# E-Learning Activity based on EMM and ADKAR Change Management for Elementary Schools

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| Keywords: | ABSTRACT |
|---|---|
| E-learning<br>Elementary schools<br>E-learning maturity model (EMM)<br>ADKAR | The introduction of internet service in Cinta Mekar village-Subang, west Java, becomes a unique phenomenon. This is because; the village located far from the city and it does not have telecommunication facility. The rural ICT technology built by the Digital Learning Team (DLT) become one of the prime movers for internet rising in this village. This rising is marked by e learning in two elementary schools, there are Cinta Mekar and MI Al Huda elementary schools. The teacher study from the e-learning, meanwhile the DLT guide them in learning process through e-learning. The internet raises the pride of the teachers and encourages them to to find the information.<br><br>The first problem with the implementation of e-learning are the teachers do not understand how to use it. Due to the problems, there is a need to measure the e-learning and define the activities phase, especially in rural area. E-Learning Maturity Model (EMM) is used to measure the e-learning and the activities is developed based on ADKAR (Awareness, Desire, Knowledge, Ability, Reinforcement) model of change management.<br><br>From EMM, we focused on 2 sub process learning, 1 sub process development, 2 sub process support, 1 sub process evaluation, and 1 sub process organization. From this measurement, the e-learning condition in the elementary school indicated partially adequate status. This result is proven by the readiness from the system but lack of training, supervising and coaching from the DLT. To solve the current condition, we define the activities based on ADKAR, for example group development, documentation, research and review.<br><br>*Copyright © 2013 Information Systems International Conference.*<br>*All rights reserved.* |

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## 1.  INTRODUCTION

Cinta Mekar and MI Al Huda are elementary schools where conducted in different authority. The first school is under Ministry of National Education and the second are  under Ministry of Religious Affairs. Altough it's different authority, both school learn common lesson study like mathematic, biology, and social. To increase the teacher knowledge about the lesson study, Digital Learning Team has develop the e-learning. The team will be give a lesson to the teacher in both schools through e-learning using internet. This method is an effective way because the team does not have to be in the same location with the teacher, more over the team location are far from both schools

The e-learning in both schools becomes some major issue. The main issue is how to use the e-learning so it will becomes useful for the teachers. The other issue is that not every students and teacher knew how to use computer, especially internet. This is because the schools are located far from the city and the computer technology are new for them.

This paper described about how to measure the condition of e-learning in both schools and developing the activities to increase the used of e-learning.  To measure the condition of e-learning in the schools, we will use EMM and the activities will be developed based on ADKAR model of change management. EMM had been choosing based on the characteristic that this model was intended for schools. The ADKAR had

been choosing because the model were define the each phase and user refuseness considered, moreover the method were generally used to change management.

## 2. RESEARCH METHOD
## 2.1. Literature Review
### 2.1.1. E-Learning Maturity Model

EMM is a model to measure capability of e-learning process [4]. Capability, in the context of this model, refers to the ability of an institution to ensure that e-learning design, development and deployment is meeting the needs of the students, staff and institution. Capability includes the ability of an institution to sustain e-learning support of teaching as demand grows and staff change. EMM divides the capability of institutions to sustain and deliver e-learning up into five major categories or process area. There are: 1) learning, 2) development, 3) support, 4) evaluation, and 5) organization. Each Processes define an aspect of the overall ability of institutions to perform well in the given process area, and thus in e-learning overall. Each process divided in sub process

Each process is further broken down within each dimension into practices that are either essential (listed in bold type) or just useful (listed in plain type) in achieving the outcomes of the particular process from the perspective of that dimension. There are five dimensions: 1) Fully adequate, 2) Largely adequate, 3) Partially adequate, 4) Not adequate, and 5) Not assessed. These practices are intended to capture the key essences of the process as a series of items that can be assessed easily in a given institutional context. The practices are intended to be sufficiently generic that they can reflect the use of different pedagogies, technologies and organizational cultures. The eMM is aimed at assessing the quality of the processes - not at promoting particular approaches.

