

## Student Data Management and School Decision Making in Kenya

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### **Abstract**

*Student data management in schools seems to be ignored by educational planners in developing countries and needs to be addressed if effective planning is to be attained and the goal of quality education realized. Studies have revealed that educators fear data, and have poor record keeping cultures in institutions of learning which may account greatly to the inability of school principals to plan and administer schools without embarrassment from time to time. There is evidence from existing literature that better use of data is essential for improving student success. It is for this reason that this study attempted to investigate the influence of student data management on planning in secondary schools. The objective of the study was to identify the types of student data required for planning in schools. The study used descriptive survey design and was done in Kisii Central Sub-county, Kenya. The study focused on all the principals, teachers, and clerks in the 77 registered secondary schools in the area whose population was 706. Stratified random sampling, simple random sampling, and purposive sampling were used to obtain a representative sample of 243 respondents. The sample size for each target population was as follows: 37 Principals, 37 Guidance and Counseling teachers, 136 Class teachers, 37 Clerks and 3 Education officials. Data were collected using questionnaires and interviews. Reliability of the instruments was tested using test-retest method while expert judgments were used to determine their validity. Data were analyzed using descriptive statistics with the aid of Statistical Package for Social Sciences (SPSS). Data were presented using frequency tables, and percentages. The findings from the study revealed that schools principals and teachers were not fully conversant with their student data requirement for effective planning. The study concluded that student data management in schools was ineffective, and this affected planning. The study recommended that school principals and teachers should build strong data cultures and ensure comprehensive student data is collected, analyzed and used continuously throughout the school year to guide decision making. Student data management should be done using appropriate techniques by trained data teams, and problems affecting data management solved.*

**Key Words: Student Data, Data Management, Data Analysis, Decision Making, Planning**

### **Background to the Study**

Schools aim at providing quality education. For this goal to be realized there is need for accurate data to be collected, analyzed, stored, and utilized in decision making. This is so because high schools are complex organizations often serving larger numbers of students and have a variety of departments, academic programmes, and co-curricular activities all of which must be administered effectively using data. However, the relevance of statistical data in school management has been greatly undermined especially in developing countries and in particular Africa (Durosaro, 2004). The underutilization of data in school management has been influenced by the poor record keeping

culture in the institutions of learning. Governments heavily invest in education but spend little to monitor and evaluate the investments made. Schools on the other hand make little effort to monitor and evaluate their activities and thus, they can no longer operate with minimum data about their environment if they are to closely monitor the inputs, process, and output in the interest of institutional development and survival (UNESCO, 2010). Further, with increasing enrolments without proportionate increases in government funding, the schools have to ensure effective management of the available meager resources which can only be possible with availability of data.

The growing emphasis on educational standards, equity, continuous improvement and accountability is a major challenge to secondary schools since they must prepare all students to succeed in academic and co-curricular activities (Ross, 2010). Majority of the High schools lack information system capacity necessary for strategically using data to identify achievement gaps, address equity issues, determine the effectiveness of specific programmes and courses, and target institutional improvement (Lachat and Williams, 1996). Love (2000) supports this by noting that schools are ill equipped when it comes to using data to address problems, target improvement, and monitor progress. He further states that schools poses limited capacity to integrate and manipulate data in meaningful ways. Data exists in different forms and places and there is complete lack of correlational data in secondary schools. Cromey (2000) on the other hand asserts that educators lack formal training on data analysis and use and as such lack deep understanding on how to use data for decision making and to support improvement. He also notes that data are not analyzed to examine patterns in student data due to the believe that they need advanced skills to analyze and interpret data.

Quality in education can be assessed in terms of facilities, inputs, finances, as well as output in examinations or test scores of students, and is enhanced by efficient management and prudent utilization of resources (MoE, 2007). Therefore, quality education should shift from merely passing examinations to encompass the discovery of talents, development of analytical, cognitive and creative potentials; and is also determined by enhanced critical imagination. Maintaining quality standards at all stages of education should be one of the highest priorities of any institution of learning and this calls for planning using comprehensive, accurate and reliable student data in secondary schools to realize the set goals and objectives. Among the major areas where data can be used in schools to guide decision making include: allocation of resources, distilling important trends, improving performance in examinations, instilling discipline in students, guiding instruction, discovery and nurturing of talent, comparing schools with others, reporting to higher authorities, communicating with parents and other stakeholders, solving individual and group problems, assisting needy students, career guidance, minimizing wastage of students, and making projections (UNESCO, 2010).

