Kaizen and Education

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Abstract In this chapter the concept and origins of *kaizen* are discussed and the difference between *kaizen* and Lean dissected. Although Lean has been popularised in the Western world since 1989, it has unfortunately been a narrow interpretation of the original Toyota Production System (TPS) with *kaizen* as a cornerstone concept. The purpose of *kaizen* should be very clearly stated and aligned with the strategic direction of the specific educational institution. Strategy must be a reflection of 'customer value' as monitored through simplicity, quality, speed, cost, motivation, and growth measurements. Although customer value should always be defined (and continuously refined) from all stakeholders' perspectives, the primary customer remains the student. The creation of a *kaizen* culture is based on seven principles, values, behaviours, and beliefs embedded in the corporate and individual unconsciousness. This culture of excellence will sustain the use of efficiency methods, tools, and techniques. Continuous Improvement efforts in education have mainly failed during the past century. However, with a *kaizen* approach this can be turned around as proven in all sectors. It will require knowledge, skill, experimenting and learning, inspired by committed *kaizen* leadership. Propagating *kaizen* lighthouses of excellence will go a long way to break down the resistance to change.

Keywords Kaizen · Lean · Continuous improvement · Lean education
Kaizen education · Lean teaching · Process improvement

1 What Is *Kaizen* and Lean?

Kaizen as an organisational excellence approach originated in a manufacturing environment but its principles and methods have been applied in various environments, albeit that education and other service-orientated sectors have been lagging behind

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in its adoption (Emiliani, 2015a). It is also important to note that *kaizen* and Lean are not synonymous. Until circa 2007 Lean was propagated mainly as a process improvement methodology with minimal reference to the broader concept of *kaizen* underpinning the Toyota Production System (TPS) with *kaizen* reduced to continuous improvement activities (Womack, Jones, & Roos, 1990; Krafcik, 1988). In many circles Lean has been used interchangeably with *kaizen* or TPS but increasingly since 2007 scholars in the field of organisational improvement started to understand the vast difference.[1]

1.1 Defining Kaizen *and Lean*

According to the legendary Japanese efficiency expert, Masaaki Imai, '*Kaizen* means improvement. Moreover, it means continuing improvement[2] in personal life, home life, social life, and working life' (1986, p. xx). This implies a holistic approach to pursue excellence (organisational and personal) whereby all people are engaged in improving the organisation every day, in all areas. Improvement is therefore not only the responsibility of a few improvement specialists.

According to Jon Miller (who grew up in Japan) the root meaning of *kaizen* is to change for the better by driving out what is bad or evil (inefficiencies in this context) (Miller, Wroblewski, & Villafuerte, 2014). To become better at almost anything requires the application of self-discipline and sacrifice to eliminate bad habits and to replace them with good behaviours that support high performance. Examples of this approach are long-running successful sports teams and athletes, renowned musicians and singers, innovative and consistent business leaders, or outstanding academics. Due to its strong focus on people and their behaviours, *kaizen* has a moral or ethical underpinning which has not been fully recognised and researched by the Lean fraternity. *Kaizen* thus pursues the eradication of what is 'evil' and replaces it with what is regarded as 'good'.

Lean proponents have seen *kaizen* as activities, usually by frontline staff and middle management to make processes better (Ballé, 2010; Womack et al., 1990). In contrast, Miller et al. argue that *kaizen* is a culture, encompassing all behaviours in all areas of an organisation. They state it concisely: '…the common thread [is] – that all types of *kaizen* serve to deliver results and develop people.' (2014, p. 32). These *kaizen* behavioural patterns can be observed in: (i) daily small, incremental improvement activities by frontline staff and lower-level leaders; (ii) improvement projects; (iii) *kaizen* leadership and strategy deployment; and (iv) formal support and coordination of all *kaizen* activities by Continuous Improvement agents (Kaizen Institute New Zealand, n.d.).

[1] In this chapter, the author does not view *kaizen* and Lean as synonymous. However, sometimes in quotations, sources are using these words interchangeably.

[2] *Kaizen* is often translated into English as Continuous Improvement.

Kaizen is driven by seven principles (to be discussed later) and these differ from the five Lean principles (as described by James Womack and Daniel Jones in *Lean Thinking*) in that the latter focus on the process only. The five Lean principles are: (i) specify value; (ii) map the value stream; (iii) create flow; (iv) establish pull; (v) pursue perfection (Womack & Jones, 1996). The *kaizen* approach is holistic and a representation of the Toyota Production System as introduced to the world outside of Japan by Masaaki Imai in 1986. It also includes the development of the human element in every process. It also expands to the improvement of broader society.

Kaizen is a holistic approach to make everything and everyone better; the workplace, processes, policies, people, the environment, the economy, and humanity. The ideal is that everything and everyone must benefit from improvements; *kaizen* does not cause harm (Emiliani, 2015c). It is a techno-social system whereby processes and people are purposefully and continually improving through scientific problem solving that enables the creation of value for the end customer and all other stakeholders.

Lean, on the other hand, is a manufacturing-orientated Westernised interpretation of the Toyota Production System initially studied by Krafcik (1988) and elaborated on by Womack et al. (1990 and 1996). Although Lean has become popular since it was coined by Krafcik, it has not been able to emulate the successes of *kaizen* as developed by Toyota Motor Corporation as its '…focus has long been the near-singular pursuit of productivity and efficiency improvements to lower costs and increase profits, usually culminating in lay-offs' (Emiliani, 2015c, p. 8). From a *kaizen* perspective an organisation does not become lean by being mean.

To better understand Lean and *kaizen*, it is important to gain insight into the historical development of organisational excellence.

1.2 A Brief Perspective on Recent History

The way organisations behave has improved progressively since the Industrial Revolution. During the late 1700s Eli Whitney introduced exchangeable, standardised parts for muskets to enable the continuous use of a firearm once a defective part has been replaced. Previously the whole firearm had to be discarded (Mirsky, 1998).

Mass manufacturing emerged during the late nineteenth and early twentieth century, replacing craft production. Henry Ford and Frederick W. Taylor revolutionised mass manufacturing through the establishment of the automotive assembly line before and after WWI (Womack et al., 1990). It is regarded in many circles that Taylor's 'Scientific Management' mirrors Western thinking where the focus is mainly on the process, especially its financial benefits for a few stakeholders. In contrast, the Toyota Production System (TPS) is more holistic, a systems approach, leaning towards an Eastern worldview whereby the group (all stakeholders) must benefit (Shingo, 2007).

Conversely, Emiliani (2015b) contends that Taylor did not propagate a focus on process whereby the workers were disregarded. Taylor stated that Scientific

Management ceases when the system delivers bad outcomes for people. It was unfortunately the misuse of Scientific Management by others that led to the belief that Taylor did not care about the workers. Frank and Lillian Gilbreth added to Taylor's scientific analysis (taking his time-and-motion studies to the next level) with a stronger focus on the needs of the employee (Hellriegel, Jackson, & Slocum, 2002).

Albeit, an important reflection on the contributions of Ford and Taylor to organisational improvement is that 'the-winner-takes-it-all' attitude in an organisation will usually lead to disengagement by the negatively-affected stakeholders. Low morale will often derail efforts to satisfy customer requirements and hasten entropy (deterioration) of the system. Emiliani (2015a) speaks of 'non-zero-sum outcomes' as the target condition; a 'win-win' situation for all stakeholders.

Walter A. Shewhart introduced Statistical Control Methods at Bell Telephone Laboratories in New York during the 1930s. This helped to 'recognise when to act and when to leave a process alone' (Walton, 1986, p. 7), bringing about efficiencies by prioritising process problems through standardised response mechanisms. Dr. W. Edwards Deming extended Shewhart's work during the rebuild of the Japanese economy after WWII. His approach to organisational improvement promoted systems thinking (not point improvements), measuring variation in performance, and understanding human behaviour (Walton, 1986). Deming was recognised in 1960 by Emperor Hirohito for his contribution to the rebuild of the Japanese economy.

