SAMSL: Software Engineering Subject Applied to the Mobile Student Learning

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Abstract: **Day to day change the information and communication technologies whatever use in daily life of the people. This change effected on the education system. The institutions give knowledge not having connection to these technologies.   Any case this issue may not consider by institutions. In this paper giving the how mobile applications will support the education systems.   This provides the communication between students and intuitions. The students share the information of their own mobile environments to the institutes. By these things possible the Student learns and also at the same time, what the students do outside the institute.**

Keywords: **LMS, mobile, SLE, tools, learning.**

I.   INTRODUCTION

In our daily life using devices are associated with the changing technologies and tools. Those devices are mobile devices, Student computers, laptops, tablets etc. These are comes under information and communication technologies (ICT). These technologies hold so many success levels. In this levels teaching and learning and teaching is one of the successive level. These applications having many tools of education that are used for teach and learn purpose [1], [2].

Learning management tool is one of best example for ICT teaching and learning process. This provides total academic activities.   Any case, learning and teaching interaction with application is not associated with educational system. Because they have so many reasons, 1) they only focused on institutions, not on students. 2) The institutions not show interest on the outside tools etc. in such situation students require the alternative learning tools. For that reason here introduce the Student Learning Environment (SLE) [3]. In this application have many tools for learner. Learner having choice for choosing tools on their own interest and it give support lifelong and it is responsible for learning. Teachers and learners are using them and it helps for learners to get degree [4], [5].

For providing communication between learners and teachers designed the service based framework. By this framework the application allows the learners to use the tools from different devices. This service based framework is supported the mobile version of the Student learning environment. It is known as mobile Student Learning Environment (mSLE). It allows the learners decide the tools for their convenient. Because, mSLE flexible. Some tools are available like this but that tools are not fully designed for education purpose. In this paper describing how it is tested and carried out by the SE students.

II.   RELATED WORK

Here considering the tools and services of the SLE. When users feel that is required to learn that allow including in mobile device. For these sense mSLE activities definitions are given here:

- In Mobiles provide the LMS.   Devices are provides the LMS functionalities provides the services to the learners. Blackboard, moodle and other are the example for LMS. There are facing some problems to the mobile users. By using it not easy to add other functionalities when require to add any other functionalities may consider the other tools.

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- Third-party and ad-hoc functionalities activities in mobile PLE. In ad-hoc technologies additionally adding some other sources. This are using in the mobile environment for PLE. In this way some mobile application projects are implemented, this provides functionalities to the learners and also clients. it is combines the university LMS for access the services of institutions. In these activities having some problem i.e., the institutions define the ad-hoc technology in a very specific manner.

- mSLEs in mobile device. Itself having the activity of mobile device as a SLE. They declare tablets or mobile devices having enough tools for carry their academic activities of the applications whatever applications want to use. If it is true; no need to consider how to combine the tools that use of learners. Learners may use different tools without an aim, it may lead to mislead. SLE centralize the tools and facilitates the tools to learners in this way carry out activities of learning in the specific environment.[6]

- mSLEs based on special features and mobile phones sensors. mSLE s using specific features in mobile phones. Special features in mobile are camera, GPS, ect. Depending on location of the student's mobile Student Learning gives the experts and peers communication channels. Student learning activities are carrying out by using some devices and applications, devices are installed the applications. There also having some problems with this approach i.e., hardware and software of the mobile devices.

- Tools or content management systems performing mobile adaption for define the virtual communities or portals. For this activities having one project name as Elgg. It is mobile version, it goal is institutions provides the personalized access to the users. This activities having problems education ecosystem does not provide the communication channel.

- mSLE integrates the very specific m technologies. For defining the Student environment use the some tools like SMS or RSS clients. For this example project is given: this project improves the connection in between user and institute by using RSS and SMS provides the LMS alerts. This project is known as only connect project. In this activity there is having limitation in the connections.

- Solutions using widgets. Using already existing widgets in the mobile devices for defining the SLE. Aplix web runtime is example for this approach. This run w3c in the mobile devices.   The SLE represent in the mobiles using some interfaces and WAC compliant widgets. Different platforms exchanging applications by using open platform. This approach having some problems, standards not follows the widgets in the mobile devices. It context is not work in other devices by this widgets.

This is just the simple description of the mSLE aim. Here given work related to the mSLE development but there not given the complete work but it is not easy.