Table 1. EMM Sub process



### 2.1.2. ADKAR Change Management [1]

The ADKAR® Model was first introduced in 1999 as an outcome-oriented approach to facilitate individual change. The model has taken hold as an easy-to-use and proven Change Management method, and is now one of the most widely used change management models in the world. Prosci's ADKAR model consists of:

1) Awareness of the need for change

In this phase, change manager define activities that can build awareness of the need for change, such as communications from others, access of information, an event and an observable condition. A change manager also consider some resisting factors such as comfort with the status quo, credibility of the source or sender of the message, denial that the reasons for change are real, debate over the reasons for change, rumors or misinformation, and general perception of the people closest to me (if different than the public message)

2) Desire to participate and support the change

To build desire from people, change manager define some activities such as likelihood of gain or achievement (incentive), fear of consequence (risk or penalty), desire to be part of something (to belong), willingness to follow a leader you trust, alternative is worse. A change manager also consider some potential resisting factors such as comfort or security with how things are new, fear of the unknown, change not

aligned with a person's self-interest or values, no answer to what's in it for me (WIIFM), negative history with change on a personal level, an individual's personal situation (financial, career, family, health), and an organization's track record with change

3) Knowledge on how to change

In this phase, a change manager define activities such as training and education, experience, access to information, mentoring. A change manager also consider some potential resisting factors such as gap between current knowledge levels and desired knowledge levels, insufficient time (conflicting demands), inadequate resources available for training, lack of access to the necessary information, capacity to learn.

4) Ability to implement required skills and behaviors

To increase the ability for change, there are activities such as practice, time, coaching or role modeling behavior, access to right tools, feedback. Some potential which should be consider for change manager are inadequate time available to develop skills, lack of support resources, existing habits contrary to the desired behavior, psychological blocks, limitations in physical abilities, personal limitations.

5) Reinforcement to sustain the change

The activities for reinforcement are celebration, reward and recognition, feedback, corrective actions, visible performance measurement, accountability mechanisms in place. Some potential resisting factors are reward not meaningful, absence of reinforcement for accomplishments, negative consequences including peer pressure for desired behavior, incentives that directly oppose the change.

2.2 Research Method
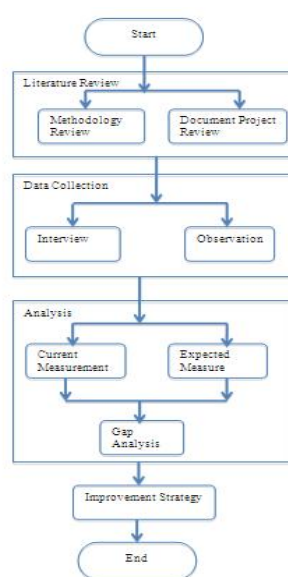


Figure 1. Research method

In this research, we collect data from elementary schools and DLT. We used interview and observation method so that we can be closed to the participants, especially the teachers from both schools. After that, we take the measurement with 2 values: current measurement and expected measurement. From both values, we analysed the gap so that we can propose the activities.

## 3. RESULTS AND ANALYSIS

### 3.1. Elementary Schools

Cinta Mekar elementary schools consist of 14 teacher, meanwhile MI AL Huda consist of 9 teacher. The teacher background are broad from high school, diploma and bachelor degree. The computer skill is relatively minimum. Only two teacher can operate the computer, one in each school. But the enthusiasm to have knowledge and able to operate the computer is high. The teacher will be learn some subject in e-learning, there are Mathematic and Science. The teacher will be act as a student.

### 3.2. Digital Learning Team (DLT)

The Digital Learning team came from two universities: Bandung Institute of Technology (ITB/Institut Teknologi Bandung) and Indonesia University of Education (UPI/Universitas Pendidikan Indonesia). The

team from ITB builds the e-learning system and infrastructure. The team from UPI will provide the e-learning subject. The team consists of 16 people for expert, lecturer, and infrastructure team.

### 3.3. Teacher and Students context

There are teacher and students terms in EMM, but in this research, the teacher context will be given to DLT (Digita Learning Team) and the students will be given to the teacher from both schools. This is because the e-learning usage for first phase will be tested to the teacher from both schools. Therefore, the students consist of 23 user and the teacher consist of 15 user.

