2002–2005) during which massive computerization to all 10,000 school was introduced;
- Making All Schools Smart (2005–2010) schools were leveraging all ICT initiatives;
- Consolidation and Stabilization (2010–2020) all innovative practices using ICT are implemented.

Malaysia’s Smart School project involves a wide range of inter-related initiatives. These include schemes to improve Malaysia’s ICT infrastructure, training in change management for teachers and school managers, a national school management system to link schools and the communities they serve, integration of software, and a help desk facility (see: ICT in Education, UNESCO Bangkok).

We have to agree that the Malaysia Project is very ambitious and attempts to involve all potential stakeholders that could contribute to its success. As the final evaluation of the project is expected after the year 2020, we do not have too many evaluations of the impact it has had on schools. One of the early reports says that the result of the incorporation of ICT into schools is at a rate not far behind the rates for more developed nations (Kader 2008).

Another evaluation written by Majeed and Yusoff (2015), represents a more reserved opinion. Authors attempted to evaluate what ICT tools are available at the school and to what extent do the teachers use ICT in teaching and learning, in addition to the factors that contribute to the teachers’ use of ICT in teaching. The

school that was a subject of their evaluation has been a part of Smart School Project for 15 years. The results of their study confirm, in our opinion, the concerns that simply equipping schools with technology tools is not enough to reach aimed goals.

The authors conclude *“that in spite of being a smart school for the past 15 years, the participants’ ICT adoption was still at a low level. This could be due to the fact that extended training was not provided regularly. In addition, the participants felt that the school management did not put ICT adoption as a priority and that the time allocated to use and explore ICT tools as well as prepare the resources was not enough. Even though the participants’ attitudes were positive and ICT infrastructure was in place, it was still not sufficient to cater to the needs of the teachers and students...Therefore, the level of ICT adoption in the smart school in this study was still at a basic level, which is the Utilization phase perhaps due to the barriers that the participants highlighted. Directly, this clearly reflects that the school has not yet achieved the smart school status as projected”* (pp. 255–56).

One of the recommendations made by Majeed and Yusoff is that the number and type of training programs provided to the teachers should be increased, as only this could improve and encourage the teachers’ adoption to the new strategy of teaching and learning.

Our assumption is that some cultural factors should be involved. In an interesting study Teo et al. (2008), made a cross-cultural examination of intention to use technology between Singaporean and Malaysian teachers. What they found that although there was no difference between the groups in the area of behavioral intention, the groups differed in the area of perceived usefulness of ICT, as well as in attitudes towards computers and the ease of using them. These results indicate that before implementing ICT in educational process we need to carefully evaluate the starting point to know teachers’ and students’ exact attitudes and expectations. If necessary, and before attempts to implement technology, we should then organize the process of training intending to change the attitudes.

This process, however, can be very long, as it was in the case of the organization trying to create a computer center in the remote village. It seems that in attempts to motivate people for changing of their behavioral patterns it is important to consider the fact that most people have a natural resistance to change. As the change requires acquiring new patterns of behavior, or inhibiting prior ineffective habits, during the transitional phase from the old patterns to the new ones, the latter usually require more effort so people are less affective. This phenomenon is well described and explained by Bridge’s Transition Model (Bridges 2009) suggesting how people should be guided through the process of change. Definitely students and teachers from different cultural and economic backgrounds may require a shorter or longer process of transition from the traditional way of teaching and learning, to the one incorporating ICT.

## 9.7 Smart Learning Environment

As it was discussed in previous chapters, smart learning environment can be regarded as the technology-supported learning environment that make adaptations and provides appropriate support (e.g., guidance, feedback, hints or tools) based on individual learners' needs (Huang et al., 2012). Typically we associate the concept of smart learning environment with a smart school.

