

Design of All-in-one Distributed e-Learning System (ADES) Using Ubiquitous Files

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Abstract—The early explorers into the new frontier were naturally computer scientists interested in teaching and learning [3]. The objectives of invention are for reducing teachers' workloads, and at the same time, offering students plenty of interactive learning experiences. With the popularity of ubiquitous mobile gadgets nowadays, for example, electronic tablets, we design a ground-breaking e-Learning model based on the technical feasibility of ubiquitous file format (called *U-File*). *U-file* is characterized by its portability across different communication platforms as well as its interactive functions embedded within. A recent study on e-Learning tools indicates their software designs do not stretch to pedagogy, and the pedagogical manner in which these tools are being used in teaching is left to the educators [5]. Therefore in this paper, we want to contribute some innovative concepts by using *U-files* over several popular e-Learning models that show convenience and efficiency.

Index Terms—e-Learning Model, Ubiquitous Files

I. INTRODUCTION

As information technology develops at an incredibly high speed, the proliferation of online users penetrates to almost all communities in modern societies. Electronic gadgets like smart-phones and electronic tablets are ever popular in consumer markets. Such mobile devices are promising heralds of future pervasive computing. With increasingly powerful capabilities in computation, communication, and sensing abilities, these devices have evolved from simple communication devices into sophisticated information services such as sensor hubs for healthcare monitoring systems, sales force automation and decision supports for field works, etc [6]. It would be equally feasible to extend the use of this ubiquitous service to the education industry. In this paper we propose an All-in-one portable e-Learning system (ADES) model which capitalizes on the ubiquitous mobile platforms (exemplified by smart-phones and tablets) and ubiquitous portable file documents¹.

ADES is a Web-based system that manages the flows and uses of the interactive test-sheets, which we generally call them ubiquitous files (*U-Files*). *U-File* is referred to object file that is portable across different computing platforms, easy to archive and retrieve, and contains interactive embedding functions. There are quite a number of implementations of *U-Files*; one example is called Power

Quiz Point² by Presentation Pro which is plugin software to Microsoft Powerpoint files with interactive quiz controls as add-ons. There is software of similar functions like Adobe PDF, advanced versions. Without being vendor specific, the term *U-File* is used here. While ADES serves like a central system that facilitates and enables the workflows of e-Learning using mobile devices, *U-Files* are the general information objects that are being exchanged and monitored between ADES and the e-Learning users.

For analysis and decision supports our ADES model system is designed to consolidate all the information of the designated users, such as teachers, students and the guardians of the students. An intuitive user-interface is provided by ADES for all users regardless of their technical proficiency to create the quiz layout. The users can easily create a form in ADES which implements the required user-interface for the *U-File*. Subsequently, ADES generates a hot-link which links to the *U-File*, which can be emailed or embedded on Web-pages, and disseminate to the designated users.

There are two modes of ADES, Web or mobile. The administrator of ADES can flexibly put the hyperlinks onto emails or Web pages in the Web-mode and hyperlinks into Apps in Smart Phone in mobile mode so that mobile users can get access to the links anytime anywhere. The unique advantages of ADES are the universal support in customizing *U-Files* to suit many different applications, as well as providing a consistent and standard format for file objects that can be used at different places. One main distinguishing feature between PDF which has been very popular for viewing and storing read-only documents, and *U-Files* is the interactivity. Users not only read information but can input, modify or work on the information via quiz controls and text input placeholders. *U-Files* at the same time inherit the features of PDF that are highly portable cross-platforms, and compact in information archival. The contribution of this paper is the design of ADES which covers the functions from designing the content layout in *U-Files*, to keeping track the status and workflow of each *U-File* as a whole process e-Learning experience. That earns its name all-in-one by referring to the full set of activities being supported under one system. In addition to technical design, the applications of ADES and *U-Files* are discussed in this paper. To sum up, the ADES system has the following features in general.

In this case, we can keep the flexibility and unify the format of those forms and the ways of collecting the forms.

¹ <http://www.articulate.com/rapid-elearning/how-to-create-an-interactive-powerpoint-elearning-module/>

² <http://www.presentationpro.com/powerquizpoint.aspx>

As long as the users open the interface of statistics, they can get all the data collected via the program. On the whole, our ADES system contain the following features,

- Data are stored locally and individually in distributed *U-Files*;
- Duplicate copies of data are archived in the ADES for central management and analytics;
- Intuitive user-interface at ADES for building *U-Files*;
- Students (users of ADES) can check their works on local copies of *U-Files* that automatically synchronized with the data of the teacher's feedbacks from the ADES.

A. Traditional Mode of ADES

Dealing with teaching and school affair in traditional way can be a tough job. Every day teachers need to deal with a large amount of scattered files or documents. Similarly, student affair offices in schools, as well as student union department, also need to deal with piles of documentation such as setting a lot of notices and collecting receipts. During this process, a lot of papers will be consumed, so is the human resource. In traditional way of documentation, teachers need to spend a lot of time on marking, analyzing, as well as collecting those exam papers. This step usually has two phases, first writing comments and marks on the test materials, and second separately inputting the marks into a computerized database.

