Considering a pull mechanism for an Informal Learning Activities Collector

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Abstract. There is a recent interest in the research of Lifelong Learning and other related kinds of learning (formal, non-formal and informal). Some projects have been held in order to propose frameworks for managing all these types of learning, giving special attention to the informal learning. The TRAILER project is one of them. It supports the identification and management of informal learning activities. It gathers informal learning activities with an Informal Learning Collector (ILC) and a Portfolio is used to make visible how much a learner acquires informal learning. The main way for registering informal learning activities data into the ILC is using push mechanisms where the user explicitly introduces such information. In this paper, we propose an alternative way to register information about informal learning activities, by using a pull mechanism, where the ILC collects data from external applications. In this sense, we improve ILC usability.

1   Introduction

Lifelong learning is not a new term [1], but recently there is an increasing interest in this concept. Some organizations, foundations and projects such as the University of the Third Age (U3A) [2] and the Lifelong Learning Programme of the European Community [3] are working to promote and facilitate continuous learning for all kind of individuals.

In the field of lifelong learning, three main types of learning arise, formal, non-formal and informal learning. As defined in EC (2001):

- Formal learning is structured, organized and intentional. It is given by an education center, institution or organism with a defined curriculum and leads to a recognized certification. Contemporary History Course in an example of formal learning.
- Non-formal learning is usually organized and intentional and normally takes place alongside formal learning complementing it. The purpose of this learning is not to lead in a certification although some programs end with an accomplishment certification. Security at work training course is an example for adults. English as an extracurricular course is an example for children.
- Informal Learning encompasses all the learning resulting from everyday activities, those skills obtained through life and work experiences. Informal learning is not structured in terms of goals and time and can be intentional or unintentional. A baby learning social norms is an example of informal learning for children. An expe-

rienced employee mentoring a new hired employee is an example of informal learning for adults.

Informal learning is often seen as a residual concept of any type of not organized learning which does not take place within a learning organization [4] not deserving too much attention. Others argue [5, 6] that informal learning enhances employability, gives employees the chance to keep learning in the workplace, and helps them improve their conditions and continue being relevant throughout their career. Informal learning supports what Polanyi [7] understands as tacit knowledge, a concept that has been largely discussed [8][9].A type of knowledge that has more to do with experience, skills and competences than with theoretical concepts. To compete in a global market, organizations are looking for its employee's talent, the embedded knowledge of the organization or the acquired tacit knowledge, which can be visible by identifying and recording all the kinds of employees learning.

European Union and UNESCO efforts attempt to highlight the important role of informal learning in the Knowledge Society. As noted in the proposed definition, informal learning is intrinsic to human behavior, that is, it occurs from birth and throughout the individual's life. Essentially, it is the way in which an individual learns how to perform their daily activities. Thus, informal learning takes place everywhere including inside formal and non-formal education organizations [10] as a hidden curriculum.

Learning is happening everywhere all the time. Formal and non-formal learning are recognized, but informal learning is not well understood, remains invisible and it is not recognized. Informal learning leads to skills, competences and know-how which is relevant and significant at the workplace. Then, it deserves the same attention and recognition that formal and non-formal learning. The initiatives above mentioned pretend evaluate and validate all kind of individuals learning, giving visibility to the informal learning.

2 Informal Learning Projects

Historically the learning acquired through informal means has been largely ignored in more formal contexts like a curriculum, but this is starting to change [2]. The gradual recognition of the importance of informal learning has led to the development of a number of projects aimed to manage it. Some examples are the following.

FREE [11] (Fostering Return to Employment through Entrepreneurship, Innovation and Creativity). This project defines an interactive tool aimed towards people working with the unemployed. Its aim is to help these people improve their hard and soft skills so that they may provide a better service to the unemployed.

IBAK [12] is an EU funded project addressed to professionals working in the field of lifelong learning and aims to help adult education institution by providing a framework for identifying, assessing and recognising informally acquired competences.

The TRAILER project [13] [14] , funded by the European Union, aims to facilitate the identification of informal learning by the learner, and provide a set of tools that

will help the learner present it in a way that will be easier to be recognized and valued by an institution, a company, an organization, etc.

All of them have in common that store and collect data relative to Informal Learning Activities. In the particular case of the TRAILER project, the component that gathers information about Informal Learning Activities is the Informal Learning Collector, described in the following section.

3 The Informal Learning Collector

The TRAILER framework consists basically of an Informal Learning Collector (ILC) and a personal Portfolio. The role of the ILC is to act as a gatherer of all the Informal Learning Activities a learner undertakes and provide an interface for the learner to add metadata to each activity before sending it to the Portfolio. These metadata include tags, comments, activity content, activity type and association with specific competences. After the learners have defined all the metadata they wish, they can send the Informal Learning Activity to their portfolio where they can create activity showcases and export their informal learning curriculum in a more formal format.