A school plan should contain information about the school such as the number of students by gender, age, enrolment, number of streams, dropout rates and other important features as stipulated in the School Management Guide (SMG, 1999). The guide further states that good office management and administration for the efficient running of the school requires records and documents. An educational planner requires data to enable him/her to determine his/her area of operation) and must possess specific skills to enable them perform vital functions for effective planning and implementation of educational plans. Such skills include: data collection, analysis, interpretation and utilization. Thus, educational planners should be able to work with data with respect to the dynamism of the education system at all levels (Mutua and Namaswa, 1992).

Good performing schools possess an appropriate data management system (Durasaro, 2004). Schools which excel in examinations and co-curricular activities have been found to have an effective Educational Management Information System (EMIS) while those with inadequate data management practices perform dismally though other factors may be responsible for the poor performance (Hansen, 2006). According to the Kenya Government Sessional Paper No 1 of 2005 on Policy Framework for Education Training and Research, there are delays in dissemination of data from schools; lack of capacity to handle data at the national office; reporting of contradicting figures from schools and the sub-county offices. There is also lack of adequate coordination within all levels. It further suggests that the government should build institutional human capacity to facilitate the use of Information Communication Technology (ICT) in education, training, and institutional management in order to improve efficiency of educational administration and management at every level starting at the classroom, through school to the sector as a whole (MoE, 2005).

The Government of Kenya through the MoE developed a policy on establishment of an EMIS in schools in 2005 but it has not been fully implemented in all schools. As a result, there is no uniformity in data management in schools leading to a tendency by schools to only keep those variables required by the MoE for reporting purposes. The MoE only requires few variables with regard to students from the schools which include: age, sex, and form. The Teachers Service Commission (TSC) also collects information from secondary schools using a tool referred to as 'FORM A (S) SCHOOL DATA RETURNS'. The variables captured include data on School Identification, School Characteristics, Summary Data, School Enrolment, Number of Streams, Staff Establishment and Management, and Examination Performance. This indicates that even the MoE does not spell out the most appropriate Education Management Information System (EMIS) to be adopted and used by schools as is the case in developed countries. Hence, school administrators may be tempted to relax in creating a student data base and adopt ad hoc decision making.

The problems experienced in secondary schools in Kenya with regard to student data management include: lack of capacity to analyze data, lack of a standard set of data to collect from schools, disparities in resource allocation to different types of school, poor coordination between different levels of education with regard to management of student data, lack of a statewide EIS linking all schools, and inability to recognize data as an important resource to use in guiding decision making at all levels (MoE, 2007). It is evident that data management is the backbone of educational planning and must be addressed in schools to realize the goal of EFA. There has been a lot of concern from different stakeholders as to whether schools in the district are effectively managed. Cases of student unrest have been on the increase in the past five years and, the schools perform dismally in national examinations as well as in co-curricular activities. This implies that instruction, talent identification and nurturing as well as career guidance are not adequately done with the aid of comprehensive student data. Therefore, there is need to establish sound data management practices in the schools to guide decision making to enhance planning. Data has been proved to be a very important tool for school improvement and the extent to which data is used in planning has a corresponding effect on school improvement. It is for the above reasons that this study attempted to investigate the influence of student data management on decision making with special reference to secondary schools.

### **Statement of the Problem**

The use of data in educational planning remains an elusive concept and skill, yet the path to using data in making decisions is not out of reach or difficult to implement (Bernhardt,1998). In order to create high schools that are responsive to diversity, connected to the realities of today's world and driven by focus on success for all students, more powerful and systematic change strategies are needed, and new capacities must be developed such as systematic and strategic use of data to support student success and continuous school improvement (Holcomb,1999). The effective management of acquisition and supply of relevant information for educational planning and informed decision making should be a priority in schools under guidance from the MoE to address the twin mandates of equity and accountability.

