

## **Knowledge Management in Secondary Education: An empirical study on role of Knowledge Enablers**

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### ***Abstract***

*As far as the economic and social growth of a nation is concerned, the opportunity and quality of secondary education needs to be focused as it contributes significantly to the social, cultural, moral and technological orientation of an individual. Therefore, this empirical study analyses the*

*Knowledge Management (KM), Knowledge Management (KM) practices followed in Secondary Education at Government Schools, focusing on the Knowledge Enablers (KE). Schools are considered as pure knowledge organizations where teachers, students, parents and staff form the major stakeholders and the role of teachers as knowledge workers is more significant. The study aims to analyse the major KE in schools and their impact on academic performance, based on the perception of school teachers. The methodology includes field survey using a structured questionnaire on a sample of 154 Secondary Schools Teachers working in Government schools of Kasargod district in Kerala. The findings essentially contribute towards the effectiveness of KM in education and this empirical inquiry come up with suggestions to make KM effective.*

### **Keywords:**

**K**nowledge Management (KM),  
**S**econdary Education,  
**K**nowledge Enablers (KE),  
**G**overnment Schools.

## **Knowledge Management: An**

### **Introduction**

A theoretical or practical understanding of a subject can be generally called 'knowledge'. This understanding could be obtained from experiences based on data, information and interpretation. Knowledge is often contextual and it has the ability to make an entity take decisions for effective action (Nonaka & Takeuchi, 2005). So managing knowledge is definitely a pathway to effectiveness as far as an entity, organization or individual is concerned. Knowledge Management (KM) is a systematic process of efficiently handling the information and resources within an organization. Knowledge Management basically involve knowledge processes such as creation, acquisition, storage, transfer, application and dissemination of knowledge along with the Knowledge Enablers (KE) such as information technology, leadership, management support and organizational culture. If efficiently practiced KM can definitely enhance the competitive performance of an organisation. Mostly such competitive advantages are discussed with regard to industry, either manufacturing or services and obviously KM was given prime importance in evaluating the performance of human resources in corporate organizations. Slightly deviating from this convention,

this study relates to KM in academia. Again, the genuine quest is on the scope of Knowledge Management in Education. The increased external and internal demands of accountability and improvement in quality, prompt the need of efficient creation, acquisition, storage, transfer and dissemination of knowledge in education. The accountability issue lies in the dilemma of what is important and how to prioritize based on the changing scenario of education.

### **Background of the Study:**

In India, the Secondary Education Commission (1952-1953) has formulated three social or national objectives of education namely, development of democratic citizenship, improvement of vocational efficiency and development of leadership. In India, the government clearly identified the importance of upgrading the quality of secondary education and, Rashtriya Madhyamik Shiksha Abhiyan (RMSA) was implemented in 2009. Its objectives focused on removing the barriers in providing quality secondary education such as gender discrimination, accessibility, socio-economic barriers, physical and mental disability. The prime motive was to develop a universal accessibility to secondary education by 2017. As the quality of secondary

education strongly lays foundation to social, cultural, technological and moral orientation of human resources, this study focuses on KM in secondary education.

If the KM strategies can be applied effectively in organizations, it can be done with regard to school administration also, as schools run much similar to any other public organization. Moreover education sector can be actually considered as a pure knowledge centric sector when compared to other sectors. But unlike other corporate organization where the knowledge sharing and transfer transcends vertically, in organizations like schools, it happens more laterally among teachers, students, administrative staff and parents.

### **Review of Literature:**

KM includes technology, techniques, and people and their interaction which act as “preconditions” to enhance the processes in an organisation by effectively utilizing the knowledge resources (Offsey,1997;Bhatt, 2001).

Schools, being highly knowledge centric, are most important entities responsible to manage knowledge holistically , but few researches are done on this context(Fullan, 2002). The underlying concept of conversion of tacit knowledge(know – how) to explicit knowledge in knowledge management was explained by Nonaka Ikujiro(1995) and they are highly relevant

in schools, as it involves a regular tinkering process of knowledge conversion( Hargreaves, 1999).The internet technology and increased digitization has increased the scope of educational resources and the educational institutions are forced to implement knowledge management practices to cope with the increasing complexity in educational practices (David, 1999; McKenzie et al., 2001;Richard, 2001;Kuo, 2003).

But besides the process, the factors that enable the knowledge processes are equally important. The prime knowledge enabler in school is definitely the leadership support as the school leaders always try to create and think of the best alternative and strategies to improve teacher’s and student’s performance (Lokman et al.,2013). School leaders need to know their schools’ overall intellectual capital, not only on an individual level, but with regard to whole school structure and culture (Hargreaves, 1999; Chu, 2011).

