Applying Six Sigma for Quality Assessment in a eLearning Courseware Production Process

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Abstract - Six Sigma method claims that focusing on reduction of variation will lead to reduction in defects in a business product. Its prestige and value is well known within the manufacturing industry. However, it is seldom applied to educational products such as courseware produced and used in higher education. It is beginning to be recognized as key process for quality assessment in e-learning and eTraining sectors in ASEAN. A consistent high quality in an eLearning or eTraining product can be achieved by applying Six Sigma in the courseware production process. This paper in attempt to discuss this new approach adopted from the industry that seeks to assess, evaluate and monitor variation in the usage of eLearning courseware components and recommend methods for their improvements. A pilot study based on Six Sigma and being conducted by the authors is briefly discussed.

Keywords- eLearning, Courseware, Learning Objects, Critical to Quality (CTQ), Six Sigma

I. INTRODUCTION

There is a clear evidence in ASEAN universities to characterize eLearning as having come of age. It is a well known fact that in last five years using online technologies is more of an expectation than a novelty for today’s university students in ASEAN. In other words, there is abundant evidence that the Internet has become an integral part of university education in terms of accessing learning resources, communicating with faculty or classmates, and its overall usage [1]. Likewise, more and more eLearning courses are becoming integral part of a university degree program at all levels- undergraduate, graduate and PhD programs. Furthermore, increasing investment in infrastructure in ASEAN makes it clear that eLearning will become more and more relevant to students entering universities for higher education.

What is Six Sigma? Six Sigma is a management philosophy originally developed by Motorola corporation located in U.S.A. Its main targets are to reduce defects in products and services. The word “Sigma” is a statistical term that measures how far a given process deviates from “perfection.” The central idea behind Six Sigma is that, if we can measure the “defects” in a process, we can also work out how to eliminate them and get as close to “zero defects” as possible [2]. This researcher believes that there are many factors that contribute to poor usage of learning objects (LOs) or components in a courseware, it is important that we look into the captured conference data accumulated in the logs of the Learning Management System (LMS) being used. Six Sigma tools are process-oriented and may be used to examine variables such as views and posts data and Activity Logs available through the system tools such as “Reports” provided in a LMS.

The researcher views the eLearning courseware as a business product consisting of various learning objects (LOs) or core components, and use common statistical methods to evaluate quality of these components using Six Sigma in a very specific context. Six Sigma believes that: “Delighting the student enrolled in a eLearning course is a necessity. Because, if one university don’t do it, some other will!” Therefore striving for quality in eLearning requires a university to look at its business from the student’s perspective, not its own.

A. Changing Business Processes in Higher Education

Globalization and instant access to information, products and services have changed the way people conduct business. Old business models no longer work. Today’s competitive environment in higher education leaves no room for errors. Universities must delight its students and relentlessly look for new ways to exceed their expectations. This is why Six Sigma quality has become a part of new culture.

Six Sigma methodologies has gained popularity because it has proved to be successful not only at improving quality- and thus helping to generate more business for the organization that adopts it- but also at producing large cost savings along with those improvements. Although Six Sigma involves a substantial number of statistical techniques that are traditionally used in the manufacturing industry, its application is not limited to manufacturing only. It can be used in service oriented sectors such as higher education which may add a new dimension to quality in terms of rigor of its components and their usage and performance [3]. This is emphasized repeatedly in Six Sigma in terms of “Critical to Quality” (CTQ); improvements which will make sense only if they are directly related to some CTQs. Thus, in contrast to some of the inward-looking efforts, Six Sigma is much more oriented to customer satisfaction. In terms of its organization, Six Sigma stresses the project-by-project feature of its implementation; this is distinct from the valid but fuzzy notions such as ‘satisfaction guaranteed’ or ‘we try our best’ slogans used in many businesses. A similar notion exists in many universities because the quality assessment is largely based on sterile internal audits and opinion surveys which in many ways...