Since the launch of the Pilot Project on Strengthening Schools’ Administration Management (Pilot Project), a wide range of implementation strategies have been adopted by schools. Quite a considerable number of them have introduced different types of electronic systems to enhance efficiency in school administration and reduce teachers’ administrative workload. Extensively-applied to various areas, the electronic systems introduced are delivering results.

Experience of participating schools shows that the use of electronic systems enables them to collect and process data more effectively, minimise manual errors and speed up the flow of information, thereby enhancing the overall efficiency of school administration. In addition, processing data by a computerised system enables better consolidation of data and generation of charts for statistical analysis to facilitate the review and planning of development.

In putting forward administration towards electronification, schools adopt different approaches in light of their context. While some directly procure off-the-shelf products from the market, some commission software developers to design school-based systems or hire substitute teachers to unleash the capacity of regular teachers so that the latter can develop systems on their own. As each implementation approach has its own merits and limitations, we have interviewed three participating schools that adopt different approaches in system development to gather their practical experience and insights. The factors to be taken into consideration and points to be noted in this regard are then consolidated in this Bulletin for other schools’ reference.

**Experience Sharing by Participating Schools**

(I) **Commissioning a Software Developer to Design an Electronic System**

Schools Participating in Phase III of the Pilot Project:
Kwun Tong Government Primary School (Sau Ming Road)

**Project Background:**
At all times, the school is required to maintain close communication with parents in organising activities, such as informing them of the dismissal arrangement after an activity. For some parent-child events, the school has to issue notices to parents well beforehand to facilitate their participation. To ensure the smooth conduct of activities and the safety of students, the school has developed a school-based Activity Control Form to monitor the planning of activities, manpower deployment, cross-unit co-ordination and preparation of notices. This arrangement helps regulate
every single procedure during the planning process and minimise errors. By using the resources provided under the Pilot Project, the school seeks to computerise its well-established school-based procedures, with a view to further lessening teachers’ workload in organising activities, particularly the workload associated with completion of forms and consolidation of data.

**Implementation Process:**
As the ready-made systems available in the market cannot accommodate its established administrative procedures, the school commissioned a software developer to create the Online Calendar Activity Application (OCAA) System, which has the functions of providing an electronic calendar for scheduling activities, preparing and vetting activity proposals, keeping activity records, and generating and endorsing circulars (see Figure 1).

Given the high costs involved, the school worked together with Shau Kei Wan Government Primary School, another participating school with common development needs, to pool funds for system development. Such collaboration among sponsored schools is indeed a key feature of Phase III of the Pilot Project. A core team was formed by the two schools to discuss the preparations for system development, such as reviewing and rationalising the process of organising student activities, preparing templates of necessary documents and drawing up specifications for system design. Since both schools are prepared to share their end product with other government primary schools, the sustainable development and extendability of the system have been taken into account when defining its concept and functionality, with the inclusion of relevant terms and conditions in the tender documents. In view of the complexity of the considerations involved, the schools have spent a great deal of time and effort in planning and designing the system.

![Concept of the OCAA System](image1.png)

![Figure 1: Concept of the OCAA System](image2.png)

![System Prototype – Calendar Layout](image3.png)
of time on preparing tender documents and service conditions, and have held a number of meetings with the successful tenderer to discuss the details and planning of system development, so as to ensure that the developer has a firm grasp of the schools’ actual needs.

Fortunately, the school has already put in place a coherent process for organising activities and hired a supporting officer under the Pilot Project to create system prototypes (see Figures 2 and 3). These have provided a favourable setting for communicating to the service provider the concept and requirements of the system and thus speeding up the development process.

Teachers of both schools agree that the system not only provides standards for organising and conducting activities, but also facilitates communication and work distribution between administration units and the general registry to minimize errors.

Views Worth Sharing:
※ The school considers it inappropriate to go for electronification merely for the sake of electronification. The rationales and objectives of developing electronic systems are to address the school’s needs in connection with management approach and workflow. To this end, in designing the system, the school has taken a solution-based approach and comprehensively reviewed and considered the actual difficulties that staff members of the school encounter when carrying out their work.

※ As the school has no intention of adjusting its school-based workflow to the system operation, it commissioned a service provider to develop an electronic system that allows more flexibility in the design of functionality and complements the school-based workflow to the greatest possible extent. In this way, matters concerning copyrights and/or licensing can be dealt with more flexibly.

