Enhancing efficiency operation of the education management information system in ethnic minorities boarding secondary schools in the northern mountainous province in the context of the Industrial Revolution 4.0

Situation and Solutions

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The role of information in Education Management is more important with the aim of improving the effectiveness of management, especially in terms of income and provide information for process planning, policy formulation, monitoring and evaluation of educational activities. Through the survey, the author of the article has analyzed the situation of operation of education management information systems in ethnic minorities boarding secondary schools in the Northern mountainous provinces in the strengths, weaknesses and from that proposed 6 performance management solutions for education management information system in ethnic minorities boarding secondary schools in the context of the Industrial Revolution 4.0.

Keywords: Education management information; education management information systems; ethnic minorities boarding secondary schools; Northern mountains; industrial revolution 4.0.

1. Background

Among the constituent elements of management, information management is considered fundamental processes first help managers develop plans, decision-making and executive apparatus, monitoring capture information contrary to enhance the quality of management. Said images, the management system has always been “embedded” in the information. Effectiveness of management depends very much on the information organizational status and use the information. The information systems become an important factor in the management system of the organization is the key to helping organizations manage effectively and contribute to increasing the competitiveness of their operating environment and better proposals meet customer needs.

In educational management, information activities important part in the management of the Education and Training sector. Education management information systems effectively contribute to improving the quality of work and the broader education management improve the quality of the entire education system.

Previously, education management operate under the centralized management of the education management information systems have other characteristics with the current period. Currently, education management information systems in the Department of Education and Training, particularly in ethnic minorities boarding secondary schools needs change due to tasks and required education reform such as: network and schools structure more diverse lot (the high schools have various types of schools as public, semi-public and private). The nature of the content and training objectives as complex and richer, requirements on quality and efficiency of education also requires more advanced ... Education management makes work becoming complex. Education management information is more important with the aim of improving the effectiveness of management, especially in terms of income and provide information for planning, policy formulation process, monitoring and evaluation rates educational activities.

The solutions to improve operational efficiency of education management information systems consistent with the previous period is no longer suited to the trend of strong growth in the field of Education and Training, in the context of the Industrial Revolution 4.0.

2. Operational status of education management information systems in ethnic minorities boarding secondary schools

To obtain information on the status of the operation of education management information systems in ethnic minorities boarding secondary schools in the northern mountainous provinces we polled by questionnaire with 120 teachers and 80 administrators management (Department of Education and Training and education managers of
10 ethnic minorities boarding secondary schools).

2.1. Overview of education management information systems in ethnic minorities boarding secondary schools in northern mountainous provinces

Departments of Education and Training in provinces are specialized agencies of the Province Population Committees for management of state for education and training in the provinces.

Subordinated DoET have ethnic minorities boarding secondary schools, School Facilitators and Books companies and Province and District Continuing Education Centers. DoET perform the function guide, inspect and urge the major undertakings of the Party, State and the MOET on the work of Education and Training. Performance management expertise, team and facilitators for the high schools and the affiliated units (planning staff training, implementation of the program of the Ministry of Education and Training, the implementation of policies and strategies for education, building of schools, allocation of staff, organizational structure). Own budget by PPC directly manage (through the Department of Finance) as the approved budget plan, funding, settlement ... Also DoET shall directly manage, the high schools also suffered coordinated management of the relevant departments in the work, such as the organization of staff and policy regime for the team must report to the Department of the Interior; construction work must be invested for Planning, Science and Technology for evaluation; Working in coordination with the provincial Youth Union Delegation; other works of art culture and social movements to coordinate with the Department of Culture, National Front, The Association of the province ...

The coordinated management of high schools by sector and territory to promote the power of the provinces and districts, towns and cities for career education and training but otherwise arise many difficulties, an ethnic minorities boarding secondary school bear the management of so many departments and agencies, through many levels of management led to limited overlaps in management work for the school and especially the ethnic minorities boarding secondary schools.

