

## **Additional Features for Learning Management System**

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### ***Abstract***

This paper presents the advancing project of implementing learning management system called e-learning management system with additional features. The e-learning LMS is further developed with adding additional features for the main functions in order to improve LMS for teachers and students more efficiently. Additional features for learner's function consists of learner publication, news alert by e-mail and mobile messaging. Learner can share his/her work with the rest of the learners. They can get news alert such as exam score, exam date and class news from teaching staffs or teachers. Additional features for teaching staff's function consist of add note and support tool for class management. Connecting to e-learning website via the Internet, teacher can add note on the slides during teaching. Learner can get those slides with teacher's note and save them into disk. With on-line support tool for class management, teacher can keep track of learners' participation, scored test, and quizzes on the web page during teaching. The system can be used to support activities in classroom. This support tool for class management uses web-based information technology to support the use of traditional classroom teaching and to help teachers manage class more efficiently. The data collected by using these new features can also be used for classroom research as well.

### ***Introduction***

Learning process involves participation of teachers and learners, in which they access to learning resources, do collaborative learning and interact with each other. With technology enhancement, learners can communicate through web board, e-mail and forum that provide for them within courses that they have registered. In addition, the group-work creates the way for them to communicate within their group and to do their collaborative projects. Learning Management System is a system that can create learning process. The focus of LMS is to manage learners, keeping track of their progresses and performances across all types of learning activities, bringing together resources, activities, interactions, assessments and administration, but is not generally used to create course content. It supports learning via the intranet or over the internet. A learning management system is a large Web-based software application. It comprises a suit of tools that centralize and automate aspects of the learning process. A good LMS application should be opened for adding additional features with new technologies. Using new developed features in LMS, teacher can achieve the collaborative learning activities. The collaborative capabilities allow learners to work with each other to learn from their colleagues and teachers.

## ***Supporting Technologies***

### **.NET**

.NET is both a business strategy from Microsoft and its collection of programming support for what are known as Web services, the ability to use the Web rather than your own computer for various services. Microsoft's goal is to provide individual and business users with a seamlessly interoperable and Web-enabled interface for applications and computing devices and to make computing activities increasingly Web browser-oriented. The .NET platform includes servers; building-block services such as Web-based data storage; and device software. It also includes Passport, Microsoft's fill-in-the-form-only-once identity verification service.

The .NET platform is expected to provide the ability to make the entire range of computing devices work together and to have user information automatically updated and synchronized on all of them.

Increased interactive capability for Web sites, enabled by greater use of XML (Extensible Markup Language) rather than HTML.

- 1) A premium online subscription service, that will feature customized access and delivery of products and services to the user from a central starting point for the management of various applications, such as e-mail, for example, or software, such as Office .NET.
- 2) Centralized data storage, which will increase efficiency and ease of access to information, as well as synchronization of information among users and devices.
- 3) The ability to integrate various communications media, such as e-mail, faxes, and telephones.
- 4) For developers, the ability to create reusable modules, which should increase productivity and reduce the number of programming errors.

### **ASP.NET AJAX**

Microsoft ASP.NET AJAX enables us to quickly create Web pages that include a rich user experience with responsive and familiar user interface (UI) elements. ASP.NETAJAX provides client-script libraries that incorporate cross-browser ECMAScript (JavaScript) and dynamic HTML (DHTML) technologies, and it integrates them with the ASP.NET 2.0 server-based development platform. By using ASP.NET AJAX, we can improve the user experience and the efficiency of Web applications.

## ***Implementation***

### **Learner's function**

#### 1) Learner publication

Learners are asked to provide a User-Generated Content (UGC) in particular subjects and publish them to the websites. They can share links or their work with the rest of the learners. This is one activity in the class for learner to publish their own content in prominent places and vice versa. The Learner publication function is shown in Figure 1.

#### 2) News alert by e-mail and mobile messaging

Learner can get news alert such as exam score, exam date and class news from teaching staffs or teachers. LMS is designed to handle e-mail and mobile messaging alert. This service is provided for all registered learners with free of charge. The News alert by e-mail and mobile messaging is shown in Figure 2.