※ When selecting a service provider, the school placed emphasis on its practical experience in developing electronic administration systems for schools. However, given a tight budget or technical limitations of the service provider, there is often a need to strike a balance between functionality and operation at the design stage.

※ In preparing tender documents and specifications of the end product, the school not only made extensive reference to materials provided by information technology authorities, but also actively participated in sharing sessions of the Pilot Project to draw on the experience of other schools. It also took the initiative to approach schools partaking in the sharing sessions to seek their advice.
Upon the completion of a system, further modification and upgrading of functionality are still required. As such, the support service of the developer is of paramount importance. To avoid potential disputes, it is advisable to include relevant clauses in the tender document, for example, specifying that the developer should conduct system tests by phase and by component, compile user manuals and provide training. Furthermore, requirements for post-development services should be clearly set out, including the maintenance period, maintenance and/or repair services, and system upgrading and enhancement, together with the charging mode (e.g. per year, per call or per hour of maintenance).

For the purpose of sustainable development, the basic design of the system should reserve room for additional functionality. For instance, as far as the workflow is concerned, the OCAA System may be further linked up to the general registry for carrying out procurement procedures pertaining to the organisation of activities.

(II) Self-developed Electronic Systems
Schools Participating in Phase III of the Pilot Project:
ELCHK Lutheran Secondary School

Project Background:
To help teachers of different subject panels assess students’ learning progress and formulate strategies for school development, the school had planned to enhance the existing filing system of student data, including retrieving students’ academic results from the Web-based School Administration and Management System (WebSAMS) for statistical purposes and consolidating student records of extra-curricular activities as well as rewards and punishments. Since the ready-made systems available in the market are costly and their functions cannot be customised to satisfy its requirements, the school hired a substitute teacher to share part of the teaching load of an information technology teacher, who was then entrusted with the task of developing the software required.

Implementation Process:
After collecting views of teachers from different panels and reviewing the administrative process involved, the responsible teacher came up with a number of programs and systems, which are capable of maintaining attendance registers, analysing academic results, projecting students’ results in the Hong Kong Diploma of Secondary Education Examination (HKDSE), keeping records of rewards and punishments as well as awards of extra-curricular activities, operating a notification system of damage to equipment, maintaining an information website on extra-curricular activities, running a mobile application, etc. In developing the school-based electronic administrative system (see Figure 4), the teacher has employed technologies made available by certain free open sources. With a familiar interface, the system only requires teachers to take a few simple steps after importing relevant data from the WebSAMS and they can consolidate data and prepare summary reports or letters to parents according to the needs of individual panels.
Take the software for projecting students’ HKDSE results as an example. The system can project the levels that are likely to be attained by a current cohort of students in the coming HKDSE by comparing their internal examination results with the HKDSE results of previous cohorts (see Figure 5). In this way, students are able to early identify subjects that may possibly show underperformance and hence affect their pursuit of further studies (commonly known as “Achilles heel” subjects). Then they may, in light of their abilities and levels, study with plans and purposes and make good preparations for further studies and/or employment.
Also, admission requirements of major disciplines of all post-secondary institutions can be input into the system for preparing a mock notice of examination results, to be accompanied by study options and guidance on pathways (see Figure 6). This will enable teachers to help students come up with appropriate learning strategies and study or career plans.

**Views Worth Sharing:**

※ The school considers the use of ready-made systems inflexible. By the nature of their design, some systems make it impossible for the school to obtain add-on modules unless it has procured a basic operating platform from the supplier. Besides, the high maintenance fee every year will, in the long run, exert financial pressure on the school.

※ Having a system developed and maintained by school staff makes it possible to continuously refine and expand the functionality as needs arise. Also, costs can be saved as copyrights and licences are owned by the school. That said, not every school has the capacity to develop school-based programs on its own. From another perspective, the work of writing programs will impose a burden on the teacher concerned and necessitate the re-distribution of work.

※ The design of software should take into account teachers’ working practices and patterns as well as their adaptation to the use of information technology. As such, a developer should maintain close communication with users to understand their needs.

