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AN ASSESSMENT/INVESTIGATION ON MALAYSIAN SCHOOL HEADS' TECHNOLOGY LEADERSHIP INCLINATIONS AND ACTIVITIES

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Abstract

A study was conducted on 120 schools heads in Malaysian schools in June 2013 to identify their inclinations and technology activities using NETS-A. Survey questions consisting of 36 items were distributed and 60% returned the questionnaires.The result of the study showed that the Teaching and Learning standard has the highest score while Social, Legal and Ethical Issues has the lowest score. Primary school outperforms secondary schools in every Educational Technology Standard.Similarly, rural area schools outperform urban schools in every standard.

1 Introduction

In the 21st century learning, the role of technology to support and improve student achievement becomes the main agenda in curriculum development and instruction. Curriculum planners and instructional designers are looking for new ideas on how to fit the new media and technologies to support and facilitate teaching and learning. Examples of such initiatives are the flipped classroom approach and the massive open online courses (MOOC) pioneered by MIT and Harvard universities,creating free online courses known as *edX*in March 2012 (Chu, 2013) and Stanford University free online courses known as *Coursera*founded by Andrew Ng and Daphne Koller.

How best can technology be used in a learner-centred environment to make learners the producer and creator of new knowledge as hailed by constructivists?Learners can access, apply, construct and communicate and share new information and skills using social media such as blogs and wikis and participate in web lectures and webinars. To do that, they need to be connected to make use of the available information in the Internet. Learning happens when all are connectedto the Internet - collaborating, creating, assessing and sharing information. Such were the present challenges that need the attention of the school leaders and teachers.In the digital age, administrators who promote technology as a tool for collaboration, and stimulation for authentic meaningful learning experiences, can expect far greater student learning and performance than ever before. However, there is evidence of strong resistance on the part of teachers to fully integrate media and technology in teaching and learning (Cuban, 1997). Such teachers may find themselves unfit as digital learners and demand for more active, relevant and real learning (Prensky, 2010).

So, the role of school administrators is crucial to ensure that teachers accept and use technology and media to facilitate teaching and learning in the 21st century classroom. They may not leave this responsibility to teachers and information technology and communication (ICT) technicians to do the job (Yusup, 2013). Bailey and Lumley (1997) have identified effective technology leaders as those who value technology as the primary tool that will change the way we view teaching and learning. They maintain that leaders who will successfully integrate technology must be able to model the technology, understand how technology can be used as an instructional tool across all disciplines, and continually focus on systems thinking as they assist others through the transformation of teaching and learning.Effective leadership is vital to determine the quality and performance of a school (Simkins, 2004; Hallinger& Heck, 2010; Sim, 2011); in this case technology leadership.

In the United States of America, the National Technology Standards (NETS) established technology standards and performance indicators for school administrators to help schools plan and implement technology and mediated instruction. The standards were developed by TSSA (Technology Standards for School Administrators) and adopted by ISTE (International Society for Technology in Education). There are six standards (ISTE, 2002):

1. *Leadership and Vision*: educational leaders inspire a shared vision for comprehensive integration of technology and foster an environment and culture conducive to the realization of that vision.
2. *Learning and Teaching*: educational leaders ensure that curricular design, instructional strategies, and learning environments integrate appropriate technologies to maximize learning and teaching.
3. *Productivity and Professional Practice*: educational leaders apply technology to enhance their professional practice and to increase their own productivity and that of others.
4. *Support, Management and Operations:*educational leaders ensure the integration of technology to support productive systems for learning and administration.
5. *Assessment and Evaluation:*educational leaders use technology to plan and implement comprehensive systems of effective assessment and evaluation.
6. *Social, Legal and Ethical Issue:*educational leaders understand the social, legal, and ethical issues related to technology and model responsible decision-making related to these issues.

However, recently, Larson et al. **(2012)** suggested five considerations for digital age leaders to integrate technology: 1) Visionary leadership, 2) digital age learning culture, 3) excellence in professional practice, 4) systemic improvement, and 5) digital citizenship. They are aligned with the ISTE's NETS for administrators, which will be examined in this study using the Principal Technology Leadership Assessment (PTLA).These considerations may be used later to assess school leaders to integrate digital technology in school management and classroom teaching.