The most commonly quoted model of a smart school called Project Zero was founded at Harvard University in 1967 by David Perkins and has been running until today. The team of co-workers (see the website Project Zero) presented 7 characteristics of a smart school that in a sense indicate that smart schools should provide smart learning environment. Here are some of those characteristics:

**Generative knowledge.** *Schools must examine carefully what disciplinary and interdisciplinary content will most benefit students. Identifying and structuring content that has the greatest potential for students' development is an important starting point for the Smart Schools model.*

**Learnable intelligence.** *Contrary to a psychological tradition that tends to view intelligence as a fixed quantity, much of the research of Project Zero and others' indicates that students can and do learn ways of thinking that can boost their performance. The integration of the teaching of higher order thinking into subject matter instruction and the creation of a school culture that champions and scaffolds such thinking can have a significant effect on students' own views of their abilities and on their learning.*

**Focus on understanding.** *While there are many legitimate goals for students, often a focus on deep understanding gets lost in the day-to-day life of the school. In the Smart Schools model, we place an emphasis on student work that builds and demonstrates deep understanding in contrast to rote or narrowly defined outcomes.*

**Teaching for mastery and transfer.** *A simple but powerful maxim of education is that students learn much of what they have a reasonable opportunity and motivation to learn. Teaching techniques that explicitly model, scaffold, motivate, and help students to bridge what they learn to new contexts (i.e., transfer) greatly enhance the likelihood that students will learn well and actively use what they learn.*

**Learning-centered assessment.** *Assessment at its best, functions as a reflective and evaluative tool for learning. It involves students as well as teachers and creates a dynamic in which students take on the ultimate responsibility for the quality of their work and their learning.*

**Embracing complexity.** *Insightful thinking and deep understanding require students to be able to deal with and even thrive on complex situations and problems. The Smart Schools model involves learning situations that help students build skills and tolerance for complexity and begin to develop a sense of excitement in the face of intriguing and difficult problems. It also supports teachers in managing the complexities of new viewpoints and practices.*

***The school as a learning organization.*** *Just as schools are places of growth for children, they should be places of growth for faculty and administrators—places where the pursuit of intellectual interests and professional collaborations are supported and encouraged. In addition, the successful learning organization institutes structures that enable all members of the school community to collaborate in the processes of direction-setting and self-monitoring, creating a dynamic system that changes as the needs and the vision of the community changes.*

Interestingly enough, although ICT is not directly mentioned in any of those principles, in a different part of the project the authors clarify their view on this issue:

Digital technologies offer exciting opportunities for learning, civic engagement, and intercultural exchange, among other vital areas of life. Virtual worlds and mobile devices offer new ways of learning and transfer of learning beyond the classroom. Online communities can connect young people from diverse backgrounds to exchange perspectives, while informal learning and civic engagement opportunities abound on social media sites, blogs, and other online spaces.

The Zero Project also mentions that it is really vital that educators will leverage the positive affordances of digital media and support youth to use them in reflective positive ways, as the Internet can also introduce distractions, misinformation and negative interactions.

R. Huang, the Dean of the Smart Learning Institute recently created at the Beijing Normal University, during the press conference organized in 2015 presented a white paper “Smart Learning Environment in 2015 China” (Huang 2015) in which he introduced ten key concepts for developing smart learning environment in China. Below are some of them:

- (1) *A smart learning environment is the foundation of learning in the age of information. A smart learning environment enables people to learn at any time and at any place, in their own styles and at their own paces. This environment supports learning more easily, attentively and effectively.*
- (2) *The establishment and development of a smart city operates on the “double engines” of “livability experience” and “innovative energy.” A smart learning environment contributes significantly to the “livability experience.”*
- (3) *With the advancement of the smart city concept and increased educational opportunity in our society, learning at home, in the community and at work will become more important and will become critical components of lifelong learning, along with learning at school.*
- (4) *“Smart learning” should be the core for the building of the smart city. It supports lifelong learning and can serve as a critical feature for an urban system’s “self-evolution.” The development of “smart learning” can enhance a city’s livability experience and vitalize a city’s creativity, thus uncovering the “smartness” of a city.*

After reading about these key concepts we must agree that in the same way as impact of culture has to be considered in the process of development of a smart city,

it must be taken into consideration in organization of educational efforts. A lot of research reports on the influence of culture on learning and motivation have been published at the beginning of this century. We strongly recommend to all educators the book “Culture, Motivation and Learning: A Multicultural Perspective” edited by Salili and Hoosain (2007).

