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A Study of Data Driven Decision Making for School Administrators

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Abstract



Data Driven Decision Making (DDDM) is a tool of management. It has been used in business and industry since 2nd half of the 20th century. A report titled “A Nation at Risk” was published in USA to know about the malaise of education in 1970s. No Child Left Behind Act of 2001 was introduced data driven decision making, accountability, collaboration and autonomy in schools to improve school education.

This study of “Data Driven Decision Making for School Administrators” was carried out to know about the perceptions and practices of data driven decision making of the public sector secondary school administrators of district Gujrat. The researchers also endeavoured to know about the role of school administrators in problem solving, decision making, collaboration, accountability and autonomy which contribute to the overall improvement of a school. To know about it, a conceptual framework was developed and literature was reviewed. There were 271 schools in public sector at secondary level (boys and girls) in district Gujrat. The schools were randomly chosen and questionnaires were distributed and collected back. The data so collected was analyzed on SPSS-16 with the help of Likert type scale. The results show that the public sector school administrators were aware about and used data to ascertain problem, make SMART objectives, make options, select the best one and take decision to achieve their objectives. The results illustrated that public sector school administrators were unable to provide technology, make databases, use spread sheets to analyze and draw conclusions on scientific basis. They helped to change the attitude of faculty toward data use in schools but unable to change their beliefs as it is a long process. The results of the study reveal that the public sector secondary school administrators use data to make policy and strategy of the school but incoherently as the administrators are unable to change attitude and beliefs of the faculty toward use of data as a tool of management. The results of qualitative analysis of interviews show that their concept of improvement is very limited.

Keywords: Data Driven Decision Making, School Administrators, Administrative Tasks

Introduction

School development planning is the work of every school. It is a systematic and collaborative activity. It provides continuous improvement in strategy, monitoring and planning for further development. It is rooted in the commitment of principals and teachers (Ireland, 1999). The principals and teachers are influenced by the social environment and education policy of a country. These factors are called interventions. The school development is influenced by internal and external interventions. The external interventions (Acts) are not of much use so internal interventions (Team decisions) are applied. Interventions ideally should be based on some data and decision may be taken on the basis of this relevant data. Data-driven decision making (DDDM) is a pedagogical way of life in school culture (Kowalski, Lasley II, & Mahoney, 2008). Interventions and DDDM are two tools which inspire for innovative solutions of the problems.

Decision making involves choosing among alternatives whereas data driven decision making involves using quantitative or qualitative information sources to inform choices (Picciano, 2006). Though the data driven decision making (DDDM) process has been promoted as a valuable management tool in education for more than fifty years but the Act of No Child Left Behind (NCLB) has been primarily responsible for making it a core topic in education profession (Kowalski et al., 2008). DDDM process has been fine-tuned by different methods of some well-known researchers

Adair (2007) enlists a 5-steps Bridge Model, W5H Model and Brainstorming for data driven decision making.

Statement of the problem

World is in a process of change in all known fields of human endeavour. Education is no exception. The countries which are going along the requirements of era are making their imprints on the world scenario.

Data driven decision making is a new and an innovative field to improve school culture. Keeping in view this problem, the present study has been designed to know about the perceptions and practices of DDDM of administrators of public sector secondary schools in district Gujarat.

Significance of the study

This study may help to inform the school administrators about their decision making approaches and guide them to make use of DDDM in their administrative tasks. This study may provide acumen to implement data driven decision making in planning and management at schools.

Research objectives

This study intends to achieve following objectives:

1. To ascertain the strategies of public sector secondary school administrators about Data Driven Decision Making.
2. To ascertain the role of Data Driven initiatives by public sector secondary school administrators for school improvement.

Delimitation

All Public sector secondary school administrators (male and female) of district Gujrat.

Conceptual framework of DDDM

A conceptual framework has been prepared to understand different concepts and processes of DDDM and their relationship. Here are two major strata of this concept i.e. problem solving and decision making. Problem solving is further divided into two steps i.e. problem and data.