Furthermore, contemporary education models require more interactions and activities between teachers and students, such as outdoor experiments, interviews, or field investigation. During these activities, interactive and prompt feedbacks are necessary to be given to students by the teachers. Also, it is too inconvenient to bring all these documents around at all times, especially if they are still in paper copies.

B. Apps Mode

Essentially, some educators claimed that e-Learning is an alternative way to teach and learn. It is a recent phenomenon that has not fully yet incorporated the pedagogical principles of teaching [1]. Recent research on e-Learning tools for learning via the Internet has found that the software design of these tools does not stretch to pedagogy. Therefore, we aim to invent Apps which can integrate the e-Learning tools with the traditional education together, so as to achieve the best outcome among both ways of learning. The Apps under our design can help teachers give out all papers in forms of ubiquitous files via ADES easily. By tapping the benefits of WiFi and Internet, Apps users can multi- or broadcast their *U-Files* to all the other Apps users. After the submission is done by the users, the Apps will get the result at once and automatically perform the data analysis over all the distributed results. In the design, Apps that connect to ADES can update synchronize the data on each *U-File* while the *U-Files* are stored at different locations with different users, in some collaborative mode.

The idea of ADES is founded on the concepts of online questionnaire, e-Learning, and the proliferation of Smart Phones. On the Web, there are numerous Websites providing us with softwares for designing questionnaires. For example, the Diaochaquan³, and SoJump⁴, are typical Websites that support Web-based questionnaires.

These Websites aim at helping organizations and Web users to easily design Webpages for data processing. Their operation procedure is very direct and simple. We design databases for processing information of teachers, parents, students, and admin staffs, etc, so that the ADES users (document senders) designate who to receive a particular *U-File*. What's more, their answers and reply will be saved automatically in the databases, so as for them to re-read or re-check. Some examples of using e-Learning are successfully applied, shown as follows.

- A major corporation uses interactive Web-based courseware with integrated instructional support and on-line forums to deliver a large-scale Enterprise Resource Planning (ERP) rollout programme.
- An insurance company uses Centra Symposium to interactively train their field sales force at home using monthly synchronous sessions with supporting on-line materials, instead of quarterly classroom training in hotels.
- A management consultancy uses an e-Learning environment supported by on-line coaching to improve the quality of sales proposal writing. [4]

The target users of these Websites are student learners and trainees, since it is easy to use. But it is complicated in setting questions or teaching materials. They may call for help from IT supports. Therefore, we want to design simpler templates for teachers to set various kinds of test papers. Also, a template is set for teachers to save the files and issue the files in no time. The ADES program is featured by its interactiviness such as sending and receiving feedback and replies promptly. It saves a lot of time in batch processing and bulk data transfer. Due to the ease and convenience of the system, teachers will generally favour this program to be applied in their daily routine works.

With regards to hardware support, a smart phone is applicable as a multifunctional cell phone that provides voice communication and text-messaging capabilities. It facilitates data processing as well as enhanced wireless connectivity. Both the industry and academic research communities are working to resolve numerous issues, ranging from low-power hardware design, to flexible I/O methods, to location-sensing technologies, to mobile security issues [12]. Smartphones allow users not only capture media but also annotate and share information [10]. Given this successful learning and teaching facilitator, an e-Learning system that taps on the features of smartphones becomes more applicable to teaching and learning especially in distributed environment. It breaks through the mode of tradition learning. When it comes to extracurricula activities or outdoor physical education, mobile e-Learning devices such as electronic

II. RELATED WORK

³ <http://www.diaochaquan.cn/?hl=en>

⁴ <http://www.sojump.com>

tables and smartphones are portable and a centralized processing system like ADES would be needed.

IV. SYSTEM DESIGN

A. Use Case Specification

The use cases are specified in Tables in Appendix.

B. Database Design

There are seven data tables for describing the data structures in the ADES system.

TABLE I.
ADES DATA TABLE – ADES

Field	DataType	Null	Key	Comments
ufileid	INT	No	PRI	ID for the ADES
ufilename	VARCHAR(45)	No		Name of the U-File
ufiledate	DATETIME	No		Date of building up the U-File
link	VARCHAR(45)	No		Connect to ADES
status	BOOLEAN	No		ADES status
groupid	INT	Yes		ID for ADES group

An ADES data-table stores the information which is prepared to be shown on the ADES list.

TABLE II.
ADES DATA TABLE – QUESTION

Field	DataType	Null	Key	Comments
questionid	INT	No	PRI	ID for a particular question
ufileid	INT	No		ID for the ADES
question	TEXT	No		Question's content

Question is a data table that stores the questions set in each U-File.

TABLE III.
ADES DATA TABLE – GROUP

Field	DataType	Null	Key	Comments
groupid	INT	No	PRI	ID for ADES group
groupname	VARCHAR(45)	No		Name for the group

Group is a data table that stores all the newly-established groups.