Although Deming was not directly involved with Toyota Motor Corporation (TMC), his methodology had a profound influence on the development of the Toyota Production System (TPS) as stated by Dr. Toyoda, former president of Toyota Motor Corporation in 2005: 'As we continued to implement Dr. Deming's teachings, we were able to both raise the level of quality of our products as well as enhance our operations on the corporate level.' (Willis, 2012). Other contributors to the post WWII economic revival in Japan include Joseph M. Juran and Kaoru Ishikawa.

Toyota Motor Corporation has been synonymous with organisational excellence. The father of TMC was Sakichi Toyoda who developed power looms during the late 1800s and early 1900s in an effort to make weaving easier for his mother and the workers (Toyota Global Website, n.d.). This respect for people inspired the 45 patents he registered during his lifetime and has since been one of the two pillars of the Toyota Production System (the other is continuous improvement). In 1907 the very successful Toyoda Loom Company was established. TMC was founded in 1937 after Sakichi's eldest son, Kiichiro, visited Ford Motor Corporation in 1927 and had the vision to manufacture vehicles for the Japanese people. Eiji Toyoda, Kiichiro's cousin, also visited Ford Motor Corporation in 1950, which inspired him to pull TMC from the doldrums after WWII. Together with Taiichi Ohno, they realised that Ford's mass production (which relied on large inventory holding, huge and expensive equipment, and high capital expenditure) would not be viable in Japan and this led to the development of a manufacturing system consuming minimal resources, the Toyota Production System (Womack et al., 1990). Taiichi Ohno and Eiji Toyoda developed the Just-In-Time system over a period of 20 years which resulted in extraordinary success and become the subject of ongoing research since

the 1980s. Much of what is covered in this chapter is based on their initial work as well as the contribution of their colleague, Dr. Shigeo Shingo.

Masaaki Imai was the first person to introduce the TPS philosophy of *kaizen* to the world outside of Japan in 1986 in his award-winning and best-selling book, *Kaizen: The Key to Japan's Competitive Success*. Prior to this he worked closely with Taiichi Ohno and the Toyoda family after he spent five years in the United States from 1957 to study American management practices through the Japan Productivity Centre. On his return to Japan in 1961, he became a management consultant (Imai, 1986) working closely with Taiichi Ohno and numerous businesses across the globe. He published a highly acclaimed sequel, *Gemba Kaizen. The Commonsense, Low-Cost Approach to Management* in 1997.

Imai's book on *kaizen* (1986) inspired James Womack (2016) to study TPS and he then popularised 'Lean' with Daniel Jones and Daniel Roos in 1990 with their book *The Machine That Changed the World* (Womack et al., 1990). They introduced Lean manufacturing methods in the 1990s, mainly focusing on cost-savings through improving processes. Unfortunately, it can be argued that their 'Western' paradigm focused their attention on the *methods* employed in TPS with the *respect-for-people* aspect of Toyota sadly ignored. In many organisations this led to the notion that 'Lean is mean', often culminating in headcount reduction (Emiliani, 2015c). It was only around 2007 that Lean advocates started to realise that TPS is more than a cost-reduction methodology. Their corrective action was to introduce Lean Management which gave more attention to Lean leadership and respectful behaviour. Nonetheless, damage to the Lean methodology was already done in some Western economies, especially in North America (Emiliani, 2017a).

Organisational improvement has been pursued for as long as organisations have existed with numerous adaptations, failures, and gains. However, the Toyota Production System is still regarded as the benchmark of excellence due to its holistic and practical approach. But what is the purpose of the *kaizen* system?

1.3 The Purpose of Kaizen

1.3.1 Developing a Culture of Excellence

The purpose of *kaizen* is to create a sustainable organisational culture of excellence, focused on creating value for the customer by everybody, everywhere in the organisation through continuously solving problems and reducing waste (inefficiencies). Customer value must be quantified in terms of quality, cost, and delivery (speed) (Imai, 1986, 1997).

However, before problems can be fixed they must first be identified, based on a new corporate and individual mind-set of pursuing a better situation. If people do not see their workplace through the *kaizen* filter, they will not be focused on eradicating inefficiencies and satisfying the needs of stakeholders. Once problems have been identified, frontline people (e.g. teachers, lecturers, and coaches) must be

empowered and supported by their leaders to formally solve these in an innovative manner through the disciplined use of the *kaizen* tools. This is the *Lean Thinking* Womack et al. referred to—new corporate and individual thinking patterns (1996).

Albeit, *thinking* is not enough to improve an organisation. *Kaizen* is truly about changing all aspects of an organisation by supporting the creation of new habits of excellence over time, and sustaining these good habits, but also developing it further. A lengthy description of a *kaizen* culture is given in the award-winning book, *Creating a Kaizen Culture* (Miller et al., 2014). An organisation cannot become extraordinary in the way it creates and delivers its goods, services, and ideas, if it is not rooted in a culture of continuous improvement. This culture implies an inward focus to enable the fulfilment of the needs of the ultimate customer (outward focus).

One of the characteristics of this culture is stated eloquently by Wroblewski (2006): 'The principles of Lean are trying to put harmony into the workplace. This means harmony between man and machine, management and associates, company and customer, company and supplier, and even between company and society. The *kaizen* principles are helping us develop and promote harmony by removing barriers, rocks, and conflicts that disrupt flow in our business.'

Kaizen, then, is a holistic approach to improve an organisation but it extends beyond the buildings, the physical classroom, and the virtual training space. It is finally about making humankind better. The spirit of *kaizen* goes far beyond just saving cost. It is a techno-social system, endeavouring to benefit all stakeholders of which the Toyota Production System is a prime example. In an educational setting this implies that the development of students entails more than transferring subject matter knowledge. Creating value for learners includes practical learning; a purposeful application of knowledge to enhance insight and to improve engagement. This insight should eventually extend to the improvement of families, friendships, cultural groups, the environment, sports teams and broader society.

1.4 Defining What 'Change-for-the-Better' Is in Education

Education will only improve if we know what to improve and why improvement is required. Senior leaders, and subsequently all staff members, must be able to clearly articulate our strategic objectives. The *kaizen* approach is intertwined with developing this vision, mission, values and strategy; it is not merely a few improvement initiatives. We might change structures, curricula, our teaching methods, technology and training aids, but we might just do more harm than good. Not only could students suffer (and have suffered) but also teachers, parents, academia and establishments, with our future as a society at stake. Change for the better should always be synonymous with the customer value we are trying to create. Education primarily exists because there is a need by the student that should be met.

Establishing what 'better' is should be done at various educational levels. At the *macro level*, politicians and bureaucrats should provide stability within the education system. Unfortunately, education often becomes a playground for politicians with

major philosophical changes causing confusion and poor outcomes. Bigham and Ray (2012) reported declining reading performance under students when politically influenced curriculum decisions were made instead of data-driven decisions. In New Zealand, misguided political policy decisions over decades have resulted in poor literacy achievement outcomes regardless of recommendations from experts (Tunmer, Chapman, Greaney, Prochnow, & Arrow, 2013). Harm is caused to numerous stakeholders when their value propositions are not congruent. A self-centred leadership paradigm (as opposed to the servant-leadership model of *kaizen*) is often the root cause of these symptoms. An OECD report (Organisation For Economic Co-operation and Development, 2010) highlighted the need for alignment of national and local policies to overcome school failure.

Defining a value proposition at a *local institution* seems easier as it is closer to the frontline of education. However, determining and measuring performance, (based on an agreed-upon vision, values, principles and strategic objectives), often fails because of the lack of a *kaizen* mind-set and practice. The improvement opportunity for kindergartens, in-home education, schools, tertiary institutes and the trades, is to define simple and clear objectives and to monitor these in a disciplined way on a daily, weekly and monthly basis. Parents with expertise in this field and local schoolboards can be an excellent resource to assist in this regard. But, which objectives should be pursued?