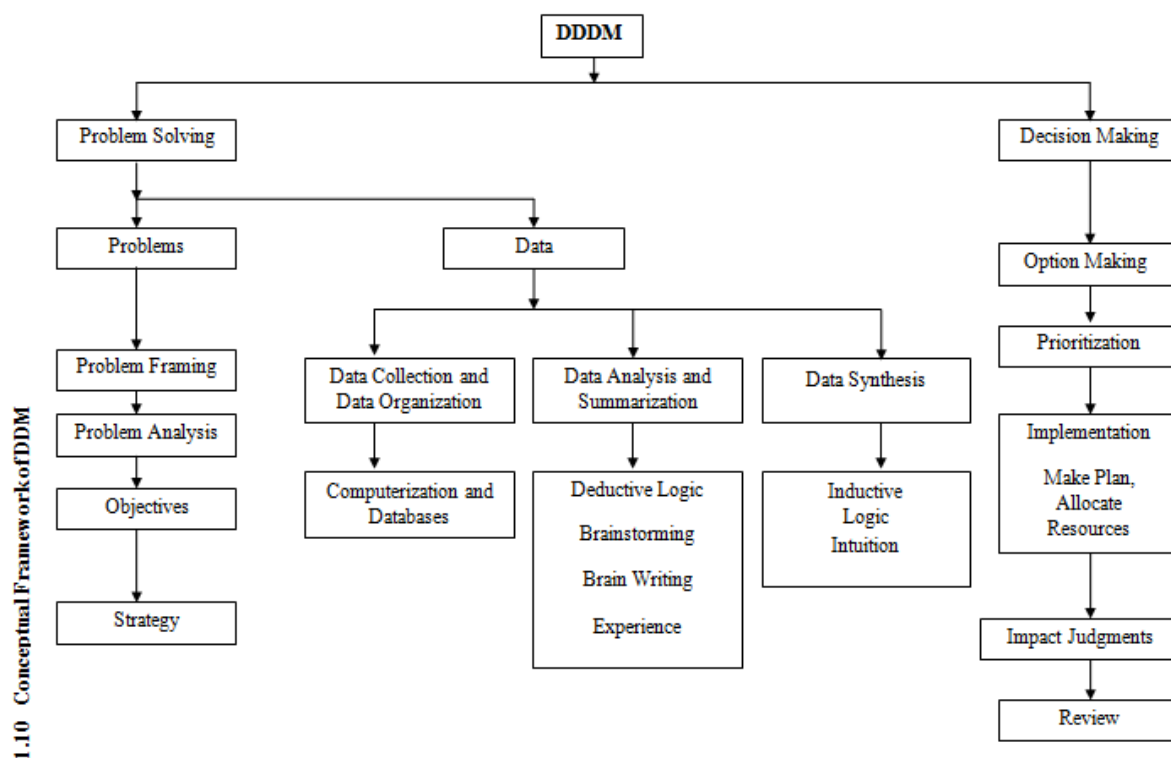


Fig.2: Conceptual Framework of DDDM

Review of related literature

School improvement through better knowledge, techniques and management. This improvement is facilitated by a diagnostic tool i.e. data driven decision making.

Introduction to data driven decision making

Rogers (2011) refers authorities and explains that DDDM is not a new concept. It is traced back in

1950s, now it has become a process. It is a diagnostic tool that requires school leaders to be data and data analysis literate to meet the challenges of 21st century.

Crawford (2010) has quoted Streifer (2002, p.8) and Luo & Childress (2009) who explain that DDDM in education is about the selecting, collecting, and analyzing relevant data for the purpose of understanding school challenges, devising alternatives for these challenges, estimating outcomes, and choosing preferred alternatives.

Data driven decision making is aimed at to achieve goals/objectives. It is based on W5H. It thinks into action (Thomas, 2004).

Foundational data for DDDM in school

White (2008, p.17) explains that data-driven decision making is a mechanism for understanding strengths and weaknesses within school. She refers Bernhardt (1998) who identifies four domains of information that should be collected and analyzed in order to create a complete assessment of the school. These four domains are student demographics, perceptions, school processes and student learning. White discusses DDDM tools such as technical tools, idea tools and practice tools which provide teachers access to data. This data should be communicated through dialogue which results in collaborative planning and grooming up in problem solving. She refers to relationship between data and improvement called data mining. Data mining is based on three stages such as: Stage 1 deals with data collection, Stage 2 deals with change of data into information and Stage 3 deals to analyze individual learning profile, work with parents and students to set learning goals and progress is monitored.

Introduce distributive leadership and enhance organizational learning.

DDDM: An applied thinking

Adair (2007) contends that data driven decision making is a sort of applied thinking. It is an instrument in the hand of administrator to achieve school goals. It is composed of three components which are as follows:

Creative thinking

Decision making

Problem solving

DDDM in Education

Marsh et al., (2006) contend that DDDM in education is modelled on successful practices from industry and manufacturing such as total quality management, organization learning or research and continuous improvement. It is dated back to 1970s. NCLB act increased its use in education.