TABLE IV.
ADES DATA TABLE – ANSWER

Field	DataType	Null	Key	Comments
ansid	INT	No	PRI	ID for answers
questionid	INT	No		ID for the question
answer	TEXT	No		Answer's content
feedbackid	INT	Yes		ID for the feedback

Answer is a data table that stores all the ADES users' answers of each question.

TABLE V.
ADES DATA TABLE – FEEDBACK

Field	DataType	Null	Key	Comments
feedbackid	INT	No	PRI	ID for the feedback
ufileid	INT	No		ID for the ADES
frdid	INT	No		Friends' ID
feedback	TEXT	Yes		Feedback's content
answerdate	DATETIME	Yes		Date of issuing answer
feedbackdate	DATETIME	Yes		Date of getting feedback

Feedback is a data table that stores the content of the feedback from only the users' friend, and the time of reply.

TABLE VI.
ADES DATA TABLE – FRIEND

Field	DataType	Null	Key	Comments
frdid	INT	No	PRI	Friend's ID
id	INT	No		User's id
frdloginid	INT	No		Friend's login ID

Friend is a data table which stores the friend's list of each user.

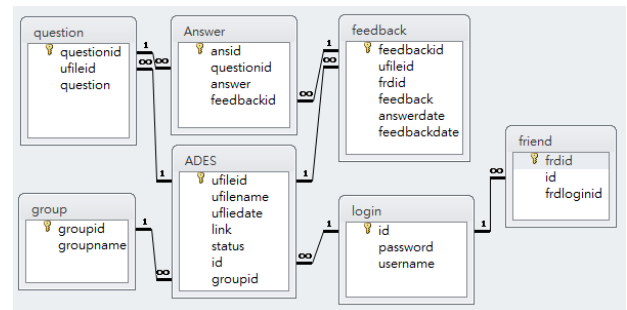


Figure 1. Entity-Relationship Diagram.

C. Business Process Analysis (BPA)

The invention of ADES system aims at simplifying workload in handling documents. The ADES system involves functions such as setting, issuing, collecting, and analyzing the data of test papers, notices, or receipts. It can be applied in any other paper work at anytime and anywhere. It can give prompt efficiency and high accuracy in handling the collected data, and thus, gradually replacing the use of traditional sheets.

We can see from the diagram in Figure 2 that the database technology is the fundamental basis of ADES system. The ADES system accomplishes the connection between the database and the server. Within the ADES system, the query and processing the database can be done together. The main function of the ADES involves designing U-Files, checking replies and feedback, and managing ADES target users. Students can easily access to their U-Files on their mobile devices via ADES, for answering the quiz, revisions or checking on the scores.

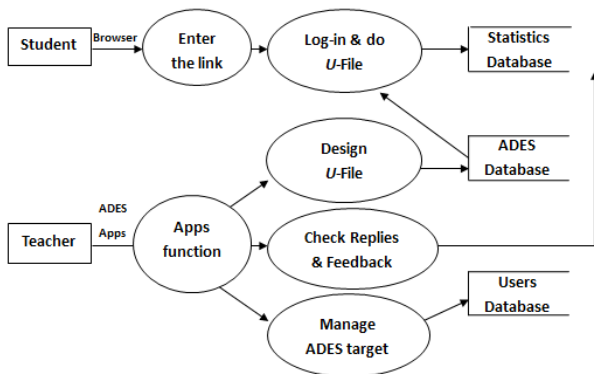


Figure 2. ADES Business Process Analysis

D. Sequence Diagram

This sequence diagram is describing the full operational process of the ADES system.