Previous studies

A number of technology leadership studies had produced mixed results. A study done by Yusup et al.(2008) on the use of instructional technology among school heads in selected best performance schools indicated that the overall performance of technology standards for school administrators was above average (76.6%) and the highest performance reported was in Teaching and Learning standard (86.4%) followed by Leadership and Vision (77.6%), Productivity and Professional Practice and Social, Legal and Ethical Issues (76.9%), and Support, Management and Operation (75.2%). The lowest performance was in Evaluation and Assessment dimension (66.5%). Anderson and Dexter (2005) reported that Productivity and Professional Practice and Learning and teaching had the highest performance while Leadership and Vision and Assessment and Evaluation had the lowest score. Another study by Saleh et al. (2011) on principal technology leadership and teachers'ICT application in two different school setting showed that Legal and Ethical Issues had the highest mean (3.02) followed by Productivity and Professional Practice and Learning and teaching with mean score (above average, 2.80) while Leadership and Vision had the lowest mean. Similar result was reported by Banoglu (2011) where the leadership and vision standards showed the lowest mean when tested for competency in technology leadership among134 school principals in Istanbul.

Overall, the studies indicated school leaders performed better in the two dimensions of the NETS that is teaching and learning and productivity and professional practice (Anderson & Dexter, 2005; Yusup et al., 2008; Saleh et al., 2011). The performance of school leaders was low in leadership and vision (Saleh et al., 2011; Banoglu, 2011) and also evaluation and assessment (Anderson & Dexter, 2005; Yusup et al., 2008).

Research questions and objectives

Research questions of the study are:

1. What are the overall standards of school administrators based on NETS for school administrators?
2. What is the highest NETS for school heads?
3. Compare the NETS of the urban school heads and with rural school heads?
4. Compare the NETS of secondary school heads and primary school heads?

The objectives of this study are:

1. To measure the tendencies and technology leadership activities based on NETS.
2. To determine the highest and lowest standards in NETS.
3. To compare NETS of rural and urban schools.
4. To compare NETS of secondary and primary schools.

2 Methodology

Purpose of this study is to provide school heads with detailed and comparative information about their technology leadership and management in schools. Survey (refer to Hughes et al.(2005)for the instrument used albeit adapted) research was used in this studyand the data was analysed usingRStudio @ver. 0.3.97.312 (R Development Core Team, 2012). Mean score was calculated for each six standards (Leadership and Vision, Learning and Teaching, Productivity and Professional Development, Support, Management, and Operations, Assessment and Evaluation and Social, Legal and Ethical Issues and plotted at the bar charts for overall, rural, urban, primary and secondary schools. General demographic information on school grade, school location and gender were provided by the participants.

Population sample

The sample consists of 120 headmasters and principals from primary and secondary schools attending Information and Communication Technology (ICT) colloquium in June 2013 at AminuddinBaki Education Institute, Genting Highlands, Malaysia. Of the 200 questionnaires that were randomly distributed, 120 (60%) were returned indicating inclinations and technology activities from at least 24 different District Education Departments in Malaysia. Of the general demographic information gathered 62 (51.7%) were headmasters from primary schools and 58 (48.3%) were principals from secondary schools. Forty two percent (50) identified their schools as rural and 70 (58%) as urban. Sixty seven percent of the participants were from the grade A schools (Big Schools) and 33% from grade B (smaller schools). Of the 120 participants, 70 were males and 47 were females.

Instrument

A survey consisting of 35 questions was administered to 120 schools heads in primary and secondary schools to assess school administrators' technology leadership inclinations and activities based on National Educational Technology Standards for School administrators (NETS-A) (Anderson & Dexter, 2005). The instrument is adapted from Principal Technology Leadership Assessment (PTLA) designed by CASTLE. Based on ISTE's National Educational Technology Standards for Administrators (NETS-A), the PTLA was developed and psychometrically validated by the American Institutes for Research as part of a grant CASTLE received from the United States Department of Education Fund for the Improvement of Postsecondary Education (FIPSE).