Bernhardt (1998) made an impassioned case for using data as a lever for creating more effective schools for students and emphasized that "what separates successful schools from those that will not be successful in school reforms is the use of one, often neglected, essential element-"data". It has been established through studies in developed countries that without using data in decision making, school principals cannot perform effective planning in their institutions and will not achieve their goals and objectives (Gurr, 2000, Gentry, 2005). Schools in developing countries like Kenya should also put data at their center of planning to achieve the goal of quality education for all. Despite the knowledge of how useful data is for effective planning and decision making, schools in developing countries and in particular Africa have historically lagged behind non-educational organizations in implementation and utilization of Management Information Systems (Telem, 1996).

Thus, student data management in schools in developing countries has been undermined and must be addressed. Without data, schools administrators and teachers are unlikely to identify and solve the problems that need attention, identify appropriate interventions to solve these problems or know how they are progressive toward achievement of their goals (Creighton, 2001).

Since the success or failure of an educational institution is gauged using the performance of students there is need for schools to properly handle student affairs using an appropriate Information Management system. The subject of data utilization for sound decision making has not been given the attention it deserves, and use of EMIS is not available in all schools across the country (MoE, 2005). Besides, studies have indicated that the record keeping culture in schools is waning. Thus, there is all evidence that data management in secondary schools has not been embraced meaning that no effective planning goes on in the schools. Although schools keep numerous records, this study focused on student data because student data management is crucial in overall school improvement. It is a fact that upon admission of new students to schools, one of the requirements is that the students fill different types of forms with information about their health, talents, previous performance, career prospects, social economic background, age, sex, and district of residence among others. All the information gathered from the students is of paramount importance in school management. The question arising is whether the data gathered are comprehensive, analyzed, presented, stored safely, and used to guide sound decision making at the school level. The idea is, if all the data gathered is effectively managed, schools will make sound decisions based on the available data to improve performance in examinations, co-curricular activities, instilling of discipline, proper resource allocation, and talent nurturing. The information will also be used for reporting to higher authorities and researchers in the field of education will find it handy.

The increase in the number of institutions experiencing management problems and cases of student riots in the sub-county pose the question whether school administrators do understand that

ineffective use of data for planning as well as in their decision making on a regular basis has an effect on their management. It thus became necessary to carry out a study on the influence of student data management on planning in secondary schools in Kisii Central Sub- County.

### Objective

Objective of the study was to:

Determine whether principals and teachers were aware of the types of student data required for planning in secondary schools.

### Methodology

The study used descriptive survey design. This design is useful in investigating the current status and nature of phenomena. The study was carried out in Kisii Central sub- county, Kenya. The sub-county covers an area of approximately 648.9 sq. km. It is densely populated with an estimated population of 552,197 as at 2009 and as such, majority of the secondary schools are day schools most of which are attached to primary schools. Majority of the schools are served by muddy roads as well as foot paths making them inaccessible during the rainy season. All the 77 secondary schools in the region were included in the study. Out of the 77 secondary schools in the area 12 were county schools 60 were sub-county day; and 5 were private. As indicated, Kisii Central sub-county has 77 registered secondary schools. All schools in the region were included in the study. The school principals, class teachers, teachers of guidance and counseling and clerks in all the schools, the sub- county Education Officer the Quality Assurance Officer and Divisional Education Officers formed the study population which was 706 persons. Since it could not be possible to cover all the schools, sampling was done. Stratified random sampling was used to select schools to be included in the sample. Stratification was done in terms of category of school (county, sub-county and private). Simple random sampling was used in each stratum to select schools using the respective proportions. Twelve county , twenty sub- county and, five private schools formed the sample which was representative since it was 30% or more of each category, but for small populations, a saturated sample was used.. Purposive sampling was used to select school principals, class teachers, and other education officials. This is because the subjects are involved in administrative duties in their respective offices and were hence deemed to be information rich and would give reliable responses in relation to the study (Kombo and Tromp, 2004). The sample size was as follows: 37 principals, 37 guidance and counseling teachers, 37 clerks, 136 class teachers, and 3 education officials giving a total of 240 respondents.