Education should follow the advice from Shigeo Shingo (TPS expert) on how to determine what 'better' looks like in this sector: make things (i) easier, (ii) better, (iii) faster and (iv) cheaper, in that order (1988). This denotes we must first set goals to make our processes **easier** for educators, students, administration, and other stakeholders. Lecturing, preparing for classes, doing research, working on assignments, and using technology should be simplified; not made more complex. It is usually easier to complicate policies, procedures, processes and tasks, than it is to simplify them. A simple key performance indicator (KPI) to show the complexity of the technology employed is the number of technical calls logged per period. Other KPIs can focus on the percentage of learners using technology; the number of critical processes that have been improved and standardised.

Once work has been simplified, it should be made **better** by improving the quality. Poor quality should never be accepted, created, or passed on. These errors and mistakes are difficult to detect because many educational processes are unseen (as in most service-orientated processes). Quality should be experienced in classroom activities, completion of assignments, providing assignment briefs, setting goals, course documentation, the marking of assignments, and in interpersonal relationships, to name a few examples. Setting particular objectives to improve the quality of the input, transformation processes, outputs and feedback loops (Millar & Theunissen, 2008) can greatly enhance the quality of teaching and learning. Examples of setting quality-goals include; student pass rates; the number of teacher training events; the number of standards reviewed or improved; how often performance against standards are checked; or the number of incidents where reports or other information sharing is erroneous.

Faster is about speeding up the time it takes to do the work the (internal and external) stakeholders require from us. Idle time, or waiting, is usually a huge part of a process. Very little time is spent on the value-added activities whereby a product or service (like information or documentation) is transformed into the value the customer is expecting. By eliminating waiting a process can be sped up dramatically. When educational processes are evaluated from a *kaizen* standpoint (value stream mapping is a well-known technique) the value-density of the process can be a rude awakening. Faster processes are not the same as rushed processes: the latter indicates poor quality and often higher cost. *Kaizen* can achieve high quality and fast lead times simultaneously. Targets related to speed can be turnaround times when dealing with complaints or hearings; recording month-end deadline breaches; or how long it should take to mark assignments for a specific course.

Lastly, applying *kaizen* also provides the service or product **cheaper**, or more cost-effectively. This is usually the by-product of the previous three goals of making improvements. Too often Western organisations make cost reduction their main reason for applying Continuous Improvement: reduce cost at any cost. The easy (and often lazy) way is headcount reduction or 'restructuring'. Chasing short-term strategic objectives, set by short-term senior leaders (who are often in the game for their own gain) is frequently the root cause of this debilitating practice (Walton, 1986). Financial targets must not negate the other goals we pursue—the *balanced scorecard* (Balanced Scorecard Institute, n.d.) is often used to ensure strategic synergy. Typical cost goals are: adherence to budgets, decreasing tuition cost, teacher–student ratio; and student debt.

Process simplification impacts favourably on quality, and both these make the process faster, and the culmination of simplification, higher quality and faster processes is cost reduction. Cutting cost without this deeper understanding is futile and most often results in hardship for the organisation, its people, students and families, the economy, and even society. *Kaizen* aspires to bring no-harm to all stakeholders when setting and monitoring the institution's goals.

These simple four objectives can serve any educational institution well when embarking on a *kaizen* transformation. However, Shingo's purposes of making improvements are more *process* orientated. Expanding the purpose of *kaizen* in education, the following *people*-orientated target conditions must also be included in any strategic plan:

Health and safety of our people includes more than providing a physically safe environment. The emotional welfare of staff members is just as important, especially in the service industry where many processes and their associated problems are more hidden than in manufacturing, often causing stress and burn-out due to work overload. The academic environment can also provide a breeding ground for bullying, as well as demoralising class and wealth discrimination (Emiliani, 2017b). If an institute is serious about making the workplace better, it should also define and monitor health and safety issues.

Improving **morale** and staff satisfaction must be at the heart of an educational organisation. Delivering quality outcomes is to a large degree dependent on the skills, attitudes, and emotional and social intelligence of staff. *Kaizen* develops all people

in an organisation so they are able to spend more time on value-added activities but also to improve their work. These improved capabilities also improve self-confidence, self-discipline, pride, cooperation and trust (Imai, 1997). A simple tool to determine staff satisfaction is the *Net Promoter Score* with employees answering the following question: 'How likely is it that you would recommend this university (or school) to a friend or colleague?' (Net Promotor Score, n.d.). However, very often staff satisfaction surveys do not improve morale; they might have the opposite effect. This can be ascribed to several factors: (i) the sincerity and credibility of senior management—do they really care about and serve their staff?; (ii) infrequent surveys with minimal feedback; (iii) no action after surveys; and (iv) the over-arching culture in the education sector. A better technique to improve staff satisfaction is through *gemba* (frontline) walks by supportive leadership on a very regular basis. These scheduled visits to the classroom are not to micro-manage people but to support people to reach the strategic objectives of the team. Process performance is monitored and corrective action taken by both leaders and teachers to enable continuous improvement. This 'immediate feedback' is based on the explicit values of respect for people, care, and trust.

Over and above Shingo's purposes for Continuous Improvement, an educational organisation must also have **growth** aspirations. This might include a roll increase target or a revenue and funding increase to cater for capital projects and operational expenses. Without realistic growth ambitions a school, college, or university will gradually be overtaken by the effects of entropy. *Kaizen* does not only reduce but also increases. This implies you might have the most efficient processes and the most capable lecturers but minimal students and/or funds to justify the institution's existence. *Kaizen* works best when inwardly focused process-and-people improvement is balanced with outwardly-orientated growth aspirations. Conversely, pursuing a growth strategy per se without improving processes and developing staff can easily lead to failure as *muda* (Japanese for waste) will also increase if not deliberately targeted.

The purpose of *kaizen* in an educational organisation can be condensed to the following: making teaching and learning processes easier, safer and healthier while improving the quality of everything, making processes faster without being rushed or strained. A by-product of all these actions is usually cost savings although explicit financial objectives should also be pursued. Growth aspirations for an institution ensure the benefits of process improvement and people development are maximised. Albeit, after we have defined all these lofty goals, the acid test is summed up in this report: 'Only when the data meets the student in the classroom will teachers begin to embrace its relevance' (Lambert, n.d.). The purpose of having a purpose is to primarily improve the student and teacher.

Now that the purpose of *kaizen* in education has been discussed, the broader principles underpinning *kaizen* will be explored.

2 Foundational Principles of *Kaizen*

To practise *kaizen* a team must understand the foundational beliefs, principles, values and habits[3] driving efficiency and effectiveness. The seven *kaizen* principles according to Coimbra (2009) are: (i) create customer value; (ii) eliminate waste; (iii) engage people; (iv) go to *gemba*; (v) manage visually; (vi) process and results; and (vii) pull and flow.

Coimbra states that a paradigm shift is required to create new habits based on these beliefs, principles, and values (ibid). It often requires unlearning the 'traditional' ways of both teaching and managing educational institutions based on critical reflection. Understanding the connection between the principles and the improvement tools can prevent inauthentic *kaizen* (and subsequent harm to stakeholders) and therefore supports a sustainable *kaizen* journey (Graban, 2007).

Kaizen practitioners continuously research and improve their understanding of the foundational principles, assumptions, values and habits. It must be ingrained in the unconscious mind by the creation of new neural pathways through regular visitation (Mind Warriors Limited, 2009). The more the principles, beliefs and values are applied, the stronger the new *kaizen* habits will become. The *kaizen* principles are subsequently explored.

2.1 Create Customer Value

An educational institute exists because it meets certain needs of a customer; in other words, creating products or services that the customer perceives as being of value. It is, however, important to pinpoint what the value is that the customer requires. According to Emiliani, 'Quality in higher education remains largely undefined' (2015b, p. 33). He lists 45 common, unforced errors occurring in teaching processes that devalue a teaching system.

It can be correctly argued that an educational organisation has multiple customers with varying, even conflicting requirements. For example, government priorities and policies might not be aligned with student expectations. Prioritising these wide-ranging requirements can be a minefield. Nonetheless, it should be the aspiration to determine a common and simplified understanding of what *value* is and the alignment of all stakeholder value propositions. This will take time and effort but it is achievable in a *kaizen* environment. If dictated government policy does not address the needs of

[3] **Principle**: a fundamental truth or proposition that serves as the foundation for a system of belief or behaviour or for a chain of reasoning (Oxford Dictionary).