Apart from leadership, technology infrastructure and people are the two enablers that can act as solution to KM problems in schools(Chu, 2016). The schools leaders, mostly the principals has the power to initiate change and can be achieved if he/she has a clear understanding of the abilities of the

teachers, existing facilities of the organisation, and quality of existing practices(Chu, 2011;2016). Chu (2016) has stated some of the key parameters of KM in education based on the perception of teachers which include collaborative environment or discussions, sharing culture among teachers, creation and up-gradation of new knowledge understanding the learning potential of students and better documentation management. A self-awareness and self-evaluation of personal teaching skill is important for a teacher to improve the teaching effectiveness. Unless a sharing culture doesn't exist the knowledge processes would never become effective as the knowledge is always meant to be created, transferred, stored and applied as a cyclic process. The intellectual and personal interactions result in effective organisational relationships and on the other hand, combination of experiences, context, knowledge and information to evaluate the existing situations for decision making result in organisational strategy(Williams, 2003)

### **Objectives:**

The key objectives of the study are:

1. To explore the Knowledge Enablers(KE) in secondary education
2. To analyze impact of KE on the academic performance in the schools based on teacher perspectives.

### **Research methodology:**

The study is an inquiry on the various KM Practices in Schools mainly through the teacher's perception, focusing on Knowledge Enablers and Knowledge Processes in school teaching. Referring to various activities and responsibilities that are instructed to the secondary school teachers and also the parameters of KM in the existing literatures, the Rodriguez and Pai (2005) model is arrived to be most appropriate after the theoretical review. Their Model of Knowledge Management in Schools focuses on eight KM variables namely 1. Leadership and Support, 2. Technology and Infrastructure, 3. People Competency, 4. Sharing Culture, 5. Knowledge Creation, 6.Acquisition and Learning 7.Dissemination and Transfer 8. Application and Exploitation. The study is done with the support of a structured questionnaire based on sub-variables of these eight KM variables. Certain sub-variables of KM in education were adapted from the qualitative study of Cheng E C K(2015).A 5 point likert-scale ranging from 'Strongly disagree' (1) to 'Strongly agree' (5), was used to measure the opinion of teachers on the sub variables (Table 4) of KM in schools.

The reliability of the questionnaire is tested for the Knowledge Enablers and Knowledge Processes with a sample of 30 respondents and the Cron Bach alpha

values are .813 and .794 respectively. Since the reliability is 81% and 79% respectively, which is above the acceptance level of 70%, the questionnaire was considered reliable.

### Data Collection:

The scope of the study is limited to the Secondary School teachers of Government Schools in the Kasargod District of Kerala State. The district has a total of 90 Government Higher Secondary Schools with an average of 11 secondary school teachers in each school. A stratified random sample of 154 respondents from 13 Government Schools of Kasargod district is selected for the survey. The study is done purely based on the perception of Government School Teachers. The data were personally collected by the researcher from the teachers. Table 1 shows the three strata based on the location of government schools in the district namely, urban, semi urban and rural. 35.7% of respondents are from urban, 19.5 % from semi-urban and 44.8% from rural schools.

**Table 1: locations of schools**

Location	Frequency	Percent
urban	55	35.7
semi-urban	30	19.5

rural	69	44.8
Total	154	100.0

Out of the 154 respondents majority (24%) are having an experience 16-20 years in government school teaching and less than 5years' experience are just 12.3% (Table 2).

**Table 2: Experience profile of teachers**

	Frequency	Percent
1-5 yrs	19	12.3
6-10 yrs	34	22.1
11-15yrs	30	19.5
16-20 yrs	37	24.0
more than 20 yrs	34	22.1
Total	154	100.0

### Data Analysis:

Factor analysis is conducted using Principal Component Analysis (PCA) to identify the key factors of School KM. The basic assumptions for factors analysis include satisfying the KMO and Bartlett's Test for sample adequacy and sphericity respectively. Table 3 shows that KMO measure of sample adequacy is 0.654 which is greater than that accepted threshold of 0.5. This indicates that the sample is adequate for Factor Analysis. The p value (Sig Value) for Bartlett's Test is 0.00 which is less than 0.05, showing that the data is significantly multivariate normal. Hence factor analysis can be suitably executed for the data.

As the existing variables are assumed to be correlated, a varimax rotation was adopted for the data. Principal Component Analysis generated 8 factors which contributes a cumulative variance of 74% to the study. The remaining 26 % would be contributed by other factors that are not included in the study. The factors are named based on the KM variables proposed by Rodriques and Pai(2005), which include 4 Knowledge Enablers such as *Leadership and Support, Sharing Culture,*

KMO Measure of Sampling Adequacy.		.654
Bartlett's Test of Sphericity	Approx. Chi-Square	962.354
	df	210
	Sig.	.000

*People Competency and Technology Infrastructure.* The remaining 4 factors act as Knowledge Processes which include Knowledge Creation, Acquisition and Learning, Dissemination and Transfer, Application and Exploitation. Table 4

illustrates the factors of KM in secondary Education.