The sampling frame is as shown in tables 1.1 and 1.2.

**Table 1.1: The sampling frame for schools**

Type of school	Population	Sample	%
County	12	12	100
Sub-county	60	20	33
Private	5	5	100
Total	77	37	48

**Table 1.2: Sampling frame for respondents**

<b>Respondent</b>	<b>Population</b>	<b>Sample</b>	<b>%</b>
<b>Principals</b>	77	37	48
<b>Class teachers</b>	472	136	29
<b>Guidance and counseling teachers</b>	77	37	48
<b>Clerks</b>	77	37	48
<b>Education Officials</b>	3	3	100
<b>Total</b>	<b>706</b>	<b>240</b>	<b>34</b>

To collect data, the study used interviews, questionnaires, observation schedules, and content analysis. Two questionnaires were used to collect data from schools. The first one was administered to the school principals, and class teachers, while the second one was for the guidance and counseling teachers. The use of questionnaires was particularly relevant because they provided room for anonymity which respondents required owing to the secrecy attached to giving information about their institutions. This was believed to have increased their level of objectivity. All the respondents were requested to fill the questionnaires with their independent responses which were compared to ascertain the consistency of the data collected. The items in the questionnaires were both open ended as well as closed. Interviews were conducted in the schools at the time when questionnaires were being collected to save time and later on at the MoE offices in the area. The interviewees included 37 principals, 37 guidance and counseling teachers, 37 class teachers, 37 clerks and the education officers. The interviews were semi-structured in nature. An interview guide consisting of both open ended and closed questions was used to gather in-depth information relevant to the study (Mugenda and Mugenda, 1999). Further, a checklist was used to collect observational data from schools that were visited; the researcher and research assistants visited the offices and made observations regarding data management practices in the sampled schools. The issues which were observed were guided by a list of items in an observation checklist which enabled the researcher and the research assistants to remain focused on the major areas of study.

Pre-testing was carried out in one school which was not included in the sample. This helped in obtaining various insights into problems that were not predictable prior to the study. It also helped in establishing the reliability and validity of research operations. Before going to the field, validity of the instruments was done. The two research supervisors and other experienced researchers in the department of Educational Planning evaluated the items contained in the instruments to determine their validity. Reliability of the instruments was tested using the test-retest method. During the pre-test stage, the questionnaires were administered twice to the same group of individuals after two weeks to compare the responses if they were correlated. The reliability coefficient was computed at 95% level of significance. A correlation coefficient of 0.8 or more shows a very high relationship. A correlation coefficient of +0.9 was obtained for the questionnaire, hence, it was deemed reliable.

Data collected using the questionnaires was coded. The coded data were those of closed end items. Responses from the open ended questions were recorded as reported since most of these questions tended to seek opinions and recommendation from respondents.

## Findings

### Types of student data required by schools for planning

The first objective was to identify the types of student data required by schools for planning. The question to be answered was whether school administrators and teachers were aware of the different types of student data they required for planning. Many aspects of student affairs can be captured and used for planning since each has a role to play in improving the standards in the school. A list of 12 items advocated by Lachat (2001), were used. It was assumed that school principals and teacher were aware of all the data they required for effective planning. The respondents were required to tick the types of, data from the given list which they deemed very useful for planning in their school. The findings are as shown on table 1.3.

