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Obtainment and management of informal learning experiences among saved life experiences via a life logging system: an observation of a software developer

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Abstract

In this study, process of obtainment and management of learning experiences by using a life logging system, that captures camera shots and screenshots spontaneously and continuously, is applied and evaluated in scope of a software developer's informal learning experiences. Life logging system is applied for a month by the first author of this paper and application results are evaluated with the help of semi-structured interviews and logs by both of the authors. As a result of the evaluation process, it is seen that life logging system carries an important potential for being an effective tool for managing informal learning experiences of software developers.

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1. Introduction

Roots of the life logging researches are based on Memex vision of Bush in 1940s (Bush, 1945). This vision, which became real with the help of Mann's wearable computer experiments in 1990s (Mann, 1997), is accelerated with Aizawa's wearable computer experiments for saving everything sensed (Aizawa et al, 2004) and Microsoft's SenseCam Project (Hodges et al., 2006). A couple of years later, Bell was able to save all the information he saw,

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heard, read. Individuals with memory problems were able to cope with their problems with the help of images taken every 30 seconds with the help of SenseCam (Gemmell et al., 2002). Today, life logging devices became widespread and turned into consumer products. Producers of life logging devices and software gathered under Quantified Self movement (<http://quantifiedself.com>) and started organizing international conferences semi-annually.

Individuals catch records belonging to their daily life individual experiences via life logging systems. Later, they can obtain results, which can improve their life quality, by working on these records. Mutlu (2014) suggested an approach to obtain learning experiences and manage them with images saved by life logging and in order to support lifelong learning he also developed a series of software for easing the application of this approach. He experimented the applicability of the approach called as “management of learning experiences” and the tools related to it with his friends (Mutlu et al., 2014).

Management of learning experiences approach includes steps such as (a) saving life experiences via life logging tools, (b) interpreting the saved experiences, (c) creating a personal database by listing the contexts accompanying these experiences, (d) collecting learning experiences among life experiences and giving them a signification, (e) planning, control and evaluating learning experiences

Software, which takes screenshots at each 30 seconds in order to capture life experiences in virtual environments and takes camera shots from computers at each 30 seconds in order to save experiences in physical environments, is developed. The images caught by both of these two software are saved on OneDrive (SkyDrive) cloud environment.

An experience processing software, (AllMyListsLE) which access images as a form of history tree and enables users to create unlimited number of entries for commenting on the daily, monthly and yearly nodes, has been developed. With the help of the experience processing software, it is possible to log entries such as events belonging to images caught by a chosen device with specific software; time sections belonging to a specific month and stories belonging to a specific year. By using the same software it is possible to create a personal database via tree structure; tag learning experiences within the life experiences such as “formal learning”, “non-formal learning” or “informal learning”; create planning, control and evaluation lists such as to do lists for future, done lists for present and completed ones list for past in order to ease the management of learning experiences.

Software developers are the first ones who realized the need for lifelong learning and tried to manage lifelong learning processes efficiently. From development of the first computer in mid 1940s to today, computer software and hardware industries developed more than any other industry and this development continues gradually. A software developer gains fundamentals of software engineering during his/her college years and after his/her graduation, he/she allocates much of his/her time for non-formal and informal learning experiences in order to increase his/her knowledge and abilities in software development processes.

In this study, attainability and manageability of informal learning experiences of software developers are researched by using management of learning experiences approach. With this aim, life experiences of the first author of the paper, who is also a software developer, is recorded for a month via life logging system and informal experiences are tried to be determined among software development experiences then they are tried to be managed by using experience processing software. Application is evaluated by both of the authors via observations, written logs and semi-structured interviews.

2. Method

2.1. Action Research

In this study, action research method is applied. According to Kemmis and McTaggart (1988) action research is a common self-reflective investigation technique which is carried out by participants in order to realize their own social or educational activities and the situations at which these applications take place as well as to develop rationalities and judgments related to them (McNiff and Whitehead; 2002). In researchers which are required the researcher to apply the action on his/her own, observe himself/herself during the action and evaluate himself/herself; action research method is preferred because it includes an applicable and manageable process. Action researches for developing a new system, determining problems of an existing system or upgrading it are usually designed as action cycles. In this study, it is aimed to determine the new findings and results of an approach, an approach which is tested and developed and its applicability is also tested within an area defined by certain lines. Because of that action

research is designed as sole action cycle which includes (a) determining the action research question, (b) defining the research, (c) planning and applying the action, (d) collecting data by observing the action, (e) evaluating observation results, (f) reflecting the results critically.