Fig.1. ILC internal architecture
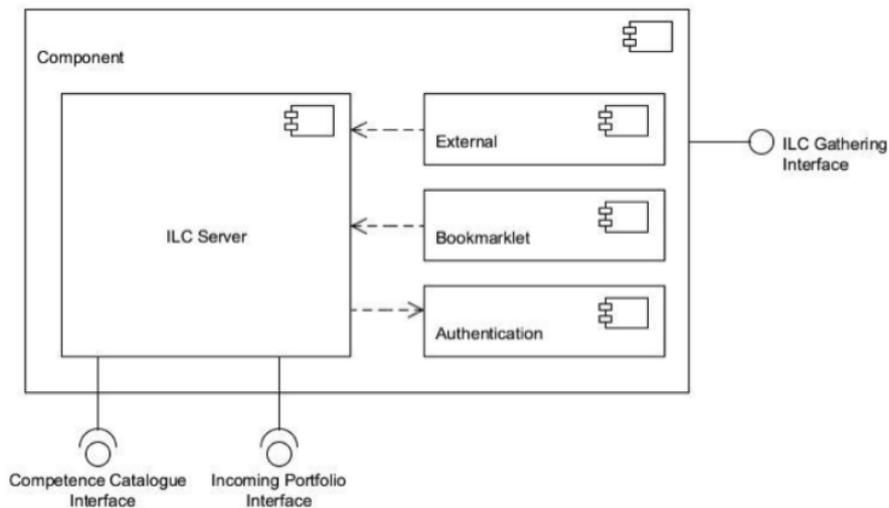
The ILC architecture provides three different ways to send Informal Learning Activities to the ILC: manually, a bookmarklet and a set of web services.

With the manually method, the user enters the informal learning activity information directly to the ILC by means of a specific web-based interface. This process implies that the user must change his/her activity context disrupting from his/her current work activity. Moreover, to keep up to date all desired activities in the Portfolio it requires some extra effort by the user.

The bookmarklet method is less disrupting, since it allows registering Informal Learning Activities while browsing the net. It requires less effort than the above method since some data is collected automatically from the web (i.eurl, title, etc). However, other data like tags also requires to be entered manually by the user.

Finally, the ILC provide a set of web services used by external applications to get user information and to register informal learning activities information. These services provide a mechanism to allow the communication between the ILC and external applications. In order to ensure as much connectivity as possible, ILC supports the most common communication protocols.

The first two methods for registering data of informal activities are based on a push mechanism while the third one is based on the pull mechanism. With the push mechanism, the user has the responsibility to initiate and perform the data entry action, meanwhile with the pull mechanism, an external application notifies that the user has performed some activities in some external application, and the ILC must gather activities information from the external application.

With respect to the push strategy used in the manual and bookmarklet methods we have some user feedback:

- The data entry is cumbersome: All users found tedious to search net resources they have read and enter them into the ILC even with the bookmarklet.
- Yet another tool: Some users were complaining about having to enter data in another tool. Some of them had their own practices using cloud services to store related information about resources they have read.
- Users were wondering to have any tool to easily retrieve information from other applications and send it to the ILC.

Fig.2. Chart depicting the activities sent using the manually and bookmarklet methods
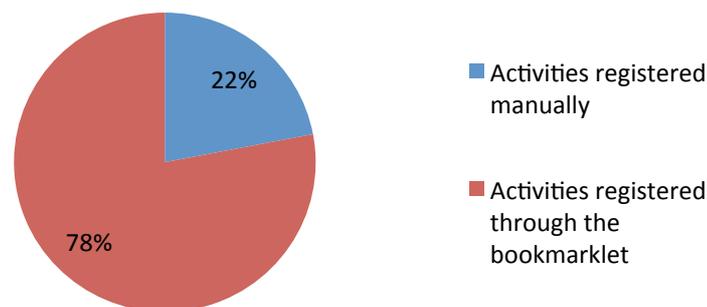
We have also recollected statistics about the use of these push strategies. We recollected the method (manually or bookmarklet) used to send any informal learning activity to the ILC. Informal activities were, mostly, sent using the bookmarklet method: 78% of informal learning activities were sent using the bookmarklet method while only a 22% of informal learning activities were sent manually.

From the data presented (user feedback and use statistics) we conclude that users prefer more automatic and guided methods for entering data.

Therefore, we wonder if the user experience can be enhanced by adding a pull method to introduce Informal Learning Activities into the ILC. That is, if we can integrate a large set of third applications, extractdata concerning knowledge activities-from these applications and send them to the ILC as an informal learning activity. In this sense, we have designed a first experience of such strategy based on an external application called Pocket.

4   Pull entry data method for ILC

In a pull mechanism is the application that retrieves information rather than asking the user to introduce it. This information is retrieved from other external applications. For security reasons, the user has to authorize the application to have access to any other external application. This is done once and for each external application.