**Table 1.3 Types of student data required by principals for planning**

Student data	Frequency N=37	Percentage
Age	37	100
Gender	37	100
Date of admission	37	100
Talent	15	40
Performance	37	100
Family background	37	100
Disabilities	3	8
Personal achievements	16	43
Health	6	16
Distance from` home to school	0	0
Mode of transport to school	0	0
Career Prospects	0	0

The results from the findings indicated that no single school principal was found to be aware of all the 12 items required for planning. All school principals in the sample responded that they required only five variables with regard to student data for planning which were: age; gender; date of admission; performance; and family background. It also came out clearly that there were three items which were not regarded as useful for planning namely: distance from home to school; mode of transport to school; and career prospects. The implication here is that, school principals were aware of and felt that they required only 42% of the information with regard to personal student data for planning purpose. Different types of data inform different types of decisions. Data for organizational, programmatic and instruction decisions vary because the decision making processes and the change agents that use data differ. Various data sources uniquely contribute to creating a comprehensive and detailed picture of student progress (Earl and Kartz, 2003). Responses from interviews concerning the reasons for not regarding other variables of student data as useful for planning are as shown in table 1.4.

**Table 1.4 Reasons for not regarding other types of student data for planning as revealed from the interviewed deputy principals and class teachers**

Reason	Frequency	
		%
Reluctance in collection of data on all variables	74	100
Lack of awareness on the importance of some variables for planning	52	70
Overemphasis on data required for vertical reporting and that on performance	74	100
Lack of a policy from the MoE to guide principals on the importance of data in school improvement and planning	39	53
Inadequate time for data collection	24	31

It was revealed that despite the fact that administrators understand the importance of using several types of student data to plan, all of them were reluctant in the collection of the required data. They also seemed unaware of which variables to collect, and a lot of emphasis was put on the data required for reporting purposes to the county and national level. From the findings, 53% reported that there was no policy from the MoE governing the types of student data schools require for planning and sound decision making. The study thus found out that school principals and teachers had not effectively embraced the use of data in school management. The findings unearthed the way data management has not been given the importance it deserves. The findings clearly indicate that the school principals plan without data on some student issues and this might resort into problems in the schools from time to time.

### **Student administrative data required by schools for planning**

The study also considered a number of important administrative student records which are crucial for the management of schools. A set of 10 items were chosen which included: enrolment, performance per grade per year, subject combinations, career prospects, repetitions, promotions, drop-outs, transfers, discipline records, and student meetings (UNESCO, 2010). The study sought to find out whether school principals and class teachers were aware of the types of student data they require for administrative purposes during their planning. From the existing body of literature, apart from student personal affairs, some data was useful for administrative purposes in schools. For effective planning and improved performance, such data is crucial.

The findings are as presented in table 1.5. In this table, the findings indicate that 100% of the class teachers regarded three variables for their administrative purposes namely: enrolment per class per year and gender-wise, discipline, and performance. Types of student data which were not regarded at all but which are of paramount importance include: career prospects, repetitions, promotions, and transfers. The findings also revealed that the respondents feared responding positively to their need for data on repetitions because of the existing government policy which dictates that students are not supposed to repeat a grade.

**Table 1.5 Types of student administrative data required for planning in schools as reported by class teachers**

Item	Frequency N=37	Percentage
Enrolment	37	100%
Subject combinations	12	31%
Career prospects	0	0%
Repetitions	0	0%
Promotions	0	0%
Drop-outs	6	15%
Transfers	0	0%
Discipline	37	100%
Performance	37	100%

The challenge of educating and caring for a diverse student body in secondary schools calls for a concerted effort by school administrators to base their decisions on sound information. The capacity to access and effectively use many types of data is critical in planning and a continuous culture of data use is necessary in schools (Lachat, 2001). The types of student data required for planning in secondary schools were grouped into two categories namely personal student data and administrative student data. The personal student data included age, gender, talent, performance, career prospects, health, disabilities, family background, date of admission, personal achievements in co-curricular activities, distance from home to school, and mode of transport to school. The administrative student data on the other hand included enrolment per class per year, repetitions, promotions, drop-outs, subject combinations, and transfers in and out, discipline and participation in co-curricular activities.

