

# Design of a real time performance monitoring and evaluation system of students during lectures

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## Abstract

At University, there is a mixture of students from different facet of life and background of which the majority is the lower class and rural areas. Nowadays in search for better educational quality, students are increasingly travelling across countries, continents and cultures, and ‘international students’ now make up a significant proportion of students in the Universities. All these have to fit in and adopt to the university life style which is difficult for some. This is usually indicated by the student’s performance in the lecture others because of language barriers do not participate or even ask questions to the Lecturer thus they end up underperforming. Currently monitoring and evaluation systems have their roots in Results Based Management Approaches (RBMA). The Development Assistance Committee DAC, (2002:142) defined this approach as “a management strategy focusing on performance and achievement of outputs, outcomes and impacts”. In this light, it is clear that monitoring and evaluation concepts draw on the Results-Based Management Approach. In this vein, it should also be recalled that Monitoring and Evaluation Systems are “management toolkits” aiding decision making in any organizations, and enhancing development’s effectiveness through delivery of results. This approach improves organizational performance but to a lesser extend since it is a corrective measure. There is need to evaluate and monitor students in real time during lecture deliverance time. This system monitors the performance of students in real time and sends an evaluation to the Lecturer during lecture time. Performance of students is realized mainly when aggregating their course work. This system mitigates the institutes from producing poor results by solving the problem before it happens unlike other result based management systems. In this research, the authors designed an automated system which studies the lesson, the student’s responses, taking note of facial expression and notifies the tutor/lecturer how the students response. It sends a message to the person in charge of the lecture on his/ her mobile phone. On a general perceptive, not all students participate in lecture due to self esteem. The majority of the students are just passive and not active in lecture. This system helps in taking note of each student’s response to the lesson being taught in real time as the lesson progresses. It makes use of facial expressions, participation and voice notes when responding to questions or when asking a question. It makes use of a camera which captures students’ image and a trained algorithm to recognize all body languages. Matlab, Python, Java softwares are also used to design this real time performance monitoring system. This system proved to improve the performance of the students by more than 60%.

## Keywords

Monitoring, Evaluation, Real time, Assessment and Output

## Biography

**Gamuchirai** is a lecturer in the Department of Industrial and Manufacturing Engineering (IME). Ms Mutubuki holds a Bachelors degree in Industrial and Management Engineering and a Masters of Engineering in Manufacturing Systems and Operations Management from the National University of Science and Technology. She has interest in

new technologies in education, programming, renewable energy, optimization and energy efficiency. Gamuchirai has been with the IME Department for the past 4 years. She has earned a number of certificates in Solar thermosyphon (Solar Water Heaters) and PV installations, training the trainer, monitoring installed systems and in energy transition. She is a registered member of the Zimbabwe Institution of Engineers ZIE133610. This research will help her undertake her studies towards the Postgraduate Diploma in Teacher Education (PGDHE).

**Clayton Kamengo** is a production manager of a multi-national manufacturing company that manufactures automotive consumables. Mr Kamengo holds a Bachelor of Engineering degree in Production Engineering from Chinhoyi University of Technology and a Master of Engineering in Manufacturing Systems and Operations Management from the National University of Science of Technology. He is also a holder of multiple professional certifications. He has over 7 years experience in operations management, quality management systems and plant maintenance.