Beliefs: Something one accepts as true or real; a firmly held opinion (Oxford Dictionary). Also called assumptions.

Values: Values are deeply held views of what you find worthy. (Mind Warriors Limited, 2009). Not to be confused with *customer value* (the customer's requirements).

Habits: A settled or regular tendency or practice, especially one that is hard to give up (Oxford Dictionary).

the grassroots institution, the latter should work towards clarifying its own strategy so it can feedback to bureaucracy using data to negotiate better alignment. This will require mutual trust.

Value is not only related to the perception and experience of the student (an external customer). Internal customers (staff members, senior management, administration, lecturers, professors and researchers) must also be taken into consideration. Liker and Meier (2006) stipulates that the starting point in the *kaizen* approach is 'generating value for the customer, society, and the economy.' It is not first and foremost about cutting cost. Monetary saving is a natural outcome of creating, producing, and delivering exactly what the customer requires when it is required. For instance, the economic benefits of a well-organised, well-skilled society can be compounding. Not only can it help reduce poverty levels, it can also increase social stability. Determining 'value' is often described and quantified in terms of Quality, Cost and Delivery (Imai, 1986).

The **quality** component can be measured as the number, percentages, or cost of, failures, defects, mistakes, rework, incomplete work, complaints, non-compliances, etc. The quality of teaching and learning should be quantified through the setting of appropriate targets and monitoring of performance. However, qualitative observations of behaviour, emotions, and attitudes (of student, staff, and other stakeholders) must also be noted and corrective action taken based on the explicit values of the institution. Quality usually starts with simplifying teaching and learning—not complicating it (Shingo, 1988); not by adding more workload and more steps to a process.

The **cost** aspect can refer to budget adherence, cost of providing a course or service, labour cost, cost centre management, government funding, allocation of funds to various departments, outstanding student fees, space utilisation, productivity and so forth. According to Emiliani (2016) higher education in the United States has been under financial pressure for a long period due to decreased student enrolments, increased operating cost and reduction in government funding. Traditional management style cost-cutting is contrary to the *kaizen* way whereby cash flow improvement is achieved through the meticulous improvement of processes (Kaizen Institute USA, 2018). The cost of providing education can be controlled in innovative ways as reported by the Davis Educational Foundation (2012) inquiry into the rising cost of higher education in New England, USA. Some of their suggestions include: (i) year-round use of the campus; (ii) early identification of students not 'college-ready' as the remedial work can be costly; (iii) reduce time to graduation; (iv) and blended learning or on-line courses.

Delivery has to do with the timeliness of providing services or information. Monthly reporting deadlines come to mind, time wasted in meetings, inconvenient class times and rosters, working overtime to mark complex assignments, waiting for decisions, time allocated to administrative tasks, etc. A *kaizen* education system will endeavour to minimise time spent on activities not adding value to the customers of the system.

Although 'not everything that can be counted counts, and not everything that counts can be counted' (Cameron, 1963), it is important to know if a team is improving or falling into entropy. Therefore, measuring the performance of processes (and

people) is a vital *kaizen* activity. Targets should be aligned with what the customers (all stakeholders) require, however, it is not always easy to determine measures in the beginning of a *kaizen* journey due to the instability of the system. Using plain KPIs to highlight key problems in a pilot area can be a sensible way to start.

A key learning is to reduce the number of targets as too many measures will confuse and demoralise. It is therefore important to develop KPIs that will measure critical success factors (CSF). Chasing the 'wrong' targets will create inefficient habits, a waste itself. As the *kaizen* journey continues, the targets themselves must also be enhanced through simplification and by combining various objectives to try to reduce these into a single and simple KPI. This can only occur if education leaders and senior managers deliberately and critically reflect on organisational KPIs and associated goals and strategies.

Customer value is constantly being prevented due to waste in processes as will be examined in the next section.

2.2 Remove Inefficiencies or Waste

What is waste? The Japanese refer to it as *muda*—not getting paid for an effort. It is consuming resources without adding any value or benefits to the end customer of the process (Imai, 1986).

Muda cannot be identified and removed effectively if a clear understanding of what value is has not been predetermined. Otherwise activities might be removed that are not wasteful, or, time can be wasted on fixing processes that should not exist in the first place. Eradicating *muda* becomes more obvious and effective once value has been clearly defined.

Various types of *muda* can be identified in the workplace. Eliminating these inefficiencies is an easy way to start improvement activities, as Masaaki Imai states in his best-selling book, *Gemba Kaizen* (1997). The classic 7-Wastes can easily be remembered by the acronym, *T-I-M-W-O-O-D*:

Transportation entails the unnecessary movement of information or materials in a manufacturing setting. In teaching, the 'materials' are the students moving through educational processes while being transformed (like raw material is transformed into a more valuable object during a manufacturing process). This can include their inefficient physical movements between classrooms, campuses and travelling long distances for just a one-hour class per day. A frustrating scenario is when students travel long distances to a campus to find the lecturer is unavailable. The root cause of this *muda* is often a disrespect for people. The waste of transportation can also include unnecessary emotional swings (movements away from equilibrium) due to insecurity, unsafe campuses, bullying, or frustration with the quality of teaching or environment. The transformation of the individual takes longer or might even be impeded.

Inventory is the storage of information or materials while it is waiting to be used or to be transformed. It piles up in email inboxes, trays, printers, servers, meeting

minutes, course brochures and even on visual boards. Stock items also refer to storing an excessive quantity of consumables and teaching resources, or running out of stock items required to teach. This waste often leads to the waste of 'defects' as unnecessary or over-produced items are often discarded. The trap is to buy more because items have been discounted by the supplier. It only takes a few items to be discarded to nullify the cost benefits of buying in bulk. Bulk-buying also requires bulk storage that could have been used for more productive activities. Too many stock items also lead to more searching (waiting) by staff.

The storage of unnecessary information in a data system also leads to multiple inefficiencies, for example the difficulty to find the correct template, numerous versions of documents, and complicated folder structures. Naming conventions can greatly assist to standardise information record-keeping and standardised folder structures can reduce searching as well.

Asking the following questions can assist with inventory reduction: do we need to keep this? Why? How many? Where? When? Who is responsible?

Motion involves unnecessary human action by the operator in a factory (lecturer, teacher, facilitator or a coach in education) like walking too much, and searching for people, information or materials. Too many keystrokes to access information in a complex folder structure indicates motion waste. Too much movement of people can lead to unsafe practices and injuries. Excessive emotional motion can also devalue the participation of the teacher. Low levels of respect for colleagues' workload and their frustrations often result in the overthinking of issues and the spending of emotional energy on self-preservation and conflict resolution. The lack of care for students will also create negativity and hinder performance. A *kaizen* culture enables an environment where debilitating emotions are minimised.

Waiting occurs in most processes and huge gains can be made if waiting times can be reduced. Unnecessary and prolonged meetings are a well-known example of this in education. The root cause of this frustrating practice is usually poor or rushed planning. This often results in rework (a quality issue) when another meeting has to be convened or discussion points have to be revisited. Drawn-out decision-making keeps staff and their teams busy while value-added work moves lower down the priority list. Waiting for decisions by leaders or managers also prevents staff from doing better work. Submitting and publishing assignment results late are also not adding value to lecturer or student. These delays are more often the result of cumbersome processes; not uncooperative staff members.

Over-production is producing too much information or material before it is required and then it waits while it is stored somewhere, running the risk of turning into a defect. Teachers must be tuned-into their students to identify when they are overloaded with too much work and either reduce assignments or provide timely support to help them cope. In *kaizen* less is often more. Too much (ineffective and inefficient) teaching will result in defective knowledge assimilation which reduces the quality of learning and living. The approach to overload students might also lead to poor work habits in these future employees, managers, and leaders. Nonetheless, teaching should also not pamper students as disciplined learning and good routines will empower students to better manage the challenges of later life.

