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Record, evaluation and planning of knowledge work experiences on personal research environments via life logging system

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Abstract

In this study, record, evaluation and planning of knowledge work experiences in personal research environments is applied via a life logging system, which has ability to capture screen shots and camera shots continuously for a month and then observations of this study are discussed. The life logging system is individually applied by first author for a month and then it is evaluated by both of the authors via logs and semi-structured interviews. As a result of the evaluation, it is seen that the life logging system has a potential for managing knowledge work experiences on personal research environments.

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1. Introduction

1.1. Knowledge work environments and personal research environment

According to Mutlu (2014a) the experiences based on individual's personal data, information and knowledge can be gathered under seven different environments such as "personal communication environment", "personal media environment", "personal transactions environment", "personal working environment", "personal publishing environment", "personal learning environment" and "personal research environment" by using environment approach. When they are compared according to the competencies, they are required to have, personal communication environment is the most commonly used environment. And it is followed by personal

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media environment. After these two, personal transactions environment comes. The environments mentioned until this point are the ones which are used intensively by the groups other than the knowledge workers. The predominant environments of the knowledge workers start with personal working environment. Personal publishing environment follows that. Personal learning environment contains partially all the environments mentioned before. Last one is the personal research environment and it represents the highest level of the knowledge work.

Today, scientific research activities mainly carried out on computer environments and Web 2.0 technology provides significant opportunities to share the research, sources and results. Online libraries, research platforms, scientific social networks, document share applications, bibliographic reference management software, social bookmark managers, citation indexes, blogs and wikis, scientific news services, open access services have become the tools that researchers spent more time with and the group of these tools forms personal research environment. At the first phases of internet, accessing data and information were important but after Web 2.0 the “sharing” became the outstanding activity. In personal research environments, main activities are grouped as sharing the research’s itself, sources and results of the research. (Rebuin, 2011, Mutlu 2013).

1.2. Knowledge work environments and personal research environment

When it is considered on an integrated basis, personal knowledge contains all the life experiences which are related to individuals’ personal data, information and knowledge and happens at individuals’ knowledge work environments and these experiences are mingled with the other life experiences of the individual. Not all of the knowledge work experiences are planned beforehand and neither they occur deliberately. By borrowing the approach which is used in “extended informal learning model” (Mutlu, 2014b) taxonomy given below can be formed according to initial planning and consciousness of the knowledge work experiences:

- Implicit (tacit) knowledge work experiences which are happens unconsciously and unplanned.
- Integrated knowledge work experience which happens unconsciously but planned.
- Reactive (incidental) knowledge work experience which happens consciously but unplanned.
- Self-directed knowledge work experience which happens consciously and planned.

While individuals easily realize their self-directed learning experiences simultaneously or later on, realizing other life experiences is not easy and it is mainly dependent on strength of the individuals’ memory and ability to review their life. In order to realize the experiences at individuals’ knowledge work environments, it is required to capture and record all the life experiences of the individual’s physical and virtual environments.

1.3. Recording knowledge work experiences

Simultaneous record of personal experiences is named as “life log” and it is focused to save, archive and access the data and information gained via wearable-portable sensors (Bell and Gemmell, 2009; Sellen and Whittaker, 2010). The first idea of saving life experiences is dated back to Memex vision of Bush (Bush, 1945). In 90s life log researches gained importance with the help of Mann’s wearable computer studies (Mann, 1997), and Aizawa’s studies (Aizawa et al., 2004), Microsoft’s SenseCam camera (Hodges et al., 2006) and MyLifeBits Project developed by Gemmell and Bell (Gemmell et al., 2002).

Even though cognitive, spiritual and religious experiences cannot be saved directly, it is possible to save physical, social and virtual experiences. A tool named as “multiple device based life log system” developed by Mutlu (2014b) to save learning experiences can also be used to save knowledge work experiences. In this system, a wearable camera which records camera shots at every 30 seconds is used for saving experiences occur in physical environments. In order to save the experiences occur in virtual environments software which can take screenshots at each 30 seconds is used on desktop computers, laptops and tablets. The content belonging to knowledge work is not recorded via camera shots and screen shots instead a mnemonic visual related to the work is obtained. These visuals are enough for retrieval and recognition of the knowledge work experiences.

1.4. Recording knowledge work experiences

Inspired by “management of learning experiences” (Mutlu 2014b) an approach which is for management of experiences in personal knowledge work environments, a three stepped approach mentioned below is suggested (Mutlu 2014a). Third stage of the approach is updated and typology of knowledge work experiences is included.