The information management division of DoET responsible:

1. To uniformly manage the entire education management information of DoET, responsible for collecting, processing, storing and disseminating information.

2. Steering complete the construction of information system of the entire education management industry, standardized communication services and IT applications in education management information activities from DoET to base unit.

3. Guide and supervise the work of statistical reports for school unit under Ministry official periodic statistical form.

4. Research Organization and participation in research projects and improve the work of the whole education management sector information.

5. Relations with the industry and organizations in and outside the province to collect and exchange data on education and training and data related to education in the province.

Information management department at the ethnic minorities boarding secondary school is responsible for:

1. Collecting, education statistical reports sent to the Department of Education and Training and education management agencies and superiors involved in the district.

2. Participating in The professional training courses which organized by the Department of Education and Training

3. Storing the Education and Training data of the schools

With decentralized management structure as above, the information channels operating in the province education management system in both directions: from the top down and bottom up.

Ethnic Minorities Boarding Secondary Schools field is the basis of education management information systems, under the direct management of DoET. Ethnic Minorities Boarding Secondary Schools responsible to collect, process information but only aims to report to superiors that is not used directly in schools serving the objectives planned development, education decision making... on the other hand the exchange of information between ethnic minorities boarding secondary schools with the mass organizations of provincial, district (town or city) as well as between ethnic minorities boarding secondary schools together many overlaps, no compatibility between the data ...makes ineffective education management works.

2.2. Perceptions of managers and teachers on the role of education management information systems

Most teachers and managers aware of the role and position of education management information systems with education management activities. 95% education managers confirmed that information systems have a very important role and important with education management activities. Meanwhile, up to 32.5% of teachers said that education management information systems only normal role with education management activities. To determine the awareness of teachers and managers about
the role and position of education management information systems with education management activities, we surveyed the perception of objects on the effects of education management information systems with education management activities. Through the survey results show that: education management officers and teachers appreciate the effects of education management information systems with education management activities. Over 50% of education managers and teachers fully aware of the effects of education management information systems. Special effects “Ensuring information between all levels” is rated with 90% managers’ opinion and 81.67% teachers’ opinions. Effects “Resolve the situation” was rated lowest with 50.33% to the managers’ opinion and 66.25% teachers’ opinions.

2.3. Human resources for education management information activities

Manpower engaged in education management information systems have a very important role in the quality of this system.

The survey results showed conflicting opinions in the assessment of education management information activities human in the provinces. While the majority of managers and teachers said that teachers involved in information systems in the education management work enthusiasm (with 81.25% of respondents), only 56.67% of the teachers surveyed agree with this opinion and up to 43.33% of teachers disagreed.

90% of managers and 70.83% of teacher said that education management information activities human are experienced. Regarding the quality of human resources, only 76.25% of managers and 60.83% of teachers that have uniformity in quality.

2.4. The system of criteria, education management information index in ethnic minorities boarding secondary schools

The system of criteria and indicators built in report templates and tables in ethnic minorities boarding secondary schools built according to criteria developed following education:
1. Improving input of the education system
2. Increasing the enrollment rate
3. Making the education system more efficient
4. Strengthening facilitators and teaching equipment
5. Strengthening the pedagogical support for teachers
6. Improving the quality of teaching, learning
7. Enhancing the management of the education system

- The criteria for student management, including:

Criterion 1: Scale develop high school education, include the index:
- Number of schools
- Number of classes
- Number of students
- The average number of students/class
- Proportion of female students
- Proportion of ethnic minority students
- Percentage of students/population aged
- The percentage of students at the right age/population in age (under 15, 15, 16, 17, 18 years or older)
- Proportion of children with disabilities to education of children with disabilities
- Number of pupils transferred (including women, ethnic, ethnic female)
- Some students go to (including women, ethnic, female, ethnic)
- The number of students out of school, absences (including women, ethnic, female, ethnic)