2.2. Question of Action Research

If a software developer records his/her daily life experiences with a life logging system can he/she capture and manage informal learning experiences among them?

2.3. Definition of The Research

In this study daily life experiences of the first author is recorded via a life log system, then they are scanned in order to find knowledge work experiences in personal research environments and management activities related to these experiences are carried out. This process is observed and evaluated by both of the authors.

The action is applied from 15 May till 15 June 2014. During this term, first author of the study recorded his daily life experiences via a life log system and commented on them by interpreting these experiences with the help of the experience processing software once in every two days. A system which works on personal and business computers of the author and catches screenshots and camera shots at every 30 seconds and saves them on OneDrive (SkyDrive) cloud environment is used as a life log system. By scanning these records every week the author collected findings related to these experiences and collected them on a personal knowledge base. Parallel to this transaction he caught and tagged informal learning experiences within his life experiences. Lastly, he used “to do lists” “lists of the activities done” and “lists of the activities she completed” in order to plan, control and evaluate his experiences in his own software development environment.

2.4. Collecting Data by Observing the Action

In order to observe the action, both of the authors recorded their daily activities belonging to this process via life log. Daily records are interpreted by both of the authors via an experience processing software, semi-structured interviews are done by meeting once-twice a week and interview notes are saved as daily activity notes.

2.5. Analyzing Data in Order to Evaluate the Action

Authors collectively evaluated observations and they have made mid-term evaluations by gathering together at the end of each term. With this aim, they used the records they made and interpreted them via life logging system.

2.6. Critically Reflecting the Results

A report, which also includes critics towards application of the action, is formed by using the evaluation results.

3. Findings

The daily life experiences of the first author are recorded for a month and the findings obtained as a result of the observations and evaluation meetings related to the application process of the management of learning experiences related to first author’s experiences held by both of the authors. And they are examined according to the steps of the “management of learning experiences” approach:

3.1. Findings Related to Recording and Interpretation Processes

During application period, images captured by life logging system and saved on OneDrive (SkyDrive) cloud environment are scanned by AllMyListsLE software on hourly, daily, weekly and monthly basis and activities, episodes and stories related to software development process are tried to be determined.

As a result of the examination of the records made during a month by using the abilities of AllMyListsLE software, it is realized that activities of the practitioner-researcher are shaped around two different stories which are mentioned below. Moreover, both research periods and intersecting episodes of each of the stories are mentioned below the related story.

(a) A Project for developing a common purpose learning management software (it started before this research and will continue afterwards):

- Developing user and role registry module
- Developing course management module
- Developing and designing e-learning environments which will be offered within scope of the courses

(b) Designing and structuring new media server which will be used in scope of Anadolu University Distance Education System (This started during the research period and it will continue after the research):

- Determining the Technologies and tools to use
- Determining business plan and calendar

Activities such as coding, development and management of database, visual design, research, examination, planning, testing, communication (e-mail, social networks and news) and meeting are made within the context of these stories and episodes. Even though main activity of the software development process is direct coding, so many different activities are done during this period. Testing the codes is the most important part. During the examinations, it is determined that testing the codes takes time as much as coding

Another activity which should be empathized during coding activity is researching efficient coding techniques. According to a software developer, we can defend that the individual should have aim of searching the latest updates in order to stay updated and develop himself/herself. This effort usually contains following and learning the updated versions of the software development tools (programming language, IDE, add-ons etc.) they used.

Even though personal abilities of the developers differ from each other, usually a developer uses help files while making software development coding. Same situation is also valid for this research. The research showed us that the researcher frequently used help files for both integrated development environment and coding language.

Another activity observed parallel to coding, testing and debugging activities is developing a database. Database management processes include activities such as creating a database, data validation, logging data, deleting and editing.

Visual design is one of the activities done by the researcher during software development process. In order to prepare web based interface of the developed software visual design tools are used.

