Quality in Education: Perspectives from the QiETT of IAQ

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The purpose of this whitepaper is to outline the meaning, scope, major concerns, and perspectives around "quality in education". It is the first of a series of documents with "random thoughts" collected, organized, and promoted by the Quality in Education Think Tank (QiETT) of the International Academy for Quality (IAQ). While this paper addresses a broader scope of topics and puts into perspective the overall field of "quality in education", setting a common ground for further reflection and guidance of QiETT activities, the forthcoming papers will focus around more specific subjects, and try to go deeper into particular topics, always based upon the collection of international inputs from quality and education experts. The collected thoughts compiled in this paper are presented in the following pages, according to headings that correspond to clusters of contributions received from the authors, with different backgrounds and from four distinct continents, but all sharing in common, as core QiETT members, a passion to promote Quality in Education.

Scope

Quality is about stakeholder satisfaction – now and in the future – and strongly in relation to customers´ needs, wants, and expectations. Customers sometimes have to be defined under a broad and open view. Namely in education, where quality is about students, now and in the future, but also must consider other stakeholders, such as parents, forthcoming schools, and employers, as well as society at large. In a changing world, with unknown requirements on citizens of the future, quality in education is therefore difficult to define or assess. According to Stephens (2003):

> *'Quality education is a learning situation which vibrates with positive energy and where the learner and the learned both are eagerly absorbed in understanding and communicating through a knowledge construction process. The emphasis lies with the learner.'*

In Stephens report to UNESCO, several different aspects of quality education are reflected upon, including effectiveness, improvement capability, value added, and equity (especially regarding gender gaps).

Therefore, quality in education is about when we utilize resources to benefit the learner and society as a whole. As such, quality in education should cover basic education, tertiary education, skills development, and lifetime learning, as well as the promotion and delivery of sound quality principles, methodologies, and tools.

When discussing the topic of quality in education, three key aspects seem to be relevant and should be taken into due account:

(1) Education on Quality – where quality is a topic in education services. This involves studying, promoting, and evaluating different approaches for teaching, training, and learning quality principles, approaches, and tools;

(2) Quality of Education – where quality and quality improvement are applied to education systems, processes, and outcomes. This encompasses studying, promoting, and evaluating different approaches for achieving better quality in the way teaching, training, and learning.

(3) Strategy – where we address how to accomplish the previous two aspects, either at the level of a given territory, of any particular school or of a particular class, teacher or student, depending on the scale of analysis being pursued. This encompasses ensuring the appropriate teachers are educated on quality improvement in order to teach and incorporate the concepts appropriately.

With respect to the above contexts, a wide variety of situations may be considered under the scope of Quality in Education activities, including projects focused around specific areas of education (e.g., K-12, higher education, lifelong learning, workforce development and training, and quality professionals). It is also necessary to consider and take into account what is happening in different regions of the world, in order to fully comprehend the wide variety of situations, and understand the concrete meaning of Quality in Education in any of such environments.

The concept extends even further if one aims to understand how to improve our own society, as well as the world, through better education. In areas where educational systems are not yet strong or teaching styles do not promote an innovative spirit, more affluent families often send their children to attend "better schools". This raises concerns that need to be addressed regarding equity and education quality to access conditions.

Furthermore, the full scope of quality in education is quite large and crosses all ages, since education covers or should cover, in our knowledge society, the overall people's life span, from birth to death. Hence, the saying "It's never too late to learn" has never been as valid as today, and will be even more so in the future. In other words, our life is the life time to receive and provide education, desirably with as much quality as possible, both as takers or givers, and even this distinction is not as clear as it used to be, given the increasing presence of interactive learning methodologies, easy access to online contents and the emergence of "flipped classroom" approaches.

At all such different levels it is of uppermost important to consider training and teaching of trainers and teachers, with a strong focus on quality improvement principles and tools, as a major component in the development of quality in education.

