

A Review of PDSA Method to Improve Productivity in Education Sector

Zubaidi Faiesal Bin Mohamad Rafeai^{*1}, Nur Nadzira Binti Majid², Amir Hamzah Bin Abdul Rasib³

^{*1}Department of Mechanical Engineering, Universiti Tenaga Nasional, Jalan IKRAM-UNITEN, Kajang, Selangor, Malaysia
zubaidi@uniten.edu.my¹

²Department of Mechanical Engineering, Universiti Tenaga Nasional, Jalan IKRAM-UNITEN, Kajang, Selangor, Malaysia
nadzira07@gmail.com²

³Manufacturing Engineering Technology Department, Universiti Teknikal Malaysia Melaka, Melaka, Malaysia
amir.hamzah@utem.edu.my³

ABSTRACT

Productivity is well defined as the utilization of resource to produce desirable output. In the case of productivity in the educational sector, the output that is desire is that of how well the student manage to understand what has been thought throughout the study period. The purpose of this paper is to review on how well the current educational system perform in its productivity and its efficiency through applying PDSA method.

Keywords: Educational sector, Productivity, PDSA, Application, Theory.

I. INTRODUCTION

Education is one of the most important sector which have existed in the modern economic society. Long time ago, education is only reserved for the elites group but nowadays have become compulsory to all persons. Education define the generation and the mindset of the people. [1]

Productivity and quality goes hand in hand but have been always define as two separate things. In education sector, people will considered that the productivity will always been quality. Lower quality education result in poor performance and productivity. Therefore, quality is and always will be an important factor in determine the productivity of the educational sector. It is believed that the PDSA method is suitable to control the quality as well the productivity in the educational sector. How to apply it is by study back what was implemented in current education method and come up with new ways and resolution to act upon for better productivity outcomes. [2]

This paper review focuses on the possible implementation method to obtain the desirable level of productivity. Again, to measure the level of productivity,

the PDSA method was implemented. The PDSA stands for Plan, Do, Study, and Act. Through this method it is the best interest that it will lead to successfully increase the existing productivity in the educational sector

II. METHODS

An effective and correct ways of implementation are important to obtain positive outcome. A number of study was made years back that implement PDSA method will able to obtain a better productivity in education sector. By applying the method of process Plan, Do, Study and Act improving the productivity in the education sector.

The process start with the Planning phase that require a very good planning in training and exercises on achieving the productivity. This stage began by separating different type of person in the sector itself. The industry itself has variety of people and thus require several related exercises and training in this process in order to achieve the real goal which is improving the productivity at that particular sector. Therefore, HEI (Higher Education Institution) has set the objectives which related to improve the productivity in education sector. [1]

Next phase is Do process which being applied in order to succeed the planning process. In this phase, DEA (Data Envelopment Analysis) were being use on achieving the improvement for the productivity.

Next phase is the Study phase which focus on current method that having less mistakes and have high volume in the efficiency.

Act phase was done by comparing expected output by using variable of input. The result were calculated to prove the concept or theory that been agreed. The input and output tables examine the efficiency for improvement of productivity in the education sector based on what is the input collected and the output results. [2]

III.DISCUSSION

In order to improve productivity of education sector, PDSA are one of the most efficient and reliable method to be implemented towards better education sector. By referring to a journal of Data envelopment analysis and its application to the measurement of efficiency in higher education, an integrated approach by using PDSA method in order to improve productivity of education sector was implemented. J. Johnes propose the proper analytical method in measuring the efficiency of Higher education.

The planning action start by defining the objectives of the experiment as well as the measured input and output before the experiment. The HEI (Higher Education Institution) which are mostly public funded makes it difficult to measure its efficiency in term of cost. Multiple inputs should be consider that would results in multiple output in order to measure the HEI efficiency. J. Johnes proposed the usage of DEA (Data Envelopment Analysis) as the analytical approach to meet the specific purpose. DEA was used as the method of analysis as its ability to carry out multiple inputs and multiple outputs in order for the variety of analysis for HEI (Higher Education Institution). Efficiency were defined as the ratio of the firm’s output to the maximum output that the firm can achieve in reference of the input. Various parametric and non-parametric technique can be used. The analysis can be done using two technique which are statistical and non-statistical approach. Non statistical approach uses programming approach, while statistical technique uses economic approach. DEA uses non-statistical approach which are relevant and suitable for the purpose of this project.

The Do method of this study are by collecting the data from universities in England for the academic year 2000/01. The quantity and the quality of the graduates, post graduates and research funds all were calculated to determine system output. While the inputs are composite measure, undergraduate teaching output and staff. Additional inputs to be consider also includes administration, facility and cost. The study phase was implemented by analysing the results of the table input and outputs. Study found out that the efficiency of the current method was more accurate with less error compared to original study method which produce more error and less accurate.

D. T. J. Lawrence J. Lau and F. F. Louat also focus on the implementation of PDSA which compares the education level of a country towards the development of the country. The study was performed towards

countries which were divided into region which are Africa, Latin America, Middle East – North Africa, East Asia and South Asia. The result of the study suggest that the GDP comparison with the level of education the countries experience for primary, secondary and tertiary education. The study found that the real GDP mean percentage change in response to an increase of one year in the average educational attainment of the working age population in 1985 for each category of education during 1985. The Improvement of productivity can be seen clearly after the implementation of proper methodology such as PDSA in the study.