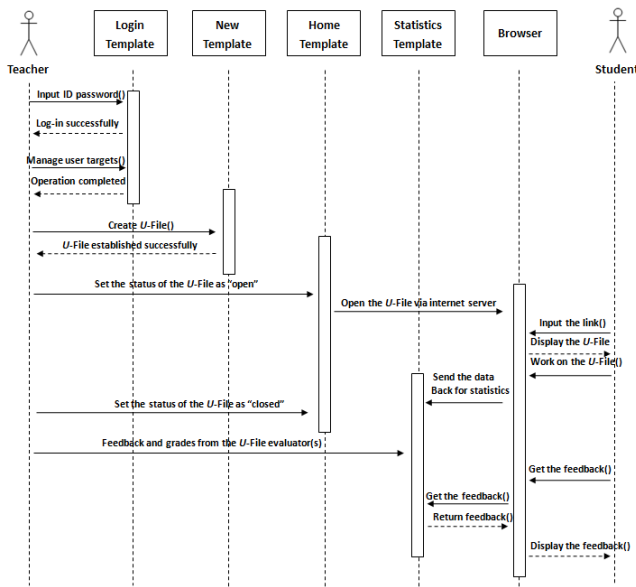


Figure 3. The sequence diagram and rationale of ADES

E. System Module Design

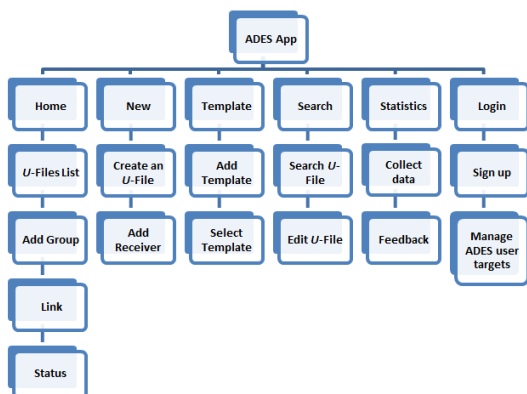


Figure 4. System Module Design

F. ADES Functions

- Home Interface
 - ADES list: List all the set *U*-Files in groups, and it can show the numbers of read and unread replies.
 - Add group : Building up a new group.
 - Link: Issue a link for each *U*-File. When the link is given, the users can access the *U*-File via the link and do some editing tasks.
 - Status: “Open” & “Closed”. When the status stays ‘open’, the users can both read the information and do the *U*-Files. When it is ‘closed’, they can only read the information but cannot do something with the *U*-Files anymore.
- New Interface
 - Create an *U*-File template: Inside is a toolbar containing textbox, labels, checkbox, and dropdown list, etc. With the toolbar, the users can design their own *U*-Files in their style. The users can put an *U*-File into a particular group by accessing the click ‘group’.
 - Add Receiver: If there is no any limitation or authorization being set as the receiver, everybody can access to each *U*-File. If the *U*-File designer wants his *U*-File to be used by a particular group of people, he can add the users’ ID into this system so as for them to log in before use.
- Template Interface
 - Add Template: When you have your frequently-used template, you can save them into this interface.
 - Select Template: The new-added templates will be displayed in this interface. The users can use the existing template if they need.
- Interface for Search
 - Search *U*-File: The users can input the name of the documents in this interface so as to search them in an efficient way.
 - Edit *U*-File template: The templates that have already been searched will be displayed in the interface. The users can do some editing work to them again.
- Statistics Interface
 - Collect data: Via this interface, the users can, in no time, collect the *U*-Files that are already finished. It reinforces prompt collection.
 - Feedback: Assessments and replies to the result of work will be given by the evaluator in the interface, but it is only for a designate group to read.
- Log-in Interface
 - Registration: If ones are not assigned to be the *U*-File users, you can register here.
 - Log-in: It is an interface for a user who has already done the register to sign in.
 - Manage ADES user targets: Frequently-visit ADES users can be grouped together as targets in this interface, so that they can easily be searched and managed.

V. USER INTERFACE

Home Interface: For the users to show the ADES list and add group.



Figure 5. ADES Home Interfaces

New Interface: For the users to edit U-File, add recipients and group U-Files.

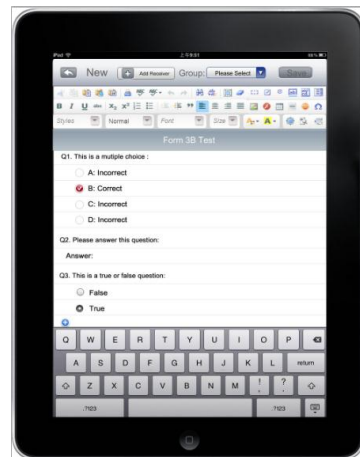


Figure 8. ADES new Interfaces

Login Interface: For the users to register, login and manage the user targets.

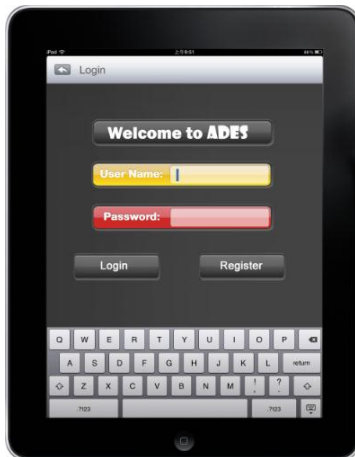


Figure 6. ADES Login Interfaces

Template Interface: For the users to select and design their favourite template

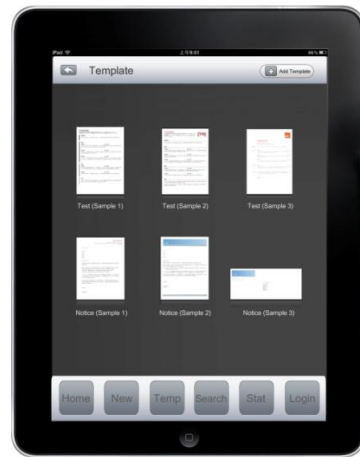


Figure 9. U-File template Interfaces

Statistic Interface: For the users to read the replies and feedbacks.

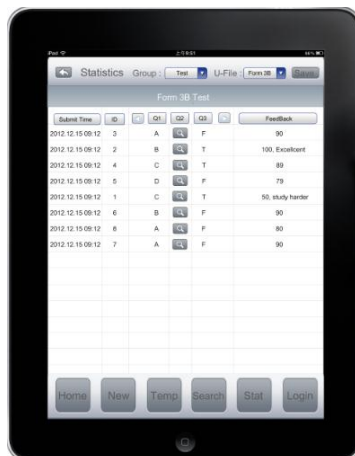


Figure 7. ADES Statistic Interfaces

Search Interface: For the users to search a U-File and do some edition.