### **Teaching staff's function**

#### 1) Add note

One feature of an existing LMS application is designed for teachers to establish

PowerPoint slides. They can use those provided slides whenever they have Internet connection. Nowadays not only computer laboratories have Internet connection but usual classrooms also have. Especially, wireless technologies can help us to access the Internet more easily. Teacher can upload and download slides from LMS website. They can also share slides with other teachers. The characteristic of this existing feature is still static. It is just a presentation slide. They may want to add note or comment in each slide during teaching. They may sometimes get the idea or question immediately from learners and they want to add them into the slides. The existing feature cannot still handle it so that the add note feature is developed. Using the add note feature, teacher can add note, questions, answers or any comments into the slides. The updated file can be replaced an old file or saved into a new file with revision number and uploaded to a database. Authorized learners can download those files into disk. They will get the slides containing with the teacher's comments. This feature will remind teachers about the idea occurring in the classroom that they may almost forget. Learners may miss the most important concept in some slides. They can just go and review. It could help learners to recall things what they were studying in the class. The Add Note function is shown in Figure 3.

## 2) Support tool for on-line class management

In the past or even present, teachers recorded the learner data such as number of learners in classroom, scored tests and quizzes manually. They filled up the learner data into paper form at the beginning or end of the class. When they went back home, they opened the computer and recorded those learner data into electronic file such as Word or Excel. Why did they do twice? Hence, on-line class management tool is developed in order to help teachers for managing data efficiently. Teacher can record just once, save into database server and then print out with standard format. This tool can relief the teachers work load. They can have enough time to prepare the teaching materials. It will be benefits for both teacher and learner. The support tool for on-line class management has many functions as the following.

- Keep tract of learners' participation

The function is used to keep record of learners' participation in each class as shown in Figure 4. The learner ID and name is loaded one by one when teacher chooses class and section. There are four choices consisting of "not absent", "absent", "skip", and "cancel" in order to be recorded. It is very easy for teacher to use because the learner data from the database is automatically loaded and teachers just decide to click one choice only. The recorded data can be corrected by clicking at the list of learner ID at the right hand side. The results of the system are shown in Figure 5. If learners absented from class more than 20 percentages, their records will be highlighted.

- Quizzes testing score and grading

The function is used to collect learners' scores in order to generate a report as shown in Figure 6. Furthermore, the information can also be used to analyze and display in form of bar – chart as shown in Figure 7. This is used in comparison of the learners' score such as maximum score, or even average score of each subject.

- Collaboration in classroom

The function is used to random selecting learners to participate in the class. So learners can have interaction with teacher in classroom by using another agent (Merline) as shown in Figure 8. The function in Figure 9 shows records of learners and their scores that come from their participation in class such as answering teacher's questions, and attendance.

## **Conclusion**

An excellent Learning Management System should be the system that consists of the following 1) ease of use 2) scalability 3) portability 4) functionality and 5) supporting technology changes. This paper presents the additional features for LMS that would be a standard prototype for other developing Learning Management Systems. The features are very easy to use for teachers and learners. LMS can be easily added with new features that support the scalability concept. The features can be plugged into the LMS that use the same platform. The independent platform is our on going project. The features can work with full functionalities on LMS. They are designed to handle with the change of technology in the future as well.

**Figure 1** Learner publication for LMS

เพิ่ม Link สำหรับ UGC

เลือกวิชา :

ใส่ URL:

**Multimedia Technology**

StudentID	StudentName	Link	Topic
4825765	พิเชษฐ เรืองอินทร์	http://pichetru.blogspot.com/	Advanced Programming
4825766	กวีวรรณ บุณรอด	http://kaweewan_b.blogspot.com/	RFID- Radio Frequency Identification Technology
4825767	สาคร ทวีวัฒนา	http://sakornboy.blogspot.com/	Google Earth
4825768	นุจรี เจริญกิจทวี	http://nutjessy.blogspot.com/	Multimedia Society