This study focuses more on Knowledge Enablers in schools as less or limited focus is being given on enablers compared to processes. *Leadership support* is analysed based on the management support, support and coordination of Principal on knowledge initiatives and how effectively Principal use the data for decision making. *Sharing Culture* is explained with the support stakeholders such as alumni and non-teaching staff. *People Competency* is explained by the self-confidence and satisfaction of teachers on their ability to teach and also on how competent they are with technology usage in teaching. *Technology Infrastructure* is measured based on facilities such as free internet access and the extent to which technology is used in evaluation of academic performance.

**Table 4: Factors of KM in Secondary Education**

Item	Factor	Variables included in the factor	Factor Loading	Eigen Value	Variance explained %	Cumulative variance explained %
1		Innovative method of teaching	.771			
2	Acquisition and learning	New teachers are supported	.756	4.669	11.304	11.304
3		Freedom to develop lesson plans	.669			
4		Opens Discussions	.641			

5	Dissemination and Transfer	Support of fellow teachers	.955	2.488	10.603	21.907
6		Receive regular feedback from students	.899			
7	Leadership and Support	Principal's support	.943	2.044	10.453	32.360
8		Principal's Coordination	.921			
9		Management support	.506			
10	Application and Exploitation	Suggestions are considered	.764	1.503	10.111	42.472
11		Curriculum standards are good	.682			
12		Methodology Evaluation	.662			
13	Knowledge Creation	Use of ICT	.803	1.431	8.754	51.226
14		Updates knowledge	.747			
15		Seminars and workshops	.508			
16	Sharing Culture	Access to alumni	.839	1.237	8.202	59.428
17		Sufficient administrative staffs are available	.837			
18	Technology Infrastructure	Principal use technology for evaluation	.764	1.153	7.594	67.021
19		Free internet access	.725			
20	People Competency	Technology usage	.692	1.013	6.974	73.996
21		Self- satisfaction of teaching skills	.498			

A binary logistic regression was applied to estimate the impact of Knowledge Enablers in Government schools on academic performance based on the perception of teachers. The academic performance of students is the dependent variable and the independent metric variables are Leadership and Support, Technology Infrastructure, Sharing Culture and People Competency, which are the Knowledge Enablers. The Hosmer – Lemeshow test (Table 5) was used to

evaluate the goodness-of-fit of the model (Hosmer and Lemeshow, 2000).

The  $\chi^2$  value is 8.441 and,  $p$  value is 0.391(> 0.05), which proves that result is statistically insignificant. Therefore, the null hypothesis ( $H_0$ : *There is no difference between the observed model and the predicted model values on academic performance*) was rejected. This implied that the model fits the data well and the

assumption satisfies for further analysis of logistic regression.

**Table 5: Hosmer and Lemeshow Test**

Chi-square	df	Sig.
8.447	8	.391

**Table 6: Variables in the Equation**

	B	S.E.	Wald	df	Sig.	Exp(B)
Peoplecompetency	1.235	.810	2.323	1	.127	3.438
Leadershipsupport	1.194	.891	1.795	1	.180	3.301
Sharingculture	-1.411	.439	10.326	1	.001	.244
Technologyinfrastruct ure	-1.413	.836	2.853	1	.091	.243
Constant	-1.789	3.088	.336	1	.562	.167

Variable(s): People competency, Leadership support, Sharing culture, Technology infrastructure.

Table 6 shows, the logistic regression coefficient, standard error, Wald's chi-square,  $p$  value and odds ratio for each of the predictors. The Wald and associated  $p$ -value is used to test the statistical significance of each coefficient ( $\beta$ ) in the model (Field, 2007), which represent the KM variable. All the estimated coefficients except for *Sharing Culture* ( $p$  value  $.001 < .05$ ) were not statistically significant! This result is based on the perception of Government school Teachers. Considering the Odds ratio (Exp(B), in Table 6, it is observed that the Exp(B) of *People competency* (3.438) and *Leadership Support* (3.301) are greater than 1 and it indicates that a slight increase in value of these variables can result in improving academic performance by 3.4 times and 3.3 times respectively.

### Findings:

It is quite obvious from the analysis that the existing knowledge practices are more process centric. KEs significantly does not contribute to academic performance of the students except for the sharing culture. It is indeed very positive that the organisational culture prevailing in these schools are collaborative, enabling the knowledge processes to greater extend. But it is indeed alarming that people competency, technology infrastructure and leadership support are not able to significantly contribute to academic development. The binary logistic regression results clearly shows the importance of people competency and technology infrastructure, as they can bring tremendous improvement in student's performance if implemented and practiced effectively. Although internet access and use of ICT are

facilitated in schools the extent to which they are utilized effectively for student development is unsatisfactory. More initiatives has to be taken in reskilling the teachers as the educational system is changing internationally in terms of orientation.