Therefore, Quality in Education specific projects will likely be located in one or eventually more of the various areas or cells shown in Table 1.

Table 1. Quality in Education Areas by Focus and Learner Targets.

	K-12	Higher Education	Lifelong Learning	Workforce Development/ Training	Quality Professionals
Education on Quality					

Quality of Education					
Strategy					

There are also several essential elements in the quality discourse, such as democratic values, openness, team-work, entrepreneurship, innovation, quality, and creativity, among many other aspects, that should be integrated in all curricula, irrespective of the corresponding educational levels.

How do we support the learners in their process to understand and to be able to utilize the principles, practices, and tools of quality? Experiential or open learning have unquestionably played an important role, as well as dialogues and reflections. Additional important aspects to be considered are the following: educators being and playing role models, leading by example; education processes subject to quality monitoring and improvement, with both teacher and student involvement; intrinsic motivation assumed as an important driver. Csikszentmihalyi´s flow channel (Csikszentmihalyi, 1990) is an important reminder in all endeavors, including education. Each educator has his/her own way of supporting students` learning within quality, and possibly the same applies to each student, on how they look into the topic; however, there is not yet enough systematic research in this area.

It is not enough to discuss quality of education. Rather, the question should be how to improve education in a systematic way. The ways improvement science and projects have advanced quality in healthcare may provide an interesting benchmark for those who want to increase Quality of Education. The Carnegie Foundation for the Advancement of Teaching (http://www.carnegiefoundation.org/) utilizes a promising approach to bring more improvement knowledge into educational systems.

Multiscale Nature
As with other quality areas (Saraiva, 2015), quality in education can be handled under a multiscale paradigm, including extended global views and benchmarks, such as the ones related with rankings and the Economic Co-operation and Development (OECD) Programme for International Student Assessment (PISA) results, moving down to national levels, where education policies can play a major role, but also to local environments and communities, as well as then individual schools, classes, or even a single student-teacher interaction. Therefore, this multiscale paradigm also encompasses smaller scales of space, which are at least as important, if not even more so. Indeed, quality in education is a challenge that to a large extent must be defined and handled at the level of each individual school or at a very local scale. Further, within a given school, what happens in the classroom, through interactions between students and students and teachers, is what may end up being most relevant for Quality of Education to occur, from a bottom up perspective. Every single minute of teaching and learning is a moment of truth upon which Quality of Education depends, and then it is the cumulative effect of such micro quality events that ends up building Quality in Education, reflected namely in the future lives of those students participating, across time, in such learning moments and opportunities.

Assuring that consistency and appropriate alliances can be made across such different scales for building Quality in Education is a major critical success factor. Therefore, it is

quite important to consider those particular microscale moments that occur frequently every day, upon which Quality of Education depends on daily basis. In this sense, Quality in Education must pay attention to all the relevant details, and in particular not forget what happens inside each learning opportunity that does occur inside but often also outside the classroom. It is, therefore, necessary to complement and integrate such a bottom up view with strategies, policies, and measures aimed at promoting Quality of Education and Education on Quality also from a broader and top down perspective, dealing with particular communities, regions, countries, or even at an international level.

Quality of Education Gaps
Numerous studies and materials have been performed, published, and shared regarding different approaches used to teach quality related principles, methodologies, and tools, mostly in the areas of higher education, lifelong learning, and for the quality community. However, there is a lack of similar efforts or easy access to analogous experiences in other education levels, namely those related to K-12 students, either performed at schools or involving other learning contexts (e.g., initiatives led by quality professionals and associations, or other organizations). Since this early stage of education has the largest impact, it may be worthwhile to build platforms containing a virtual "library" for presenting experiences and research performed for students at these young ages, possibly in conjunction with awards aimed at recognizing international examples and best practices in this field. Some challenges in this regard are discussed in a report prepared by the Netherland branch of UNESCO (UNESCO Netherland (201x).)