According to the authors, the aim of their book is: “...to present research findings and views of scholars and researchers in the field of motivation and learning, from a multicultural and international perspective. Educators and scholars from different parts of the world have examined recent learning and motivation theories in different cultural contexts in order to explore the dynamics of sociocultural processes affecting student motivation. Others have focused on teaching and learning strategies that are known to be effective with culturally diverse students.”

## 9.8 Impact of Cultural Context on Students’ Motivation for Learning

**Need for Achievement.** According to Maehr and Braskamp (1986) and Salili (1994), students with different cultural backgrounds attach different values and meanings to achievement, and therefore they approach achievement tasks in a different way. In one of Salili’s cross-cultural studies comparing Chinese and British high school students, it proved that although the dimensions of achievement were similar across the two cultures, the meanings students attached to achievement and the ways they achieved their goals were significantly different. Academic achievement was significantly more important for the Chinese than British students, while career was significantly more important for the British. In another more recent study by Salili et al. (2001), they compared Chinese immigrants to Canadian students and found that goals of pleasing parents, friends, and teachers were rated significantly more important by Chinese students than by Canadian students (pp. 7–8).

**Cooperative versus Competitive Learning.** More and more educators agree that the traditional teacher-oriented curriculum no longer meets the needs of multicultural schools (see for example Nieto 2004). When we look at the characteristics of smart schools as described previously, they put a strong accent on collaborative and cooperative learning as the tool developing independent thinking and problem solution skills. According to Garton (2007), learning is a socio-cultural event that can be achieved only in a collaborative context. Competition and collaboration are often seen as mutually exclusive, the first one being typical for individualistic cultures while the second characterizes collectivistic cultures. Interestingly enough, some authors suggest that competition can be used to motivate students in collaborative and group work (see Salili and Hoosain 2007, p. 13; Fulop et al. 2007).

## 9.9 Literacy: Traditional and New Definitions

In our discussion on the importance of technology based education we cannot neglect the statistics provided by UNESCO:

- *Today, nearly 17% of the world's adult population is still not literate; two thirds of them women, making gender equality even harder to achieve.*
- *The scale of illiteracy among youth also represents an enormous challenge; an estimated 122 million youth globally are illiterate, of which young women represent 60.7%.*
- *The 67.4 million children who are out of school are likely to encounter great difficulties in the future, as deficient or non-existent basic education is the root cause of illiteracy. With some 775 million adults lacking minimum literacy skills, literacy for all thus remains elusive.*

These numbers create a big challenge for the visionaries of smart cities and smart schools. They also indicate that providing relevant infrastructure must back up the process of building motivation for learning. For readers who had an opportunity to visit some of the governmental schools in India as well as some private schools in this country, it is obvious how dramatic the differences are between these school in the aspect of infrastructure, staffing, and supply of instructional materials. There are, however, new definitions of literacy introduced nowadays. For example, The Colorado Department of Education defines technology literacy as the ability to appropriately select and responsibly use technology. Students who have attained technological literacy are able to use information technology to:

- Solve problems
- Communicate
- Locate, use and synthesize information
- Develop skills necessary to function in the 21st century.

Again, it looks that smart schools should meet these goals. Children who are attending these often neglected schools are at the least at school and receive basic education, so we can still discuss what would the obligations be of smart cities towards those schools, and how to create in these schools a smart learning environment.