Kowalski and Lasley II (2009) discuss evidence based practice in professions. The authors narrate that in traditional science, knowledge is constructed through model building and testing. In 1950s and 1960s the scholars started using pure rationality in social sciences. After it the scholars started using evidences. Evidence is something providing proof. It is information that verifies effective practice. Evidences are building blocks for constructing and refining knowledge. These evidences are used to make decisions in relation to problem solving. The value of evidence is determined by three criteria: Relevance, sufficiency and veracity (free of error).

Luo (2008) complains that administrators use D3M in instructional and organization's operational leadership and do not use in school vision and collaboration.

Kretzer (2012) discusses that data is used in education for operational, instructional and programmatic decision making. It improves school by introducing changes in leadership, school culture, instructional practices and professional learning.

Importance of DDDM in school management

Kowalski and Lasley II (2009) say that administrators and teachers should view DDDM as a professional responsibility and a process of solving adaptive problems. This disposition will facilitate them to define problem, identify needed information, learn to create, evaluate and apply evidence, integrate various forms of evidences, value experimentation and risk, and evaluate the effectiveness of their decision.

Rogers (2011) refers many educational professional associations and agencies such as the American Association of School Administrators (AASA), the Educational Commission of the States (ECS), the National School Board Association (NSBA), the National Staff Development Council (NSDC), and the North Central Regional Educational Laboratory (NCREL) have made data-driven decision-making a priority.

Design of the Study

In this study mix method approach has been used. Questionnaire was prepared to know about the perceptions and practices of the public sector school administrators about DDDM. This questionnaire was used to collect data on five point Likert type scale varying from Always to Never. To confirm these data interviews of a focal group of school administrators were also conducted.

Population of the study

The population of the study was all administrators of Public sector secondary schools of district Gujrat. There were 265 public sector secondary schools as per record of School Education Department. There are three tehsils in district Gujrat.

Sample of the Study

The sample size of the population was taken according to the formula of Gay (2012). Sample percentage which is 62 % of the population (Gay, 2012, p-125). The researchers applied this percentage to all three tehsils to select the sample . districtGujrat. The researchers approached 85boys' school administrators and 80girls' school administrators.

Reliability of Research Instrument

The data was analyzed and Cronbach's Alpha test was applied. It calculated Cranach's alpha as 0.908.

Pilot testing of the Instrument:

For pilot testing the researchers sent the questionnaire to 24 public sector secondary school administrators. The researcher selected 12 male and 12 female administrators of public sector secondary schools. The researcher further selected 6 urban and 6 rural male and female schools administrators

Table No: 1

Ascertaining problems through data

Statement	Results	Always	Frequently	Sometimes	Rarely	Never	Mean
My school uses data to ascertain any problem in school	Frequency	33	103	21	6	2	
	%age	20	62	13	4	1	4

Table 1 shows that 62% administrators frequently use data to ascertain problems while 20% always use data to ascertain any problem in school, 13% use sometime, 4 % use rarely and 1% never use data for it. So a big chunk of administrators (82%) agree that data is used to get information about problems in schools. The mean value (4) shows that administrators frequently use data to ascertain problems in school.

Table No: 2

Use of data to solve problems

Statement	Results	Always	Frequently	Sometimes	Rarely	Never	Mean
My school uses data to solve problems related to school	Frequency	51	104	4	6		
	%age	31	63	2	4		4.2

Table 2 reveals that 63% administrators frequently use data to solve problems while 31% always use data to solve problems, 2 % use sometimes and 4% rarely use data. This table shows that 94% administrators always/frequently use data to solve their administrative problems. The mean value (4.2) shows that data is always used in schools to solve school problems.

Table No: 3

Use of accurate data

Statement	Results	Always	Frequently	Sometimes	Rarely	Never	Mean
My school uses accurate data about any problem	Frequency	39	91	24	8	3	
	%age	24	55	14	5	2	3.9

Table 3 reflects that 55% administrators frequently use accurate data while 24% always use accurate data, 14% sometimes, 5 % rarely and 2 % never use accurate data. So 79% always/frequently use accurate data to solve school's problems. The mean value (3.9) also supports the statement.