In our highly competitive world, too much emphasis is put on achieving a target score and less emphasis is put on the thinking processes. The currency of students and learners is previous exam papers rather than grasping concepts of the subject at hand. This is leading to a false sense of security, when being promoted to higher grades, entering tertiary institutions, and the workplace. The situation is exacerbated by political interventions that may distort the real situation. For example, key performance indicators (KPI) are being set for the schools and universities on the percentage of learners that have achieved a pass rate, rather than the quality of teaching and learning being delivered. Such decisions have a disruptive influence not only over the learners but also with regards to future employees. Statistics that only cover pass rates of those writing a final exam and do not include for instance rates of dropouts in previous grades will lead to biased views and approaches, that may not in the end benefit the improvement of real Quality of Education.

Finally, another gap, that is present in many different parts of the world, deals with inequalities of access to Education Quality. Depending upon the wealth of families or qualifications of parents, but also when it comes to geographical issues, namely when one compares Education Quality levels that are offered in rural versus urban schools. Universal access to Education Quality is something that Quality in Education must take seriously into consideration, aiming not only at increasing the average performances, but also at reducing the corresponding performance variabilities, regardless of differences in what concerns location, surrounding environments, or student families. International and national tests show that significant differences, in terms of learning outcomes, can be found between countries, regions, counties, or even nearby schools, as well as depending upon specific social and economic features of the corresponding families. Equality of Education Quality is therefore far from having been solved and needs to be properly taken into account whenever we address Quality in Education.

Keep Focused on the Core of Quality in Education
There have been many occasions where Quality in Education initiatives or programs end up partially lost in a number of potential "traps", namely by not being able to focus on what lies at the core of true Quality of Education.

Such deviations can be quite problematic, since they may result simultaneously in: i) achieving only marginal gains of real education quality, if any at all; ii) passing the wrong message, concepts, priorities, and tools regarding authentic education quality issues; iii) promoting misunderstandings and creating decreased motivations regarding this and other possible future quality in education projects for all those people who were exposed to such unbalanced approaches to quality in schools. Therefore, it is critical to emphasize how important it is, when approaching Quality of Education, to keep in mind several key points, namely the following ones:

   i.   Quality in Education has little to do with simply adding procedures, forms, surveys, or any other red tape burdens, so that any documentation must only be considered if and when it helps to build what really matters, which is education quality;
   ii. It pays off to have the courage to get into the classroom and find ways to improve learning, as the heart of education quality, rather than relying only on what surrounds the classroom (e.g., equipment, facilities, extracurricular activities), just because it is easier than really getting teachers involved to the point of seeing class improvement as clear opportunities, worthwhile exploring both for and by themselves and students;
   iii. Stakeholders' perceptions should be heard and taken into account. However, long-term goals and achievements must be considered and define significantly what education quality is all about, since good schools are to a large extent those that are able to transform people in a positive way, across their lives. Therefore, short-term views of perceptions are not good enough to capture the complete essence of education quality, so that other tools and metrics also need to be defined, measured, and taken into account by each specific school that wants to improve its quality performances.

Schools Play a Key Role in Setting the Quality Foundation
Although, as previously stated, Quality in Education benefits from being addressed at multiple scales, it is important not to underestimate the critical role played in the proximity level associated with each particular school, its local communities, and how it, as a very special kind of organization, manages both Quality Education and Education Quality. Regardless of important policies that may be adopted at international, national, regional, or municipality levels, it is to a very large extent at the scope of each particular school that the Quality in Education challenges are not addressed.

Recognizing this issue, the promotion of Quality in Education at the school level is playing a major role for instance in South Africa, where the South African Quality Institute (SAQI) has an initiative where it trains school heads and teachers in quality principles, besides a periodic newsletter with constantly updated information and tools for helping education improvement efforts (Hayward, 1998).

