Information Systems in the UK Education Sector

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Introduction

This report explores the utilisation of information systems in the UK education sector. The purposes of using information systems in education is detailed in addition to the various influences they can have on this industry. The further education provider, [OMMITED FOR ANONYMITY], is used to demonstrate the types of information systems used by education providers and the impacts this technology can have on schools as organisations.

The purposes and importance of information systems in education

Use in general operations

One of the principal reasons that education providers may choose to invest in information systems could be to support and improve the processes performed in the day-to-day running of a school. Furthermore, several companies that offer information systems as products for education providers advertise this as one of the reasons for utilising their platform. For instance, ProSuite highlights that their software is intended to improve information orientated processes in education such as timetabling, management of exams and enrolment of learners (Advanced, 2023b). Since these are all key procedures in the operation of an educational institution, it can be inferred that this is a driving factor for the use of information systems within education.

In terms of how valuable this factor is, a significant proportion of headteachers use software, of which information systems would be included, for data management and administrative purposes (see Table 2). Therefore, information systems may also be frequently used in schools for these tasks. The Department for Education also mentions that one of the benefits of choosing an effective information system is saving time by allowing the system to perform information driven jobs more efficiently (Department for Education, 2023). Considering the prevalence of information systems in education, alongside the fact that they are used to improve tasks involving crucial processing of information, it can be concluded that information systems play a substantial role in the management of schools in the education sector.

However, this may not necessarily be universally agreed upon. What may also need to be considered is the subset of staff in schools that believe software is not always suitable for certain cases, such as those that believe it's often not fit for purpose for special education needs students (Department for Education, 2021, p. 19). For this cohort, information systems may not be as vital by comparison in these circumstances where they could instead hinder with their data and information processing tasks.

Use for reporting purposes

Another key element for why information systems are used in education could be that they enable education providers to conduct reports and analysis. Educational institutions often host a wealth of data due to various procedures involved in operating them and so information systems are incorporated to manage and utilise this data for the benefit of its stakeholders (Martins et al, 2019, p. 182-183). For example, Bromcom, a widely used information system for secondary schools, promotes the analytical capabilities of their system for tracking KPIs frequently monitored in education such as attendance (Bromcom, 2023).

It could be argued that providing this functionality for schools to conduct data analysis is one of the more prominent motives for utilising management information systems in education. One of the key reasons for this is that the ability to use these systems for reporting purposes in schools allows them to benchmark their performance and quality of education delivered. Consequently, this can also

mean that more informed business decisions, such as with educational planning, can be delivered (Huseim, A. ,2014, p. 11). The resulting benefits from having information systems in schools that facilitates data and information management can be that the efficiency of reporting is increased, and overall outcomes improved (Department for Education, 2023). From these advantages, it can be surmised that information systems are pivotal within the education industry.

Use for achieving strategic aims

Information systems can also contribute to the strategic aims of educational institutions. A universal goal amongst education providers is to continually deliver high-quality teaching since this is, after all, one of the purposes of education (Gibb, 2015). [OMMITED FOR ANONYMITY] is an example of an educational institution in which one of their objectives in their strategic plan is to achieve success rates that exceed the national rate. As deduced previously, one of the primary purposes for implementing information systems into schools is to improve the workflows around data and information orientated processes. Taking this into account, it could be determined that information systems contribute to this goal since this can result in reduced workload and allow for more teaching time (Department for Education, 2023) thus raising the overall quality of education provided.

Another objective for providers in the education sector is to stimulate the economy by assisting students in becoming employable people (Williamson and Acland-Hood, 2021). Determining how employable a learner is, and thereby determining if they are a contributor for boosting the economy, is realised by measuring factors such as the level of knowledge and skills gained from their time in education (Cheng et al, p. 19). As speculated prior, the analytical capabilities of information systems in education can determine how effective they are in measuring their success; this may be connected to this strategic aim. In other words, information systems can assist in the strategic objective of benefitting the economy by enabling schools to assess, and thereby improve, the employability of their learners.

The use of information systems within [OMMITED FOR ANONYMITY]

[OMMITED FOR ANONYMITY] as an organisation

The type of organisation that [OMMITED FOR ANONYMITY] can be defined as is a professional bureaucracy. This is because professional bureaucracies are often schools that have a small number of executive managers, qualified teaching staff and a large support division to handle administrative operations (Lunenburg, 2012, p. 5). These characteristics closely reflect [OMMITED FOR ANONYMITY] since it is also an educational institution and operates in this fashion.