※ The school considers that developing programs by Excel and Visual Basic for Application (VBA) is highly flexible because they facilitate development, modification, back-up and recovery. In addition, unlike a web-based electronic system, a stand-alone system built into the computer does not require a web server, which means that the hardware and operating costs can be saved and the work pertaining to server maintenance can be minimised.
(III) Procuring Ready-Made Systems
Schools Participating in Phase III of the Pilot Project:
Kwun Tong Government Secondary School

Project Background:
It is indeed time-consuming for the school to take care of its routine administrative work, such as circulating documents and notices, booking venues and audio-visual equipment, organising activities and communicating with stakeholders. Besides, with the diversification of the modes of teaching and assessment, the school has to handle and consolidate students’ information and various data in a more systematic manner, in order that it can accurately assess students’ academic and non-academic performance. In this regard, going electronic in school administration not only benefits learning and teaching, but also effectively helps students create portfolios of their personal development, which may serve as a source of reference for pursuing further studies or seeking employment.

Implementation Process:
The school points out that applying electronic systems in school administration is a novelty for some teachers, who inevitably have concern about their adaptation to the new mode of operation. New things have to be introduced in a progressive manner to avoid resistance from teachers. Hence, the school opted for systems that are user-friendly and suppliers who are able to render adequate support.

Considering that some ready-made systems available in the market are able to address its development needs, the school procured electronic systems and associated modules to cater for its needs in the following three aspects. First, there is an electronic administrative management system, which enables digitalised management of the school’s administrative data to facilitate searching and application. This system helps free up space and track the movements of documents. Meanwhile, its associated module is capable of supporting the booking of venues and the management of facilities. Second, there is an electronic communication and interaction platform, through which parents can access the latest information or circulars of the school by means of a mobile application. A school email system is also
available for disseminating internal messages and facilitating communication among teachers on official business. Third, there is a learning support system, which helps students create portfolios of their learning and development process. Such portfolios enable teachers to offer proper guidance by getting a whole picture of students’ academic and non-academic performance.

Upon the introduction of the electronic platforms and associated modules, the efficiency of related administrative work has been enhanced, resource utilisation has become more transparent, and communication has been strengthened. Different users have benefited from such initiatives. These systems not only facilitate the creation of portfolios of students’ learning and development process, but also help strengthen support for students and make plans for home-school co-operation.

Views Worth Sharing:
※ The school is concerned about whether the project can tie in with the school context, cater for the needs of stakeholders and serve the purpose of streamlining work procedures. As such, electronic options that can better support its staff are selected to lessen the burden on teachers.

※ A teaching assistant with professional knowledge of computer was hired to assist the school in carrying out the related administrative work, such as creating accounts for teachers, students and subject panels; producing user manuals; inputting and updating system data; and providing support for teachers and students in using the systems. This initiative has been proven effective.

※ As far as procuring electronic platforms and/or modules is concerned, it is advisable to confirm with the supplier whether it is necessary to procure ancillary hardware or devices (e.g. servers or scanners) to support the system operation.

※ On training, the school initially invited the supplier to organise two professional training programs for the task force of the project, and subsequently assigned members of the task force to conduct for all school staff training sessions that covered materials more specific to the school context. This arrangement has achieved positive outcomes.

※ The school realises that the new systems cannot instantly and entirely replace the existing operational modes, which have been adopted for years. Hence, the project has been rolled out in a step-by-step manner to alleviate worries among staff members.

※ To seek stakeholders’ acceptance of the new systems, the school regularly briefs them on details of the project, such as its objectives, support measures, modes of implementation and schedules, and actively collects their views as inputs for refinement. Also, the school makes good use of various indicators and data (e.g. questionnaires for stakeholders, utilisation rates and output of the systems, and the use of systems in facilitating teaching and supporting students) (see Charts 7 to 10) to regularly keep stakeholders informed of the progress and effectiveness of the project, enhancing their understanding and recognition of the project.
As seen from the projects discussed above, introducing electronic tools to strengthen administrative management has become a trend. Many schools participating in the Pilot Project are able to, by applying electronic systems in school administration, improve internal liaison, enhance communication with stakeholders and provide students with more comprehensive and targeted support services, thereby increasing the overall efficiency of administrative management. The modes of electronification are determined by the circumstances and development needs of individual schools. Generally speaking, for schools that develop systems on their own, time can be saved as discussions with developers or suppliers are not required, and the system design may better serve their operational needs.
Such schools, however, need to take care of training, maintenance, bug-fixing and upgrading on their own. As for schools that procure programming services or ready-made systems, they have to gather detailed information for preparing tender documents and specifications of products/end products, discuss with successful tenderers the requirements and operation details of systems, and earmark resources for post-procurement services.