The Princeton Review provides some useful tips on avoiding over-production at school. It includes studying more often in shorter sessions instead of long, tedious hours, less often. This requires good planning and a set routine. Developing open, trusting communication with teachers and parents to obtain support when a student is struggling is vital. Celebrating successes is also crucial to keep motivational levels high (The Princeton Review, n.d.). These tips are all associated with a *kaizen* approach.

Over-processing happens when a process (work) is too complex or difficult and in need of simplification. Marking assignments and performing all the related administrative tasks is usually a real tester for teachers and lecturers. Complaints about unnecessary administrative work in schools and universities have driven numerous excellent teachers from this future-creating vocation (Lambert, n.d.; Allpress, 2018). This waste of over-processing is often leading to the defect of teachers leaving the sector or moving to other schools. The attrition cost in US education is annually between $1 billion and $2.2 billion (Alliance for Excellent Education, n.d.).

Defects in education are numerous: incorrect data, endless reports, omissions in administrative documents, and justified student and parent complaints. Emiliani (2015a) refers to 45 common, unforced errors occurring in teaching processes that devalue the product delivered to students. Some of these are teachers who cannot teach, lecturers who cannot explain the course content with clarity, go too fast, read from books and slides, do not use real-world examples, come to class unprepared, do not keep to class times, ignore student feedback, cancel classes and speak to students in a condescending way. The obvious defect is a student failing to develop holistically and to underperform. Schools not dealing decisively with bullying are also a defect (Green, Harcourt, Mattioni, & Prior, 2013).

2.2.1 The 3Ms

Muda forms part of a triad that also includes *mura* (variability, irregularity, unevenness) and *muri* (strain on people, processes and equipment or other technology). This triad is called the 3Ms and they are intertwined. Unevenness in processes leads to strain which results in *muda*, for example; a student not studying regularly in short sessions usually 'crams' information just before an exam or assignment in one long session (large batch of information) which often leads to strain (stress, anxiety, lack of sleep). This overburdening can result in various *muda*: (i) defects (poor memory and low retrieval of information, even failing an assignment); (ii) other academic or personal activities waiting; (iii) over-processing of the learning material (re-reading to gain insight); or (iv) slow transportation of knowledge or skills (inventory) to the long-term memory functions of the brain. Education can become better by 'reducing unnecessary, unreasonable and uneven activities' (1973 Toyota Production System Manual, p. 2).

Other forms of waste can also be found, for example, marking large batches of assignments at end-of-term instead of getting closer to the ideal of single-piece flow. This can imply shorter assessments more often through 'machine evaluation'

as Emiliani (2016) implemented for 45% of his course assessments at Central Connecticut State University. 'Multi-tasking' can also be very ineffective and inefficient which implies that students (and facilitators) involved in too many courses simultaneously can impede the quality of learning and teaching. The use of mobile devices for social communication during tuition and individual studies can also reduce the quality of learning as attention is continuously diverted (Weimer, 2018). Other inefficiencies in a service environment include work-time losses like absenteeism, and employee underperformance due to low morale.

The 3Ms should be eliminated through daily, small, incremental *kaizen* by all staff members (Imai, 1986). Waste can also be minimised through project-based improvements like Value Stream Design whereby the current state of a process is analysed and then vastly improved to incorporate pull and flow principles. It is also called: 'Learning to See' (Rother & Shook, 1998). Daily *kaizen* should once again follow such a project to ensure the improved ways are followed and further enhanced. These projects can deliver break-through results and can be applied at various process levels.

To conclude this section on eliminating waste a word from the efficiency expert, Deming. His rule of thumb is that about 94% of all problems in education will be due to the system (the responsibility of senior leaders) and only approximately 6% can be attributed to employees (Deming, 1986). Senior pedagogical leaders and managers must develop the *kaizen* habits of actively supporting people at the coalface to solve these systemic issues; not blaming them as they struggle against the system in the organisation.

2.3 Engage and Develop People

Engaging people is underpinned by a deep-seated respect for people (and society in general). The Toyota Production System has been an outstanding example of an effective and efficient organisation due to their balanced, holistic approach: people and process should equally and simultaneously become better. Imai (1997) states that engaging people requires 'everybody, every day, everywhere' doing *kaizen* for the betterment of all.

An educational organisation must be a 'learning enterprise' as Imai further stipulates (ibid.). This does not imply the process of teaching students; it is about staff development. Administrative people, management and frontline educators, are continuously thinking about the systemic problems and process challenges they are facing daily. They reflect regularly on what happened (the good and the bad) and collectively search for solutions to embody a better way of meeting student and other stakeholders' needs. Mark Graban says 'Lean [*kaizen* in this context] is a thinking process more than a simple to-do list of tools to implement.' (2009). It is pointless if we try and 'fix' processes without developing the 'fixing' skills of teaching staff and administrative personnel.

Engaging people is also about improving staff morale through genuine support to all people. Richard Branson and other high-profile business leaders are convinced that high staff satisfaction underlies customer satisfaction. As Zappos stated it cleverly in an advertising campaign: 'Happy People Making People Happy' (Mullenlowe U.S., 2010).

A few aspects related to developing staff should be considered:

- Understanding and practising respect for people, whether they are the (internal or external) customers of the work that is done, or whether they are suppliers of information and materials.
- Respect for people (and broader humankind) must be practised and promoted by the senior leaders at the educational institution. This might require the development of new behavioural patterns for some due to deeply embedded poor practices and systems. However, *kaizen* enthusiasts should not be discouraged by the challenges ahead. Their focus should be on the long-term vision of empowering our societies with knowledge and skill in a relevant, effective and efficient way. We might not even see some of the results in our lifetime but our *kaizen* efforts should create a legacy that future generations can build on.
- Engage faculty and administrative people to remove inefficiencies and to improve quality. In other words, empowerment them to identify waste and to remove it.
- Continuous skill development in the daily processes of teaching, research and administration. Nonetheless, employees should also be trained in the use of the continuous improvement approach and subsequent techniques.
- Deep reflection on practices with team members to find better ways, to standardise the better ways, and to further enhance them.
- Improving staff morale by connecting genuinely and sincerely with people, especially as a leader (at any level in the organisation).
- Celebrate success and reward staff for improvements made and targets achieved. This does not have to be financial. The pride and emotional connection with the workplace can be more powerful than monetary rewards.
- Servant-leadership is required to engage people and to develop them. Coaching staff cannot occur when egos and selfish motives get in the way.
- High staff turnover is one of the most inefficient and devastating results in an organisation: 'As a rule of thumb, the cost of employee turnover is estimated to be one to three times the departing employee's annual salary, depending on factors such as the seniority of the position, and how quickly a replacement can be found and trained.' (Cole, 2001). Organisational efficiency is much more than just measuring process performance. It has a lot to do with the quality of social relationships, the emotions generated within the team, and the lived values of each individual (Miller et al., 2014). Deming asserts that 'A system that fosters an atmosphere of receptivity and recognition is far preferable to one that measures people by the numbers they turn out.' (Walton, 1986).

Engaging and developing people happens at the coalface; the theme of the fourth principle of *kaizen.*

2.4 Focus on Gemba

The *gemba* is the frontline of the organisation; where value is created for the customer but also where *muda, mura* and *muri* persist and where it must be eliminated with the active support of senior leaders (Imai, 1997). Leaders at all levels need to be strongly connected at the coalface of education. Leaders need to derive their decisions and strategic objectives by what is happening where students and educators connect. The opposite of *kaizen* management is managing through reports and endless meetings, behind a comfortable desk, and managing on the internet or in the cloud.

With *kaizen*, problems are made visible at the *gemba* through visual management. When leaders step into the classroom regularly they support and develop teachers to resolve the apparent issues; not to spy, criticise or demean them. A leader's standard work must deliberately be designed to provide optimum support to frontline staff. The lower a leader is in the organisational chart, the more frequent the coalface interfaces will be.