**Figure 2** SMS feature for LMS



**Figure 3** Add Note Feature for LMS

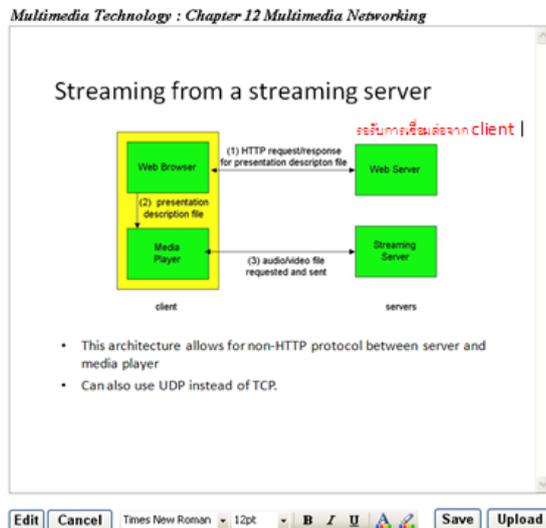


Figure 4 Keep track of students' participation

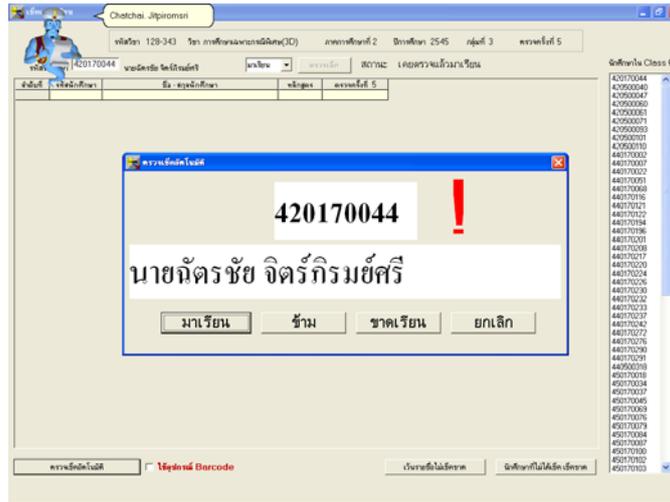


Figure 5 A students' participation report

ลำดับที่	รหัสประจำตัว	ชื่อ-สกุล	ชั้นเรียน	โทรศัพท์	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	รวม
1	420170044	นายจักรชัย จิตรกริมย์ศรี	สมัครเรียน	01-8116602	X																5
2	42050040	นายวิชา นนทิพันธ์	4D	01-9879266																	12
3	42050047	นายวิชา นนทิพันธ์	4D	01-9879266																	13
4	42050060	นายวิชา นนทิพันธ์	4D	02-2213358																	10
5	42050061	นายวิชา นนทิพันธ์	4D	02-462353																	13
6	42050071	นายวิชา นนทิพันธ์	4D	02-462353																	13
7	42050093	นายวิชา นนทิพันธ์	4D	02-462353	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2
8	42050101	นายวิชา นนทิพันธ์	4D	02-4106552																	12
9	42050110	นายวิชา นนทิพันธ์	4D	09-4047717																	12
10	440170002	นายวิชา นนทิพันธ์	สมัครเรียน	02-8936726																	9
11	440170007	นายวิชา นนทิพันธ์	สมัครเรียน	09-7953229																	10
12	440170022	นายวิชา นนทิพันธ์	สมัครเรียน	09-4609293																	13
13	440170051	นายวิชา นนทิพันธ์	สมัครเรียน	02-8992781																	13
14	440170068	นายวิชา นนทิพันธ์	สมัครเรียน	01-7741241																	12
15	440170116	นายวิชา นนทิพันธ์	สมัครเรียน	09-627368																	13
16	440170121	นายวิชา นนทิพันธ์	สมัครเรียน	09-1646014																	13
17	440170122	นายวิชา นนทิพันธ์	สมัครเรียน	02-863636 ext.611																	12
18	440170194	นายวิชา นนทิพันธ์	สมัครเรียน	09-4747377																	13
19	440170196	นายวิชา นนทิพันธ์	สมัครเรียน	09-1346278																	13
20	440170201	นายวิชา นนทิพันธ์	สมัครเรียน	09-5203940																	11
21	440170208	นายวิชา นนทิพันธ์	สมัครเรียน	02-8054804																	13
22	440170217	นายวิชา นนทิพันธ์	สมัครเรียน	09-4462970																	8
23	440170220	นายวิชา นนทิพันธ์	สมัครเรียน	02-4519709																	13
24	440170224	นายวิชา นนทิพันธ์	สมัครเรียน	09-6117128																	12
25	440170226	นายวิชา นนทิพันธ์	สมัครเรียน	02-8051616 # 509																	13
26	440170230	นายวิชา นนทิพันธ์	สมัครเรียน	01-4200904																	13
27	440170232	นายวิชา นนทิพันธ์	สมัครเรียน	060059678																	13
28	440170233	นายวิชา นนทิพันธ์	สมัครเรียน	01-9446482																	13