## 9.10 Conclusion

Although we did not cover in this chapter the entire area of cultural diversity and multicultural education, we hope to have presented some of arguments for the need to consider the impact of cultural context in the planning of a smart city. The common phenomenon of migration, both on the national and global scales, creates a challenge for the government of smart cities, for community leaders, and for

communities that must coexist within the city. They need to understand cultural diversity and have basic skills allowing multicultural communication. As we have mentioned above, for the vision of smart cities to succeed we need to educate a new generation of governmental leaders, community leaders and citizens who will be co-creators of a smart city.

Here is where the role of smart schools is supposed to create smart learning environments. These schools should prepare students for their roles in a smart city. To assure positive effects of these processes teachers need to first acquire knowledge and skills enabling them to effectively use information technology in the educational process. Another important element of this preparation should again be knowledge about cultural diversity and multicultural communication. To be effective in this task teachers at smart schools must understand the cultural background of their students, and organize school activities in a way reflecting cultural differences between them. This seems to be a necessary condition for developing motivation for learning and building partnerships across cultural borders.

Finally, all the reflections presented above lead us to the conclusion that any hope that creating smart classrooms equipped with the sophisticated technology will bring more effective learning may become just a wishful thinking if we neglect one extremely important step. Namely, incorporation of technology must be followed by the intense training of both teachers and students intended to create new attitudes and change in their traditional patterns of behavior.

## References

- Bahagian Teknologi Pendidikan, Kementerian Pelajaran Malaysia. (1996). *The Malaysian smart schools: Developing 21st century skills*. [http://www.jaet.jp/katudou/seminar\\_ict/Malaysia.pdf](http://www.jaet.jp/katudou/seminar_ict/Malaysia.pdf)
- Bridges, W. (2009). *Managing transitions: Making most of change*. Lifelong Books.
- China's Position Paper on the Post 2015 Development Agenda. (2015). *Ministry of Foreign Affairs of the People's Republic of China*. [http://www.fmprc.gov.cn/mfa\\_eng/wjdt\\_665385/2649\\_665393/t1263455.shtml](http://www.fmprc.gov.cn/mfa_eng/wjdt_665385/2649_665393/t1263455.shtml)
- Cultural Diversity; Universal Declaration of UNESCO. In *31st Meeting of General Conference, Paris*, November 1, 2001
- Elliott, C., Adams, R. J., & Sockalingam, S. (2016). *Ten myths that prevent collaboration across cultures*. <http://www.awesomelibrary.org/multiculturaltoolkit-myths.html>
- Fulop, M., Ross, A., Kuscer, M. P., & Pucko, C. R. (2007). Competition and cooperation in schools: An English, Hungarian, and Slovenian comparison. In F. Salili & R. Hoosain (Eds.), *Culture, motivation, and learning* (pp. 235–284). Charlotte, NC: Information Age Publishing.
- Garton, A. F. (2007). Understanding the effect of culture on the pursuit of multiple goals, learning through collaboration: Is there a multicultural perspective? In F. Salili & R. Hoosain (Eds.), *Culture, motivation, and learning: A multicultural* (pp. 195–216). Charlotte, NC: Information Age Publishing.
- Global Institute of Sustainability (GIOS) at Arizona State University. (n.d.). <https://sustainability.asu.edu/>
- Global Network for Sustainable Development (GNSD). (n.d.). <http://gnsd.org>
- Huang, R. (2015). *Smart learning environment in 2015 China*. <http://english.bnu.edu.cn/academicevents/79456.htm>