Immediate feedback mechanisms must be designed to ensure rapid exposure of problems, challenges, issues and improvement opportunities. These problems can be fertile ground to enhance people's problem solving abilities and to strengthen their *kaizen* skills and confidence through the coaching of a senior leader. Immediate feedback can be given through the use of visual boards in smaller teams (or departments) whereby daily and weekly performance can be observed and corrective action taken. The early staff room gathering in the morning before school or after lunch is an ideal time for this.

Walking through the *gemba* must be deliberate, well-designed (standardised) visits not only to the coalface but also to the administrative teams. The *gemba* walk is much more than Management By Walking Around (MBWA). Standards must be checked. These include checking if people are following: (i) work instructions, (ii) processes, (iii) achieving student targets, and (iv) perform against teacher-set targets. This checking is in the form of respectful support.

The focus by management (and all other support areas) on the frontline is to ultimately support the teaching staff to solve the problems they and their customers, the students, are facing. It is, however, important to prioritise the problems that are having the biggest impact on creating performance gaps. Once a problem has been identified, defined, and prioritised, root causes should be uncovered and addressed through ideation and creative solutions. As part of the Scientific Method, the results of the implemented solution(s) must always be verified to establish if improvement has been made. If so, standardisation should follow. If the situation did not change, further root cause analyses should be done, or alternative solutions investigated. It is also recommended to solve one problem at a time but do it thoroughly (no multi-tasking) and to achieve the targeted outcomes.

"The greatest sign of strength is when an individual can openly identify things that did not go right, along with 'countermeasures' to prevent these things from happening again." (Liker & Meier, 2006, p. 14).

2.5 *Manage Visually*

Visual management is the word used in *kaizen* to describe the management style. It makes information and activities visual so problems (deviations from standards) become obvious. Imai puts it as follows: 'This is visual management: making abnormalities visible to all employees – managers, supervisors, and workers – so that corrective action can be taken.' (1997, p. 96). It can even be added that abnormalities and problems can be made visible to students and other stakeholders as well to enable their participation in improvement activities.

Managing classrooms, student areas, and the back offices in a visual manner creates interest and engagement from colleagues, senior management, and students. More improvement ideas can be generated if more eyes are looking at the problems a team is facing.

Visual management creates a disciplined approach to improving the teaching environment as problems can be seen and it creates an urgency to solve it. Without this urgency (about solving the right problems at the right time) improvement efforts will always have a low priority. The content of all team boards throughout the organisation should be aligned, culminating in an overarching, high-level board at senior management level depicting the organisational performance and its people development; a line of sight throughout the organisation.

Visual management can also be seen in the use of videos, presentation slides (minimal use), photographs, graphs, an idea system in the office (and even the class), displaying visual class standards during lectures, or a need-to-know area with important information to save time in class.

An indispensable form of visual management is 5S (better workplace organisation) (Imai, 1997). It is based on five words starting with 'S':

1S—**Sort** out an area (physical or digital) by eliminating all items not required to carry out the work.

2S—**Set**-in-order to help locate materials, tools, software, files, folders, data and other information, easily and always in the same place. This can be depicted through photos of the layout, labels, demarcated areas, and naming conventions for files, and standardised folder structures.

3S—**Shine** or sweep the area regularly to ensure compliance and a work environment conducive to high performance. It helps to detect unnecessary files or folders within folders; these should either be deleted or archived. A regular sweep with the eyes when entering a classroom, office, virtual space, or the lunchroom is a habit that can prevent the reoccurrence of waste.

4S—**Standardise** the improvements made during the first 3Ss. Create visual standards to show the target condition in a specific area, preferably by engaging the people using these standards. They usually know the processes better and can be more efficient and effective in creating these standards. The key to effective standardisation is simplification. A picture paints a thousand words is truly applicable here. These visual standards are intuitive and easy to understand and make the deviation from

the standard obvious. Nonetheless, these standards must be improved by the people using them. This can only be achieved with a motivated and inspired workforce.

5S—**Sustain** the standards through regular checks or audits to ensure people are adhering to the better ways that has been developed. Display the results of these checks with clear actions on how to get the area or process back to the standard. This can also display new ideas on improving the existing standard.

Applying 5S must be lead and supported by senior management to ensure the discipline is upheld in all areas. A good area to start with 5S is the staff room of the institution as it is a neutral area where staff can learn-by-doing *kaizen.* It can also become a benchmark and training ground for people on giving the first steps in organisational improvement.

2.5.1 Immediate Feedback and Visual Management

Visual control must be of such a nature that a problem can be seen immediately. At Toyota Motor Corporation they have developed the *andon*, a visual and/or audible signal to attract the attention of the supervisor the moment a problem occurs on the assembly line. In similar fashion the next layer of management in education should know as soon as possible when a problem occurred so that root cause analysis with the appropriate people can be done. This urgency to solve problems has the potential to eradicate reoccurring problems through standardisation once a solution has been implemented.

Visual management is a key component of a *kaizen* organisation, but, what should be managed visually? The next section explores the sixth principle of *kaizen*.

2.6 Process and Results

Excellent results in education are consistently achieved if the (i) teaching, (ii) learning, and (iii) administrative (supporting teaching) processes are stable and repeatable through standardisation. The meticulous monitoring of results of these processes is not sufficient to become excellent. Deming stated that 'A goal without a method for reaching it is useless… But setting goals without describing how they are going to be accomplished is a common practice among American managers.' (Walton, 1986, p. 77). According to Imai (1997) the predominantly results-driven thinking in the West must be replaced by a process-oriented approach. Liker later mentions that the 'right process will produce the right results' (2006).

In other words, standardisation within and around processes is a crucial element in achieving consistently good results. This requires documented standards being followed and improved by intrinsically motivated faculty members and administrators. This should occur after they have been trained correctly in the application of these standards, based on the *Job Instruction* method (Training Within Industry Service,

1944). The important role of ensuring that standards are available, followed, and improved, lies with the leadership team.

According to Imai (1997) stability must be achieved in five key areas in a process to improve results (referred to as the **5Ms**):

(i) **Manual power (people)** where low staff turnover is a competitive advantage because highly skilled and experienced people are staying for lengthy periods because they find fulfilment in doing value-added work. Stability with people means they know what is expected of them and they have the skills to do their work based on clear standards. Moreover, when a stable workforce finds encouragement in the respectful interaction with students, colleagues, and other stakeholders, they will care more about students, management and even national pedagogical policies. Creativity enters the workplace where the culture is conducive to learning and personal development. This will be reflected in the performance results of students and educators.

(ii) **Machines/equipment/software/educational systems** must be reliable and well maintained so they are always immediately available to create value for students (or other customers), whether in the hands of educators, or through self-service by students. Educators must not be hoodwinked by thinking that technology and artificial intelligence will make processes better (Emiliani, 2015a). It is better processes that will enable us to design fit-for-purpose technology solutions. Huge financial expenses and massive time waste can follow the premature introduction of technology (or the next level of technological advances).

(iii) **Materials** can include educational training resources used to add value for the students (and other stakeholders). It should be easy for students and teaching staff to access learning materials when they require it. Pursuing quality content is required. However, compared with manufacturing, the material flowing through the educational process is primarily the student. And this is where it becomes challenging for education because the students flowing through our teaching processes vary dramatically in 'quality' and consistency, unlike most factories. Factors like low income families, family violence, materialistic affluence, cultural differences, language barriers, single-parent families and the breakdown of the traditional family unit, makes the 'handling of this raw material' unique. Nonetheless, this is also where many passionate educators find their fulfilment and this must be celebrated and supported. Recent attempts to improve consistency with the quality of students entering the educational system include better screening for college-readiness in the USA (Davis Educational Foundation, 2012) and focusing on developing sufficient levels of essential reading-related skills of new school entrants in New Zealand (Tunmer et al., 2013).

(iv) **Methods or processes** include teaching processes to develop students' skills and knowledge. It also entails administrative processes like enrolment, library access, etc. The vital processes must be identified and standardised to improve consistency in the classroom. It must be noted that standardisation does not

imply rigidity; just the opposite. Cooke stated in 1910 that a standard is simply the best method at the time the standard is created. The purpose of a standard is to make work easier, better, faster and cheaper; not to make the workplace unbearable and frustrating. To avoid entropy, stable processes must constantly be improved by staff and customer, encouraged by senior leaders.