Criterion 2: The effect of General education in boarding high school, include the index:
- Percentage of repeaters
- Rate dropout
- Completion rate of all secondary school levels (including with good, fair, average, not rated)
- Transition rates from secondary school to ethnic minorities boarding secondary school (which kind of good, fair, average, not rated)
- High school graduation rate (including honors, rather, on average, not rated)

Criterion 3: Rank culture and high student conduct, including the indicators:
- Rank solid culture
- Rank pretty culture
- Rank average culture
- Rank weak culture
- Rank poor culture
- Ranking good conduct
- Rank pretty conduct
- Rank average conduct
- Rank weak conduct
- Not rated (cultural, behavioral)

Criteria and indicators of managers, teachers include indicators:
- Teachers (total, female, ethnic) split on the standard qualifications, standards and under standards
- Of the total number of teachers divided into disciplines (literature, history and geography, mathematics, physics, chemistry, biology, politics
English, Chinese, French, subjects also again)
- Principal (total, female, ethnic)
- Vice Chancellor (total, female, ethnic)
- Teachers specialized teams
- Library staff
- Laboratory staff
- Technical and professional staff
- Staff

Criteria for ethnic minorities boarding secondary school’s budget, including the indicators:
- State budget expenditures for education (billion)
  The state budget by:
  · Total recurrent expenditure (billion), of which recurrent expenditure for one student per high, salaries and amounts of salary nature as total recurrent expenditure.
  · Basic investment expenditure (billion), including new construction, repair, purchase of equipment.
- Funds from the source of socialization for education (tuition and contributions as prescribed, the donations voluntary parents, support of enterprises and economic organizations, funded by foreign organizations, other).

Facilitators criteria of ethnic minorities boarding secondary schools, including the indicators:
- Permanent classrooms (including refresh, the total area)
- Number of temporary classrooms
- Cultural classrooms
- Subject rooms
- Library
- Laboratory
- Computer lab, the computer
- Gym Sports

Based on a system of criteria and indicators education management information used in education management information systems of the high schools, we solicited comments from managers the value of criteria and indicators through aspects:
  1. The criteria and indicators used are not uniform?
  2. The handy when using the criteria and indicators?
  3. Criteria and indicators that cover all the information?
  4. The effects of criteria and indicators?

2.5. The mechanism of collection, processing and reporting of data
- Regarding the statistical form system

Statistical form system of MOET system of ordinances with binding force, the school must collect, process and report on time stipulated. The number and content of indicators in the form consistent with management requirements of the education and training sector in different periods.

The collection, processing and reporting of data was conducted through the reporting form. Ethnic minorities boarding secondary schools are responsible for collecting and processing data according to the direction of the Education and Training Department.

2.6. Conditions for ensuring operational education management information systems

Funds for information activities is very tight. For education and training and some ethnic minorities boarding secondary schools funding for this activity is usually not specific, not regularly planned annual allocation. This is also one of the reasons why the school difficult or deploy proactive information activities approved education. Schools often use the funds allocated to specific work as follows:
- Purchase documents for the management and direction of education
- Conduct surveys, collect data and periodically supplemented
  - Procurement of information equipment (computers, printers, photocopiers ...)
  - Training and retraining staff working in education management information

From 2003 onwards, DoET built funding plan to serve the education management information as:
- Build computer classrooms for ethnic minorities boarding secondary schools.
- Equipped with computers for classrooms in this discipline.
- Open training courses for professional deployment thematic education management information work (open trainings management program teacher entire branch staff (PMIS), training programs for schools financial management ... )
- Regular provincial funding for the purchase of books, newspapers, magazines, topical information.

3. The solutions enhance the operational efficiency of educational management information systems in ethnic minorities boarding secondary schools in northern mountainous provinces in the context of the Industrial Revolution 4.0

3.1 Solution 1: Propagating and educating audiences about the role, location

Raise the awareness of cadres, teachers, employees of educational institutions, education
management agencies about the role and position of education management information systems in the education management work.