Role and Relevance of Teachers

We have all experienced and remember not so good and also excellent learning experiences, usually related with the corresponding teachers. Several longitudinal studies provide sound scientific evidence related with how strongly Education Quality depends upon having "Good Teachers", and even more so in terms of impact when we talk about early and primary school "Good Teachers". Societies need to realize the long-term losses that they have to support by not paying enough attention, recognition, and resources for having high quality teachers, keep improving and motivating their strong contributions to learning and development, as well as the negative consequences of keeping teachers for decades that are not able to achieve high quality pedagogical performance.

Education Quality is a complex process and depends upon a large number of factors and contexts, but recent research indicates that creating, motivating, and continuously developing "Good Teachers" has the highest impact for improving performance, particularly in early and primary school.

To increase motivation and involvement of the entire school community in the quality journey, it is important to establish ways to promote active participation. It has been suggested that in order to do so one may define a number of rewards and awards aimed at the recognition of good quality in education practices and results. In the end, the educator is the catalyst for student learning and, as such, is the most important person. Unfortunately, the educator role – becoming a teacher – has decreased considerably in popularity in many countries, while in others they lack motivation, either due to wages, social status of the profession, and/or the heavy red tape working load that they are asked to comply with. On the other hand, countries where "being a teacher" is still seen as being quite attractive, well recognized and rewarded, as happens in Finland, are able to present quite interesting education performances.

Quality at Different Levels of Education
It is important to provide proper training to those that will be participating in the quality in education movement. While, at the same time, appropriate internal and external communication channels need to be in place in order to assure that goals, activities, results, and milestones achieved are widely communicated to all those belong to the school community. This communication should be made accessible in easy to understand means and formats, appropriate for each different type of school stakeholder and society in broader terms.

Another challenge, related with "Education on Quality", deals with the different certifications, qualifications, and bodies of knowledge available. Many countries and organizations have put together such certification schemes (e.g. ASQ, EOQ), but there has not been enough progress in making them more harmonized, under common settings or leading to mutual recognition of qualifications achieved, neither in evaluating their practical effects and impacts.

The problems existing in education at different levels are quite different from each other. Therefore, it is necessary to address some observations and viewpoints about quality in education from such different levels and from a global perspective. More so than in other types of organization, one needs to develop strong teamwork and quality aligned efforts.

In addition, well-established measurement tools for different education levels do not always exist or allow for meaningful comparisons or benchmarking purposes.

Furthermore, it is essential to recognize that students at one level of education may have been disadvantaged in an earlier level. For example, in South Africa there is a large percentage of workers that were previously disadvantaged in the form of education opportunities, and the government has set up a number of institutions to address this issue, including a Quality Council for Trades and Occupations (QCTO) that is developing and approving qualifications for various skills within the workplace.

Given the specific nature of Quality in Education challenges faced at different ages of students, we will in the next paragraphs mention some of the most relevant ones, as well as some ongoing initiatives or remaining gaps, at each of the levels mentioned, but it is also important to share learnings and feedback received between and across those levels.

Quality of Education in Kindergartens
As more and more studies point out how critical Quality of Education in the early stages is, more and more countries are expanding the nature and promoting further improvement of the very early beginnings, through attention to kindergartens.

As an example of such efforts, it is important to remember that in the 1980's China began to implement home planning and adopted the "One Child Policy" for each family. Most Chinese families with one child invested considerable time and money to educating their children, and parents even considered that competition for success may well start in kindergarten. Thus, they enrolled their only child in the best kindergartens, some of which have entrance exams to select the best children. It is not uncommon for the families to send their two year old child to learn English, even though his/her Chinese may not be very fluent. In some developed urban cites in China it is quite common to see parents taking their children to training classes for English, piano, dancing, or handwriting, for example.

However, the result of this kind of early education may not always be fully satisfactory, since children can lose their interest in learning, because they do not have enough time left to enjoy playing. On the other hand, they are forced to memorize things such as English words and Chinese poems without fully understanding them; thus, they easily forget these things as they grow up. Similar trends can be found in many other countries, where lots of curricular and extracurricular activities end up with providing not enough free time for kids to play.