Business intelligence systems in [OMMITED FOR ANONYMITY]

Though [OMMITED FOR ANONYMITY] has implemented various business intelligence systems already, there exists alternatives which may have advantages over the currently used systems but might also provide new challenges. Business intelligence systems support different aspects of an organisation, and in education, can assist in the running of and decision making within schools (Kabakchieva, 2015, p. 106-107). Bearing this in mind, Civica may be a business intelligence system which [OMMITED FOR ANONYMITY] could incorporate. One of the ways in which implementing Civica can benefit [OMMITED FOR ANONYMITY] is by centralising and shifting the systems currently used to Civica's cloud solution so that processes, such as the currently used enrolment system, would all be handled by the same platform (Civica, 2023). The potential gains from this would be that security and compliance would improve since this is built into the cloud system, it could also save time and improve the student experience due to it all being in one place instead of separate systems for different purposes.

Despite the pros, there may be downsides to migrating to Civica. Not only could switching be costly, but [OMMITED FOR ANONYMITY] could lose some of the functionality used with the current systems. This is because some are created in-house and therefore have bespoke functions created specifically for [OMMITED FOR ANONYMITY] which would not exist in Civica. Hence, it is reasons akin to this that all impacts of introducing or changing business intelligence systems at [OMMITED FOR ANONYMITY] must be considered.

Enterprise applications in [OMMITED FOR ANONYMITY]

[OMMITED FOR ANONYMITY] presently uses Microsoft 365 as its chosen enterprise application. Another option [OMMITED FOR ANONYMITY] could employ would be to upgrade to Dynamics 365. The simplest advantage of this is that, since it is another Microsoft product, implementation should be simpler than changing enterprise applications altogether. Another purpose for upgrading could be to make use of the Supply Chain Management module of Dynamics 365 (Microsoft, 2023). Since [OMMITED FOR ANONYMITY] does make use of suppliers, having the facility to manage the supply chain effectively could improve efficiency by streamlining processes through methods such as automation of workflows, for instance, supplies could automatically be ordered when inventory is low. Dynamics 365 would be more costly however, and so the increased cost would have to be compared to the potential return of investment gained from upgrading.

There is also the choice of using another enterprise application altogether. TechnologyOne is one such enterprise application that is used by other educational providers in the UK (TechnologyOne, 2023). This may be a preferable alternative since it has features present in other enterprise applications but with other functions made specifically for education providers, such as management of student information. The immediate downside may be that it would require more time and resources to implement as opposed to staying with Microsoft 365 or upgrading to Dynamics 365.

Another disadvantage could be that collaboration with other educational institutions is decreased. Most schools use Windows as their main operating system (see Table 1). Since Windows is a Microsoft product, it is likely that these providers employ similar Microsoft products to [OMMITED FOR ANONYMITY]. Using the same products could make for easier collaboration between [OMMITED FOR ANONYMITY] and other schools and this ability may be lost if [OMMITED FOR ANONYMITY] were to switch to another enterprise system. These factors must be weighed up when considering whether [OMMITED FOR ANONYMITY] should switch enterprise applications.

[OMMITED FOR ANONYMITY]'s use of information systems for cross-functional processes

Cross-functional processes may involve one or more information systems. For [OMMITED FOR ANONYMITY], the enrolment of learners is one of the lengthiest cross-functional processes that is regularly performed and utilises numerous information systems to do so due to all the different touch points involved in becoming a student at [OMMITED FOR ANONYMITY]. The website portal would be the first information system used, as the learner would create an account which would then be used for entering the information needed to make an application. The website is managed by the Marketing team, though the student may also be in contact with the Careers and/or Admissions Team depending on the level of support they need.

The data related to the application would then be automatically sent to ProSolution, one of the information systems used at [OMMITED FOR ANONYMITY] for administrative tasks (Advanced, 2023a) The Admissions team would process the application via this system. If the application is accepted, a link is sent to the potential student which allows them to submit the details needed for

enrolment such as prior achievements. This link is to a separate information system which is a bespoke website created in-house by the MIS team at [OMMITED FOR ANONYMITY]. Once this is completed, the data regarding the enrolment details are automatically inputted into the learner's record in ProSolution for the respective curriculum area to review. A message is then sent to the student from ProSolution inviting them to an interview with their relevant curriculum area(s). Lastly, the Enrolments team would conduct any finalisation of the enrolment details within ProSolution and notify the learner of the outcome.

The complexity of this cross-functional process, as well the number of steps and teams involved, is demonstrative of the necessity of information systems for [OMMITED FOR ANONYMITY]. In fact, most stages were paper based prior to the first lockdown from Covid-19 and so they were pivotal for minimalizing human contact at the time to prevent spread alongside reducing paper, decreasing human error, and hastening communications.