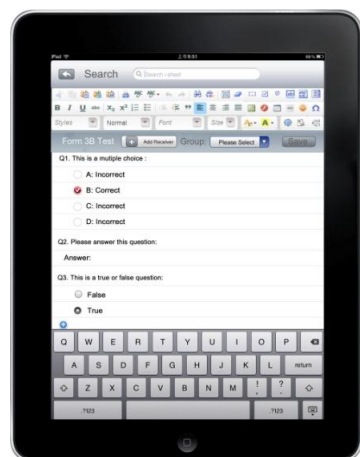


Figure 10. ADES search Interfaces

VI. CASE SCENARIOS

Duffy et al. (1998) stated that asynchronous learning environments foster students' information processing and critical thinking by allowing them the time to process their thinking when they post a message in an online environment. Additionally, the asynchronous learning environment is the preferable method for fostering in-depth student rich interactions [2]. This is the core objective of ADES invention. The followings are the case scenarios which briefly describe about different ADES application domains.

A. Experiments in Life Science class

When some biological experiment should be carried out outdoors, teaches can create the field report through ADES. Students need to carry an electronic tablet or smart phone so for them to make records and do experiments at the same time. Teachers can check the progress of students' work promptly without physically standing by the students. As shown in Figure 11, teachers can set the pre-tasks of some outdoor activities in a classroom. Students can search articles via an electronic tablet beforehand. Students having drafted the process and design of the experiment, teachers can send the students a list of questions related to the experiment, or the requirements of the experiment report to be submitted. Afterwards, students can carry out the experiment individually outdoors. They can answer and ask for feedback from their teacher. Teachers can immediately examine the effectiveness of the whole activity so as to give prompt feedback. This application can realize the usefulness of ADES which can benefit students and teachers in doing outdoor activities. Students can better explore the field subject and acquire skills through outdoor activities than from books, with interactive guidance and feedback from teachers.

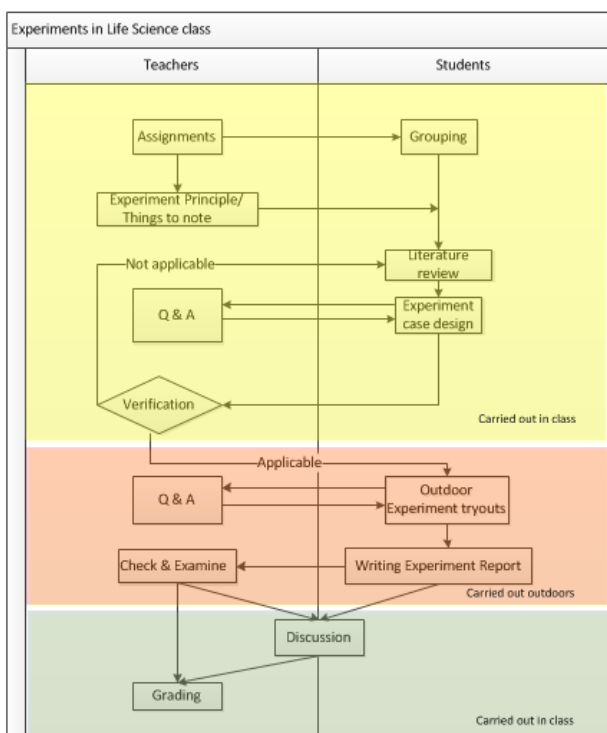


Figure 11. The flow chart of Experiment in Life Science class

B. College study

College students need to do research and collect data when they are doing academic projects. In this case, they can create an U-File and send it to all participants so as for them to fill out the questionnaire. They can receive the data promptly when the participants finish the form. It can save time handing in the form and collecting back the data. As shown in Figure 12, data analysis is a necessary process in College Study. Through using U-Files, students can set out various kinds of questionnaire. They can directly issue the questionnaire to all the target users without adopting the traditional ways such as doing door-to-door interview. We can also add some short videos in an U-File so as to make the questionnaire more informative and figurative.

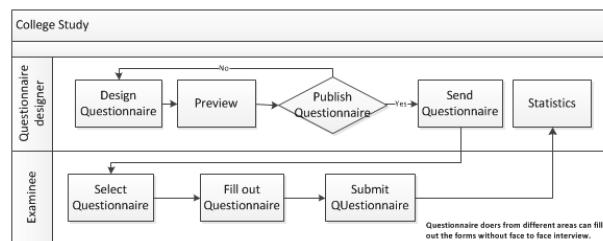


Figure 12. The flow chart of College Study

C. Teacher users

Teachers can design tests, exercises, teaching materials and directly give grades to students' works online. In this way, students can check their grade promptly. All the work can be done chronologically step by step through the so-called All-in-one Distributed E-Learning System. An U-File contains questions, answers, grading and comments from teachers, again all in one. All the learning procedures can be read within an U-File.