III.   THE MOBILE SLE

Mobile SLE requires communicating to the academic institute environment. The mSLE requires the communication between the students and institute. Giving the student framework is developing for maintaining the communication. This framework gives the services in this way 1) institutes gets the information, whats happening in the mobile. 2) Functionalities of LMS get in SLE by this framework.
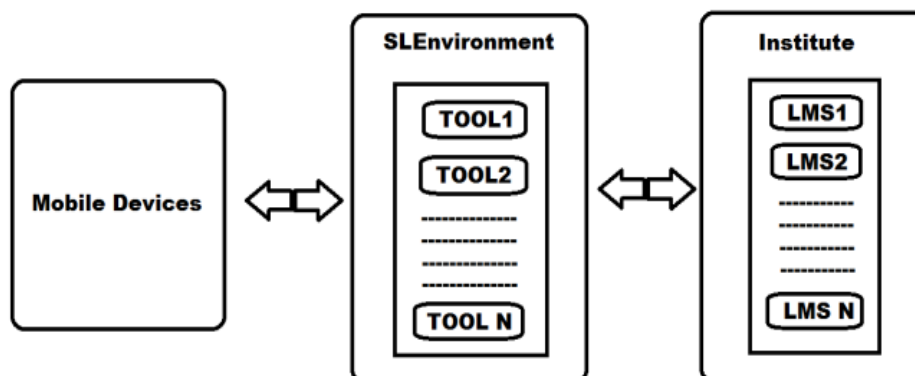

Fig.1. Main Framework

This framework facilitates the communication in between the student and institute. mSLE idea implements the tools, services and communication channels by the help of this framework. mSLE gives the students learning environment by this communication channels.

Above given framework is a service based framework, it gives the communication by using interoperability specification and web services. Web services are giving the institutional functionalities to the mobile devices by this framework facilitation. mSLE not define the exportation of the functionalities for this require the mobile tools for SLE. These problems adapted by the framework [4].

Form fig.1. Main framework contains the mainly three elements: the student environment, communication channels and environment of institute (it contains one or more than one LMSs). Fig.2. represent the distributed elements of mobile Student Learning Environment architecture point of view. The mSLEs includes the each device individual tools, tools of institute external tools. External tools are the educational purpose tools. One or more than one LMS included in the institute environment. There also having the mediator (proxy tools). Proxy tools are used for two purposes: 1) this gives the solution for not modified codes with the help of API, it integrates into the SLE. 2) For carrying purpose. It provides the assessment interface for carry out the tools which are not defined originally for purpose of education. By using interfaces connected the specifications of interoperability and web services [7].

Proof of concept is implemented for test the framework. The components of framework technologies are affected by the design constraints of involved in this implementation. Those are given below:

- The mobile student environment. In student learning environment, students can manage the apps of mobiles for this it should facilitate the mobile space. Android app should be implemented in this space. For implementing the android apps there are having many technologies. There, future development keep in mind other possibilities are provided. In this having the app container, it provides the mobile tools for learn. Mobiles coming with this apps itself or download and install. LMS functionalities can be represented by these apps [8].

- This are allows to the students for personalization environment of learning. Activities of educational tools are decided for use. The mSLE carries the outcomes to the institutional environment, it also combines all educational tools and functionalities of moodle are exported to mSLE. It provides information of learning outside the institute, it also considering into account [9].

- Context of institute. Different LMS are used here. In this majorly considered the moodle instances. Moodle is open source, wide spread and it is popular in some institutions. All this reasons conceded this platform. It also having layer of web service it facilitates the combines the other tools and new technologies.

- Channels for communication. For communication in between the components framework, BTLI and web services of moodle communication channels are used. LMS are used former to interaction and information exchange [8].

IV.   THE PILOT

Subject of software engineering students 40 members tested the system. These 40 members are separated into two groups one group for controlling and another is for experimenting. This both the groups are experienced with this mSLE and using the browsers in mobile. Messages are posted in the forum, this are arranging by the mSLE. Here having the four tools are using for the learning purpose those are not present in the moodle. 5 teachers are giving the reply to the students whatever students having doubts posted in the forum.

Students and teachers are considering into perception is two main issues in the mSLE. Those are opinion and usability. Below described the philosophy used in this.
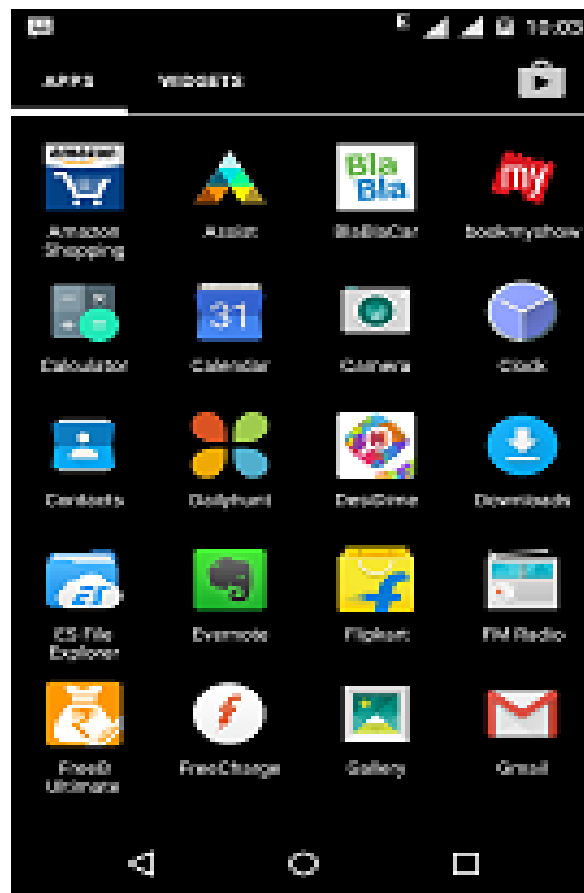
Fig.2. Mobile applications