(v) **Measurement** of our performance and our people will help to show the gaps so improvements can be made. Without measurement, how will an organisation know if it is improving or deteriorating? Surely, it is difficult, and sometimes almost impossible, to measure certain aspects of the workplace, like feelings of loyalty or pride in one's work. Deming's management method even states that organisations should eliminate numerical quotas (Walton, 1986) when not backed by a stable process. Emiliani also warns against the use of metrics without a deep reflection on the behaviour it will create (2005). Measurements should always help a team to see the gaps in performance so that corrective action can be taken.

If any of these five areas are under strain, unreliable or inconsistent, then quality educational outcomes will be very difficult to achieve. Consistently good results (and a good reputation) demands consistent and robust processes. Senior management must set the environment where there is a continuous focus by everybody, every day, everywhere to follow and enhance standards in teaching and administrative processes. There is no point in expecting certain outcomes (whether quality, cost, or speed) if the underlying processes to achieve these targets have not been defined and standardised.

On leadership in higher education Emiliani states: "It is common to hear senior managers say 'we looked at the numbers' to justify the cuts… but almost never do they say 'we looked at the process' to understand and eliminate costs that customers do not value." (2005, p. 4). Coimbra states it boldly: 'It is this focus on improving process detail that will bring extraordinary results.' (2009, p. 8).

2.7 Pull and Flow

The ultimate objective of the *kaizen* methodology is to make services (e.g. information and people), and materials flow when the customer needs it; when they 'pull' the information, knowledge, service, or material from the educator or education process. It is also known as *just-in-time* processes. Delays in a process easily turn into more *muda* as previously discussed; when 'flow' is hindered, value (for internal and external customers) diminishes. Management reports should be prepared in such a manner that it flows immediately when needed by the head of a faculty two days after the semester concluded; no waiting. The process steps should also be synchronised to ensure a continuous flow from one person to the next. Examination results, for instance, should flow to students in a timely manner when it is time to pull them from the student management system. The timely feedback on assignments is also impor-

tant to foster learning. If there are delays in providing feedback to students, a learning opportunity goes begging and the quality of their education can be compromised.

To introduce pull-flow processes requires a truly student-centric system. A pull-flow system could incorporate the availability of material when students ask for it or when they are ready for it. The opposite of 'pull' is a 'push' system 'wherein faculty design courses with the information that they think students need to know.' (Emiliani, 2016, p. 8). More research and experiments are needed in this area although blended courses and on-line learning starts to fulfil that need.

When introducing the flow methodology we initially endeavour to make information, people, and materials flow by reducing the non-value-added activities in processes, and then we make the processes flow faster. Implementing flow is an advanced *kaizen* methodology but flow can already be improved through the initial elimination of *muda*. Every improvement should improve the flow of the process.

All previous six *kaizen* principles are supportive of achieving flow throughout processes.

3 *Kaizen* and Education

The efficiency expert, Frederick Taylor, raised his concern about the low quality and high cost of university qualifications early in the twentieth century. He was especially concerned about the poor work ethic of graduates and their disrespectful attitudes towards workers (Emiliani, 2015a). It sounds frighteningly familiar more than a century later—it seems that education is still facing the same issues.

Morris Cooke added his voice soon after Taylor in a report entitled *Academic and Industrial Efficiency* (Cooke, 1910). His research indicated that tertiary institutions incorrectly regarded themselves as unique and very different from other organisations, creating a mind-set of superiority and exclusivity. This has prevailed in many educational institutions with an unwillingness to learn from the practices of organisations in other sectors. This non-scientific thinking goes against the essence of pedagogy and it prohibits learning and improvement. Cooke also indicated that teachers were not spending enough time on activities adding value to students; their administrative work took their focus away from their main purpose. His work was largely ignored at the time. Even until today, applying business excellence approaches has been given little attention in education. It might just be that the same scientific method applied to academic research has not been put to practice in the administrative or teaching processes of many educational organisations.

Since then various voices have pushed for improvement in education especially since the popularisation of *kaizen* and Lean in the 1980s and 1990s. However, this chapter will not explore this pathway.

Emiliani (a seasoned Lean practitioner, turned academic) published a research paper on the application of *kaizen* in business degree programmes (2005). He concluded that if *kaizen* is applied correctly, it can rapidly improve courses and is an

organisational excellence approach that can create value for all stakeholders, something the traditional management style cannot usually emulate.

3.1 Where and How to Start with Kaizen *in Education?*

Senior leaders, educators and employees in this industry should consider a range of factors when transforming from a traditional managed institution to a *kaizen* culture of excellence.

3.1.1 *Kaizen* Leadership

The *kaizen* journey will be doomed to failure if *kaizen* thinking and *kaizen* habits are not developed first in senior leaders. This might take time but it will prevent numerous inefficient and fake *kaizen* activities in the medium term and failure to improve in the long-run.

Kaizen leadership is critical in initiating, planning, leading and sustaining better ways of working. Imai (1997) refers to the two functions of organisational leadership: (i) ensure standards are maintained, and (ii) promote the enhancement of the current standards through structured problem solving by all employees. Although leaders are usually well qualified, their decisions can do serious harm to processes, people, the environment, and society. Emiliani says: 'While we may think of leadership as intelligent, thoughtful, and capable, it would be wise to recognise it as an error-prone activity whose quality is normally very poor.' (2015a, p. 56). Without strong, ethical leadership, any organisation will suffer.

Kaizen leadership is vastly different from the mainly results-driven traditional Western management style. *Kaizen* leaders coach and model the productive behaviours that will deliver sustainable and repeatable results. They do not tell, force, bully or threaten people into compliance. They are leading by example at the *gemba*, inspiring people but also applying discipline within teams through the use of the *kaizen* tools. 'When shaping a culture, the desired core beliefs and behaviours need to be defined and spoken explicitly. This begins with humility, alignment, and a safe environment' (Miller et al., 2014, p. 87).

The role of *kaizen* leadership is to support frontline staff; the educators working at the coalface of the education system. In a *kaizen* organisation the staff do not serve the needs of leadership; leadership serves and enables employees to ensure value is being delivered to the customer, especially the student. They encourage and coach the use of structured problem solving techniques in a respectful manner. 'The expectation of leadership at Toyota is to effectively develop people so that performance results are constantly improving.' (Liker & Meier, 2006, p. 221). Hence their mantra, 'We don't just build cars, we build people' (ibid., p. 242). *Kaizen* leadership must be expressed through *leader standard work*; formalising disciplined leadership activities. This

standardisation of the leaders' responsibilities supports the development of the new *kaizen* habits of senior leaders, middle management and frontline leaders.

Kevin Meyer recorded his observation on *kaizen* leadership during a Lean study tour to the Toyota plant in Kyushu, Japan: "Leadership at Toyota is humble. Fujio Cho [former President of TMC] has said 'lead as if you have no power.' After seeing this facility, you truly understand that concept. Toyota is a principle, a system that just happens to have a leader." (2008). The role of leadership in education systems is to ensure that sector-specific problems are dealt with at the frontline, engaging and developing the people dealing with these daily frustrations to help resolve them. There must be a deliberate break with the self-serving leadership tradition that has been prevalent in many organisations (Emiliani, 2015a). In education there is a huge need to bury egos as this will not serve the people within the system, whether they are colleagues or learners.

Quality interpersonal relationships are deeply rooted in the *kaizen* philosophy. An excellent team is more than just following policies, processes, and procedures. Leaders create an environment where people can flourish, build confidence and expand their self-esteem. The pessimists will say it is unrealistic and unachievable. The optimists in education will ask 'Why can't it be done?'

The education sector should learn from the failures of Lean in other settings. One observation is that the leadership role in *kaizen* cannot be abdicated to a *kaizen* champion or a business excellence team. The *kaizen* leadership capabilities must first be developed to enable a committed journey.

