Forecasting using Econometric Approach (e-powtimesanalysis)

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Abstract: The objective of this study is to develop interactive learning multimedia of Powerpoint (POWTOON) in teaching and learning activities especially in reading subject. The study also aims to examine the effectiveness of power point in forecasting approach especially in econometric chapter. A total of 39 students from part 4 Diploma in Statistics , UiTM Cawangan Kelantan were selected as sample. The interactive learning multimedia of time series analysis course was successfully developed and named as 'e-powtimesanalysis'. This 'e-powtimesanalysis' gives significant and valuable contributions to statistics educational practice and knowledge in the area of time series anaysis in the context of Malaysian Institution of Higher Learning. The findings also reveals that the students performance improved by 15.69% when teaching and learning process integrated the interactive approach. The implication of this study suggested that the 'e-powtimesanalysis' can be used to enhance the quality of teaching and learning process in statistics education and simultanoeusly increase the students' performance in times series and forecasting subject.

Keywords: interactive learning, performance, time series

1. Introduction

Introduction to Forecasting Analysis is an elective course for Diploma in Statistics and Diploma in Actuarial Science students. Forecasting method in this course covers Univariate Modelling and Causal Modelling (Econometric). Econometric is a set of tools to confront theory with real-world data including Bank data and Oil data. Econometric method also can be used in Engineering Sciences, Medical Sciences, Geoscience and others. Econometric Modelling requires students to extract useful information about important economic issues from the available data and analyze using statistical techniques (Brockwell & Davis, 2016). However, the average achievement of students in this topic is always an issue.

There is a widespread concern in Malaysia education about the quality of learning experienced by students (Lim, Nagendralingan, Sopia, Noor Shah, Rajendran, & Idris, 2012). Mostly, the teaching and learning process is conducted by conventional education system dominated by lecture-centered known as "knowledge transmission activities". It produces a student that passively receiving information which only involves recall skills and simple understanding of learning. Consequently, students are more likely to become a fact-memorizer rather than a problem-solver. Lecturer at higher institutions incorporated only passive teaching method in teaching of the subject matter (Nor'ain, 2015). Supposedly, mathematics/statistics should be the subject that trains students' mind to think logically and systematically and develop students' creativity (Munirah & Santi, 2014).

Examination oriented culture, time constraint, educators' belief and lack of confidence in student's ability to acquire knowledge by exploring the lesson themselves becoming the challenge for educators to incorporate good teaching practice (Fatimah & Lim, 2004). Thus, this study was done to determine students' perception in learning Forecasting Analysis (Econometric Approach) using Powtoon that had been named as 'e-powtimesanalysis' on integration concepts at undergraduate level. An interactive slides was used as a tool in improving student's understanding on the economic theories and statistical techniques used. These interactive slides will help students to understand the concepts of econometric and encourage them to explore this course.

2. Methodology

The interactive slides were developed by using Powtoon where it is user- friendly and intuitive animation software. Powtoon allows anyone to create an engaging, animated video with a professional look and feel. A Google form survey was also used where several questions were developed using Likert-scale in order to investigate the students' perception towards the interactive slides.

3. Results and findings

In order to examine the effectiveness of interactive slide in forecasting approach especially in econometric chapter, the students' performance were measured by conducting a pre and post test. The result in Table 1 shows that the students' performance is improved by 15.69%. Thus, this result indicates that the interactive slides developed in this study gives a positive impact on the students' performance.

Table 1: Average score

Pre-test (Conventional Learning)	Post-test (Interactive Learning)	Result
67.03%	82.72%	Improved by 15.69%

Figures below shows the results of the online survey that had been carried out. Figure 1 and 2 depicted that the students agreed that the content is presented in creative way and captivate their attention.
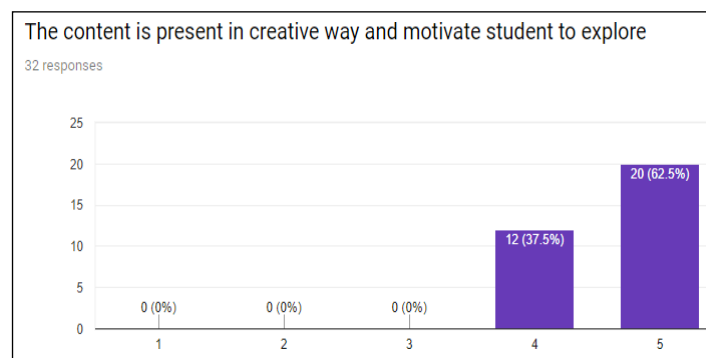

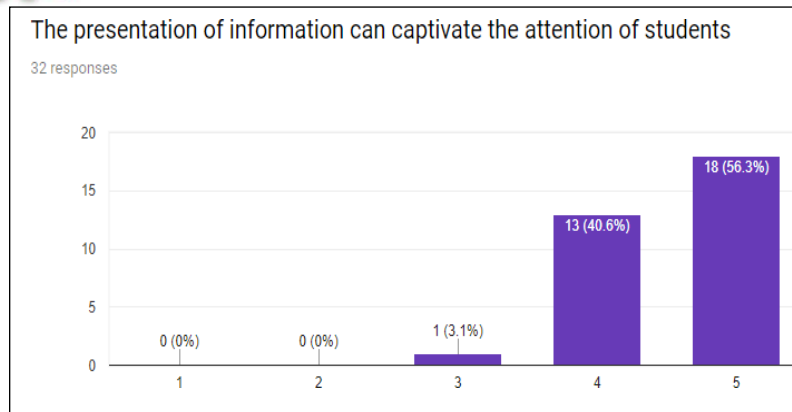Figure 1:Result of Online Survey (Explore)

