

# Identification of the Pedagogical Design Improvements of the TL Process in the ICT/CS Education in the University System of Sri Lanka

V.Janaa<sup>#1</sup>, H.H.A.T.Asanthi<sup>\*2</sup>, M.S.Yatigala<sup>#3</sup>, M.G.N.A.S.Fernando<sup>#4</sup>

<sup>#</sup> *University of Colombo School of Computing, Sri Lanka*

<sup>1</sup> vjanaa90@gmail.com

<sup>2</sup> thilinia90@gmail.com

<sup>3</sup> myatigala96@gmail.com

<sup>4</sup> nas@ucsc.lk

**Keywords—** ICT/CS education, Pedagogical techniques, Practical oriented large classroom, Quality education

There is an ambiguity in identifying the quality status of the Information and Communication Technology/ Computer Science (ICT/CS) education in the university system of Sri Lanka as it is not specified in any of the previous studies. In order to identify whether there is a deficiency in the quality, international standards of the education are compared. As the quality of the TL process which is one dimension of the quality education consists of different sub processes: curriculum design, pedagogical design, implementation quality, outcomes assessment and resource provision, quality pedagogical design is one of the most significant component of the quality education and it is chosen as a way to enhance the quality of ICT/CS in this study.

Motivations to select the pedagogical design for this study are: complexity of analysing all the sub processes at once, pedagogical design is the sub process which lacks quality in the Sri Lankan university context as discovered through the preliminary survey and other sub processes are difficult to be analysed due to some constraints. Pedagogy can be defined as an effective way of describing the relationships between teaching, learning and assessment in classrooms.

The main objectives of this study are (i) identifying the quality status of the pedagogical design of ICT/CS education in Sri Lanka against the international standards (ii) specifying the gap if there is any, against the international standard, (iii) taking actions to minimize the quality gap and finally developed a prototype pedagogical model utilizing existing human and physical resources to enhance the quality of ICT/CS Education through an empirical approach to achieve the global competency. This type of empirical exploration is timely applicable to achieve the global competency in ICT/CS education, since Sri Lanka is experiencing a rapid development in the Asian region.

To achieve the objectives of this study, it was carried out in two phases. In order to identify whether there is a deficiency in the quality status of the pedagogical design of ICT/CS education in the university system of Sri Lanka and international standards of the pedagogical design are compared and the existing gap is driven using gap analysis in phase I.

Phase I, consisted of three steps. The first step was to identify the pedagogies that are applied in international level. To identify the pedagogies, it was decided to gather the data through literature survey. In order to assure the outcomes which are derived through the literature review about recognized pedagogical techniques an online questionnaire was provided to a sample of 20 international students who are following IT related degrees in well-known international universities. Through the questionnaire, the existence of the identified pedagogical techniques were questioned and verified. The next step was to identify the current level of the pedagogical design of the university system in Sri Lanka. At this step interviews were carried out to gather the data from lecturers while a questionnaire was provided to gather data from student sample with 294 students in two leading universities in Sri Lanka to discover the current status of the pedagogical design in Sri Lankan universities. In order to gather data from both parties by participate in the context observations was used. The last step was analysis of the collected data and Gap analysis. The data collected through the questionnaire, observation and the interviews were analysed thoroughly. Gap analysis was another important segment of the research study, because only if there is a significant gap between the two portions and only if the current situation of the TL process in the university system of Sri Lanka is behind the international level, this study is carried out further to minimize that identified gap.

In the phase I, a clear gap was identified between the local university context and the international university context in terms of pedagogical design in TL process. Therefore in phase II the ultimate goal should be achieved, which is to organize the best possible pedagogical techniques to formulate a model to empower the skill development of ICT/CS university students of the selected sample, in order to minimize the specified gap in the local context in a sustainable way. Experimental approach will be chosen as the approach to reach the target of the phase II. By applying different active learning techniques to individuals and incorporating the collaborative empirical approaches, the experiments will steer a series of continuous practical based assignments other than the lecture. Further, with valid testing, this study will use reflective practice theories, feedback of students and peer lecturers in a cyclic way to fine-tune the proposed model after the each experiment. Not only the quantitative but also the qualitative measures will be taken in order to derive correct and accurate results from the evaluation.