In general, the study findings revealed that both principals and teachers lacked an adequate set of student data for their use to aid in effective planning. The implication given was that decisions made in the schools were not based on available data; hence their planning could only be described as ineffective. There was need for school administrators to create good data use practices by ensuring that data on all student variables are gathered and used for planning. In the school set up, different types of student data have a significant role to play in the planning and management of the physical and human resources in the institution. Student data can be used by teachers to: gauge student understanding, determine whether students are passing or failing; identify areas of improvement; form instructional strategies in various subjects to target student needs; plan units of instruction; create specific strategies for needy students; guide resource allocation and goal setting, distill important trends; identify and focus on the data elements most critical to targeting instructional needs; compare schools with others locally and nationally; tying instruction to standards; and to modify strategies in management at the school level. Data can also be used to empower and communicate with both parents and students and also to contribute to student success (Ross, 1990).

### Conclusions

The study revealed that all schools do require student data for planning. It however emerged that all the respondents felt that they required only five variables of student data for planning. They included: performance, enrolment, age, gender, date of admission and family background, leaving out other important variables like health, subject combination, career prospects, transfers, disabilities, personal achievements, repetitions, drop-outs, talent, and promotions. Although schools

collect the required data for their planning from students upon admission, the variables gathered differ from school to school with some schools keeping more variables than others. The findings revealed that school administrators were not fully aware of all the types of student data they require for planning. This scenario is as a result of inadequate coordination between schools and the ministry concerning the standard set of items to be kept and used for planning. The fact that there is inadequate data available in schools suggests that decisions made are not based on facts. Hence the planning process in majority of the schools must be wanting. It was therefore concluded that school principals and teachers were not adequately aware of the student data requirement for effective planning in their schools.

### **Recommendations**

On the strength of the foregoing conclusions, it was recommended that schools should build a foundation for data driven decision making. This can be attained by ensuring that student data is collected, analyzed, and stored using appropriate techniques on a regular basis under guidance from the principal and data teams. To assist schools in data management at school level it was also recommended that the Ministry of Education should come up with a policy to guide schools on how student data can be used to improve school planning.

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School management policies regarding learners with special needs were not comprehensive enough to cater for all students.

Collaboration among teachers to support learners with special needs falls below expectation. There is need to develop knowledge base on inclusive education, to meet learning needs of individual students. Not much research has been done in this area in Kenya, to effectively inform decision making at all levels of education. Theoretical framework The most cases, it is difficult, especially in learning environments with large classes, to provide students with a teacher who can design learning experiences to suit the learning needs of all learners. Schools now have more data than ever about their students. And, that should translate into making better decisions about curriculum and instruction. The trouble with realizing this optimal learning experience for students, it seems, is that educators need the time and direction to analyze this overabundance of data points. Advances in technology, standardized testing, student information systems, and instructional software have provided districts with an overload of information about learning trends, patterns, and student progress – many of which probably are never identified. Large amounts of Data on student achievement, school administration and digital learning environments are collected and analyzed to help teachers and principals identify the problems and understand the patterns. Research on data use has shown that teacher’s and leader’s data literacy and assessment literacy determines whether they can successfully use data to inform their decision-making. To illustrate how data analyses and analytics can improve student performance, the authors describe four examples. Agasisti, T., Bowers, A.J. (2017) Data Analytics and Decision-Making in Education: Towards the Educational Data Scientist as a Key Actor in Schools and Higher Education Institutions. In Johnes, G., Johnes, J., Agasisti, T., López-Torres, L. (Eds.) Management of secondary schools in Kenya is taking this approach with the aim of addressing the problem of rampant student’s unrests in secondary schools. The students are getting involved in school management through the student’s representative council as one of them becomes a member of the BOM. Scholars such as Okinda and Owuor (1995) appreciate the importance of student leaders and observe that they should be protected, guided and accorded privileges without vesting on them a lot of power. 5. Financial management in secondary schools in Kenya. Principals in secondary schools in Kenya are key players in implementing the curriculum and sustaining learning institutions. This enables students from humble backgrounds access basic education (Republic of Kenya, 2005) The funding in secondary school is done according to each individual school, its characteristics and enrolment. Schools managers consult in financial decision making in relation to the procurement procedures as laid down by the Public procurement and Disposal Act, Secondary schools are allowed to control and plan on how to utilize the huge amount of money which is delegated to schools.