Figure 2:Result of Online Survey (Attention)

Besides that, Figure 3 and Figure 4 shows that most of the students agreed that using multimedia tools or interactive learning tool can increase their interest and their level of understanding in learning forecasting. This implies that this 'e-powtimesanalysis' is effective to attract the students interest and applicable for other students from any institutions.
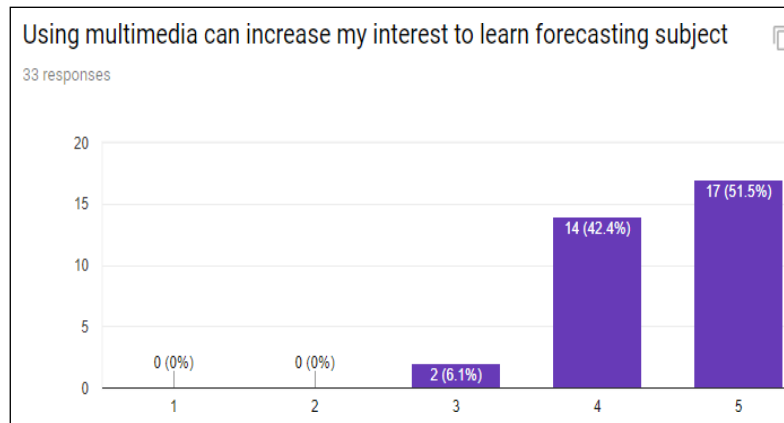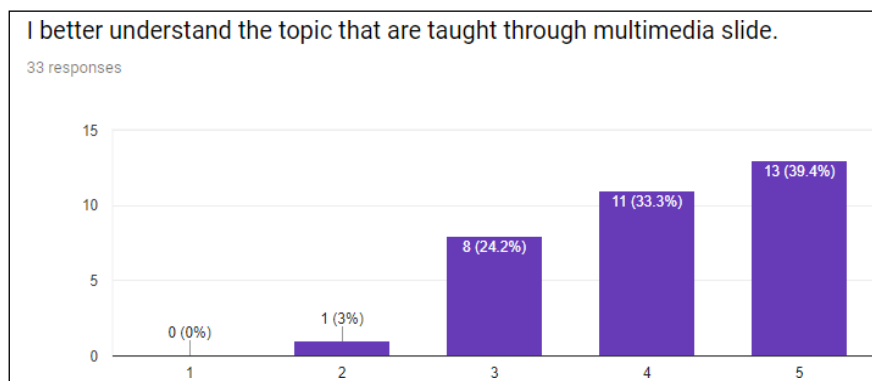

Figure 3:Result of Online Survey (Interest)

Figure 4: Result of Online Survey (Understanding)

4. Conclusion

This study has successfully developed an interactive learning multimedia of Powerpoint (POWTOON) for forecasting using econometric approach topic which is known as 'e-powtimesanalysis'. The results show positive impacts of using interactive learning in teaching and learning process especially for a lesson that requires low order level of cognition and this is also supported by a survey that was carried out among 39 students. This study is also in line with Malaysia Education Blueprint 2013-2025, additionally, the government wants to emphasis and strengthen the quality of teaching and learning process for educational development.

The present study gives an important and valuable contribution of knowledge in the area of Statistics Education research in the context of Malaysian Institution of Higher Learning. The present study could contribute to the statistics education in Malaysia to become more competitive and dynamic in higher education level. Moreover, this will be beneficial to students as they can increase their knowledge in econometric in order to enhance their statistics content konwledge.

Acknowledgements

References

Brockwell, P. J., & Davis, R. A. (2016). In*Introduction to Time Series and Forecasting* (pp. 1-37). Springer, Cham.

Fatimah, S., & Lim, C.S., (2004). Mathematics education in Malaysia: Where are we heading. *Trends and Challenges in Mathematics Education. East China Normal University Press, Shanghai*, 129-138

Lim, C.H., Nagendralingan, R., Sopia, M.Y, Noor Shah, S., Rajendran, N., & Idris, M.R., (2012). The challenge to transform learning: Changing teachers' theory of teaching. *Journal of Research, Policy & Practice of Teachers & Teacher Education, 2*(1), 6-15.

Munirah G., & Santi S., (2014). A Research on Teachers' Beliefs about Mathematics Teaching and Learning between Sekolah Kebangsaan (SK), Sekolah Jenis Kebangsaan Cina (SJKC) and Sekolah Jenis Kebangsaan Tamil (SJKT). *Journal of Education and Practice, 5*(31).

Nor'ain, M.T., (2015). Exploring Mathematics Lecturer's Teaching and Learning Practices at Higher Learning Institution. *International Journal of Contemporary Applied Sciences, 2*(8).