- Huang, R., Yang, J., & Hu, Y. (2012). From digitalized environment to smart environment: the reform and trends of learning environment. *Open Education Research*, 18(1), 75–84.
- Imagine Schools. (n.d.). <http://www.imagineschools.org/>
- Kader, B. K. B. A. (2008). *Malaysian Smart Schools project*. ICT in Education, UNESCO Bangkok. <http://www.unescobkk.org/fr/education/ict/online-resources/databases/ict-in-education-database/item/article/malaysian-smart-schools-project/>
- Lee, J., & Lee, H. (2014, June). Developing and validating a citizen-centric typology for smart city services. *Government Information Quarterly*, 31, S93–S105. <http://www.sciencedirect.com/science/article/pii/S0740624X14000598>. doi:10.1016/j.giq.2014.01.010
- Maehr, M. L., & Braskamp, L. A. (1986). *The motivation factor: A theory of personal investment*. Lexington, MA: Lexington Books.
- Majeed, Z. S., & Yusoff, Z. S. (2015). *Journal of Studies in Education*, 5(3). ISSN 2162-6952. See also [https://www.researchgate.net/publication/281618344\\_Are\\_We\\_'Smarter'\\_Now\\_Case\\_Study\\_of\\_Smart\\_School\\_Implementation\\_in\\_a\\_Developing\\_Nation](https://www.researchgate.net/publication/281618344_Are_We_'Smarter'_Now_Case_Study_of_Smart_School_Implementation_in_a_Developing_Nation)
- Martin, B. S., & Beltran, J. M. (2006). *Multiculturalism and immigration*. [http://www.lasalle.org/wp-content/uploads/pdf/mel/cahier\\_mel/26cahier\\_mel\\_en.pdf](http://www.lasalle.org/wp-content/uploads/pdf/mel/cahier_mel/26cahier_mel_en.pdf)
- Nieto, S. (2004). *Affirming diversity: The sociopolitical context of multicultural education* (4th ed.). Boston: Pearson Education Inc.
- NigeriaFacts. (n.d.). <http://travel.nationalgeographic.com/travel/countries/nigeria-facts/>
- Our Common Future. UN Documents: Report of the World Commission on Environment and Development. (n.d.). <http://www.un-documents.net/ocf-02.htm>
- Project Zero. (n.d.). <http://www.pz.harvard.edu/projects/smart-schools>
- Robinson, R. (2013). *7 steps to smart city*. <https://theurbantechnologist.com/seven-steps-to-a-smarter-city/>
- Salili, F. (1994). Age, sex, and cultural differences in the meaning and dimensions of achievement. *Personality and Social Psychology Bulletin*, 20(6), 635–648. doi:10.1177/0146167294206002
- Salili, F., Chiu, C., & Lai, S. (2001). The influence of culture and context on students' motivational orientation and performance. In *Student motivation* (pp. 221–247). doi:10.1007/978-1-4615-1273-8\_11
- Salili, F., & Hoosain, R. (2007). *Culture, motivation and learning: A multicultural perspective*. Information Age Publishing, Inc.
- Simon, G. E. (2015). *How diverse is China in terms of culture, language, etc.?* <https://www.quora.com/How-diverse-is-China-in-terms-of-culture-language-etc>
- Smart Cities Summit Mumbai. (2016). <http://www.asappconferences.com/smartcities/index.aspx>
- Smart School Project Team. (1997). The Malaysian Smart School Project; A conceptual blueprint. Government of Malaysia (pp. 1–177). [http://www.mscomalaysia.my/sites/default/files/pdf/publications\\_references/Smart\\_School\\_Blueprint.pdf](http://www.mscomalaysia.my/sites/default/files/pdf/publications_references/Smart_School_Blueprint.pdf)
- Sustainability Transition Consulting, LLC (SusTranCon). (n.d.). <http://www.sustrancon.org>
- Teo, T., Luan, W. S., & Sing, C. C. (2008). A cross-cultural examination of the intention to use technology between Singaporean and Malaysian pre-service teacher: An application of the Technology Acceptance Model (TAM). *Educational Technology & Society*, 11(4), 265–280.
- Tolan, C. (2014). *Cities of the future? Indian PM pushes for 100 smart cities*. CNN <http://www.cnn.com/2014/07/18/world/asia/india-modi-smart-cities/>
- UN Sustainable Development Goals. <https://sustainabledevelopment.un.org/?menu=1300>
- van der Veer, P. (2015). *Cultural diversity in China*. <http://www.mmg.mpg.de/publications/cultural-diversity-in-china/>