In order to delineate inclinations and activities based on PTLA, the questions were categorized into six categories namely: (1) Leadership and Vision (Leadership), (2) Learning and Teaching (Teaching), (3) Productivity and Professional Development (Practice), (4) Support, Management, and Operations (Management), (5) Assessment and Evaluation (Assessment) and (6) Social, Legal and Ethical Issues (Social). Responses were then given numerical values on a scale from -2 to + 2 (-2, -1, 0, 1 and 2).

The six NETS-A, and their corresponding 35 performance indicators, outline what a technology-savvy school leader knows and is able to do.PTLA results are centred on a midline of zero and range from +2 to -2. This scale is not precise but is a rough measure of reported activity in each of the NETS-A standards areas. The bar for each standard represents an average of responses to the survey questions representing that standard. A positive value bar represents strength or an area of frequent activity; a negative value bar closer represents an area of need or an area of relative inactivity. Lower or negative bars may represent school heads personal knowledge, skill, and/or level of interest or may also reflect a lack of opportunity for involvement.

Limitations of the study

Based on PTLA instrument, the study may have limitations as participants may make the following errors when responding to the questionnaires:

- Leniency error: this occurs when the respondent gives himself/herself an assessment higher than he/she deserves. This could happen for several reasons: the individual has relatively low performance standards for himself/herself; the individual assumes that other individuals also inflate their ratings; or, for social or political reasons, the individual judges that it would be better not to give a poor assessment.
- Halo error: this occurs when the respondent assessment is based on a general impression of his/her performance or behaviour, and the general impression is allowed to unduly influence all the assessments given. An example of halo error would be an individual who rates himself/herself highly on every single assessment item. It is rare that individuals perform at exactly the same level on every dimension of leadership. It is more likely that an individual performs better in some areas than others.
- Recencyerror: this occurs when an individual bases an assessment on the most recent behaviour, as opposed to the entire behaviour over some fixed period of time (e.g., the last year). This assessment should be based on the entire year (or other fixed period of time.

3 Result of the study

Fig. 1 shows the overall performance of school heads in termsof technology standards. The result of the study indicated that Teaching and Learning standard has the highest score (0.98) while Social, Legal and Ethical Issues has the lowest score (0.38). In order of performance, Productivity and Professional Practice scored 0.95 the second highest, followed by Assessment and Evaluation 0.67, Support, Management and Operations, 0.63 and Leadership and vision 0.52.

Fig. 2 shows rural school heads outperforms urban school heads in every standard. In the area of Teaching and Learning rural school headsscored 1.05 compared with urban school heads performance with 0.87 (Fig. 3). Similarly, rural school heads performed better than urban school heads in the areas of productivity and Professional development (1.03) and Leadership and vision (0.55).

Fig. 4 shows primary school heads outperforms secondary schoolheads in every area of Educational Technology Standards. In the area of Teaching and learning primary school heads scored higher (1.04) compared with secondary school heads (0.9).

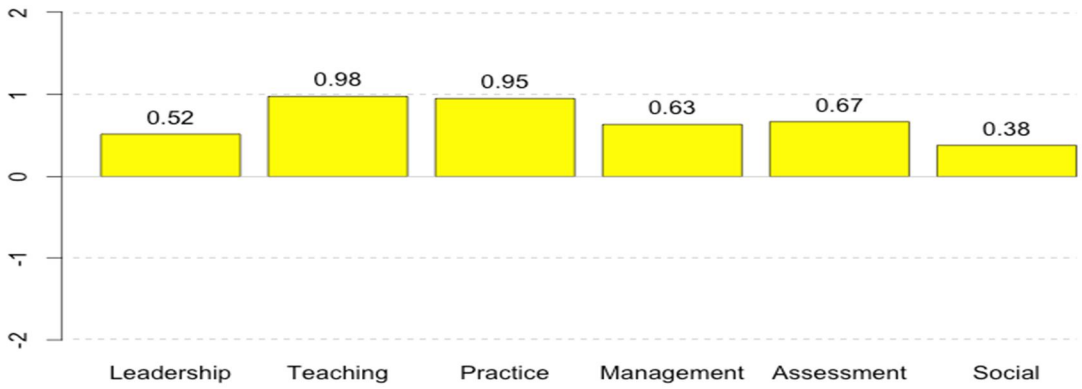

Fig.1: Overall NETS-A performance for school administrators (n=120)