- Do the knowledge work. (With this aim individual uses processes and tools suitable for the nature of the knowledge work in knowledge work environments.)
- Save knowledge work experiences passively. (Experiences of individual in physical and virtual knowledge work environments are saved as screenshots and camera shots at 30 second intervals spontaneously.)
- Manage knowledge experiences. (At this stage, the individual relates the experiences with the context space and comments, do activities such as tagging knowledge work experiences, and activities such as evaluation-controlling-planning)

At the third stage of the suggested approach, the individual scans life experiences he/she obtained via the life log tool and interprets these experiences hierarchically such as “activities”, “episodes”, “stories”. Then places, persons, events, behaviors, attributes and assets related to these experiences are transferred to lists of contexts and notes taken for every context. Knowledge work experiences are tried to be determined by evaluating experiences and comments, then these experiences are tagged as “implicit (tacit) knowledge experience”, “integrative knowledge work experience”, “reactive (incidental) knowledge work experience” or “self-directed knowledge work experience”. Lastly, planning lists towards future, control lists for current situation and evaluation lists for past are created for management of knowledge work activities.

In this study, attainability and manageability of knowledge work experiences are researched by applying “management of knowledge work experiences” approach. With this aim, life experiences of the first author of the paper, who is also a Ph. D student at dissertation level, are recorded via life log system for a month and knowledge work experiences in her own personal research environment are tried to be caught and managed via experience processing software. Application is evaluated with the help of observations, logs and semi-structured interviews by both of the authors.

2. Method

2.1. Action Research

In this study, action research method is applied. 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 (Kemmis and McTaggart, 1988: 5; McNiff and Whitehead; 2002). Action research method can be applied for the studies in which action is applied by researcher’s himself/herself, self-observation during the research and self-evaluation periods and it is also preferred because of the fact that it includes an applicable and controllable process. Action researches towards developing a new system, determining problems of an existing system or improving it are usually developed as action cycles. In this study, it is aimed to obtain new results and findings by applying an approach which is designed and tested before within a bordered area. Because of that action research is designed as an action cycle which contains steps such as (a) defining the question of action research, (b) defining the research, (c) planning and applying the action, (d) gathering data by examining the action, (e) evaluating the observation results and (f) reflecting results in a critical approach.

2.2. Action research question

If a knowledge worker saves daily life experiences via a life log system, can he/she catches and manages knowledge work experiences in his/her personal research environments among these experiences?

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.

2.4. Planning and applying the action

The action is applied from 15 May till 15 January 2014. During this term, first author of the study recorded her daily life experiences via a life log system and commented on them by interpreting these experiences with the help of a 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 which are accompanied with these experiences and collected them on a personal research environment. Parallel to this transaction she caught and tagged personal research environment experiences within her life experiences. Lastly, she used “to do lists” “lists of the activities done” and “lists of the activities she completed” in order to plan, control and evaluate her experiences in her own personal research environment.

2.5. 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.

2.6. Analyzing data in order to evaluate the action and critically reflecting the results

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 log system.

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

3. Findings

The first author’s daily experiences by using life log system recorded for a month. And the “management of knowledge work experiences” approach is applied on them for a month. And the findings obtained via observations and evaluation meetings carried out by both of the authors are arrayed according to management of knowledge work experiences approach.

3.1. Critically reflecting the results

Images belonging to life experiences which are recorded to the cloud environment via OneDrive (SkyDrive) and caught by life journal system are scanned on hourly, daily, weekly, monthly basis and activities, episodes and stories related development period of the software are tried to be determined. In order to make it clear in scope of management of knowledge work experiences, comments which can be found during longer research periods are also mentioned.

Activities: Because of the fact that the first author, whose life experiences are recorded via life log system, is at dissertation stage, it is seen that most of the knowledge work experiences she had on her personal research environments are about her dissertation thesis writing. In this phase, she deliberately worked on her thesis. Aims are determined by defining the problem and framework of the method part of thesis are tried to be formed. Draft

of the thesis proposal presentation is prepared. At the same time, summarization and archiving of the researches are made with the help extensive literature scans for reporting process. During application period weekly interviews are regularly made with counselor and all of them are recorded. Another experience occurred in this period as a result of the writing process of two separate papers for presenting them at a congress.

If the study wasn't limited to a month, it would have been covered all the thesis writing process and it would have included a wide list which contains literature scan, taking notes, creation of the draft, quotation, referring, writing sub-chapters of the thesis such as summary, introduction, collection of data, data analysis, findings, discussion, results, suggestions, writing references, making interviews with the counselor, preparing thesis follow-up juries and attending them, preparing thesis presentation and presenting them in addition to the activities mentioned above.

Episodes: During application period, dissertation proposal is prepared. During dissertation proposal preparation period, problem, aim, importance and limits of the thesis study is asserted first and main framework of the method chapter is determined. At the same time members of the jury is assigned and both the author and members of the jury are informed.