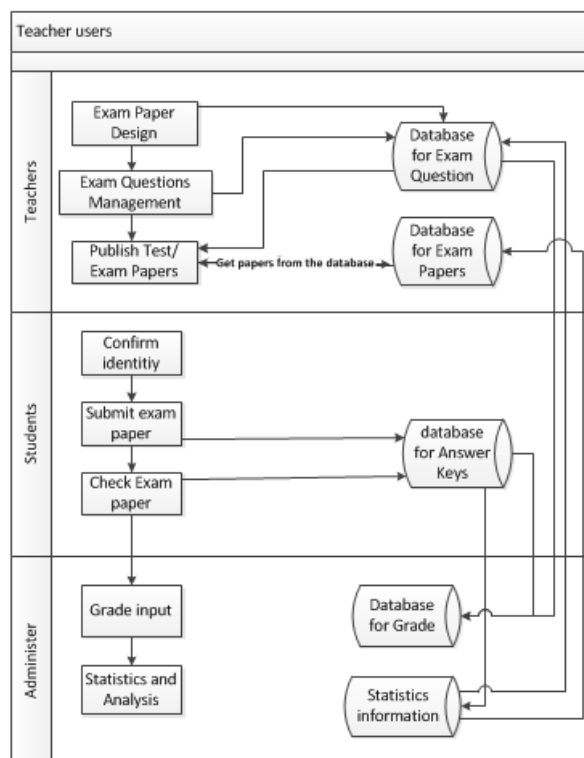


Figure 13. The flow chart of the working process of Teacher users

As shown in Figure 13, teachers can make records of the test questions, answers and grades in the database. In addition to simplifying the procedure of examination, we can also use the given data to calculate and analyze good questions from the bad ones, and thus get to know the level of each question. Through the study of those questions, we can build a database with such questions of high-quality. The teaching effectiveness can, thus, be raised.

D. Evidence-based e-Learning

There is something worth to note in evidence-based learning. According to Will Thalheimer (2007) presented in one of his talk, he concluded the evidence-based practice in the following three critical points.

- (1) Evidence-Based Learning (EBL) DOES NOT simply mean that we follow research-based prescriptions.
- (2) Evidence-Based Learning (EBL) requires us also to measure our own performance. In other words, we ought to be routinely gathering good EVIDENCE about how well our learning interventions are working. Only by having feedback loops can we learn from our performance.
- (3) Evidence-Based Learning (EBL) requires us also to build continuous cycles of improvement into our practices. After gathering and analyzing the evidence, we need to act on it. Then we need to evaluate, analyze and act again.

Generally, in designing such an e-Learning program, we can program a list of data which involves heart-beat of an athlete when s/he performs the activity in a normal situation, the body movement of a particular martial arts, as well as the standard posture of a dance, etc. into the system so as to test the degree of correctness in performing a certain physical activity. This system is a new model of e-Learning. It mainly aims at handling lessons which involve a lot of physical movements. For example, martial arts, dance, and yoga, etc. It will capture ones' body movement and work out a list of statistic data. We can add these data into the database of ADES. The system will calculate all the data and work out the result.

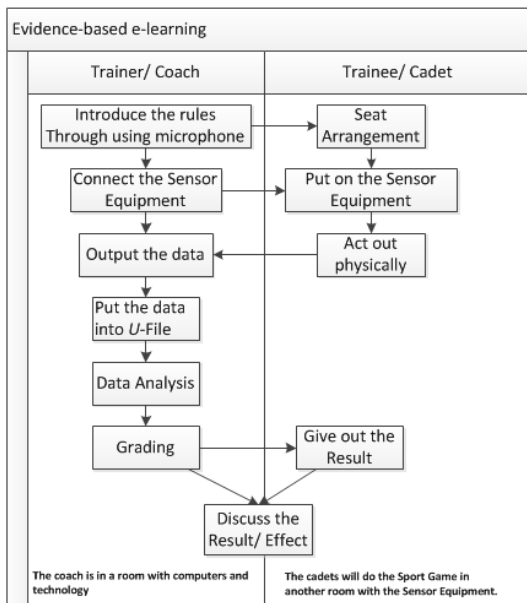


Figure 14. The flow chart of Evidence-based E-Learning

As shown in Figure 14, in going through lessons involving body movements, evidence-based e-Learning plays a part and takes effect in carrying out such PE lesson. The data obtained from the evidence-based process can be used as analysis of students' performance throughout the lesson. The data collected through electronic devices are proved to be more accurate than those seen just by human naked eyes. In this way, grading will be fairer to students. The program is even more suitable for carrying out activities with high demands on the correct posture, such as martial arts or hip-hop dance.

E. Student Union Office

According to Figure 15, the staff can design notices, receipts, school admission forms, course enrollment forms and evaluation sheets for teaching performance. The U-Files can be checked promptly. All the procedures can be carried out through ADES without manual operation. All the users do not need to download any documents and they can still operate the ADES, because the idea of U-File is created data based on some universal data format, e.g. HTML or XML, which can be operated everywhere. It is surely environmentally-friendly and it reduces the load of human resource and management.