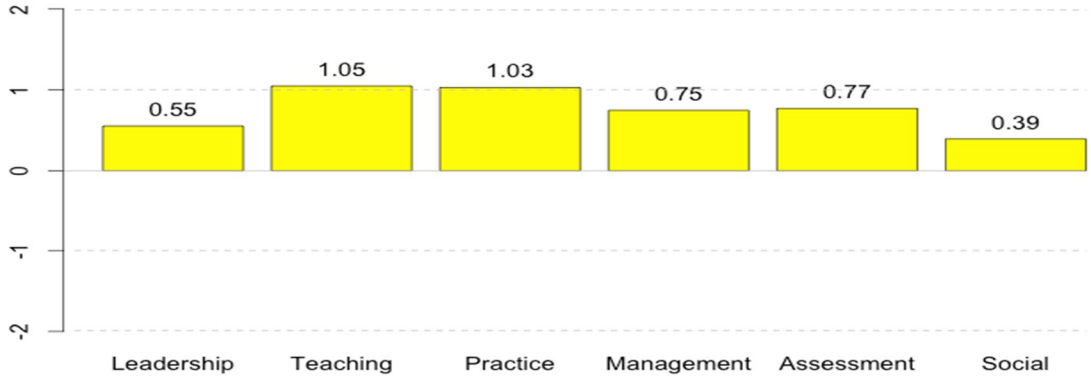

Fig. 2: Rural school heads NETS-A performance (n=120)

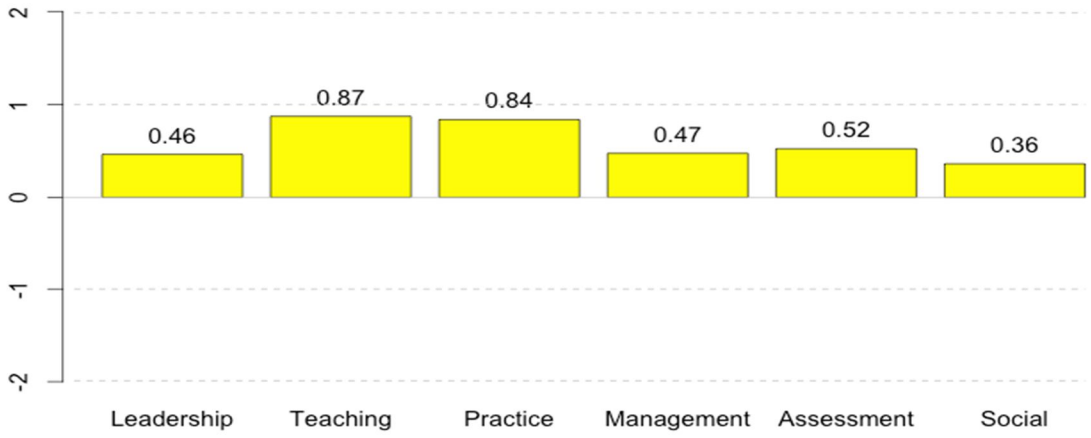

Fig. 3: Urban schools heads NETS-A performance (n=120)

