

Lifelong Learning Hub

Citation for published version (APA):

Tabuenca, B., Kalz, M., & Specht, M. (2014). Lifelong Learning Hub: A Seamless Tracking Tool for Mobile Learning. In C. Rensing, S. de Freitas, T. Ley, & P. J. Munoz-Merino (Eds.), *Open Learning and Teaching in Educational Communities: 9th European Conference on Technology Enhanced Learning, EC-TEL 2014, Graz, Austria, September 16-19, 2014, Proceedings* (1 ed., pp. 534-537). Springer International Publishing. https://doi.org/10.1007/978-3-319-11200-8_59

DOI:

[10.1007/978-3-319-11200-8_59](https://doi.org/10.1007/978-3-319-11200-8_59)

Document status and date:

Published: 15/10/2014

Document Version:

Peer reviewed version

Document license:

CC BY-SA

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

<https://www.ou.nl/taverne-agreement>

Take down policy

If you believe that this document breaches copyright please contact us at:

pure-support@ou.nl

providing details and we will investigate your claim.

Downloaded from <https://research.ou.nl/> on date: 03 Nov. 2024

Open Universiteit
www.ou.nl



Lifelong Learning Hub: A seamless tracking tool for mobile learning

Bernardo Tabuenca, Marco Kalz and Marcus Specht
Welten Institute, Research Centre for Learning, Teaching and Technology
Open University of the Netherlands; Heerlen, The Netherlands
{bernardo.tabuenca,marco.kalz,marcus.specht}@ou.nl

Abstract—Lifelong learners’ learning activities are scattered along the day in different locations and they make use of multiple devices. Most of the times adults have to merge learning, work and everyday life making it difficult to have an account on how much time is devoted to learning activities and learning goals. Learning experiences are disrupted and mobile seamless learning technology has to find new solutions to integrate daily life activities and learning in the same process. Hence, there is a need to provide tools that are smoothly integrated into adults’ daily life. The contribution of this demonstration is presenting a mobile tool that leads the lifelong learning towards a self-regulated process: foster awareness on learning goals and learning moments; facilitates the user to keep track of learning time with frictionless interface; fosters engagement and motivation on the task providing useful statistics. The 3LHub project has been released under open access with the aim to foster adaptation to further communities as well as to facilitate the extension to the increasing number of NFC tags existent in the market.

Keywords: seamless, lifelong learning, feedback, seamless learning, self-regulation, natural interaction, NFC, sensors

1 Introduction

Nowadays, lifelong learners are confronted with a broad range of activities they have to manage everyday. In most cases they have to combine learning activities and their professional and private life linking formal and non-formal learning activities. In the setting of an adult lifelong learner this is especially difficult as in most cases interests might be highly distributed over different domains and keeping up learning needs an extra effort. One of the main challenges here is the bridging of learning activities between different contexts.

Mobile seamless learning technology can offer solutions to the address this problem [1] [2] The learner-centric view of mobile seamless learning [3] suggests that *a seamless learner should be able to explore, identify and seize boundless latent opportunities that his daily living spaces may offer to him (mediated by technology), rather than always being inhibited by externally-defined learning goals and resources.*

In summary, there is little support for lifelong learners that typically try to learn in different contexts, are busy with multiple parallel learning tracks, and must align or

relate their learning activities to everyday leisure and working activities. Hence, there is a need to provide suitable tools for lifelong learners to facilitate bridging learning experiences in a seamless flow. In this paper Near Field Communication (NFC) is proposed as an instantiation for natural interaction with mobile devices and for seamless integration of technology in lifelong learning.

2 The Lifelong Learning Hub

This demonstration presents the *LifeLong Learning Hub*¹ (3LHub) as mobile seamless tool for self-regulated learning that aims to cover the following gaps in lifelong learners' learning process:

1. No support for learning activities across locations, devices and environments.
2. No linking between learning activities and everyday life.
3. Incompatibility between NFC-tags and NFC-readers is blocking further expansion of the NFC technology for open (educational) communities.
4. No feedback on lifelong learning activities.

The 3LHub has been designed based on the seamless notion that lifelong learners can learn in a variety of scenarios and can switch from one scenario or context to another easily and quickly, using the personal device as a mediator. This tool has been conceptualized on the idea that mobile technology can be smoothly integrated in daily life activities whenever interacting with it requires the least number of clicks (zero) possible and the duration of any action with the tool lasts not longer than 20 seconds. The 3LHub features the following functionalities:

2.1 Set goals

This stage assumes that the user reflects on his autobiography as a learner mapping learning goals to learning environments identified by NFC tags (See use cases in figure 2). Whenever the user sets a new goal in 3LHub, he should get a NFC-tag, tap it with the NFC-enabled mobile device, characterize the goal with a name, specify the expected outcome when the goal is finished, estimate how much time (in minutes) will he devote to this goal on daily basis, and indicate when the goal should be finished. Placing an NFC-tag in a physical learning environment enables the connection of a variety of tracking data with the learning activity. For example the "check-in" at a NFC tag can track the learners use of a specific resource, at a certain time of the day, in a specific location.