Using asynchronous communication channels, the local media to provide information for staff, teachers, employees of educational institutions, education management agencies.

Through the forms and methods of managing such meetings, to convince... for promoting education for the audience about the role of information in modern management, the requirements set for individual participation in the education system

3.2. Solution 2: Selecting and fostering the professional qualifications of education management staff and education management information activities human

In order to select the right personnel and education management officers working in education management information activities with capable, qualified and operate effectively meet the needs of today’s innovations.

Planning, zoning officials, open training courses in various forms for education management staff and education management information activities human to choose, fostering the professional qualifications of education management staff and education management information work staff. Organized education management activities serve knowledge, skill, applied science and information technology in education management information operation.

3.3. Solution 3: Unified indicators in the fields of education management information for ethnic minorities boarding secondary schools

Select and propose the unification of education management information index for ethnic minorities boarding secondary schools to precisely define the education management information from the base, facilitating enhanced efficiency for education management information operation and the general agreement on education management throughout province, to satisfy the needs learn, collect, process information, make decisions about the education management levels from schools, to the DoET, to the MoET.

Proposed criteria should be agreed in ethnic minorities boarding secondary schools information, there are specific indicators; tables and general regulations; the deadline to submit the report of the high schools and modalities, addresses reported by the school to ensure the correct understanding and application accuracy in the process of collecting, processing and synthesis of information on the basis of pressure of IT in statistical work and plans.

3.4. Solution 4: Improved mechanisms of income and the level of information channels

Develop tools for the collection and reporting of statistical data at the school level, forming a common mechanism agreed for the processing and reporting data from the field to the DoET and the MoET help the screening, selection select the correct and effective information.

Improving the quality of information and data depend on many factors such as data collection tools (samples, tables, charts ...), knowledge and skills of staff working in the information, technology, regulation, regulation of data collection and many other factors. Design of precision tools, unified mechanism for the collection, processing and reporting of data from the ethnic minorities boarding secondary schools conditions to ensure collection of data on education fully and consistently at all levels of education management.

3.5. Solution 5: Innovation in the financial and equipment, servicing for the education management information works

To support the finance and facilitators additional conditions for modernization of education management information systems at the ethnic minorities boarding secondary schools

To coordinate with relevant agencies to plan, invest about facilitators and financial service of the education management information, computerization of education management information systems toward modernization construction of information systems capable of achievement right across the sector.

3.6. Solution 6: Implement radical decentralization in education to improve the system of education management information

Thoroughly implement education management decentralization to improve education management information systems increase operational efficiency of the system.

Define roles and responsibilities and the mode of operation of high schools, education management information which is the first link and the most important in the whole information system of the education sector and education management sector.

The education sector is now gradually improved, developed and developing education management organization systems from central, provincial (city), the district (town or city) and to the school facilities. Information system corresponding to the education management level also need attention and building development.

For cases: ethnic minorities boarding secondary schools, the base unit of the education management system, as well as basic units of education management information systems, under the direct management of the Department of Education and Training are responsible for collecting and
processing education management information, press statistical report, transmitted to the education management report superior and relevant agencies in the province. The information collected should be handled and used directly in ethnic minorities boarding secondary schools serving the objectives planned development of the university and help principals and administrators of the decisions the management consistent with the specific form of ethnic minorities boarding secondary schools, local. The ethnic minorities boarding secondary schools is the last chain execution guidelines, common policies where the deployment of innovative undertakings will arise many difficulties and contradictions. To capture all the information from students, teachers, from implementing new programs such as innovation content, textbooks program, innovation teaching methods... after reporting to all education management levels sources that information will be processed, to be decided in a positive direction upward development. Difficulties and contradictions will find a solution to the problem, the new decision will be implemented and the efficiency of the education management system is enhanced.