During the research it is seen that examination, testing and planning activities are mainly carried out for determining re-allocation of a media server in Anadolu University's Distance Education. Activities done during these episodes, software solutions belonging to different producers are examined and compared in scope of the findings obtained. A working plan which shows how the examined media server solutions will integrate Anadolu University Distance Education System is designed.

3.2. Findings Belonging to Contexts

During the research, contexts related to the experiences are tried to be determined and persons, places, episodes, behaviors, features, emotions entities are logged into the lists. It is determined that the data given below is mainly found in these lists.

- **Persons:** Other project members, managers of Anadolu University Faculty of Distance Education, colleagues, corporate representatives and client representatives
- **Places:** Home, office, meeting rooms at the workplace, top management offices
- **Episodes:** Meetings, delivery of reports
- **Behaviors:** During the month of the research daily and weekly routines of the researcher are tried to be determined. The most attractive point of the research is that the researcher prefers working accompanied with music. It is also seen that during the time he spends on computer, he also maintains intensive communication via e-mail, Facebook, Twitter.
- **Entities:** It is determined that the researcher used numerous software, hardware and environments each of them is specific for a purpose or work. Chrome, Internet Explorer, Safari and Firefox browsers and Visual Studio and Sublime Text software development tools grab attention as the most commonly used ones. In addition to them, Photoshop and Illustrator are also used intensively during graphical design processes. For listening music Grooveshark, following news feeds Flipboard and management of Twitter accounts Tweetdeck is used. Moreover, for management of e-mails Gmail and for management of documents Microsoft Office software is used intensively during Daily activities. Google Calendar, Dropbox and Wunderlist are also tools used intensively.

3.3. Findings Belonging to Informal Learning Experiences

Learning experiences found while scanning the experiences are tagged as formal, non-formal and informal learning experiences. Informal learning experiences are also examined in itself and tagged as “implicit (tacit) learning”, “integrative learning”, “reactive (incidental) learning” or “self-directed learning” experiences. Informal learning experiences of the software developer are densified under the topics given below.

- Examination of the sample codes given in online sources.
- Studying help files, tutorials and user manuals provided by producers of software development tools and platforms.
- Scanning community sites of software developers.
- Surfing through Q&A web sites concentrated on software development and system management
- Browsing software development user’s reference books
- Examining journals of other software developers
- Browsing video sharing sites of software developers

When records made during the research are examined, it is seen that learning processes of the software developer are centered on reactive (incidental) and self-directed learning experiences. When we explain all of the software development process on problem-solution axis, we see that the duty of the developer here is finding a solution. The process of finding a solution which happens within a certain process has a potential for creating reactive (incidental) learning experiences. Debugging, testing, searching for help within the context of coding can be defined as casual learning experiences

Software developers of whom can be defined as persons finding solutions, have to keep themselves updated in order to be successful at their jobs. It can be defendable that software developers have self-direction which is feeding on need for development of software developers.

3.4. Finding Belonging to Non Formal Learning Experiences

During the application, it is seen the first author has practices given below towards auditing the current and evaluating the past:

- Creating a working plan and a calendar
- Creating task lists and following them

- Preparing reports
- Working on the Project and writing journal

4. Discussion, Results and Suggestions

Within scope of the research, life logging system is applied individually for a month and application results are evaluated via semi-structured interviews and logs. An analysis towards management level of the individual learning experiences is made from the point of view of a software developer. As a result of the evaluations, it is seen that life logging system carries a potential for being an effective tool for managing informal learning experiences.

Recording their life experiences during certain intervals enables individuals to analyze the life they experienced later. Evaluating life experiences fast and easily makes this system sustainable. The life logging tested in this study enabled users to record their own life experiences fast and easily so that they can make their individual evaluations towards past successfully.

The life logging system gives the practitioner-researcher the ability to observe his own life experiences with the third eye. The recorded life experiences gives an opportunity to developers to make their self-evaluations. It makes possible to analyze time management, one of the most important elements of the project management processes, within the individual context.

Many of the tacit knowledge may be lost experienced during software projects focused on a specified target with limited time without being noticed. Life logging system enables us to make self-evaluation which is required for uncovering the tacit information we experienced but didn't realize faster and easier.

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