Therefore, it is clear that both governments and families are paying increasing attention and resources to education quality at very early ages of children, but many questions remain unanswered, especially with regards to the definition and proper measurement of education quality at the kindergartens level of education.

Quality in Education at Elementary and Middle Schools

If not earlier, at least beginning at the level of elementary schools, not only is Quality of Education Quality a matter of concern, but also Education on Quality comes into place, since at these ages it is quite appropriate to introduce teaching of basic quality principles

and tools. Simple problem solving methodologies, as well as some creativity tools, are possible to explore starting at such a young age.

For example, in some Japanese schools children illustrate familiar things utilizing the seven QC-tools. In this way, familiarity with variation and the possibility to illustrate it can be achieved. Some creativity tools are also suitable from an early age. Thus, an initial familiarity with systematic problem solving can be created, and supported by many online contents, such as websites showing TRIZ for kids. Aside from its relevance in industry, it may be possible to learn from these endeavors to introduce the 7 QC tools (see http://www.ideationtriz.com/Ames.asp). For older children, evolution theory may be a good way to understand variation and its importance (not only reduction of variation) for managing processes and systems in general.

Once again, at this level it is important to leverage classes and homework loads with other activities, suitable for the full development of skills at these ages. For instance, in China, entering elementary school starts the formal educational competition, with a heavy load of homework, and it is thereby common for a third grade student to spend more than three hours a day completing homework. To avoid such situations, and since the Chinese government has also realized the existence of such problems in elementary schools, most cities have now canceled the junior high school entrance examinations for the sixth grade elementary students.

Currently, there are not yet enough adequate measurement tools to assess education quality for elementary and middle schools. Parents generally evaluate a schools' quality by personally assessing the teaching quality of specific subjects in the school and how the scores of their children compare with other schools. This is becoming even more so since results from national tests are being made available, with rankings of several kinds produced and published online. Other, less common approaches, do complement such kinds of data with additional information regarding the social and economic context of the students and their families attending any particular school, leading to the computation of "added value" indicators, or the attempt to compare performances of schools sharing similar environments. However, all of these approaches convey a limited vision for Quality of Education, too focused on only a fraction of learning outcomes, having to do with specific knowledge acquired but not with skills or other personal development issues, some of which may also be difficult to measure under the most well-known frameworks, such as the OECD PISA results.

Quality of Education in High Schools
At this level, it is particularly appropriate to incorporate broader Education on Quality concepts into the learning processes. One important issue relates to extending the concept of variation, through the application of statistical tools. Accordingly, problem solving can be taken to a higher level, namely by introducing (perhaps simplified) concepts utilized in industry, such as Six Sigma or Design for Six Sigma. There is also an opportunity for companies to help education by providing interesting problems in the science, technology, engineering, and mathematics (STEM) area. For example, groups of subject matter teachers could work together in teams with students on real life improvement projects provided by external stakeholders. This happens to be particularly motivating, both for students and teachers involved in such quality projects.

However, in many countries the focus of high school students is on preparing for nation-wide college entrance examinations. For instance in China, such an examination (GAOKAO) determines to a certain extent a child's future. Most students have to study until late at night every day in the 9th grade, for preparation of this examination.

As mentioned previously, for elementary and middle schools, here even more parents and society tend to assess education quality of any given high school based on its average scores in national examinations. Due to this focus, it is difficult to add quality concepts to the curriculum or develop innovative approaches focusing on generic skills or other concerns not directly seen as contributing to examination results. Other approaches do exist, such as is the case with the "Swedish Scholastic Aptitude Test", which tries to evaluate general maturity levels required for higher studies: with good results it is possible to get entrance to the university even if the high school grades are not high (https://en.wikipedia.org/wiki/Swedish_Scholastic_Aptitude_Test).