So to improve the education management information system in the education management system levels should thoroughly decentralized the ministerial level, the provincial level to the base. Ethnic minorities boarding secondary school unit must become the focus, the correct starting point for information data source with the correct starting point the whole industry information system will operate more efficiently.

The proposed solutions based on the study rationale, assess practical operation of education management information systems in the field ethnic minorities boarding secondary schools eduction management in accordance with the socio-economic context of the locality. The holistic solutions for the completion of education management information systems at the grassroots. Each solution has proposed to become specific solution to improve the operational efficiency of the education management information system.

The solution has been tested on the meaning and feasibility through the referendum of objects. Results referendum allows the conclusion that the solutions necessary, reasonable, adequate reliability and feasible to raise the quality of the operation of education management information systems common.

4. Conclude

Enhance operational efficiency of the education management information system in the ethnic minorities boarding secondary schools in Northern mountainous provinces in the context of the Industrial Revolution 4.0 is extremely important and urgent in phase renovation of education management today, especially the renewal of information work in ethnic minorities boarding secondary schools of Northern mountainous provinces.

The research results was to clarify some issues:

(1) The education management information system is important tool of management to improve the quality and effectiveness of education management. While this system works effectively, the information not be provided promptly to the managers but also be widely publicized to all subjects in society, to organize various educational contribute strengthen the supervision of the society for education. Increase healthy competition among educational institutions, the schools in the national education system.

(2) The education management information system in ethnic minorities boarding secondary schools the basis of the original information system the whole industry, built on the basis of the practice of each ethnic minorities boarding secondary school. It is a subset of the education management information system including relationship elements to open with each other and interact with the surrounding environment to serve the goals of general education and specific. The construction and development of education management information systems from ethnic minorities boarding secondary schools level must be undertaken gradually to avoid upsetting the whole system, requires taking into conformity with the needs of data users and sustainability of all system.

(3) The education management information system in the ethnic minorities boarding secondary schools field now have to catch up with the progress of science and technology, especially information and communication technology. Building an education management information system be focused at the institutional level to ensure unity, connected and integrated database of education management information at all levels. Allows conveying education management information quickly and accurately, towards networking in the entire system. The investment in facilities and equipment for the education management information network necessarily go hand in hand with training the users and there is a mechanism, a legal framework consistent facilitate the schools increased autonomy , self-determination and self-responsibility.

(4) From the practical operation of education management information systems in ethnic minorities boarding secondary schools already shows that although there are some problems but basically education management information systems at the ethnic minorities boarding
Tăng cường hoạt động hiệu quả của hệ thống thông tin quản lý giáo dục ở các trường phổ thông dân tộc nội trú tại các tỉnh miền núi phía Bắc trong bối cảnh Cách mạng Công nghiệp 4.0

Ngô Quang Sơn

Tóm tắt: Vai trò của thông tin trong quản lý giáo dục được coi trọng hơn với mục tiêu nâng cao hiệu quả công tác quản lý, đặc biệt trong việc thu nhập và cung cấp thông tin phục vụ cho quá trình lập kế hoạch, xây dựng chính sách, theo dõi và đánh giá các hoạt động giáo dục. Qua điều tra khảo sát, tác giả bài báo đã phân tích thực trạng hoạt động của hệ thống thông tin quản lý giáo dục ở các trường phổ thông dân tộc nội trú tại các tỉnh miền núi phía Bắc, mặt mạnh, mặt yếu, thời cơ, thách thức từ đó đề xuất 6 giải pháp quản lý hiệu quả hệ thống thông tin quản lý giáo dục ở các trường phổ thông dân tộc nội trú trong bối cảnh Cách mạng Công nghiệp 4.0.

Từ khóa: Thông tin quản lý giáo dục; hệ thống thông tin quản lý giáo dục; trường phổ thông dân tộc nội trú; miền núi phía Bắc; cách mạng công nghiệp 4.0.