Therefore, implementation of PDSA in study to determine productivity through education sector improve the accuracy of the result as well as the efficiency of the study. The result technique proves that more parameters are able to be consider in a study by using DEA method after PDSA implementation. It is also shows that by implementing PDSA in the study, researcher able to compare the effect of years of schooling in different countries towards the real GDP performance.

A. Benefit of applying PDSA

The PDSA cycle is a process model for productivity improvement that has been used in the education sector, especially for the theory and application of the productivity in education sector. Applying the PDSA cycle will enable to test the changes of the productivity in a small scale before major implementation.

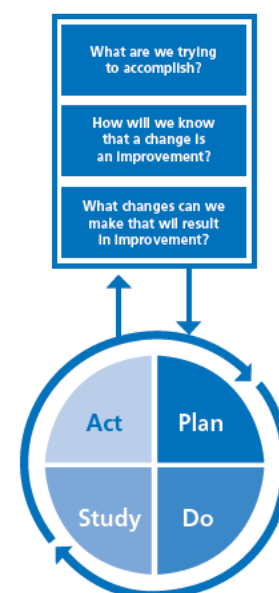


Figure 1: The model of improvement

This will gives the opportunity to see if the proposed change will succeed and it is a powerful tool to learn and improve the ideas that do and don’t work. In this point,

the method to change is safer and less disruptive for the students and educator. However, this approach has been unusual in the education sector because before this, the new idea was been proposed without sufficient testing. **Figure 1** shows the model of improvement which integrated with PDSA implementation.

Figure 2 shows the Four stages of the PDSA cycle which can be used in the basis of changes:

Plan – the change to be tested or implemented.

Do – carry out the test or change.

Study – based on the measurable outcomes agreed before starting out, collect data before and after the change and reflect on the impact of the change and what was learned

Act – plan the next change cycle or full implementation.

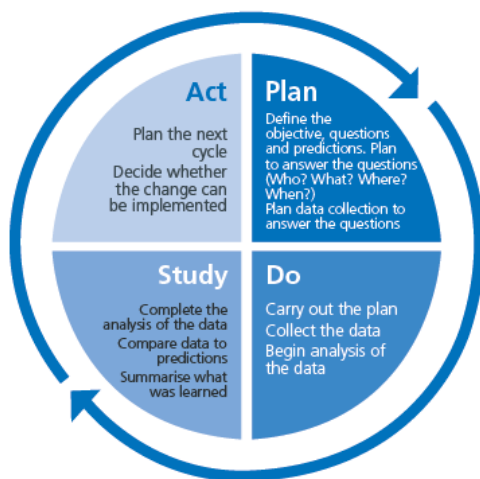


Figure 2: PDSA cycle

B. Obstacles in applying PDSA

Even though the PDSA method is considered simple, however it does not mean that it is easy. PDSA is an impressive approach, and that the projects that make successful use of PDSA can solve specific quality problems and also help shape the culture of education for the future.

One of the challenges of implementing PDSA method for education's management is that most schools are used to the old system and not ready or not willing to try a new management method. Other than that, it is time consuming due to the fact that it requires training and familiarity in order for the PDSA to work flawlessly. Since it requires training, it will also involve financial investments. Insufficient human resources and financial supports may doom the school in implementing this method flawlessly. Therefore it is crucial that both staffs and teachers have well understanding regarding the

application of PDSA and that the process is well managed. In order for this method to be successful, the use of PDSA must be supported by a significant investment in leadership, expertise, and resources for change.

IV. CONCLUSION

It is proving that by PDSA method implementation at educational sector will definitely increasing the productivity of the sector. This method were reviewed to have much benefit based on its effect towards improvising the educational sector. Nevertheless, there are also drawbacks from this method that could be improve by implementing variety of solution. In order to overcome the obstacle educational sector should be ready to adopt new approach and trying new things in order to solve a problem. Proper training and full involvement of all level of staff are necessary in order to make this works. Last but not least this paper suggest that implementation of PDSA method in educational method are vital to ensure the productivity of the educational sector.

REFERENCES

- [1] C. P. S. B. M. Patrick Van Der Heiden, "The role of education and training in absorptive capacity of international technology transfer in the aerospace sector," *Progress in Aerospace Sciences*, vol. 76, pp. 42-54, 2015
- [2] J. Johnes, "Economic of education review," *Data envelopment and its application to the measurement of efficiency in higher education*, vol. 25, pp. 273-288, 2006.
- [3] D. T. J. Lawrence J. Lau and F. F. Louat, "Education and productivity in Developing Countries," *An Aggregate Production Function Approach*, p. 22, 1991
- [4] V. a. I.Schiopu, "Optimal higher education enrollment and productivity externalities ina two-sector model," *Journal of Public Economics*, vol. 121, pp. 1-13, 2015.
- [5] D. M. Darra, "Productivity Improvements in Education: A Replay," *European Research Studies*, vol. IX, no. 3-4, 2006.
- [6] K. M. Killeen, "Educational Productivity and Opportunities to Learn," *THE UNIVERSITY OF VERMONT JAMES M. JEFFORDS CENTE*, vol. 2, no. 3, 2012.