Quality of Education in Higher Education
Often higher education students, at least in certain countries, do not study as hard as they did in high school. For some of them, this is when they start to "enjoy life", particularly if they do not plan to further pursue their studies, as graduate students, and they may feel the need for some "relaxation", after heavy and lasting preparations for national examinations that are connected with admission to higher education institutions. This needs to be taken into account, especially also since many studies have pointed out that the first semester of the first year of studies is quite decisive in terms of students forthcoming higher education performance. If everything goes well at this entrance period of time, it is most likely that things will move smoothly in the remaining semesters and years of higher education studies. Therefore, to improve Quality of Education at this level, focused resources and initiatives should target these incoming students and their first months of experience as higher education students.

Many quality evaluation procedures are being adopted at the Higher Education level, including course accreditation by national agencies and well known international rankings of performance, but it is important to always keep in mind and never forget what relies at the essence of excellent universities: top professors and researchers in close interaction with bright students and both provided with enough freedom to pursue their dreams. Sometimes, when several approaches to quality management are adopted by higher education institutions, this seems to be somewhat forgotten, and unfortunately quality is wrongly connected mostly with procedures, documentations, ranking results, or certain biased but popular performance indicators, dealing with teaching or research activities.

Increasingly, especially in Europe, there is an emphasis on the interaction between research, innovation and education (usually under the name of "the knowledge triangle", as mentioned by Sjoer et al., 2016). In the current context the emphasis is on how education is interacting with both research and innovation. Some specific entrepreneurship education does have this focus but the idea is that this tri-directional interaction should exist in all relevant educations (http://www.technopolis-group.com/?report=good-practice-knowledge-triangle; European Commission, 2005).

Quality of Education in Vocational Schools

In vocational education, it is even more important to relate education quality to the future profession of students and their specific problem areas. Professionals already in work life should be seen as an important resource in this regard.

A strong interaction of such schools with the external world, in close connection with related companies, can play a key role in the promotion of the education quality provided by vocational schools, and their performance should take into account short term employment levels of their alumni, but also in a longer term a detailed analysis of their professional careers, achievements, and progresses made.

Quality of Continuing Education
A college education does not guarantee by itself high performance in the workplace, especially if we look into the medium or long term future as well. People must therefore keep receiving on-the-job education, or come back to school from time to time across their careers, since this is a key way to keep updated and have sustainable success in our knowledge society. The quality of on-the-job education and lifelong learning varies based upon each individual, company, industry, and job attributes, in addition to many other factors. The main objective of on-the-job training or education is to increase job performance, and thus here education quality must take into account whether or not such objectives are being reached.

Continuing education is a key area in order to change how work is performed. Young employees are quickly socialized into the routines and structures of the workplace; therefore, quality improvement should be natural and acquired as part of the organizational culture since the beginning, otherwise the mindset for improvement with a young employee can be lost soon and forever. Therefore, continuing education is also a means to achieve such a continuous improvement mindset, and should be offered taking also into account Quality of Education issues. Continuing education improvement projects can involve teams in the workplace, and dialogues as well as reflections are important elements to such a continuous learning journey.

Continuing education for industry professionals can also be combined with graduate courses in Six Sigma, Design for Six Sigma, or other quality related topics. Several universities are partnering with industries that have suitable problems with graduate students in joint courses and classes, with results that are often very successful and motivating for all parties involved.

Benchmarking in Education
Although more data, examples, and information are becoming available, many schools still rely on just looking at themselves, without structured approaches for building learning communities or sharing practices with other schools or even types of organizations, both at the national or international levels. Looking more and more for such additional learning opportunities can be very powerful for any given school to continuously improve by exploring best practices related with other entities, rather than just trying to build from its own current practices and results, as shown by a recent study performed at Massey University (New Zealand) on the application of benchmarking in schools.

Furthermore, besides more formal environments, usually school related, one also needs to take into account the role of other settings, including families, peer learning or simply

access to available online or printed materials, that may support self-learning as well, and should not be forgotten when we deal with Quality in Education.