### 3.4. E-learning Objective

First phase, DLT team define the e-learning objectives, there are: 1) Students would be able to use computer system; 2) Students would be able to interact with other student; 3) Students would be able to used e-learning as a source of knowledge; 4) Students would be able to implement the knowledge at the class; 5) Students would be able to contribute in to the system;

In this research, the objective will be focusing to the second objective. Based on the objectives, EMM Process which will be used:

1) Learning: Processes that directly impact on pedagogical aspects of e-learning
   a. L2 : Students are provided with mechanisms for interaction with teaching staff and other students
   b. L3: Students are provided with e-learning skill development
2) Development: Processes surrounding the creation and maintenance of e-learning resources
   a. D5 : All elements of the physical e-learning infrastructure are reliable, robust and sufficient
3) Support: Processes surrounding the oversight and management of e-learning
   a. S3 : Student enquiries, questions and complaints are collected and managed formally
   b. S4 : Students are provided with personal and learning support services when engaging in e-learning
4) Evaluation: Processes surrounding the evaluation and quality control of e-learning through it entire lifecycle.
   a. E1: Students are able to provide regular feedback on the quality and effectiveness of their e-learning experience
5) Organisation: Processes associated with institutional planning and management
   a. O5: E-learning initiatives are guided by explicit development plans

### 3.5. Result

Before defining the activities, the research will measure the current and expected condition. Current condition will be based on the ability from the students and the school. Meanwhile, DLT will define the expected condition. Below is the result of the current condition and expected condition. The values of current condition are based from the survey and question and answer to the students.

Table 2. Current and Expected Measurement

| | | Current | | | | | Expected | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Delivery | Planning | Definition | Management | Optimisation | Delivery | Planning | Definition | Management | Optimisation |
| **Learning: Processes that directly impact on pedagogical aspects of e-learning** | | | | | | | | | | | |
| L2 | Students are provided with mechanisms for interaction with teaching staff and other students | 2.00 | 1.63 | 1.50 | 1.00 | 1.50 | 3.33 | 3.63 | 3.50 | 3.00 | 3.00 |
| L3 | Students are provided with e-learning skill development | 1.75 | 2.00 | 1.75 | 1.43 | 1.25 | 3.75 | 3.00 | 3.25 | 3.14 | 3.00 |
| L7 | Learning designs and activities actively engage students | 1.20 | 1.60 | 1.67 | 1.50 | 1.50 | 3.20 | 3.40 | 3.00 | 3.00 | 3.00 |
| **Development: Processes surrounding the creation and maintenance of e-learning resources** | | | | | | | | | | | |
| D5 | All elements of the physical e-learning infrastructure are reliable, robust and sufficient | 1.67 | 1.89 | 1.50 | 1.38 | 1.60 | 3.33 | 3.33 | 3.00 | 3.38 | 3.00 |
| **Support: Processes surrounding the support and operational management of e-learning** | | | | | | | | | | | |
| S3 | Student enquiries, questions and complaints are collected and managed formally | 2.00 | 1.00 | 1.83 | 1.75 | 1.75 | 4.00 | 3.67 | 4.00 | 3.38 | 3.50 |
| S4 | Students are provided with personal and learning support services when engaging in e-learning | 1.00 | 1.44 | 1.67 | 1.33 | 1.75 | 4.00 | 3.56 | 3.67 | 3.00 | 3.00 |
| **Evaluation: Processes surrounding the evaluation and quality control of e-learning through its entire lifecycle** | | | | | | | | | | | |
| E1 | Students are able to provide regular feedback on the quality and effectiveness of their e-learning experience | 2.00 | 1.33 | 2.00 | 1.75 | 1.00 | 3.00 | 3.67 | 3.67 | 3.00 | 3.00 |
| **Organisation: Processes associated with institutional planning and management** | | | | | | | | | | | |
| O5 | E-learning initiatives are guided by explicit development plans | 2.00 | 2.17 | 1.75 | 1.86 | 1.80 | 4.00 | 3.33 | 3.25 | 3.00 | 3.20 |