¹ The Lifelong Learning Hub project. <https://sites.google.com/site/lifelonglearninghubproject/>

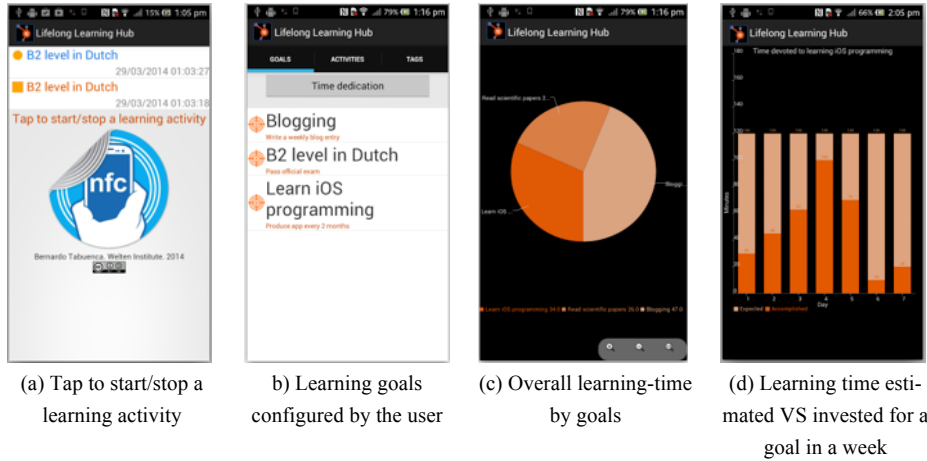


Fig. 1. Binding goals to NFC-tagged learning environments with 3LHub

2.2 Perform/track learning activity

Lifelong learners recur to specific locations (e.g. desktop, coach) and moments (e.g. waiting times, transitions) to accomplish their learning activities along the week [4]. Learning activities should be tracked in a way that the transition from/to daily life activity can be done with effortless interaction, otherwise the user will not bother to track such a short learning moments, and as result it will never be accounted as learning time.



Fig. 2. Learning activities (write, read, listen, watch) bound to daily learning environments

This feature considers that the user will tap the associated NFC-tag every time he starts/stops a learning activity (Figure 1a). Hence, 3LHub harvests all learning moments and accounts them as real learning time with frictionless interactions.

2.3 Monitor learning activities

The 3LHub features the following visualizations with the aim to foster understanding on learning habits, optimise learning, and, bind successful learning environments:

1. *Percentage of time invested on each learning goal.* Figure 1c illustrates how percentage of total time and number of minutes are presented in a pie chart. This visualization can be used by lifelong learners to compare time invested on his learning goals, identify priorities to accomplish goals, and, patterns regarding preferences for specific learning environments, devices or learning activities (read, watch, write, listen) Fig. 2.
2. *Distribution of learning moments along the day.* This feature illustrates the distribution of the learning moments during the day (X axis 0..24) for a whole week (Y axis 1..7).
3. *Monitoring accomplished goals.* Figure 1d illustrates a representation of accomplished learning time versus expected time towards a learning goal 3LHub.

3 Conclusions

The contribution of this demonstration is presenting a tool for lifelong learners to bridge scattered personal learning environments in which learners can define their personal ecosystem and experience the interaction with such a system in long term typical lifelong learner settings. This research aims at giving an open, flexible and low-cost prototyping framework for defining and linking everyday learning activities to contexts, physical artefacts, everyday home media solutions, and supporting to link sustainable learner tracks to these components.

References

1. Chan, T.-W., Roschelle, J., Hsi, S., Sharples, M., Brown, T., Patton, C., Cherniavsky, J., Pea, R., Norris, C., Soloway, E., Balacheff, N., Scardamalia, M., Dillenbourg, P., Looi, C.-K., Milrad, M., Hoppe, U.: One-To-One Technology-Enhanced Learning: an Opportunity for Global Research Collaboration. *Res. Pract. Technol. Enhanc. Learn.* 01, 3–29 (2006).
2. Wong, L.-H., Looi, C.-K.: What seems do we remove in mobile-assisted seamless learning? A critical review of the literature. *Comput. Educ.* 57, 2364–2381 (2011).
3. Wong, L.-H.: A learner-centric view of mobile seamless learning. *Br. J. Educ. Technol.* 43, E19–E23 (2012).
4. Tabuenca, B., Ternier, S., Specht, M.: Supporting lifelong learners to build personal learning ecologies in daily physical spaces. *Int. J. Mob. Learn. Organ.* 7, 177–196 (2013).