

Using Action Research Approach towards Implementing a Cloud Framework in a Polytechnic

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ABSTRACT

This poster presentation details the outline of the methodology which is suitable to design and implement a framework over cloud technologies to assess and advance the quality of the teaching and learning practices in a New Zealand (NZ) Polytechnic. The approach explains the importance of using action research. The flexibility within the action research processes allows for an insightful look at the problems pertaining to the views of the research participants. By proposing the importance of using this technique to create a framework for optimal teaching and learning over the cloud, it is envisaged that the future of the Polytechnic, if they adopt the framework, could be driven towards a more collaborative, scalable, and extensible and cost saving ideology and pave way for other NZ tertiary organisations willing to adopt the framework.

Keywords

Action Research, Cloud Computing Pedagogical Framework, Analytical Instruments

1. INTRODUCTION

With the increasing use of Information Technology (IT) in education in areas of distance, self-paced, and eLearning, there is always the need for institutions to upgrade to newer less costly technologies. It is anticipated that a lot of hardware and computers in use currently will get outdated soon as most platforms and services would become accessible directly from the cloud [12]. With this change, a range of shortcomings that are currently experienced will be addressed: slower bandwidth leading to an even slower download and sharing by multi-users, the constant need to install and run applications on local computers by the technical team, scattered academic course resources and security and data storage [12,13].

2. LITERATURE REVIEW

According to Mircea, *Cloud Technology* is considered as the future ICT and it is meant to transform the new era of the education culture in NZ [9]. The cloud has distinct qualities such as its ability to exchange information and ideas among themselves in order to create on-line lessons without being faced by travelling issues, added technical expenses and time-consuming issues [11].

In higher education, students are always searching for the latest offerings of facilities and services. The costs of offering,

operating, and maintaining these services for students can become exceedingly high for most tertiary organisations. To cater to student needs educational organisations adopt cheap yet effective ways of improving knowledge transfer. Universities and Polytechnics must also adapt to changing requirements by continuously reinventing and updating their academic infrastructure.

Current researches have proposed architectures and frameworks based on the cloud model for educational sectors [5,9,11,12]. All the proposed architectures have these factors in common: storage of resources, collaboration and student-centred learning.

With Cloud infrastructures already in existence globally, newer frameworks are still emerging but not utilised. Scholastic research is quite small in this area in NZ comparatively and it was therefore of significant interest to add to the knowledge base the interesting topic of cloud in NZ tertiary education sector.

3. METHODOLOGY

'Action Research' research is mainly qualitative in nature but will also include some quantitative analysis of answers based on closed ended questions through use of a MOODLE forum. This methodology seemed most appropriate as the study is focused on selected participatory groups who could provide in depth information of their experiences, ideologies and beliefs. Creswell indicated the incorporation of both qualitative and quantitative approaches in any research, makes available the best insights of research predicaments [2].

Kemmis and McTaggart proposed that the use of action research in any organisation gives confidence to researchers to experiment methodically through intervention which allows systematic reflection on the involvement and then to be able to amend their views based on this reflection [6]. A similar ideology is depicted by Cardno & Piggot-Irvine whereby they have depicted an iterative approach towards each process [1].

Hence my strategy of inquiry will draw on Cardno & Piggot-Irvine framework [1] as guidance towards the research. The iterative approach will help modification of the framework after the first cycle which includes the four processes: Plan, Act, Reflect and Observe.

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4. ACTION RESEARCH MODEL

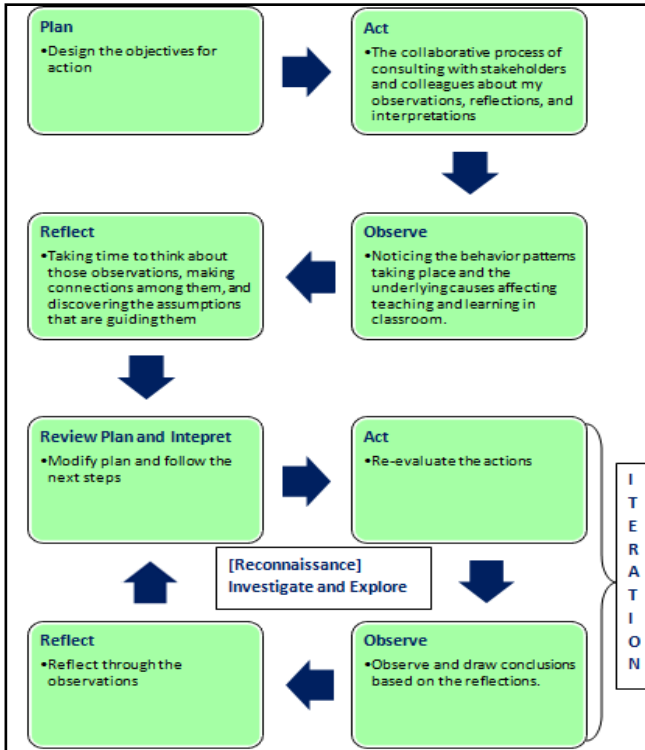


Figure 1.0 Action Research Model (Adapted from Cardno & Piggot-Irvine, 1996)

Table 1.0 Analysis

Data Collection Instrument	Methodology Applied	Type of Data/Information	Qualitative or Quantitative	Analysis
Research Journal	Self/Field Notes	Written reflection	Qualitative	Categorising
Interviews	Delphi Method	Open answers based on perception and knowledge experiences		
Focus groups				
Videoconferencing				
MOODLE Forum(Surveys/Thematic)			Summarised Data	Both

5. JUSTIFICATION

Instigated by Kurt Lewin in 1946, the Action Research methodology, as stated by Dickens and Watkins, implores involvement, discussions and negotiations, which as a rule attains a final consensus amongst research participatory groups which normally consists of contemporaries and professionals of similar experiences and beliefs [3]. Dickens enforced that action research necessitates group decision and commitment to improvement and this notion instigated the ground works for this research. Based on this view and considering that this method is most suitable for educational based research, the researcher is committed to making a change for betterment of the organisation based on the outcomes of the research.

Analysis will include identifying significant categories and classification of information which was collected via research instruments used (see Table 1.0). Two data analysis tools have been chosen: for qualitative analysis- Delphi and for quantitative NVivo9 and MS Excel. The points of view gathered from this method will be categorised and also prioritised.

6. CONCLUSION

Applying this method will assist the researcher to capture the expectations of the action teams and expert perceptions of the deductive factors of a good cloud framework design before, during and after suggesting changes which arises from the action research. While the structure of the cloud framework will involve utilization of a qualitative method, on the whole the paradigmatic importance focuses on norms and values used towards progression. With the construction of the instrument designed for use in the Action Research model, it is anticipated that the pedagogical cloud architecture will be fused into broader educational sectors to advance the expansion of effective education successfully in NZ tertiary institutes.

7. REFERENCES

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