Commitment to developing excellence through resilience must be developed in leaders to ensure continuation of *kaizen* during the change management process. An awareness of the five stages of dealing with change or loss can provide insight to leaders on how to support their school or university more effectively and efficiently. Kubler-Ross introduced the following stages: (i) denial; (ii) anger; (iii) bargaining; (iv) depression; and (v) acceptance (Connelly, 2016). Teams and individuals might get stuck in one of the stages and this can impede *kaizen* without the guidance of leaders.

Senior leaders and middle management must include *kaizen* as a strategy (Imai, 1986) and communicate the vision, mission, values and principles, continuously throughout the organisation and set up processes to give regular feedback on the progress. Setting up effective team boards, with simplified KPIs displayed can greatly enhance the quality and frequency of this communication. A mutually-agreed transformation roadmap can also help to clarify the journey. Policy deployment (*Hoshin Kanri*) should be cascaded throughout the organisation with feedback provided from all organisational levels to improve accountability, based on a deeper understanding of the purpose and direction of the organisation's journey. Senior decision-makers should therefore move away from a 'top-down' approach and include more of a 'bottom-up' process to ensure their expectations, and those from *gemba* people, are aligned. This will realistically happen progressively as the *kaizen* capabilities of senior leaders are developing.

3.1.2 Create a Lighthouse of Excellence

Carefully choose a team or department that is willing and committed to make improvements when embarking on this delicate *kaizen* transformation journey. They must be open for change. Senior leaders and *kaizen* champions cannot waste precious energy and other resources at the beginning of the *kaizen* journey in trying to convince the nay-sayers. In general, do not start with the toughest team. To make the workplace better can be arduous in the beginning, so, be easy on the people planning, organising, leading, and supporting *kaizen*. However, *kaizen* is often needed because of critical issues in certain departments and these will have to be addressed first whether these teams are ready for *kaizen* or not. Wisdom, respect for people and process, and transparent communication, is pivotal to progress under these circumstances.

Solving real problems to reach clear goals must always be the motivation for doing *kaizen*. Do not be tempted to embark on an all-encompassing *kaizen* training programme from the outset if you have not defined what your major problems are. First determine clearly what the actual problems are. Then prioritise your efforts and demonstrate and promote a 'can-do' attitude whereby problems are almost celebrated because these can germinate into improvements. Start small but get real improvements to showcase the benefits of *kaizen* rather than trying to improve everything and everyone from the onset.

One of the usual problems when starting with *kaizen* is the lack of time to do *kaizen* (Miller et al., 2014). Creating time for improvements can be one of the first problems to be solved by teachers, administrators, and senior leaders. An easy way to achieve this is to identify and remove *muda* immediately (Imai, 1997). Senior leaders can lead staff on *gemba* visits to formally identify the 3Ms *(muda, mura, and muri)* and to enable waste reduction.

When real obstacles are removed, making processes simpler, better, faster and cheaper (Phillips, 2014), people will regain hope and start to trust the *kaizen* approach. This increased intrinsic motivation of teachers, professors, coaches and administrators can become the foundation of further improvements.

3.1.3 Resistance to Change

When embarking on a change management excursion, resistance to change is usually high on the agenda. It is not uncommon to hear that 'we have tried this before', or 'this will soon go away – it's just another flavour of the month.' People sometimes actively resist the envisaged changes. These are real concerns and should be dealt with transparently.

Reasons for this resistance might include the fear of loss of control, uncertainty, past resentments and disillusionments with leaders and colleagues, the loss of face, laziness, concerns about own competency, uncertainty, protecting comfort, lack of trust, and the list goes on… (Kanter, 2014). However, it is vital to uncover the root causes of these deeper seated problems as an organisation progresses with *kaizen*. This might be one of the most challenging problems to deal with but as long as it

is hidden, ignored or denied (often by senior leaders as they do want to be implicated) *kaizen* will be smothered. Only when leaders are humble enough to also be accountable for deep-seated problems, will the rapid progress be made. The servant-leadership model will greatly enhance outcomes.

The objection to applying *kaizen* in sectors outside of manufacturing is sometimes expressed. This is often indicative of a narrow-mindedness or being ill informed. There is a vast richness in understanding the principles driving organisational excellence. These can be applied in any industry, sector, cultural and religious group, sports team, and in personal life. As Toussaint, former CEO of ThedaCare, highlights his healthcare team's learning from visiting a Lean factory: 'Sick people were not snow blowers. The snow blowers were in many ways treated better. Work on each snow blower was designed to happen efficiently, without waiting between procedures, and with every employee understanding his or her role. Quality had improved dramatically. There was a lot to learn on that shop floor.' (2010, p. 14).

Being aware of one's paradigm can be very helpful in becoming more open to new ideas. A paradigm is the way a person or group sees the world based on their values, beliefs, and strengthened by their standards, habits, and past experiences (Coimbra, 2009). Academics, educators, senior leadership teams or teachers must apply their critical thinking skills and be open-minded about the application of *kaizen* in education. An unwillingness to explore and learn from others, is not only unscientific and arrogant, but also dangerous in an ever-changing environment.

Nonetheless, it must be said that the 'copy-and-paste' approach to implementing the *kaizen* tools is damaging to this proven philosophy and will result in resistance and resentment. A *kaizen* system cannot be copied; the spirit of an organisation cannot be replicated. It must be developed; continuously.

To experience doubt about a new approach, even resistance, is a normal response to a perceived threat. It is a built-in defence-mechanism that can be indicative of people caring about their work and their customers. Instead of resisting the resistors, leadership should embrace this. Educators cannot be pushed blind-folded into the unknown. Leadership must lead them with respect onto a common-found better pathway, whereby people continuously get a better understanding of what the purpose of the journey is. Policy deployment and continuous communication about the organisational goals is pivotal to minimise resistance to change.

Scholtes et al. succinctly summarises one of the laws of organisational transformation: 'People don't resist change, they resist being changed.' (2003, p. 7). *Kaizen* is never done to people. They must be led and guided to a point where they understand the purpose of the improvements. They must be included in making changes for the better that will be meaningful to them. This requires patience, endurance, and humility from leaders and managers.

Once people have been genuinely included in determining what 'better' is, and the 'why' of the transformation, persistent resistance to change has to be dealt with decisively. Everyone must know there is a strong commitment from leadership that *kaizen* is the way forward for the organisation; to become 'better' is non-negotiable. It is often better for the organisation if the persistent resistors leave sooner rather than later. These people often impede the development of others and halter process

performance. But, always deal with these people in a respectful, kind way. Servant-leadership does not imply weakness or tolerating disrespect.

4 Conclusion

Although there might be challenges and obstacles to implementing *kaizen* in education, it can deliver results traditional management styles cannot achieve due to its holistic and respectful approach. However, it will require strong servant-leadership, humility and a willingness to explore, experiment, and learn about the proven field of *kaizen*. Education should learn from the bountiful *kaizen* experiences (failures and successes), knowledge, and skills available, especially from other sectors. Scientific thinking should not only be applied to curriculum development and research, but, also to the processes and people employed in creating value for students and other stakeholders.

To enable the creation of a culture of excellence, everyone in an educational institution must understand and apply the seven principles, beliefs, and values every day, everywhere. Developing and cascading a clear strategy and policies to all levels is a primary responsibility of senior leaders. It should focus on making processes easier, better, faster and cheaper; in that sequence. Goals related to people development and their motivational levels should also be monitored alongside the growth aspirations of the institution.

Kaizen is a culture of excellence; not individual acts of brilliance or even the use of *kaizen* methods to make education better. It is the continuous improvement of a holistic system, based on the seven *kaizen* principles, beliefs, values and behaviours, made explicit through the *kaizen* capabilities of leaders at all levels. Creating *kaizen* lighthouses of excellence can overcome resistance to change when supported by respectful, caring leaders. Educational excellence will occur when 'the concept of *kaizen* is so deeply ingrained in the minds of both managers and workers that they often do not even realise that they are thinking *kaizen.'* (Imai, 1986, p. xxix)

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