Figure 6 Input score of each student

ลำดับที่	รหัสประจำตัว	ชื่อ-สกุล	ชั้นเรียน	โทรศัพท์	คะแนนสอบรวม
1	420170044	นายจักรชัย จิตรกริมย์ศรี	สมัครเรียน	0	0
2	42050040	นายวิชา นนทิพันธ์	4D	018116602	23
3	42050047	นายวิชา นนทิพันธ์	4D	01-9879266	22
4	42050060	นายวิชา นนทิพันธ์	4D	02-2213358	23
5	42050061	นายวิชา นนทิพันธ์	4D	02-462353	22
6	42050071	นายวิชา นนทิพันธ์	4D	02-462353	22
7	42050093	นายวิชา นนทิพันธ์	4D	02-462353	28
8	42050101	นายวิชา นนทิพันธ์	4D	02-4106552	19
9	42050110	นายวิชา นนทิพันธ์	4D	09-4047717	24
10	440170002	นายวิชา นนทิพันธ์	สมัครเรียน	02-8936726	13
11	440170007	นายวิชา นนทิพันธ์	สมัครเรียน	09-7953229	19
12	440170022	นายวิชา นนทิพันธ์	สมัครเรียน	09-4609293	28
13	440170051	นายวิชา นนทิพันธ์	สมัครเรียน	02-8992781	25
14	440170068	นายวิชา นนทิพันธ์	สมัครเรียน	01-7741241	17
15	440170116	นายวิชา นนทิพันธ์	สมัครเรียน	09-627368	23
16	440170121	นายวิชา นนทิพันธ์	สมัครเรียน	09-1646014	29
17	440170122	นายวิชา นนทิพันธ์	สมัครเรียน	02-863636 ext.611	22
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21	440170208	นายวิชา นนทิพันธ์	สมัครเรียน	02-8054804	21
22	440170217	นายวิชา นนทิพันธ์	สมัครเรียน	09-4462970	15
23	440170220	นายวิชา นนทิพันธ์	สมัครเรียน	02-4519709	15
24	440170224	นายวิชา นนทิพันธ์	สมัครเรียน	09-6117128	26
25	440170226	นายวิชา นนทิพันธ์	สมัครเรียน	02-8051616 # 509	23
26	440170230	นายวิชา นนทิพันธ์	สมัครเรียน	01-4200904	29
27	440170232	นายวิชา นนทิพันธ์	สมัครเรียน	060059678	17
28	440170233	นายวิชา นนทิพันธ์	สมัครเรียน	01-9446482	15
29	440170197	นายวิชา นนทิพันธ์	สมัครเรียน	01-9446482	18

Figure 7 Score of each student together with bar chart

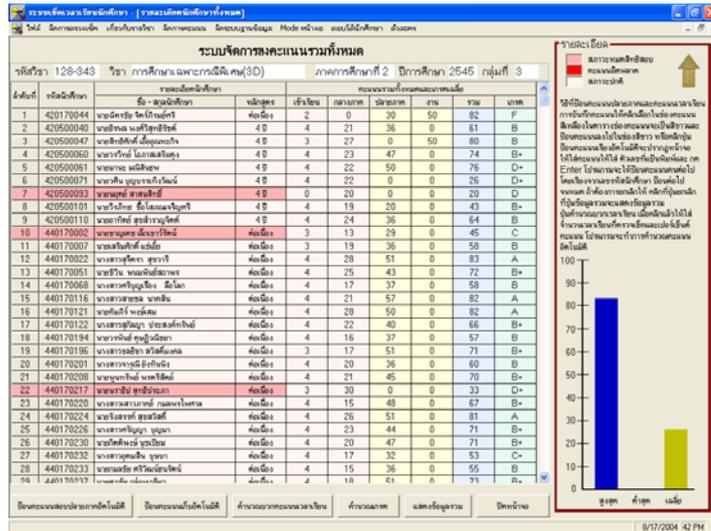


Figure 8 Class collaboration by using Merline agent

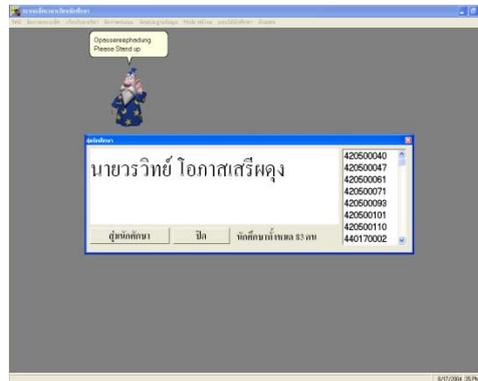
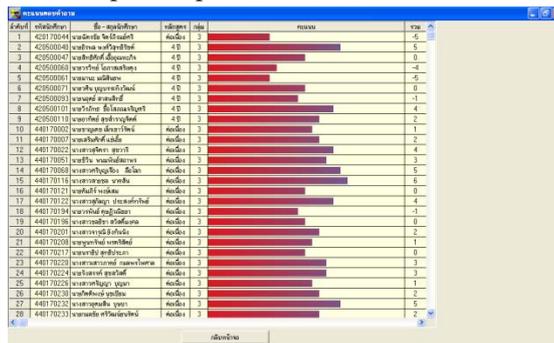


Figure 9 Score of student participation in classroom



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5. <http://ajax.asp.net/docs/overview/default.aspx>