With a pull mechanism for entering Informal Learning Activities, the ILC can prompt to the user a list of Informal Learning Activities recollected from the data of external applications. At this point, we can consider two alternatives for selecting the relevant activities for the ILC. One alternative is to notify the ILC when there are Pocket activities considered as relevant. Then the ILC gathers and introduce these activities. The other alternative is to retrieve all activities from the Pocket, display them to the user and let him/her to mark which activities he/she wants to record in the ILC.

When starting to design the integration of an external application some questions arose, the majority, related with how to extract external application data:

• Which applications can be considered as data providers for Informal Learning activities?
• Which data from external applications should be recollected by the ILC.
• With which detail level the data is going to be recollected.
• And finally, how to match external data with required ILC data?

In next section we explain our solution and how we answered these questions.

5   The Pocket Case

Pocket, formerly known as "Read It Later", is an application for managing a reading list of articles from the Internet. Pocket allows saving articles, videos or images from the web, tag, search and share them. Saving articles to Pocket is easy and there are a variety of ways to perform this operation: via e-mail, from over 300 third-party applications, using Chrome, Firefox and Safari extensions, with a bookmarklet for any other web browser, manually through the Pocket Web Application and with Share Page Menu on Android and Kindle Fire [15].

A Pocket item is any stored resource (i.e articles, videos, etc). For each item, Pocket application saves the title, the URL and a short description extracted from the net. For each item the user is able to store more information tagging it, marking as favorite item or as a read item.

We have developed a component integrated into the ILC architecture called "Pocket to ILC". Its main feature is to pull information from Pocket and list it to the user. Then, when the user enters into the ILC is able to register Informal Learning Activities extracted from its Pocket account. For this purpose, we selected the second alternative to allow the user registering related informal learning activities. We implemented a new component into the ILC to gathers all items from Pocket and then lists them to the user. The user can mark all the items he/she wants to send to the ILC. Once the user has selected all the items he/she wants to send to the ILC, the user can send them as Informal Learning Activities. Finally, the ILC save the activity.

Taking into account the questions we have stated to guide how to design the data extraction on the integration process between two applications, in our case, we have considered this aspects:

- Which applications can be considered as data providers for Informal Learning activities? In our case, we only consider Pocket application as a first pilot application.
- Which data from external applications should be recollected by the ILC? Data we collect from the Pocket application is related to the activity a user performs with the Pocket application. Pocket and ILC are used to register activities a user does while navigation through the web (Pocket) or while performing Informal Learning Activities (ILC). We have considered that registering information a user finds while he/she navigates through the web is an Informal Learning Activity. Therefore, the Pocked to ILC component gathers the same basic information Pocket collect in each their items: Title, URL and Tags.
- With which detail level the data is going to be recollected? In our case, we gather the information as stored in the Pocket application without additional aggregation nor simplification. Our component does not consider additional information of a Pocket item such as description, observations, favorite or read status, etc. The main reason is because such comments and annotations may be different from a learning point of view (ILC) than from a simple recorder of Internet resources (webpages, images, videos, etc.) like Pocket. Whit the ILC interface the user can maketheir own annotations and descriptions.
- And finally, how to match external data with required ILC data? Our component obtains the basic information from a Pocket item, which it matches perfectly to the required format of the basic information of an Informal Learning Activity stored in the ILC.

We have run the Pocket to ILC pilot in order to get user's perception about the third way to register information into the ILC. During one week the users were ask to send Informal Learning Activities to the ILC. For this purpose they had available all three methods to send activities to the ILC, those supplied by push mechanisms (bookmarklet, and manually) as well the Pocket to ILC pulling mechanism.

After that week, we ask users for feedback. They valued positively the pull mechanism. Most of them highlighted that, with the new method, entering Informal Learning Activities was less tedious. They found that being notified about Informal Learning Activities by the ILC was a good improvement. Some also stated that pulling information from Pocket was less disrupting. They only had to save an item into Pocket (which is done automatically by Pocket application) and then was automatically included into the ILC. We have to note that most of our users were currently using Pocket to store and retrieve net resources.

6 Conclusions

Informal learning is just as important as formal and non-formal learning, however identifying, managing and giving visibility to informal learning is not an easy task. Concerned about the importance of informal learning, several projects have been held in order to recognize this type of learning.

The TRAILER project [13] [14] facilitates the identification of informal learning activities but we have seen that can be improved by means of usability. The main way for adding informal learning activities was using pushing mechanisms. We have added a pull mechanism to the ILC and test this new feature. According to the received feedback from users we concluded that adding such a mechanism improve the ILC. Users are more willing to use the ILC when the data entry is simplified and requires less effort and time for them.

The new pulling mechanism is useful but does not resolve all the problems regarding the introduction of Informal Learning Activities. Firstly, it should be implemented for a large list of external applications to be able to notify to the user the maximum number of Informal Learning Activities. A priori we don't know which other applications individuals are using to learn informally. Secondly, each external application stores different data and with different granularity. The matching between external application data and ILC data could not be so direct like in the Pocket case. Finally, it should be studied which data is going to be recovered from the external application, obtaining directly from the external application only those activities that are relevant for the ILC portfolio.

7 References

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