It is seen that main episodes of thesis writing process are determination of the thesis subject, making weekly interviews with the advisor, attending thesis follow up juries, writing parts of the thesis consequently or correspondingly, attending thesis defense jury. These episodes are the ones which triggers, directs and enables us to categorize meaningfully all the activities belonging to the process and they will be remembered even though long time passes after the thesis writing process.

Stories: Stories are summaries of life log entries at the highest level which are used for defining the individual's life with its main lines. For an academician conducting a research, giving lectures and performing his/her administrative tasks, if he/she had any, are main stories and main episodes related to his/her carrier. During application period main story defined in personal research environment is thesis writing process' itself. Other story contains other academic publishing works which are carried out during the same period. Third story is administrative tasks of the author who also continues her job as a manager of e-certificate Programmes of Faculty of Distance Education.

3.2. Findings Related to Contexts

During research, findings related to recorded experiences are tried to be determined and persons, places, episodes, behaviors, features, emotions, assets are logged into their own lists. Even though, some of the entries in contextual lists related to the experiences are the ones which appeared for the first time during the research period, some part of them are the ones which are related to the new experiences she had during the research process. The data given below is found mainly in lists of contexts.

Persons: It is seen that thesis advisor, members of thesis follow up jury and the environment which mainly consists of colleagues with whom thesis subject is discussed, co-authors with whom she worked together while writing the paper, her supervisors to whom she communicates with in order complete her administrative tasks and her colleagues are main entries.

Places: It is seen that during that period personal research environment is mainly used at her office and home. Besides, she accessed her personal research environment for meetings she holds with other authors and her advisor for her administrative tasks.

Events: During this process main events are determination of thesis subject, appointment of members of jury and basic events related to administrative tasks (exams of the certificate programs she is responsible for and beginning of the new semester.)

Behaviors: Behaviors are routines we have. Daily, weekly, monthly and annual routines of the author during the research process are tried to be determined and recorded. Fundamental behaviors towards personal knowledge work in personal research environment defines our practices such as accessing the information, creation of information, changing, forwarding and saving it.

Attributes: The characteristics an individual have are formed, changed and accumulated in time. The new administrative responsibilities undertaken by the author of the paper during research period can be given as an example of the new characteristics she gained related to her personal research environment

Emotions: Contexts related to emotions may contain the entire perception that cover individual's inner world. Especially life-deep learning experiences are closely related to the individual's subjective perception, his/her inner world and his/her past and while individual manages his/her life he/she usually ignores these contexts. From time to time individuals know and manage themselves better as long as they put on paper the experiences which are accompanied to these contexts.

Assets: Assets of knowledge work experiences in personal research environments are the tools which can be usually defined as the software, hardware and services used, sources and contents. It is observed that during her research period author used online resources that belong to Anadolu University Library very often.

3.3. Findings belonging to knowledge work experiences take place in personal research environments

The learning experiences found while scanning these experiences are tagged as “implicit (tacit) knowledge experience”, “integrative knowledge work experience”, “reactive (incidental) knowledge work experience” or “self-directed knowledge work experience”. It is seen that the knowledge experiences of the author are concentrated on the headlines given below.

3.3.1. According to knowledge work environments

Personal communication environment and personal media environment: In addition to the e-mail, it is observed that various social media environments are used. It can be said that, especially on social media environments, covered knowledge work experiences happen unplanned and unconsciously. For example, while she was in communicating with her friends via a social network, an article about benefits of the yoghurt was suggested on the same screen and after it is read by author it made her to have an unplanned and unconscious learning experience. Suggestions of social media sites similar to this kind of knowledge sources which cause the occurrence of a lot of covered knowledge work experiences. These experiences are interpreted by scanning the screen shots which are taken at every 30 seconds.

Personal transactions environment: During research period, main transactions are the ones done at Anadolu University website, online library transactions, services of online magazines, transactions made on the website of the conference she is interested to.

Personal working environment: During research period, a personal working environment, on which Microsoft Office software and internet based software are mainly used, is utilized in order to complete administrative tasks.

Personal publishing environment: During research period nothing is published on author's o personal Blog and wiki pages. In real life, both of these two personal publishing tools will be used more in order to direct the PhD dissertation process.

Personal learning environment: It is seen that web browsers and folder, in which she backs up the documents she gets, are at the center of author's personal learning environment.

Personal research environment: It is observed that the author mainly benefits form online library services of Anadolu University. Also she plans to use Mendeley reference management software more in order to manage her academic studies.

Self-driven knowledge work experiences, which are consciously planned, carried out. And also they are observed on personal work, personal learning and personal research environments. While she is writing her doctorate thesis, the author follows certain calendar and obeys her daily, weekly and monthly working schedule. During application period she scanned sources she determined in literature, archived the researches which she will use in her thesis by summarizing them and she has done planned activities such as taking notes, recording, and reading.