Table No: 4

Use of relevant data

Statement	Results	Always	Frequently	Sometimes	Rarely	Never	Mean
My school uses relevant data about any problem	Frequency	38	99	20	6	2	
	%age	23	60	12	4	1	4

Table 4 presents that 60% administrators frequently use relevant data while 23% always use relevant data, 12 % sometimes, 4% rarely and 1 % never use relevant data. So 83% always/frequently use relevant data to solve school's problems. The mean value (4) shows that relevant data is used to solve school's problems.

Table No: 5

Use of interpretable data

Statement	Results	Always	Frequently	Sometimes	Rarely	Never	Mean
My school uses interpretable data about any problem	Frequency	25	92	34	11	3	
	%age	15	56	20	7	2	3.7

Table 5 exhibits that 56% administrators frequently use interpretable data while only 15% always use interpretable data, 20% sometimes, 7% rarely and 2% never use interpretable data to solve school problems. This shows that 71% use it always/frequently. The mean value (3.7) shows that administrators frequently use interpretable data to ascertain and solve school problems.

Table No: 6

Data to develop SMART objectives.

Statement	Results	Always	Frequently	Sometimes	Rarely	Never	Mean
My school develops SMART objectives based on data	Frequency	30	92	33	7	3	
	%age	18	56	20	4	2	3.8

Table 6 displays that 56% administrators frequently use data to develop SMART objectives while 18% always use data to develop SMART objectives, 20% sometimes, 4% rarely and 2% never use data to develop SMART objectives. The mean value (3.8) reveals that it supports the statement.

Table No: 7

Data to determine alternative solutions

Statement	Results	Always	Frequently	Sometimes	Rarely	Never	Mean
My school uses data to determine alternative solutions of a problem	Frequency	39	99	19	6	2	
	%age	24	60	11	4	1	4

Table 7 expresses that 60% administrators frequently data to determine alternative solutions while 24% always use data to determine alternative solutions of a problem, 11% sometimes, 4% rarely and 1% never use data to determine alternative solutions. The data shows that 84% administrators develop alternative solutions on the basis of data. The mean value (4) shows that it is a prevalent practice of administrators in their schools.

Qualitative analysis of interviews' data:

It deals with analysis of data collected from the public sector secondary school administrators through interviews. The interview template carries five major questions and 23 sub/probe questions. To triangulate the data, the same school administrators were interviewed who had already provided data through questionnaires.

Responses of Q-1:

All the respondents told that they keep data of students in their personal diaries rather in computer. They keep building, furniture and teachers data in registers. The respondents (1 and 6) explained that rooms, furniture and teachers are sufficient. The respondents told that rooms and furniture are sufficient while they adjust teachers' periods according to the strength. Some respondents explained that they adjust rooms, furniture and teachers as strength increases. Few respondents told that they send requisition for required things to the higher authority but response is always lukewarm.

Responses of Q-2:

All the public sector secondary school administrators responded that they use data to make policy to improve marks in board's exams. They keep record of the marks of the students and display highest marks achieved in board's exams in administrator's room. All respondents told that they make policy to improve quality and skills of the students. They make policy by having discussion with the teachers. They told that they are obliged to do all this as our increments and promotions are stringed with it.

Findings

Findings were as follow:

1. Use of Data:

The results of analysis revealed that data was frequently used by public sector school administrators to find out problems in schools.

The results of analysis shows that school administrators depend upon data to solve school problems.

The results of analysis confided that school administrators used accurate (fresh, up to date) data to solve any problem faced by school.

The results of analysis divulged that school administrators used relevant to problem data to solve any problem in school.

The results of analysis showed that school administrators frequently used interpretable (report form) data to solve school problems.

The results of analysis reflected that school administrators frequently used data to develop SMART objectives concerning to any problem in school.

The results of analysis indicated that data was frequently used to determine alternative solutions of a problem.

The results of analysis depicted that this was the favourite activity of school administrators. It showed that school administrators frequently used data to take any decision.

The results of analysis illustrated that school administrators were used to do all relevant things to promote use of data in school

The results of analysis presented that the school administrators encouraged faculty to have open minded and honest discussion on the data to solve a problem.

The results of analysis unveiled that data was helpful to make good decisions to tackle the problems in school

The results of analysis unwrapped that it was not favourable with the school administrators to access databases to explore data.

The results of analysis expressed that there were problems to maintain data bases at school because of reasons.

The results of analysis witnessed that school neither used to make spread sheet nor used it in DDDM.

The results of analysis signified that it was the most unfavourable topic in school.