The impact of information systems on [OMMITED FOR ANONYMITY]

The effects on [OMMITED FOR ANONYMITY] as an organisation

The effect of implementing information systems within [OMMITED FOR ANONYMITY] could have a positive impact as it may contribute to the college's strategic aim of becoming a technologically enabled education provider. Utilisation of information systems in the education industry is usually viewed positively due to the advantages gained, such as, improved reporting ability and increased efficiency with administrative tasks (Shah, 2014, p. 2799-2800). These outcomes could be prominent factors as to why [OMMITED FOR ANONYMITY] uses information systems currently. With this in mind, using information systems in [OMMITED FOR ANONYMITY] can be seen as advantageous since it is an exemplar of using technology for the bettering of the college which would align with the strategic objective of becoming a technologically enabled education provider.

Although the employing of information systems in [OMMITED FOR ANONYMITY] may not always be beneficial. One of the potential risks with introducing information systems in a company is creating conflict with existing organisational culture (Jackson, 2011, p. 58). Within the education sector a quarter of schools in England have a proportion of staff members that are not confident with technology (Department for Education, 2021, p. 95). [OMMITED FOR ANONYMITY] could be part of this ratio and so the introduction or changing of information systems may result in varied uptake and mixed views based on employee trust in technology. Subsequently, the impact on different stakeholders should be considered with the implementation of information systems with [OMMITED FOR ANONYMITY] as the resulting benefits and drawbacks may differ between them.

The effects on competitive forces

There exists competitive forces which should also be reviewed with respect to information systems in the education sector and [OMMITED FOR ANONYMITY]. Substitutions for conventional in person teaching may be an important factor to account for. For instance, self-learning is becoming increasingly commonplace in recent times, particularly among individuals with a strong learning drive (Leddo et al, 2017, p. 20). This could create competition in the education industry as it may be more appealing to these persons instead of face-to-face teaching which traditional schools, including [OMMITED FOR ANONYMITY], primarily offer.

Consequently, these learners may be more inclined to enrol with education providers that focus mostly on self-learning such as The Open University (2023) or even forgo education institutions altogether and use other platforms for self-teaching such as Skillshare (2023). In short, students are essentially the customers of schools and so these alternative teaching methods could be a significant

form of competition. Relating this to information systems, it may be prudent for schools to account for learners that prefer the self-teaching format. One way in which this could be achieved is by choosing a system which can facilitate both in person and face-to-face teaching.

Rivalry with other similar companies is another competitive force to consider (Harvard Business School, 2023). Mostly, education providers recruit students within 5 miles from the location of their campuses (Department for Business, Innovation & Skills, 2013, p. 5) and so it could be assumed that schools which overlap territories would be competitors. Whilst this form of competition could exist, it may not be as prevalent compared to other markets. The reasoning for this is that schools within proximity to each other form partnerships as it's more beneficial to do so due to the positive impacts on the local community (Department for Business, Innovation & Skills, 2013, p. 16). [OMMITED FOR ANONYMITY] and [OMMITED FOR ANONYMITY] are an example of this as both providers have campuses in [OMMITED FOR ANONYMITY] but are partner schools to improve knowledge of and increase progression to higher education. Due to these benefits, it may be more advantageous for schools to utilise an information system that supports that collaboration with other educational institutions instead of one that would encourage rivalry between them.

Summarisation of information systems in education

It can be ascertained that, due to the prominence of information systems within schools currently alongside how substantial a role they have in the operations of educational institutions, information systems play a significant part in the education industry. As well as supporting the general running of schools, information systems can assist with the business aspects, such as with achieving strategic aims. Although, what has also been shown is that information systems can have different effects on various areas in education and its stakeholders. Thus, the introduction or changing of information systems by education providers should be meticulously planned to ensure any potential barriers are outweighed by long-term benefits.

References

Advanced (2023a) *ProSolution* [Online]. Available at: https://www.oneadvanced.com/siteassets/resources/factsheet/advanced_factsheet_prosolution2.pdf (Accessed 30th March 2023).

Advanced (2023b) *ProSuite* [Online]. Available at: https://www.oneadvanced.com/products/prosuite/ (Accessed 23rd March 2023).

Bromcom (2023) *School MIS for Secondary Schools* [Online]. Available at: https://bromcom.com/secondary-school/ (Accessed 25th March 2023).

Cheng, M. et al (2022) 'Employability in higher education: a review of key stakeholders' perspectives', *Higher Education Evaluation and Development,* 16(1) [online]. Available at: https://doi.org/10.1108/HEED-03-2021-0025 (Accessed 25th March 2023).

Civica (2023) *Further Education Management Information System* [Online]. Available at: https://www.civica.com/en-gb/product-pages/further-education-management-information-system/ (Accessed 3rd April 2023).

Department for Business, Innovation & Skills (2013) 'Further education sector: competition issues', *BIS research papers*, 141 [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/248707/bis-13-1235-competition-issues-in-the-further-education-sector.pdf (Accessed 13th April 2023)

Department for Education (2023) *Benefits of a fit for purpose management information system (MIS)* [Online]. Available at: https://www.gov.uk/government/publications/choosing-a-school-management-information-system-mis/benefits-of-a-fit-for-purpose-management-information-system-mis (Accessed 25th March 2023).