An important question to ask is if the same process, that has been used elsewhere (namely in developed countries), and their approaches to education, should be considered as the benchmark for other contexts. One needs to be particularly careful, in order to make sure that appropriate metrics and approaches are adopted for benchmarking purposes. Otherwise, simply attempting to copy what happened somewhere else is not likely to lead to substantial improvements of quality in education. Further, the indicators used for quality assessment must also be revised on a periodic basis (e.g., student to teacher ratios may not be as important as they used to be, as we move more and more to e-learning experiences and online available teaching contents and materials).

Benchmarking with Other Industries

It is important to note that education can also learn from other industries, and the reverse can also apply, as was already stated previously.

A good example can be found in the Health Sector, where the emerging science of improvement in healthcare has grown significantly during the last two decades, and in many different places, as well as types of health related organizations. For instance, the Institute of Healthcare Improvement has been conducting a wide range of projects and initiatives, always with a focus on quality improvement. An important instrument in the beginning was the engagement of manufacturing industries to help healthcare in their improvement work (Berwick et al., 1990), with successful results. They initiated summer camps, which consisted of an almost week long retreat with activities to get the participants involved and committed to a systematic approach to improve healthcare, in order to reach influential people and get them actively engaged. The Institute of Medicine took these ideas and contributed to several seminal works such as *To Err is Human*. The Institute for Healthcare Improvement (IHI) was established around 1990 and has been an important engine in the improvement of quality and safety in healthcare, both nationally and internationally. In the UK, The Health Foundation is an important driver at the national level, with similar goals, and in Sweden an initiative called Vinnvård has supported research on healthcare improvement and created a platform for improvement knowledge, involving representatives from many of the professional bodies in healthcare, including medical doctors, nurses, physiotherapists, work therapists, and dieticians, who work together with researchers on healthcare quality and improvement. Each year the initiative holds a three-day summer dialogue, which is similar to a summer camp, in order to create a community of practice.

A social movement towards continuous improvement has been clearly initiated in the healthcare area. While education is different from healthcare, a similar initiative could benefit the education area, given its impact over societies, development, and the world in general, as recognized also by the United Nations. Which clearly assumed "Education Quality" as being one of its key 17 goals "to transform our world" and promote "sustainable development", under the scope of its 2030 agenda and targets ("Ensure inclusive and quality education for all and promote lifelong learning"). Due to the specific nature of each industry, different approaches may be needed, but inspiration from other sectors, such as the initiatives dealing with Health Quality Improvement, can be a motivation driver for further promoting Quality in Education, as education is facing major

challenges and problems all over the world, even if by very different reasons and with variable starting points.

Experimentation in Education to Drive Improvement
The ways education takes place today are significantly different from the past, yet there is some tendency to keep "doing education as usual", without enough disruptive innovation attempts being explored and evaluated. As society keeps changing faster and faster, with new generations of students and teachers, there is a need to reinforce the different types of innovation and experimentation that may drive stronger, less conventional education approaches and practices. Additional initiatives may be needed, aimed at providing incentives for new experiences and methodologies to be adopted, applied, and evaluated. When successful, these approaches should also be scaled up, including those that may correspond to "out of the box" thinking and ambitions. On other contexts, such as is the case of Sweden, education has been a playing ground for politicians and governments, whereas large scale changes have been enforced without evidence based in research and without small scale experimentations. Especially when new governments are in charge, without a proper evaluation of previous results or enough time for doing so, there is a tendency to come up with changes and withdrawal of education measures inherited from the previous ones, leading to permanent waves of over-readjusted education policies. Not surprisingly, PISA results do show that countries with "continuous reforms" do fall back when compared with those having more stable and long term views about education matters.