Conclusions

The results show that the public sector secondary school administrators use data to ascertain and solve a problem. They use data, accurate data, relevant data and interpretable data for problem solving.

The results of interviews also support that the public sector secondary school administrators keep record of data in their personal diaries and use it as need arises.

The results show that the public sector secondary school administrators promote objective based management. They develop SMART objectives, make and discuss options which resultantly improve quality of management.

So these results are in line with the previous study which mentions that every school plans to develop academic achievement system, support system, human system and fiscal resource system based on DDDM (Education, 2012).

Objective 2: To ascertain the role of DD initiatives by public sector secondary school administrators for school improvement:

The results confide that the public sector secondary school administrators use data to generate school vision, vision statement and design strategy to achieve objectives. It changes attitude toward data use in problem solving.

The results reflect that the public sector school administrators use data to determine issues of school efficiency ascertain need of professional development of the faculty and make plans for their professional development.

The results express that the public sector school administrators promote data driven environment to identify areas of improvement of students and school. They involve faculty to make, implement and monitor these improvement plans.

The results unwrap that the public sector secondary school administrators outreach to community to collect resources.

The results of qualitative analysis support that public sector secondary school administrators make policy to improve quality of instructions. They also make training need analysis of the faculty for their professional development. The interviewees acknowledged that they hold meetings to improve general operation of the schools. All public sector secondary schools constitute "school council" which is compulsory but the school administrators manage interference by its members.

All these results are supported by the following previous studies. The Ontario Principals' Council (OPC) contends that a leader should get start on using data to inform, shape, revise and assess their school improvement plans. Santoyo (2010) is very clear about DDDM. He explains leader's role to train teachers and change the environment to promote analysis of the school problems.

Recommendations

The following recommendations are framed keeping in view findings and conclusions.

The results of the study exhibit that public sector secondary school administrators are well aware about data although they use it verbally/ or from personal diaries as they are shy of technology. They least use technology, databases, spread sheets to analyze data and draw conclusions on scientific basis. So a rigorous training of the public sector secondary school administrators is needed in problem solving, decision making, computer skills and its uses in DDDM at school level. It may be arranged by provincial education authority.

The results of the study reveal that the public sector secondary school administrators use data to make policy and strategy of the school but incoherently as the administrators are unable to change attitude and beliefs of the faculty toward use of data as a tool of management. The results of qualitative analysis of interviews show that their concept of improvement is very limited. It shows that a regular training of the administrators is needed in data practices in school management which would subsequently change their beliefs about use value of data.

References

- Adair, J. (2007). *Decision making and problem solving strategies*. Philadelphia, USA: Koganpage.
- Bernhardt, V.C. (1998). *Data analysis for comprehensive school wide improvement*. New York: USA: Eye on education
- Crawford, R.J. (2010). *DDDM and New Zealand Secondary School Principal*. Newzealand: Unitec Institute of Technology.
- Gay, L.R. (2012). *Educational Research, Competencies for Analysis and Application*.(5th Edition). Islamabad, Pakistan: N.B.F.
- Ireland, GOI. (1999). *School Development Planning*. Ireland: Department of Education and Science.
- Kowalski, T.J., Lasley II, T.J., & Mahoney, J.W. (2008).*DDDM and school leadership*. USA: Pearson.
- Kowalski, T.J.,& Lasley II, T.J.(2009). *A hand book of DDDM in education* USA: Routledge.
- Kretzer, S.A.(2012).*Data-Focused Decision Making: One School's Journey*. USA: Polytechnic institute and state university.
- Luo, M. (2008). Structural equation modeling for High School Principal's DDDM. *Educational Administration Quarterly*,44(5), 603 – 634
- Luo, M., & Childress, M. (2009).*DDDM and the validation of an instrument to measure principals practices*.
- Marsh, J. A., Pane, J.F., & Hamilton, L.S. (2006). *Making sense of DDDM in education*. USA: RAND
- Picciano, A.G. (2006). *DDDM for effective school leaders*. Columbus, USA: prentice Hall.
- Rogers, K.K. (2011). *Rural school principal's perceived use of data in DDDM and the impact on student achievement*. USA: University of north Texas
- Santoyo, P. (2010). *Driven by Data: A Practical Guide to Improve Institutions*. San Francisco, USA: John Wiley & sons Inc.
- Thomas, N. (2004). *The John Adair hand book of management and leadership*.UK : Thorogood.
- White, V.C. (2008). *Relationship among principals' beliefs about DDDM*.USA: university of Florida.