Department for Education (2021) *Education Technology (EdTech) Survey 2020-21* [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1057817/Education_Technology_EdTech_Survey.pdf (Accessed 23rd March 2023).

Gibb, N. (2015) *The purpose of education* [Online]. Available at: https://www.gov.uk/government/speeches/the-purpose-of-education (Accessed 25th March 2023).

Harvard Business School (2023) *The Five Forces - Institute For Strategy And Competitiveness* [Online]. Available at: https://www.isc.hbs.edu/strategy/business-strategy/Pages/the-five-forces.aspx (Accessed 13th April 2023)

Huseim, A. (2014) 'What Matters Most for Education Management Information Systems: A Framework Paper', *World Bank Group,* SABER Working Paper Series; No. 7 [online]. Available at: http://hdl.handle.net/10986/21586 (Accessed 25th March 2023).

Jackson, S. (2011) 'Organizational culture and information systems adoption: A three-perspective approach', *Information and Organization*, 21(2), p57–83 [online]. Available at: https://doi.org/10.1016/j.infoandorg.2011.03.003 (Accessed 15th April 2023)

Kabakchieva, D. (2015) 'Business Intelligence Systems for Analyzing University Students Data', *Cybernetics and Information Technologies,* 15(1), p104–115 [online]. Available at: https://doi.org/10.1515/cait-2015-0009 (Accessed 3rd April 2023).

Leddo, J. et al (2017) 'The effectiveness of self-directed learning vs. teacher-led learning on gifted and talented vs. non-gifted and talented students', *International Journal of Advanced Educational Research*, *2*(6), p18-21 [online]. Available at: https://www.researchgate.net/publication/320831845_The_effectiveness_of_self-directed_learning_vs_teacher-led_learning_on_gifted_and_talented_vs_non-gifted_and_talented_students (Accessed 13th April 2023)

Lunenburg, F.C., (2012) 'Organizational structure: Mintzberg's framework', *International journal of scholarly, academic, intellectual diversity*, 14(1), p1-8 [online]. Available at: http://www.nationalforum.com/Electronic%20Journal%20Volumes/Lunenburg,%20Fred%20C.%20Organizational%20Structure%20%20Mintzberg%20Framework%20IJSAID%20V14%20N1%202012.pdf (Accessed 13th April 2023)

Martins, J. et al (2019) 'Assessing the success behind the use of education management information systems in higher education', *Telematics and Informatics,* 38 [online]. Available at: https://doi.org/10.1016/j.tele.2018.10.001 (Accessed 23rd March 2023).

Microsoft (2023) *Dynamics 365 Supply Chain Management capabilities* [Online]. Available at: https://dynamics.microsoft.com/en-gb/supply-chain-management/capabilities/ (Accessed 3rd April 2023).

The Open University (2023) *How will I study?* [Online]. Available at: https://www.open.ac.uk/courses/what-is-distance-learning/study (Accessed 13th April 2023)

Shah, M. (2014) 'Impact of Management Information Systems (MIS) on School Administration: What the Literature Says', *Procedia, Social and Behavioral Sciences*, 116, p2799-2804 [online]. Available at: https://doi.org/10.1016/j.sbspro.2014.01.659 (Accessed 15th April 2023)

Skillshare (2023) *About* [Online]. Available at: https://www.skillshare.com/en/about (Accessed 13th April 2023)

TechnologyOne (2023) *Enterprise software for educational institutions* [Online]. Available at: https://technologyonecorp.co.uk/industries/education (Accessed 3rd April 2023)

Williamson, G. and Acland-Hood S. (2021) *DfE Outcome Delivery Plan: 2021 to 2022* [Online]. Available at: https://www.gov.uk/government/publications/department-for-education-outcome-delivery-plan/dfe-outcome-delivery-plan-2021-to-2022#c-priority-outcomes-delivery-plans (Accessed 25th March 2023).

Appendix

Table 1. Main operating systems used for server infrastructure – technical survey (Department for Education, 2021)

	Primary	Secondary
NET: Any Windows	55%	94%
Windows 2016	21%	66%
Windows 2019	14%	58%
NET: Any Windows 2012	21%	55%
NET: Any Windows 2008	6%	15%
Any Linux	1%	13%
Any Mac Server OS	1%	11%
Other[34]	2%	4%
Don't Know	43%	6%

Table 2. Use of software for school administration – headteachers (Department for Education, 2021)

	Primary	Secondary
Timetabling	67%	99%
Financial management	92%	81%
Pupil data management	99%	99%
Parental engagement / communication	99%	100%
Supporting flexible working practices (e.g. part-time working)	85%	97%
Communication with and delivery of governance	94%	91%