3.3.2. According to activity type on personal research environment

Sharing the research: Sharing the research on personal research environments are usually done via research platforms, scientific social networks and file share applications (Mutlu, 2013). It is also observed that the author shared her publications on Academia, ResearchGate and SlideShare in this period.

Sharing resources: Researchers would like to share their sources with the others and benefit from other researchers sources during their research. With this aim, they use bibliographical reference management software, bookmark managers and citation indexes (Mutlu, 2013). It is seen that the author uses Mendeley, Diigo, Google Scholar Citation and Microsoft Academic Research web sites during this period.

Sharing results: One of the fundamental characteristics of Web 2.0 and social networks is the fact that they enable researchers share the results of their researches via blogs, wiki sites, news services, open source magazines and open source archives. So researchers can introduce their researches more to the other researches and enable them to cite from their own work (Mutlu, 2013). Because of the fact that the academic studies of the authors haven't been resulted yet, activities related to share of the results haven't been observed.

3.3.3. According to knowledge work typology

Implicit (tacit) knowledge work experiences: It is observed that, implicit knowledge work experience are unwittingly within the self-directed knowledge works which are carried out planned and deliberately. While author is conducting her planned knowledge work, she also realizes that she reached a lot of information and gained experience unwittingly and unplanned.

Integrative knowledge work experiences: While the author was writing the report of her thesis proposal, she had integrative knowledge work experiences which happened planned but unwittingly. Even though reporting period is a planned activity, the learning experiences she gained unwittingly during this period, are evaluated under integrative knowledge work experiences.

Reactive (incidental) knowledge work experiences: Unplanned and deliberate reactive knowledge work experiences are coincided frequently especially during literature scan. The knowledge work carried out which includes reaching primary sources of the citations made from other sources can be placed in this category.

Self-directed knowledge work experiences: When screenshots and camera shots taken during the application period are interpreted it is realized that self-directed learning experiences are the ones which disguised fastest and easiest. Author could determine easily the knowledge work experiences which were started in a plan and she was also aware of the fact that they will end up with learning by examining the record imageries.

3.4. Findings belonging to knowledge work experiences take place in personal research environments

During the application period, it is seen that first author has abilities towards planning the future, supervising the current and evaluating the past and these are mentioned below:

A calendar, which is required to follow during the thesis writing period, is prepared and monthly activities are determined in accordance with this calendar. Studies are conducted mainly according to scheduled work-time chart. Monthly activities are determined on this calendar later on weekly and daily activities are also determined. Annual working plan is summarized on a monthly basis and logged into the AllMyListsLE experience processing software. When the time of planned episodes and activities come, they are evaluated by reviewing their completion rates. On the other hand, previous events and activities are also reviewed and this enabled user to update his/her current and upcoming episodes and/or activities. During research period planning, supervision and evaluation processes are applied for a month. It is foreseen that the process will be applied after the research period in order to easily follow knowledge work activities from previous year, current year and upcoming year.

4. Discussions, results and suggestions

Continuous record of daily life experiences of the individuals via life logging tools enables us to evaluate these experiences later. The system is also required to be economic and easy for sustainability. In this study,

passively and non-assertively recording the experiences via life logging system, then scanning fast and systematically the caught experiences by the individual and developing them by interpretation are enabled with the help of existing suitable tools.

The results mentioned below are obtained at the end of the research:

In this study, operating researcher recorded all of her knowledge work experiences via life logging system on her personal research environment for a month. She scanned these records once every two days via AllMyListsLE software and defined knowledge work activities, episodes and stories. Practitioner -researcher applied the three staged “management of knowledge work experiences” flawlessly from beginning to end with the help of the experience she gained during another research she conducted via management of learning experiences by using same tools.

The author focused on the knowledge work experiences, which belong to a specific story (writing a PhD thesis), so she was able to distinguish the episodes and activities related to this story amongst the others. She gained ability to interpret each episode together with the context they belong to while her awareness towards contexts related to these experiences are increasing. And she turned her personal database which is created by these contexts into a powerful personal knowledge management tool.

Later on, she also realized her unplanned or unwittingly learning activities in addition to her planned and conscious ones with the help of crosshatching. Especially determining unplanned and spontaneous covered knowledge work experiences in personal learning environments and recording them later on, supports revealing process of the covered knowledge of the operating researcher.

Planning knowledge work experiences in personal research environments as activities, episodes and stories, auditing and evaluating the experiences he/she had with these concepts enables us to manage these experiences flawlessly and fluently.

Systematical observation of knowledge work experiences is a relatively new research area. In this study, natural steps of method of management of personal knowledge work experiences are applied on only one practitioner for a month. If we apply method of management of personal knowledge work experiences in future studies on more subjects, it will be possible to find out the acquisitions of the individuals and nature of the method in details.

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