



Utilizing the latest information technology to improve educational system

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DESCRIPTION

Education information systems have developed to keep up with the industry's growing demand for data use. Schools, colleges, and educational organisations have long been data-rich settings. In the past, however, a lot of these data would be difficult to retrieve and put to use outside of a specific time and institutional setting. To support the gathering, storing, and use of education data, a number of technical solutions have arisen over the past few decades, from school-based information systems to historical data repositories. To maintain high-quality information about the inputs, resources, operations, and outcomes of their educational systems and act as one-stop shops that facilitate the use of education data by a variety of stakeholders, national/state education agencies have only recently started to develop comprehensive, longitudinal education information systems.

The education sector often produces a vast amount of data, which is increasingly being stored digitally. Consider the volume of data that a typical school in an Organization for Economic Co-Operation and Development (OECD) nation may generate and keep on a regular basis as an illustration. During the enrollment process, the school will normally collect comprehensive demographic data regarding new students, such as their age, sex, or place of residence. Additionally, records of previous and present course attendance, attendance trends, and class placement will be included in student data files. Periodic evaluations will then produce various sorts of academic performance data, such as interim grades, final course grades, and advancement across educational levels. Less frequently, the data base may include include student work samples, behaviour notes, or details about the transition from high school to college. Additionally, the school often keeps thorough records about each of its teachers, including information on their education, experience, subjects they teach, and

professional growth. Importantly, the school will gather these and other data pieces at various points throughout and across years, allowing for the creation of longitudinal data series. But until recently, a lot of this data was stored in paper-based formats, making it difficult to retrieve and analyse. These data would frequently continue to be contained in school-based information systems even after being digitalized.

When taken into account at a national or regional level, the scope of the data creation activity in the education sector and the advantages of leveraging upgrades to data management capability become more evident. By making it possible to conduct more detailed statistical modelling and to contextualise student accomplishment trends in a meaningful manner. To manage their student and school registries, as well as the data generated by national evaluation and assessment policies, education agencies around the world have adopted a variety of information systems. This is in response to a climate of public sector accountability and rising demands for effectiveness and quality in education. The range and frequency of educational data have increased as a consequence.

The early systems were composed mostly of repeated cross-sections of data that were used to generate system-level aggregate indicators. Individual-level unique identities have lately been added to more sophisticated systems, allowing for the possibility of tracking students throughout time. Regardless of their specific functionalities, data in these platforms, including the global databases run by United Nations Educational, Scientific and Cultural Organization (UNESCO), the OECD, or Eurostat, are typically used to support statistical reporting at the regional or national level and inform policymaking. There are numerous information technology options available at the school level, in addition to national information systems, to support the

archiving, retrieval, and analysis of data needed for school management and school development strategies. While advancements in information technology have made it much easier to collect and handle education data on a broad scale, the absence of framework policies for the creation of education information systems has led to a disjointed architecture of data silos. This occurs when separate systems built to address various purposes are unable to easily communicate with one another. Data

warehouses effectively store historical data, but they frequently lack functionality for turning around and linking data from many sources and eras. Conversely, operational or transactional systems are made to support queries on recent data, but they are rarely equipped to handle long-term data storage and retrieval. As a result, linking data from several time periods and entities is frequently expensive and time-consuming.