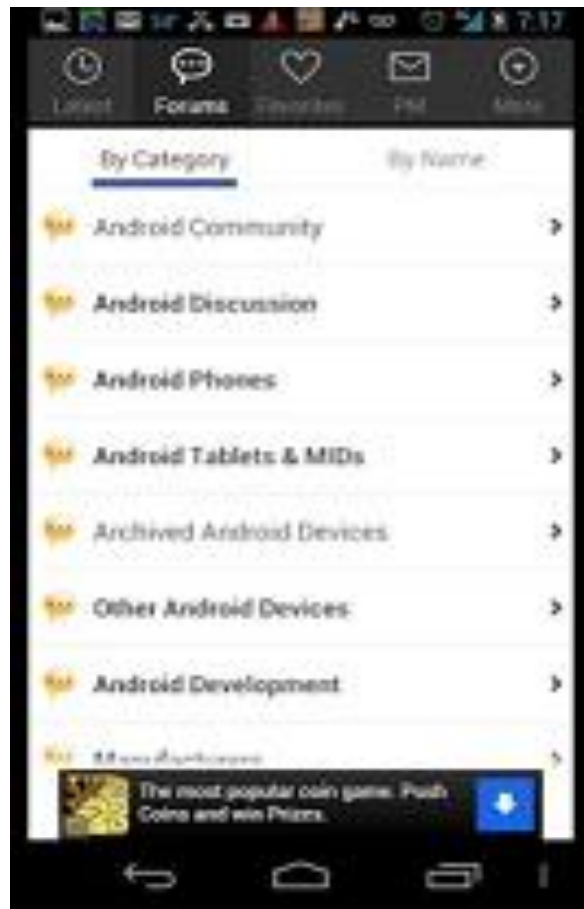**Fig.3. Adapted geology quiz tool for mobile PLE.**

Fig.4. Example of the LMS forum to mobile device

A. Procedure and rules:

In mSLE several procedures and rules are applied, this pilot stakeholders and deferent aspects are taking into consideration. Teachers and students perception and system usability mainly focused two of them in this paper.

Several study issues are evaluated by the usability. This are focused on the system efficiency, satisfaction of user's, use perception etc. Here mainly considering the satisfaction of the user's with this mSLE. SUS (system usability scale) by using this analyze the user's satisfaction. In this having the ten item scale this are gives the over view of the usability. SUS form is filled by the pilot both groups (control and experimental) [10].

Teachers and experimental group conducting interviews of semi structured through this gathering the information. Analyzing the gathered information and depending on the components and thematic were defining the units. The results are shown in the matrix and conclude the information. The students giving information is categorizing into the some groups. They are: learning, motivation and problems with the mSLE [11].

Application results during the experiment procedure are shown below.

B. Results and discursion:

Experimental and control groups are applying the SUS form and different results are expecting.

The experimental group SUS results are 72%. The Sauro described the accepted satisfaction level is 68%. it means the experiment percentage is higher then it. It is only based on the concept proof there is not considering the all breakdowns not solved and identified.

Results of control group are 34%. Students are using mobile browser for accessing the moodle. The functionalities not adapted fully to the mobile devices. Forum of moodle interaction is difficult. Another way the mSLE uses the tools for learning in the mobile device. Tools are accessing the centralized way. Control group of students are adapting the mobiles LMS and also managing the tools for learning.

The mSLE is useful for increasing motivation of the learners. It helps to the learners with very advanced technologies, those technologies are very popular. mSLE is very flexible for using, it is available at anywhere and anytime.

Finally, some problems are detected by the students and reported related to the mSLE. There is having so many tools of two different contexts, it may leads to lose the concentration on learning. Education tools are not adapted as sufficiently require for learning, that are combined in the mSLE. The outcome is return in the LMS. in fact every student does carry the smart mobile, in case it is have some of them does have the internet connection. This problem overcomes with the mSLE by providing it in offline working mode.

However, not only consider the students opinion also considering the teachers opinion on the use of mSLE. Teacher's perception also categorizing into previously described way (mSLE work, learning effects and environment problems). Teachers are feeling mSLE is very flexible to the students for learning. It provides the advanced tools in the teaching and learning process. By mSLEs, motivation of the students increased. The students have choice to decide the tools and the devices for learning.

These results usability perspective support the system viability. Problems of may addressed in this solve in future work.

V.   CONCLUSIONS

Different technologies and devices used for learning and students learn not only in the institute but also outside institute. About this two issues described and addressed in this paper. For learners there is available different tools and with different context. It makes learners show interest for learning. The tools provides new context which is not available in the institutes context and this new context is visible to the intuitions for understand the knowledge of learners. Mobile Student Learning Environment supports the service based framework. It provides the students take a decision on which app want to use for learning. The proof of context is given form student side and also from the teachers side and also tested by the both of them. Validation of the context proof is allowed in the experiment. As final conclusion mobile SLEs implementation and definition is possible and teaching process and learning process is improve by the opinion of teachers and students.

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