

# CONTINUOUS IMPROVEMENT AND RESPECT FOR PEOPLE: LESSONS LEARNED AND IMPLEMENTED FROM STUDYING THE TOYOTA PRODUCTION SYSTEM'S PRINCIPLES

RENEE KINER AND KELLY SAFIN

## INTRODUCTION

On the surface, academic libraries and large-scale production models do not appear to have a lot in common. However, the authors decided to explore librarianship through the Toyota Production System (TPS) and related models after reading *The Toyota Way* by Jeffrey K. Liker (2004). Liker studied TPS for years and outlined 14 principles (see Appendix A) that he believes make Toyota successful. These are based on the two pillars guiding Toyota's operations: respect for people and continuous improvement.

The two pillars resonated with the authors, resulting in a journey down a research rabbit hole of literature about lean approaches developed since TPS (Six Sigma, Lean Six Sigma, Total Quality Management, and others). The relevance of principles outlined by Liker (2004) to library work was clearer than expected, along with others' observations about lean in general and adaptations to processes and workflows in public services.

The lean way of thinking is an overall culture change, and the authors are not experts or administrators. However, viewing aspects of instruction and patron services through the lens of lean can support functional improvements. On this smaller scale, and on a larger organization-wide scale, those empowered to make change can consider how to better incorporate respect for people and continuous improvement.

This is especially relevant given the impact of COVID on organizations' budgets, often resulting in an evaluation of methods for providing products or services. Researchers noted that the act of reducing waste – a key part of lean thinking – does not refer to cutting staff, but rather, to cutting waste (Kress, 2008; Liker, 2004, p. 77; Womack & Jones, 2003). Yeh et al. (2021) explain that "using lean thinking to remove overburden is to make jobs easier...leading to increased employee engagement" (p. 3).

## WHAT IS LEAN?

In the 1980s, the usage of "lean" in approaches to production became more widespread. By then, the Toyota Production System—"a specific set of practices that were successfully tested and implemented" (Paez et al., 2004, p. 287)—had been in place for decades. Other companies tried to replicate TPS, and new models were derived from Toyota's system.

According to Hopp and Spearman (2020), a term and a title are two separate things. A title is simply a name; however, a term requires a definition. They consider lean as a title, providing examples of the attempts to define it: pursuit of waste elimination; minimize cost of excess inventory, capacity, or time; systemic process for reducing cost of waste; and organizational culture that encourages continual reduction of the cost of waste (pp. 611-612). Therefore, lean does not have one singular definition in the manufacturing context. Liker (2004) makes several points related to this: TPS is not to be viewed as a toolkit; lean tools are only one part of the broader Toyota Way philosophy, which companies need to be reminded of repeatedly. Leadership may confuse implementing these tools with guaranteed success. Toyota Production System is successful because of its pillars, not just the "tools" of lean manufacturing.

The majority of articles and books on lean cover its implementation in large-scale production operations (Adler et al, 1999; Holweg, 2006; Hopp & Spearman, 2021; Lee & Jo, 2007; Spear & Bowen, 1999; Sugimori et al, 1977 and others). In the years since TPS became a well-known success in automobile production, lean principles have been applied in other industries (Nicholas, 2018). Health care, education and other service-oriented fields are just a few being studied in a growing amount of literature (Barney & Kirby, 2004; Kress, 2008; Kumi & Morrow, 2006; Radnor & Osborne, 2013; Sunder M. & Mahalingam, 2018; Yeh et al., 2021; and others).

### **Criticisms of TPS and Lean**

Some criticisms of TPS are based on implementors not being as successful as Toyota. In the beginning, critics said success was due to employees in a single ethnic group making up the workforce in Japan (Sugimori et al., 1977). The success of TPS in Toyota's plant located in California disproves this theory. Other lean production systems have been successful, but TPS has been able to reduce waste, speed up production and also add value while continuously evolving (Toyota Motor Corporation, n.d.). Success for TPS did not happen overnight, but some companies try to make change happen too quickly or permit workers to deviate from specified processes in their work. This can stall learning and improvement in a company because "variations hide the link between how the work is done and the results" (Spear & Bowen, 1999, p. 99).

Failure to sufficiently incorporate the human element of the system is another barrier to success noted in the literature. According to Liker (2004), "Toyota's strong sense of mission and commitment to its customers, employees, and society *is the foundation for all the other principles* and the missing ingredient in most companies trying to emulate Toyota" (p. 72; italics in original). Western companies often focus on the technical aspects of lean with less consideration for the workforce aspects (Paez et al., 2004). The workers might then "become overwhelmed by increasing levels of responsibility.... lean production can turn into 'management by stress'" (Barney & Kirby, 2004, p. 49).

### **Adapting Lean**

Lean has been applied in health care, education, and other public services, with some adjustments and challenges stemming from manufacturing and public service culture differences (Radnor & Osborne, 2013). Sunder M. and Mahalingam (2018) noted the reach of lean and Six Sigma concepts to transactional and service industries, including their own work with students to improve usage of a campus library and increase satisfaction with a university computer center.

Examples of lean and similar principles being used in academic librarianship include projects to reduce the time from book return to reshelving (Kress, 2008), improve e-resources management workflows (Yeh et al., 2021), and make self-service book lending more efficient using a Six Sigma process (Kumi & Morrow, 2006).

In education, lean attributes such as worker empowerment are relevant because those who do research and make decisions have expertise but "often cannot understand the realities of the teaching experience as well as teachers can" (Barney & Kirby, 2004, p. 48). The pandemic has created additional stressors in all levels of education, and worker empowerment gives value to the experience of public-facing teachers and other staff.

The authors found several examples of the TPS pillars and Liker's principles in existing practices in teaching and librarianship in general (see Appendix A). The next two sections will focus on the two TPS pillars, highlighting a few examples of how Liker's principles fit with work in academic libraries.

## **PILLAR: CONTINUOUS IMPROVEMENT IN LIBRARIES**

Organizational innovations and improvements are enabled by challenging and pushing processes to higher levels (Spear & Bowen, 1999) rather than remaining stagnant. By nature of their work, librarians are continuously learning. Their roles often include knowledge of current technologies, services, and teaching methods, while also making sure patrons have access to everything they need. These tasks all include some level of assessment, which is directly tied to continuous improvement. In fact, Principle 14 is "Become a Learning Organization through Relentless Reflection (*Hansei*) and Continuous Improvement (*Kaizen*)."<sup>1</sup> Instruction librarians engage in this practice informally, such as in conversations with students about their past research experiences, and formally, in professional development sessions, reviews of literature, and updates to lesson plans based on student feedback.

Team teaching falls under this pillar, Principle 14, as well as Principle 12, which is "Go See for Yourself to Thoroughly Understand the Situation."<sup>2</sup> Observing or collaborating with a colleague in the classroom provides an opportunity for reflection on one's own teaching, along with monitoring students' overall engagement. Post-class conversations about what was effective and

perhaps not as effective, examples of search strategies that seemed to resonate with students, and other observations facilitate improvements to future sessions.

Incremental changes, rather than drastic ones, contribute to the success of TPS. When working with suppliers, Toyota prefers process replication to system replication to avoid disruption (Marksberry, 2012). Similarly, a total overhaul of a library's instruction program midway through a semester would potentially create confusion. Instead, small changes to activities or topics covered can be made based on student feedback and instructors' observations. Although requests for major changes such as innovative technology might still be accommodated, Liker (2004) notes "you cannot become a learning organization by jumping willy-nilly from fad to fad" (p. 290). Frequent, large-scale changes to instruction plans would not be sustainable.

It would be easy to dismiss Principle 14, because academic libraries are part of institutions fostering student learning. However, the level to which the organization and its units engage internally in learning and questioning varies (see Örtenblad and Koris, 2014, for exploration of this topic). Although reviewing instruction strategies and conducting individual research are examples of librarians learning and improving their work, attributes of lean can also be applied to processes within a library and beyond. Resistance can be a barrier to change, with questions or suggestions met with responses like "we've always done it this way" or "we can't address this right now." Library administrators could model TPS' relentless reflection, including removal of bottlenecks and providing clarification, when evaluating policies and procedures.

## **PILLAR: RESPECT FOR PEOPLE IN LIBRARIES**

According to Liker (2004), respect for people includes developing exceptional teams who follow the company's philosophy, Principles 9 and 10. As previously noted, incorporating the human element is an essential part of TPS. Teaching, mentoring, and promoting from within creates an environment where employees flourish. Spear and Bowen (1999) observed Toyota's instruction focus, "not expecting them to learn strictly from personal experience" (p. 7). For librarians with instruction duties, on-the-job training is especially important given the lower priority of instruction-based course offerings in some graduate programs (Dodson, 2020, p. 91).

Respect for people includes making sure employees know their role in the process and that they have a specific point person to contact with questions or problems. In their work with suppliers, Toyota encourages them to develop systems that encourage their employees to voice opinions and concerns as well (Marksberry, 2012). In libraries without this kind of guidance, sometimes answers are crowdsourced using collaborative software like Microsoft Teams. These communication platforms are only efficient until incorrect advice is shared and followed by nonexperts, resulting in additional time and effort to correct.

Principles 9 and 10 reflect Toyota's commitment to their employees. Cultivating leaders and developing exceptional people means providing growth opportunities and keeping employees engaged with learning and satisfied with their jobs. "Managers in successful Lean cultures eliminate barriers, provide direction and mentoring, and develop capabilities and development opportunities" (Yamamoto et al., 2019, p. 31). Types and levels of mentoring can vary across academic libraries. Some universities have formal mentoring programs or committees to provide guidance, while other institutions' structures may be informal or nonexistent. Just as Toyota prioritizes growth opportunities for employees, mentorship is important to provide librarians new to an organization with overall guidance in teaching and other aspects of their jobs, research and scholarship, as well as their careers more generally.

## **MOVING FORWARD IN TODAY'S LEARNING ENVIRONMENTS**

After reviewing the literature cited—a very small portion of the research on lean approaches in all types of organizations—the authors find that the TPS principles outlined by Liker (2004) and lean attributes in general can be useful in framing work in libraries. For instance, continuous improvement can be linked to instruction assessment, professional development, work with units outside the library, and more. Within a library organization, mentoring, clear guidance, and receptive feedback channels demonstrate respect for people.

Another takeaway from TPS and lean is that streamlining processes to remove wasted time or materials—bottlenecks, in particular—does not require eliminating jobs. Rather, the principles of TPS can provide guidance for describing a workflow's

strengths and weaknesses. Asking "why" five times, for instance, can get to the core of an inefficient process and provide opportunities for those directly involved to improve it. Employees can focus on their work, not workarounds.

Despite these applications, Liker's principles do not correspond item-for-item with librarianship. Unlike Toyota, there will be variations in librarians' work. Even with a solid lesson plan, instruction sessions for the same course will not be the same, based on the number and engagement level of students in each section. However, attributes of lean do provide a lens by which to view processes and procedures, describe barriers and determine solutions.

As higher education and civilization in general continue moving through these unprecedented times, an observation from Sugimori et al. (1977) sums up the authors' view on the most important foundation of TPS and lean: "In short, treat the workers as human beings and with consideration. Build up a system that will allow the workers to display their full capabilities by themselves" (p. 554).

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