With ADES, we can digitalize all the documents in school stage by stage. First of all, the information of all school members should be collected, and establish a database for storing the data so as to contact them easily from time to time. Secondly, Different groups of staffs will receive training and they will be asked to give the opinion on the effectiveness of the program. At the first stage, part of school members who has a good foundation in computer, such as teachers or students, will be targeted as the ADES users. When all the technical problems smooth out, ADES should be extended to the users in the school, so as to make the documentary process more efficient and convenient.

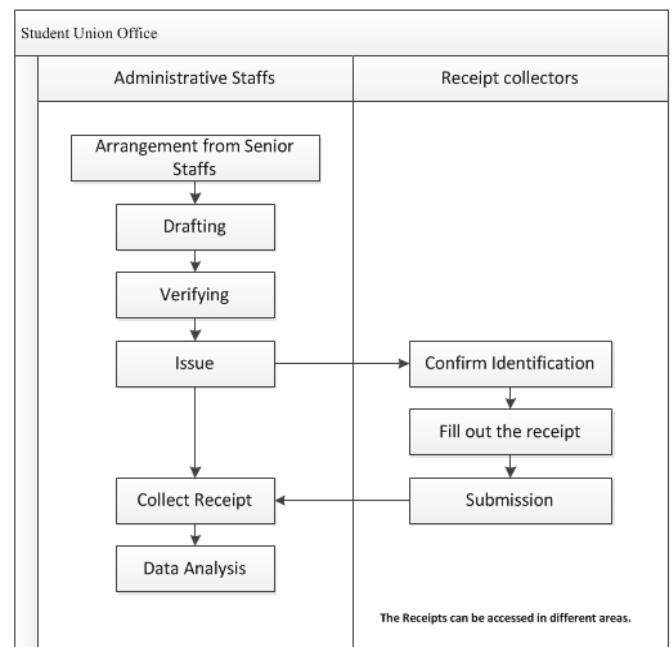


Figure 15. The flow chart of working process of SU Office

VII. ADVANTAGES

K. B. M. Abramovici and A. Stekolschik, proved that blended learning cannot be separated from the modern education. It is crucial for a successful educator to adopt the rapidly changing multimedia, networking, and educational technologies to develop an efficient blended e-Learning system that combines the conventional education and the online distance based e-Learning [7]. Also, a blended learning approach can combine face-to-face instruction with computer-mediated instruction. It also applies science or IT activities with the assistance of educational technologies using computer, electronic tablet or any other electronic media to improve the quality of learning and teaching. Therefore, in order to work with the blending learning, our design has the following pros to achieve the educational purposes:

- Use simple and fluent navigation system.
- Monitor and follow the process and result of students' learning.
- Allow students to communicate with the instructor and peers
- Provide a wide variety of reports
- User-friendly interface
- Integrate the learning tools with the teaching materials.
- Tackle all the issues related to the growing factors, such as computer network.
- Simplify both the operation and the maintenance processes

VIII. CONCLUSION

Practical exercise is very important in the final stage of learning. If a full set of learning system is well-developed, students can easily follow their learning step by step as the software directs them to do so. Schulman [11] identifies a six-stage learning process: engagement and motivation, knowledge and understanding, performance and action, reflection and critique, judgment and design, and commitment and identity. Learning begins with student engagement, which in turn leads to knowledge and understanding. Once a learner understands, he or she becomes capable of performing an order. Critical reflection on one's practice and understanding leads to higher-order thinking in the form of a capacity to exercise judgment in the face of uncertainty and to create designs in the presence of constraints and unpredictability. Finally, the exercise of judgment allows the learner to develop commitment. In commitment, he or she becomes capable of professing his or her understandings and his or her values, internalizing those attributes and making them integral to his or her identities. These commitments, in turn, make new engagements possible and even necessary. ADES which we proposed in this paper can provide a full set of the six-stage learning so that the purpose of individual-learning can be achieved too.

Based on Ragain's essay, he suggested, in an effective learning, that students are involved in more than just listening. We should put less emphasis on transmitting information but more on developing students' skills. More importantly, students are engaged in activities such as

reading, writing and discussing, solving problems. Greater emphasis should be placed on students' exploration of their own attitudes and values [9]. Our ADES system is designed for fulfilling this purpose. A flexible teaching platform offers convenience and multi-purpose to the educators and learners when it applies to the formal curriculum. Spontaneously, teachers can give prompt attention to the students' learning process, and give them instant feedback at the right moment. With the flexible teaching material in the format of *U-Files*, teachers can handle workloads from more students than those in the traditional approach; thus the effectiveness of teaching and learning is elevated.