All of the three schools we interviewed have comprehensively assessed whether to apply electronic administration systems, which include conducting an overall review of administrative work, delineating work procedures, clearly defining the authority and responsibilities of various sections, and prioritising development items. In this way, they are able to identify areas that are most appropriate for the implementation of electronic administration systems. These schools stress that the overall development and resource utilisation should be their prime concern in exploring the ways to introduce electronic systems. When selecting a supplier, the schools consider not only the costs, but also its experience in supporting school administration, the effectiveness of its services as well as the feedback of other schools. In the process of developing and implementing electronic systems, the three schools have all attached great importance to the needs of users, carried out the work step by step and proactively communicated with suppliers/developers to ensure that the systems serve the purpose of supporting administrative work and the administrative work will not be compromised for the sake of accommodating the systems.

Drawing on the successful experience of these schools, the Education Bureau (EDB) will enhance the functions of relevant modules of the WebSAMS to strengthen support for all schools in the territory. We understand that it is difficult to fully address the needs of every school in school-based administration by means of a vast, centralised system, and that it is the aspiration of many schools to develop school-based electronic administration systems appropriate to their needs. As such, we encourage professional interaction among schools in the development of electronic systems, in order to share strategies and insights about going electronic in school administration and exchange information on technical solutions and service provision in the market. This could provide schools with more information and options (see Figures 11 and 12). We are glad to see that school educators have actively participated in these activities and shared their views and experience. Quite a number of these educators are competent in the development of information technology. We believe that through candid sharing and collaboration among schools, a strong professional force will be formed to promote the development in this respect.
While effective use of information technology can streamline work procedures and enhance efficiency, schools should in parallel foster a corresponding management culture and develop measures and guidelines for system security. This is to ensure that in the process of system design and operation, data can be properly handled by and stored in the system, and the loss, leakage or mishandling of data can be prevented as far as possible to safeguard the interests of both teachers and students and facilitate the smooth operation of schools. Schools should bear in mind that the block insurance policy taken out by the Government for aided and caput schools does not cover their legal liability for damage to/loss of any person’s property arising from the use of electronic/online systems. Here, while illustrating the consolidated experience of the Pilot Project for schools’ reference, we would also like to put extra emphasis on the security issue.
Schools should formulate policies and measures to ensure the security and reliability of a system, such as reminding users to keep and use their login names and passwords in a proper manner, to change login passwords on a regular basis, and to avoid logging in a system by a communal computer.

Schools should assign officers of an appropriate rank to manage the setting of access right to a system. The list of authorised users should be input and verified by at least two officers. The list of authorised users as well as the access right of individual users should be updated on a regular basis, particularly in the event of staff movement.

Schools should develop policies on the back-up and recovery of electronic data to ensure that back-up copies are made at regular intervals to prevent the loss of important data in case of emergencies and that the system can promptly resume operation with data recovered after the emergencies.

Schools should pay particular attention to protecting sensitive and personal private data. Even for a system accessible to internal users only, a risk assessment should be conducted as early as possible to prevent system intrusion or data leakage.

Cloud-based services are now provided by some information system suppliers for schools to operate their electronic systems on cloud platforms without the need to set up and manage their own servers. However, participating schools generally have reservations about storing sensitive data on the cloud platforms. Schools opting for cloud-based services are advised to conduct a risk assessment to find out and weigh up the merits and risks involved and seek professional advice before making a decision.

The above information is by no means exhaustive but it gives an account of the practices of some schools and school sponsoring bodies (SSB) participating in the Pilot Project. For more details, please refer to the following guidelines:

◆ Information Security in Schools – Recommended Practice prepared by the Information Technology in Education Section, EDB

◆ Government IT Security Policy and Guidelines prepared by the Office of the Government Chief Information Officer
For more details of the projects mentioned above, please directly approach the contact persons of the schools concerned. For other matters, please contact the School Administration and Management Section (Telephone Number: 2863 4606/2863 4624).

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◆ ELCHK Lutheran Secondary School –
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In addition to those introduced in this Bulletin, there are various effective electronic administrative measures developed by other SSBs and schools participating in the Pilot Project. Relevant details, together with this Bulletin, are available on EDB website: