

Mr. Shigeo Shingo's P-Course and Contribution to TPS



By Isao Kato

Retired Manager
Training and Development
Toyota Motor Corporation

July 2006

Mr. Shigeo Shingo taught an industrial engineering course at Toyota Motor Corporation and then decades later at Toyota affiliated companies starting in latter part of 1955. After 1960 and up until the mid 1980's I organized his classes, edited the materials, as well as coordinated the majority of his training visits to the company. Before that time it was handled by one of my senior colleagues. Despite several myths and wide spread rumors the only course Mr. Shingo actually taught at Toyota was something called the P-course (the P stands for production) and he never was an instructor to Mr. Ohno or any other senior executives at that time. In fact they rarely met. However his association with Toyota Motor Corporation as an instructor did continue for close to 30 years and was highly beneficial to both parties although there were frustrations toward the end on both sides. As requested I will explain his actual role on the following pages for those interested in the actual history of events.

There were actually four different versions of the P-course taught by Mr. Shingo that were held on average a couple of times per year during this period. There was also a longer version of the P-course that combined the different elements together that was taught every three or four years. I will outline the material below. The participants in the course were primarily young engineers in manufacturing. Shop floor foremen were also encouraged to take the shorter P-courses. The longer P-course was reserved for veteran engineers and was considered a key course for them at the time. The courses were limited to 30 people at a time and taught about 80 times different over thirty years. This works out to visiting Toyota around just two to three weeks per year over the entire period. The rest of his time was spent with other companies which is not usually pointed out in all fairness.

From 1956-1958 though Mr. Shingo taught a version of the P-Course at Toyota about every month. After that period the frequency was reduced to four courses per year and then it eventually tapered off even further to once or twice per year due to declining demand. In the beginning the course was taught as a "stay over" event where the participants remained overnight in the company training center. In the early days of his training courses Mr. Shingo stayed over as well many times and it was this sort of enthusiasm in training that earned Mr. Ohno's approval.

In the following tables I will outline the different versions of the P-Course. The essence of these workshops was eventually summarized in several of Mr. Shingo's books published by Nikkan Kogyo Publishing in Japan between 1958 and 1980. As they became available the books were handed out as texts for the class as well. These books were the most recognized works of Mr. Shingo by Toyota or in Japan up until 1980. These books have not been translated into English except for a few sections and are no longer re-published in Japan due to lack of sales. If you actually read Mr. Shingo's initial books by Nikkan Kogyo you will see the views he held at the time and his thoughts on production. Unfortunately only his later books from after 1980 are available in English which are of a different nature and have contributed to a series of misunderstandings about the actual role and services he provided to Toyota. First however let me outline his P-course contents for parties interested in the contents of his P-course material.

1. Motion Analysis Course (5 Days)

Day	AM	PM
Day 1	-How to view and think about kaizen -Steps for kaizen	-Step 2: Study the current condition -Study of motion analysis

	-Step 1: Problem -Discovery -How to discover problems	-Prep for studying motion analysis on the shop floor
Day 2	-Step 2: continued -Practice motion analysis on the shop floor	-Summarize results of motion analysis -Study of the results
Day 3	-Step 3: Idea generation focus for kaizen	-Ways to generate improvement ideas -Practice shop floor observation
Day 4	-Presentation of kaizen ideas from the shop floor observation	-Step 4: Creation of kaizen plan -Step 5: Regarding implementation of kaizen plan
Day 5	-Desk top practice examples and kaizen	How to proceed with kaizen on the shop floor Overall summary

2. Time Analysis Course (5 Days)

Day	AM	PM
Day 1	-How to view and think about kaizen -Discussion of analysis methods	-Time study basics
Day 2	-Time study: Main subjects -Shop floor observation & practice	-Summary of observation results
Day 3	-Time study: Additional items analysis and discussion	-Additional item shop floor investigation practice
Day 4	-Time study: Additional items analysis and measurement	-Time study: Additional items analysis and measurement -Investigation into kaizen plan
Day 5	-Results summary and presentation on main subject and additional items from time study	-Wrap up and closing

3. Operation Analysis (3 Days)

Day	AM	PM
Day 1	-Types and categories of IE analysis -Operation analysis	-Operation analysis & shop floor observation practice
Day 2	-Operation analysis and investigation	-Operation analysis and investigation -Wrap up observations
Day 3	-Operation analysis presentation and results summary	-Work sampling practice -Wrap up and closing

4. Process Analysis (5 Days)

Day	AM	PM
Day 1	-How to view and think about plant kaizen -Process analysis – Subject analysis	-Process analysis – subject analysis investigation and observation
Day 2	-Observation practice -Summary	-Process analysis – additional item analysis -Explanation and investigation
Day 3	-Process analysis – additional item analysis -Explanation and investigation	-Process analysis – additional item analysis -Investigation and analysis
Day 4	-Process analysis – additional item analysis -Investigation and analysis	-Process analysis wrap up for main subjects and additional items

Day 5	-Desk top practice for process analysis	-Shop floor kaizen activities -Wrap up and closing
-------	---	---

As you can see from the outline of Mr. Shingo's courses there is nothing related directly to the more famous elements of the Toyota Production System. In other words he did not teach or develop anything that relates to JIT, Jidoka, Kanban, Standardized Work, or other TPS items. He mainly taught different ways to look at the production process in detail from an industrial engineering point of view which is his specialty. As you should also realize Mr. Shingo was largely working in a class room training role at Toyota for most of his time teaching the P-course material. Each course only visited the shop floor for a few observations and exercises to practice different analysis methods and improvement techniques.

Mr. Ohno's primary management direction during the period in question was to implement plant kaizen in such a way as to eliminate waste to reduce cost in manufacturing. The efforts of Mr. Ohno and his chief group of managers alone however were not sufficient to meet all his aggressive goals. Consequently it was important for Toyota as an organization to develop greater numbers of engineers and supervisors who could actively participate in improvement efforts as well. The P-course contributed to this type of skills development for people in the manufacturing organization. It replaced an earlier training course called Job Methods from the TWI training programs we previously used in the company. The P-course was more detailed and varied than the JM course so we adopted it as a part of our training curriculum for supervisors and engineers.

Students of TPS are probably aware that Mr. Ohno always maintained a top management philosophy that emphasized the overall production system. He stressed profitability and cost reduction from different management view points such as total quality, cost, lead-time and overall system productivity. If you read Mr. Shingo's five books published by Nikkan Kogyo in Japan on kaizen techniques you will see that he was initially a much narrower specialist who looked at production from mainly the view point of a single operation or process. Unfortunately since neither his initial books nor the P-course material were translated into English this reality is lost to non-Japanese speakers. Regardless however this emphasis was a primary difference in their respective views on production and an eventual point of contention.

Over the years a result of Mr. Shingo's instructional efforts the P-course did indeed produce success in *contributing to the development of manufacturing engineers and supervisors in Toyota*. In turn these people improved processes in Toyota in line with Mr. Ohno's priorities and goals. Thus the P-course helped achieve one of the aims related to human resource development that Mr. Ohno had set out for my department.

Unfortunately the success that Mr. Shingo experienced in *instructing* the P-course at Toyota also eventually led him to believe that he created parts of the Toyota Production System. While he is a contributor to the success of Toyota in the area of skills development however that does not make him an inventor of the system in any way. The establishment of the principles of Jidoka and JIT predate Mr. Shingo's involvement in the company by several decades. They were put forth by Sakichi Toyoda and Kiichiro Toyoda respectively. Not even Mr. Ohno claimed to have invented these concepts. In his own writing Mr. Ohno states that he merely applied the concepts and properly gave credit to the Toyota family and other members of his internal group that

helped develop the system. Anyone with any experience in production would realize that TPS is too big for any one person to have developed unless you are simplistically discussing a small kaizen training course or some other minute portion of the system.

For the record I think it is worth noting that that Mr. Shingo actually taught the P-course as well at Matsushita Electric Corporation (known as Panasonic in the U.S.) and worked at many other Japanese companies far more often than he taught at Toyota. Interestingly however these efforts did not result in the establishment of an overall production system at any other location. Nor did he later write entire books about those companies he worked at. It was merely training and skills development and not overall system implementation type of work. Toyota's production system development is truly unique in that it was adapted and created almost entirely internally by trial and error.

You might be surprised to learn that regarding actual Toyota Production System implementation Mr. Shingo was initially quite critical of our production methods and ideas for improvement. His attitude began to shift in 1973 however when the first draft of a TPS manual entitled "The Toyota Production System for Cost Reduction" was written by several managers including recent president of the company Mr. Fujio Cho. You might recall that during this period there was an oil shock to the economy of Japan due to an embargo by OPEC. During this period of rising factor costs Toyota was the only major company in Japan to make a profit including all of Mr. Shingo's other clients. Until this time Mr. Shingo had shown no interest at all in learning about our overall concept of a production system or the two pillars of Just-in-Time and Jidoka or even Standardized Work for that matter. These concepts and others were all developed by Toyota personnel separate from and earlier to the involvement of Mr. Shingo as an instructor at Toyota.

After our surprise financial performance however and our gift to him of a TPS manual he became quite keen to learn more. It was around this time period in the mid 1970's that Mr. Shingo started studying the Toyota Production System from different angles and began asking detailed questions over the next several years. Eventually this culminated around 1980 when in Japan he then published his book on TPS, "A Study of the Toyota Production System from an Industrial Engineering Viewpoint". This book was later translated into English and became famous. It is quite good and the title is honest in stating the fact that he was indeed *studying* Toyota's production system and attempting to provide his views on the topic. After publication of this book and the ensuing attention he received however he noticeably seemed to take on more of an attitude that he had invented the system somehow. This trend unfortunately has been repeated over the years as different people write about TPS or Lean Manufacturing and receive similar attention. I suppose it is part of human nature although it is especially pronounced in certain consultants for some strange reason.

Around 1974 we jointly started changing the contents and delivery of the P-course. A brief up front section commenting on the Toyota Production System and the importance of kaizen were inserted which we of course encouraged. On a more difficult note however Mr. Shingo also attempted to have the shop floor observation parts of the P-course take place in the newest part of the factory where our latest equipment and tooling improvements were being installed. In hindsight he was of course looking for examples to include in his various works on depicting different aspects of TPS. As course organizer I struggled quite a bit with this maneuvering on

his part as there were frankly aspects of system that we did not yet want shown to the outside world. Amusingly just observing some of these new processes however seemed to further convince Mr. Shingo that he had invented them somehow even though it was not possible. Equipment and tooling is specified and procured outside of the plant by a special central production engineering group (Seisan Gijutsubu) in Toyota. This group never interacted with Mr. Shingo and did not even attend his training sessions since he was teaching at the factory level for manufacturing engineers and supervisors.

In Japan Mr. Shingo's role and contribution to education and training in the realm of industrial engineering is well chronicled and appreciated. Overseas however it is misunderstood due the selective translation of his materials and a lack of any rudimentary fact checking. As a result verbal stories and anecdotes have come to pass for history instead of rigorous research and verification. Contributing to the situation Mr. Shingo became more widely known in the U.S. than in Japan and started to infer in discussions with different parties that he had developed much of TPS himself somehow. He advised many people to tour Toyota facilities and see his work. He knew that it was difficult to get approval for plant such tours in Toyota so he skipped the official path of making requests through the Public Relations department and he passed them directly onto us in Training and Development. Since we had known him for a long time it was difficult in our culture to turn him down. For a couple of years we accepted such requests. However he took advantage of the situation over time and the requests grew too large to accommodate. We had to tell him to direct his requests officially through the normal Public Relations department. Consequently these plant tour requests from him then came to a complete stop.

Let me be perfectly clear for the record. What Mr. Ohno expected from Mr. Shingo was help in developing the ability in people to see and think about how to make process improvements in manufacturing. There was never any expectation from Mr. Ohno regarding any advice or assistance regarding the overall Toyota Production System. Neither was Mr. Shingo at any point in time an instructor to Mr. Ohno although he apparently claimed he was outside of the company. The primary work that Mr. Shingo did in Toyota was the P-course content which was taught to lower level engineers and first line supervisors in the company. In reality there were only perhaps 4-5 times inside of Toyota where Mr. Shingo and Mr. Ohno directly met in formal meetings over the many years in question. Additionally they never discussed overall TPS development instead the contents mainly just related to simple updates regarding the P-courses and training topics in Toyota. In 1980 I was requested by Mr. Shingo however to set up a meeting with Mr. Ohno to discuss the merits of the Toyota Production System but the meeting was turned down by Mr. Ohno. He felt that his stature and position in management was quite different from Mr. Shingo's and he did not care to debate what he viewed as probable academic details. I had the delicate job of conveying this message to Mr. Shingo.

None the less overseas there continues in some circles to be a misunderstanding that Mr. Shingo somehow invented the system that the Toyota family, Mr. Ohno and so many other people worked to develop. This notion is apparently perpetuated by publishers and translators of Mr. Shingo's later works after he finished his studies of TPS at Toyota. Unfortunately these parties have been extremely lax in conducting any basic fact checks or background verifications of the actual situation. I'm sure they also have some small person connection and allegiance to Mr.

Shingo but it is no more in comparison to the two decades I spent coordinating his visits and work at Toyota. For the record I also have no financial incentive to advance regarding the role of Mr. Shingo at Toyota. My interest is merely in providing the truth and giving proper credit where credit is due. Simple elementary background checks would show the errors that have been communicated and repeated over the years. I personally view such continual misrepresentations of the historical development of TPS as disrespectful to Mr. Ohno, his internal group of protégé's, and the Toyoda family members that earlier worked so hard establishing the foundation of the system.

It is also not fair or accurate regarding the proper legacy of Mr. Shingo and the credit he does deserve. He was a great instructor and contributor to the body of lean knowledge as an author especially in the West. No one has ever disputed this point. He deserves credit and recognition as an author, consultant, and instructor regarding specific shop floor improvement techniques and helping to develop human resources in Toyota. Any claims that he somehow invented the Toyota system somehow are deeply flawed and misconstrued by uninformed parties. I wish the self proclaimed experts on Toyota would do their homework in a more careful and scholarly manner.

In this summary I have attempted to clarify the role of Mr. Shingo, his P-course for industrial engineering, and his actual involvement with Toyota for concerned parties. The P-course contributed significantly to the development of engineers and supervisors with regards to their ability to see and think about shop floor kaizen at the *process* level in Toyota. Anyone who ever took his course in Toyota would agree to this statement. However that is quite different from stating that Mr. Shingo personally developed or deployed the production system created by the Toyota family, Mr. Ohno and so many other members of his group. There is simply no person in Toyota Motor Corporation that thinks Mr. Shingo created TPS even those who value and respect his courses and teachings as much as I do. I would like these facts made clear for the record.