### Conclusion:

The secondary education in India, is still being stuck with the regular tinkering process in spite of technology advancement and availability of large knowledge resources. A structural approach is definitely a mandate to revamp the existing processes. The role of knowledge enablers/activators is inevitable in this context, as the technology infrastructure, people competency and sharing culture can tremendously boost the academic performance of students apart from enhancing the knowledge of teachers. Although this study has explored the knowledge process as well, which contributes well to the knowledge practices, the attempt to focus on KE was deliberate as they are often less researched .The future of academia would primarily rely more on the technology and competent teachers apart from the academic processes .

### References:

Azman Safi (2003), Teacher's Awareness in Implementing

Knowledge Management Practices: A Case Study towards Teachers at SMK Tunku Abdul Rahman Putra Kulai. Unpublished Master Education project paper, Universiti Teknologi Malaysia  
Bhatt, G. D. (2001). Knowledge management in organizations: examining the interaction between technologies, techniques and people. *Journal of Knowledge Management*, Vol. 5 Iss 1 , 68-75.

Chu Kai Wing, Wang Min Hong, Yuen A H K (2011), Implementing Knowledge Management in School Environment: Teachers' Perception, Knowledge Management & E-Learning: An International Journal, Vol 3, No.2.

E.C.K.Cheng(2011), Knowledge strategies for enhancing school learning capacity, *International Journal of Education Management*, Vol 26, No.2.

Field, A. (2007), *Discovering Statistics Using SPSS*, Sage, London

Fullan Michael (2002), The Role of Leadership in the Promotion of Knowledge Management in Schools, Ontario Institute for Studies in Education University of Toronto, OECD Conference, March 18-19.

Goel, A.K., Sharma, G.R., & Rastogi, R. (2010). Knowledge management implementation in NTPC: An Indian PSU, *Management Decision*, Vol 48, No.3, pp 383–395

Hargreaves David H (1999), Knowledge Creation in School, *British Journal of Educational Studies*, Vol 47, No.2, pp.122–44

Hosmer, D.W. and Lemeshow, S. (2000), *Applied Logistic Regression*, 2nd Ed, John Wiley & Sons, New York, NY.

Kai Wing Chu (2016), Beginning a journey of knowledge management in a secondary school, *Journal of Knowledge Management*, Vol. 20 No. 2, pp.364-385

Kuo, Y. F. (2003), A study on service quality of virtual community. *Total Quality Management & Business Excellence*, Vol 14, No.4, pp 461-473.

Lee, Lu, Yang(2010), Process-based knowledge management system for schools: a case study in Taiwan , *The Turkish Online Journal of Educational Technology* ,Vol 9, No.4

McKenzie, J., & Truc, A., & Winkelen, C. (2001). Winning commitment for knowledge management initiatives, *Journal of Change Management*, Vol 2, No.2, pp 115-127.

Nonaka Ikujiro (1995), *The Knowledge Creating Company*. Harvard Business Review , July- August

Nonaka, I. and Takeuchi, H.(1995), *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, New York, NY

Offsey, S(1997). *Knowledge Management: Linking People to Knowledge for Bottom Line Results*. *Knowledge Management*, Vol. 1 Iss 2 , 113-122.

Rodriguez, L. L. R., & Pai, R. (2005). Preparation and validation of KM measurement instrument: an empirical study in educational and IT sectors. In S. Alhawamdeh & M. International Conference on Knowledge (Eds.), *Knowledge Management: nurturing culture, innovation and technology: proceedings of the 2005 International Conference on Knowledge Management*, North Carolina, USA, 27–28 October 2005 (pp. 582–593). Singapore ; Hackensack, N.J.: World Scientific.

Tahir Lokman Mohd, Ozay Mehmet, Sumintono Bambang, Matzain Izuddin(2013). *Creating Knowledge Practices in School: Exploring Teachers Knowledge Creation*. *International Journal of Humanities and Social Science*, Vol 3, No.1

Williams, R. (2003) Integrating distributed learning with just-in-context knowledge management, *Electronic Journal of e-Learning* , Vol 1, No .1, pp. 45-50.

“Reforms in Teacher Education”, 2009, [http://www.teindia.nic.in/reforming\\_TE.aspx](http://www.teindia.nic.in/reforming_TE.aspx), accessed on 10/11/2016

“Department of School Education and literacy”. <http://mhrd.gov.in/school-education>, Accessed on 10/11/2016