Figure 2. Delivery



Figure 3. Planning

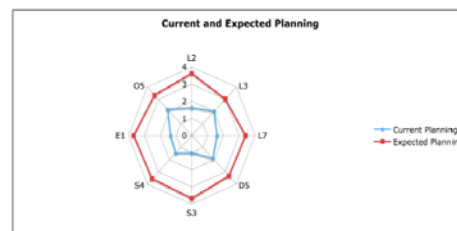Figure 5. Definition
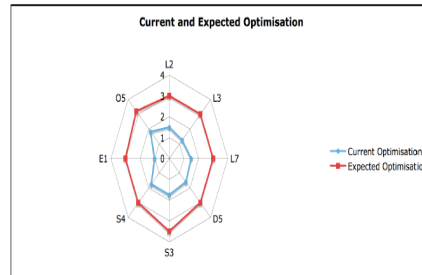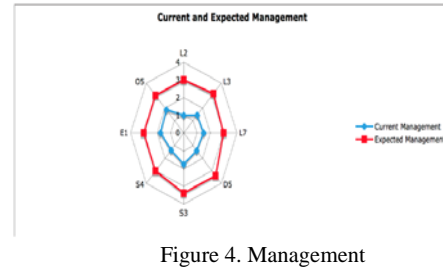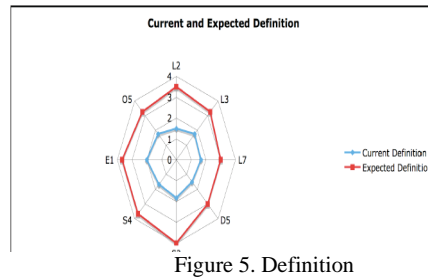

Figure 4. Management


Figure 6. Optimization

From the result, the suggestion to increasing e-learning in both schools are:

[1]  Awareness, consist of activities:
   1.1) Developing group consist of technical support, teacher group, management group, training and support group, and research group. Every group has their activity for increasing the usage of e-learning
   1.2) The routine meeting for every groups
   1.3) Management group build e-learning strategic plan
   1.4) Detail activities to using chatting, email and forum technology
   1.5) Punish and reward concept

[2] Desire, consist of activities:
   2.1) Defining financial planning by management group
   2.2) Management group have to define the connection between investation with the result of learning, and connection between investation with training availibility and support group
   2.3) Technical support have to define the chatting, email and forum documentation. This documentation was intended for the students and the teacher in how to using chatting, email and forum technology.
   2.4) Research group build advancement documentation

[3] Knowledge, consist of activities:
   3.1) Training and support group gives student training about chatting, email and forum technology
   3.2) Training and support group gives student training about learning proses using chatting, email and forum technology
   3.3) Technical support group gives student training about infrastructure technology which is used in their respective schools

[4] Ability, consist of activities:
   4.1) Teacher group gives assignment to the students using chatting, email and
   4.2) Online meeting twice a week using chatting technology.

[5] Reinforcement, consist of activities:
   5.1) Technical support review about user problem in using chatting, email and forum technology or infrastructure.
   5.2) Research group and technical support measure the risk due to the infrastructure changes, if needed.

## 4. CONCLUSION

1) EMM able to measure e-learning process in both elementary schools. In the current condition showed the e-learning value is 1 which means partially adequate. This measure is proven by field condition which is showed the ability of the system but lack of training, supervising and coaching from DLT

2) There is a need for documentation consist of e-learning strategic plan, chatting-email-forum documentation, feedback documentation, and infrastructure documentation.

## REFERENCES

[1] http://www.prosci.com/adkar-model/overview-3/

[2] http://www.ict.itb.ac.id/wiki/index.php/Notulen_Rapat_Koordinasi_ITB_dan_UPI_12_Desember_2008

[3] Jogiyanto, "Metodologi Penelitian Sistem Informasi", ANDI Offset Yogyakarta, 2008

[4] S. Marshall, "E–learning Maturity Model, Process Assessment Workbook", University Teaching Development Centre Victoria University of Wellington, 2007

[5] R. S. Wahono, "Meluruskan salah kaprah tentang e-learning", http://romisatriawahono.net/2008/01/23/meluruskansalah-kaprah-tentang-e-learning, 2008

[6] D. H. Widyantoro, Yuliar, Sonny., Indra, Rionita., Cendikia and Ilham, "Kajian Kebutuhan Informasi Warga Desa: Studi Kasus Warga Desa Cinta Mekar, Subang - Jawa Barat.", Program Studi Pembangunan STEI ITB. 2008

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