Furthermore, the new possibilities created by digitized education material and internet availability lead to new challenges and opportunities that are difficult to foresee. Massive open online courses (MOOCs) and flipped classrooms are just two ways that are probably changing and challenging education approaches. Problem-based learning may also have a strong revival, with increased possibilities for simulation of realistic situations and containing some gamification mechanisms (Kanigolla et al., 2014; Cudney and Kanigolla, 2014). As in many other countries, attempts have been made in South Africa to move to online learning and promote the use of tablets and the internet in schools, but this will not solve the problem across all sectors, as some areas in the rural districts are still without basic services such as running water, sanitation, and a consistent power supply. Furthermore, regarding online contents, South Africa also must address language diversity issues, since it has eleven official languages. How to move to online learning tools while assuring equity and wide access to such new methodologies, regardless of location, language or family social conditions, is a major challenge when we want to address quality in education for the present and future generations of students.

Another potentially powerful contribution, that combines together Education Quality with Quality Education, has to do with the application of well-known structured improvement approaches, coming from the quality related bodies of knowledge, to increase the performance of learning processes, and in particular to achieve deeper understandings of the subject matters that are being taught, with continual improvement over how that is being done and what is being achieved, year after year.

Many Higher Education Institutions are also moving away from the "chalk and blackboard" approach to using tablets and downloading lectures on to the university's intranet, where they are made available to the students or even to the world. In some

cases, however, this was a great success for the few lecturers that took up this initiative but most lecturers were not receptive to change, and this led to a mass migration of students from the "chalk and talk" class to the technology class, with unintended consequences, since class sizes in excess of 500 students were created, in need for solutions related to "large group teaching" (Harding, 2015). It has been shown in certain situations that in terms of education quality that is provided, few competent lecturers using state of the art technology with large groups may have a better impact (Harding, 2015) than less tech savvy lecturers teaching small groups. This raises a new scope of discussion, namely regarding education resources allocation, as well as proper definition of quality metrics (e.g. is under such kinds of new environments the teacher/student ratio as important as it has been considered so far?).

Conclusion

Quality in education may mean different things to different people in many parts of the world or having different roles to play. Further, the problem is not limited to education in itself, seen strictly as such, since it also involves politics, economy, and many other fields, which makes proposing solutions even more complex, but essential for addressing the present and future societal challenges and demands.

Although each quality in education context tends to be quite specific, there is however room for considering common approaches or guidelines for helping in improvement efforts conducted. For that purpose, models built from the education community are available, but at the same time different quality models, with appropriate adaptations, have also been employed, such as is the case of the ISO 9000 standards, models of excellence (Saraiva et al., 2003), or certain structured problem solving methodologies and tools. Enough experiences, at the national or international levels, have been conducted to draw conclusions and adopt the best frameworks for handling each concrete situation at which one wants to address quality in education.

To put things into perspective, it is also important to recognize that there have always been examples of good or not so good quality in education across the world. As students, we all can remember examples of high or low quality that we have experienced across time. However, the challenge here is not to rely just on such "spontaneously" created quality in education, or the corresponding "islands of quality" within a given school, but rather reinforce quality in education through the adoption of better defined, integrated, and holistic approaches for quality definition and implementation at any given class, school, region, or country, under appropriate leadership, with clear aims, goals, and milestones that take into account all the relevant stakeholders and needs.

Further, attention must be re-directed from teaching towards learning, which leads to the following additional question, even more pertinent under the context of the knowledge society we live in: How do we create (or rather sustain) a habit of efficient and effective learning of our young ones to be sustained during their life-long learning journeys?

In addition, recommendations are only words if we do not have teachers that understand the basics of improvement knowledge, which leads to the following two additional key questions, in this regard: 1) How do we reach the educational institutions? and 2) How do we reach the future teachers?

From the three main areas from which Quality in Education can be addressed (Education on Quality, Quality of Education and Strategy), as outlined at the beginning, more attention was paid here to Quality of Education related issues, this not implying that the other two topics are not also as important, and thus deserving future additional thoughts. Especially regarding how one may establish education policies and strategies aimed at providing reinforced improvement and innovation capabilities in school systems, just as was done in other sectors of industrial activity (Leih and Teece, 2016).

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