REFERENCES

- [1] B.Bixler & L. Spotts, "Screen design and levels of interactivity in Web-based training", 2000.
- [2] C. Bonk Joseph. and D.J. Cunningham, "Searching for learner-centered, constructivist, and socio-cultural components of collaborative educational learning tools". *New Jersey: Lawrence Erlbaum Associated, Publishers*, 1998.
- [3] C. Severance and R.J. Vetter, "Web-Based Education Experiences", 1997p. 139-141
- [4] "E-Learning: The Future of learning." *eLearnity Ltd. v.1.0*, 2000
- [5] T. Govindasamy, "Successful implementation of e-Learning pedagogical considerations" *Internet and Higher Education 4*, 2002, 287-299
- [6] G. Roussos, A.J. Marsh, and S. Maglavera, "Enabling Pervasive Computing with Smart Phones," *IEEE Pervasive Computing*, vol. 4, no. 2, 2005, pp. 20-27
- [7] K. B. M. Abramovici and A. Stekolschik, "The changing face of design education". *In Proceedings of the 2nd International Engineering and Product Design Education Conference*, 2004
- [8] E. Kaasinen, "User need for location aware mobile services". *Pers Ubiquit Compot 7*, 2003
- [9] P. Ragains, "Four variations on Drueke's active learning paradigm, Research Strategies 13", 1995, pp.40-50
- [10] B. Russell. "Redux, number 3 in headmap series", London, 2003
- [11] L. S. Schulman, "Making differences: a table of learning. Change", 34, 36-44,2002
- [12] P. Zheng & M. Ni. Lionel Spotlight: "The Rise of the Smart Phone" *The IEEE Computer Society*, Vol. 7, No. 3., 2006

Appendix

TABLE VII.
USE CASE SPECIFICATION – LOGIN

Use Case Name :	Login
Brief Description :	For new users to register before using the system
Pre-Condition :	Click ‘login’
Basic Flow of Events :	1. Fill in the form 2. Manage <i>U-File</i> target user 3. Click ‘submit’
Alternative Flows :	3-1. User name registered, show a prompt to users. 3-2. Some fields were blank, show a prompt to users
Post-Condition :	System creates a new user

TABLE VIII.
USE CASE SPECIFICATION - HOME

Use Case Name :	Home
Brief Description :	Show <i>U-File</i> list and related information of user targets.
Pre-Condition :	A new-built <i>U-File</i> has been ready.
Basic Flow of Events :	1. Click the down-arrow to list the detailed <i>U-File</i> list of the group. 2. Set the status of the <i>U-File</i> 3. Copy the link for sharing your <i>U-File</i> 4. Click “Total/ New” to check the statistics. 5. Click the ‘Add group’ button to add groups. 6. A window will bounce out for users to fill in their group name. 7. Click ‘Submit’
Alternative Flows :	7-1. If the group name has been used, prompt an error message to users.
Post-Condition :	System will renew the database of the updated <i>U-Files</i> .

TABLE IX.
USE CASE SPECIFICATION - NEW

Use Case Name :	New
Brief Description :	Search the flights available in the system
Pre-Condition :	Click ‘New’
Basic Flow of Events :	1. Take advantage of the toolbars to design questions 2. Add receivers 3. Select groups 4. Click ‘save’
Alternative Flows :	4-1. If the <i>U-File</i> is successfully saved, show a prompt to users.
Post-Condition :	System shows the <i>U-File</i> that suits the query.

TABLE X.
USE CASE SPECIFICATION - TEMPLATE

Use Case Name :	Template
Brief Description :	Users can select or add template in this interface
Pre-Condition :	Search a preferable template for designing one’s own <i>U-File</i>
Basic Flow of Events :	1. Click ‘add template’. 2. Edit ‘template’ 3. Click ‘save template’ 4. Select your template so that it will directly be shown on the new interface and start editing a new <i>U-File</i> .
Alternative Flows :	3-1. If the template is successfully saved, show a prompt to users.
Post-Condition :	System displays the booking details as a receipt

TABLE XI.
USE CASE SPECIFICATION - SEARCH

Use Case Name :	Search
Brief Description :	Search an <i>U-File</i> in the system
Pre-Condition :	Click ‘search’
Basic Flow of Events :	1. Input the <i>U-File</i> you want to find 2. Click ‘Search’ 3. Edit <i>U-File</i> (add and design questions, add receivers, select groups) 4. Click ‘Save’
Alternative Flows :	2-1. If the <i>U-File</i> searched is not on the list, show a prompt to users. 4-1. If the <i>U-File</i> is successfully saved, show a prompt to users.
Post-Condition :	System shows the <i>U-File</i> that suits the query

TABLE XII.
USE CASE SPECIFICATION - STATISTICS

Use Case Name :	Statistics
Brief Description :	Collect the reply and feedback from ADES users.
Pre-Condition :	The ADES target users should be set open and finished. Also, a particular receiver has to be assigned.
Basic Flow of Events :	1. Select ‘group’ 2. Select ‘ <i>U-File</i> ’ 3. Show the statistic data of final result 4. Fill in the feedback 5. Click ‘Save’.
Alternative Flows :	5-1. If the feedback is successfully saved, a prompt will be given to users.
Post-Condition :	The system will automatically save all the feedback into the database.