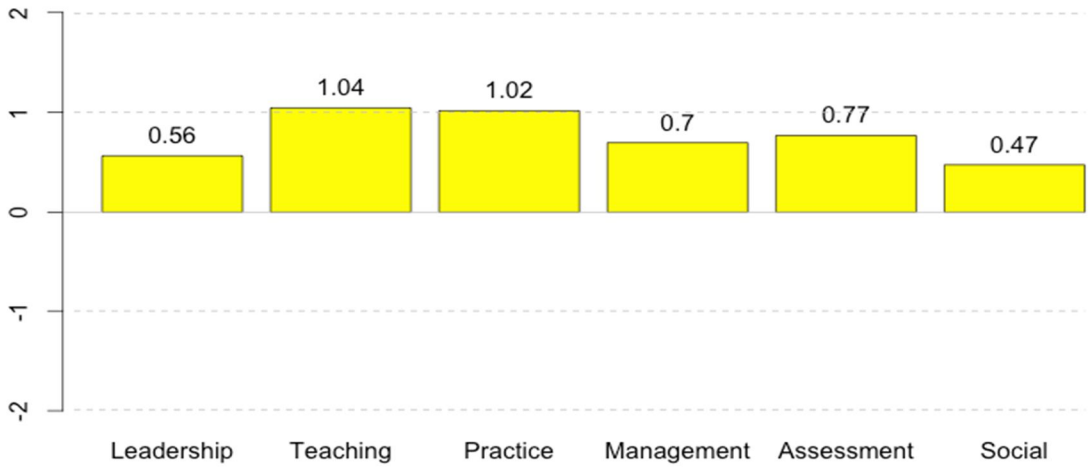

Fig. 4: Primary school heads NETS-A performance (n=120)

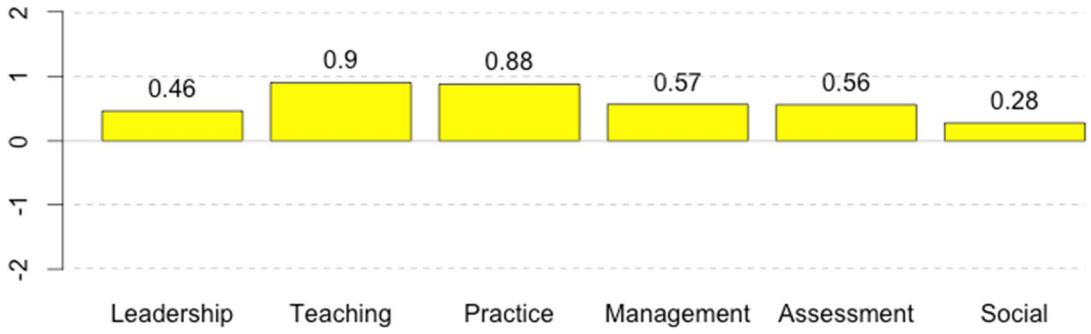

Fig. 5: Secondary school heads NETS-A performance

4 Recommendations

Based on the study, the following recommendations need attention to improve performance on technology leadership and management among school administrators:

- Need to have clear vision and technology plan to integrate and implement educational technology in their schools.
- Need training and understanding on the social, legal, and ethical issues related to technology and model responsible decision-making related to these issues.
- Need training on the integration of technology to support productive systems for learning and administration.

The results will help the Ministry of Education to plan its leadership training and professional development program for school administrators to manage and lead technology and media use in education. School heads are expected to have technology and media skills to plan curriculum and instruction in 21st century education. The results also help to establish school heads' dialogue with their school district about their technology-related professional development needs and interests.

5 Discussions

From this survey, overall result indicated that Teaching and Learning and Productivity and Professional practice gained the highest score respectively. This result supports previous studies (Saleh et al., 2011; Yusup et al., 2008; Anderson & Dexter, 2005).However, it is interesting to note that the rural schools outperformed the urban schools in every category of the NETS particularly in the areas of Teaching and Learning and Productivity and Professional Practice (Fig. 2 and 3). This is contradictory to previous study done by Yusup, et al (2008) indicating that urban school heads performed better than rural schools especially in the assessment and evaluation standards.Does this mean that rural schools were more technology-inclined than urban schools? The data collected was based on perceptions or opinions gathered from urban and ruralprincipals. Further study needs to be done on rural and urban school heads to see if there are variations in terms of technology and media use in management, teaching and learning. For example, a headmaster from rural schools may consider using e-mail and SMS as new technologies for learning and instruction whereas a school head from an urban school may consider using social media such as blogs and wikis and tablet as indicators of new media and technology. Perhaps school heads should need training on 21st century education and technology skills to be an instructional and management leader. The samples need to be screened in terms of technology information and skills before they are assigned to the sample group.

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