

# WORK AND LEARNING AT THE BOUNDARIES OF KNOWLEDGE

**Work and Learning at the Boundaries of Knowledge** (WLBK) was a GCU study examining the learning practices of knowledge workers.

Societal changes, as well as changes in the nature of knowledge, mean that knowledge workers are increasingly asked to operate at the boundary of knowledge, or to source and use knowledge across different domains (Nardi et al., 2000), constantly learning as they perform their work role. Examples include *Software Engineering* where technological innovation demands constant reconceptualization of knowledge, and *Finance*, where changing regulations and recent failures require new solutions and process innovation. Knowledge workers in such contexts must learn continually to maintain expertise.

This study aimed to surface, describe and systematise the strategies that knowledge workers use to self-regulate the learning they undertake to maintain expertise and support the generation of new knowledge. **self-regulation** refers to “self-generated thoughts, feelings and actions that are planned and cyclically adapted to the attainment of personal goals” (Zimmermann, 2005, p. 14).

The study examined how knowledge workers in organisations plan, implement and reflect upon their learning goals, analysing similarities and differences in the use of SRL strategies between learners who are positioned on different points on the spectrum of SRL skills.

In identifying the SRL activities and strategies used by the participants, we were specifically interested in finding out how individuals draw upon available resources, such as other people and technology, to plan and attain their learning goals, and what tools they use to do so.

## Research Questions

The study was guided by the following key research questions:

1. How do professionals plan, implement, and reflect on their learning goals in the context of everyday work at the boundaries of knowledge?
2. How do individuals draw upon others (the collective) in self-regulating their learning?
3. How do professionals use technology to support their self-regulated learning?
4. What are the similarities and differences in a) the use of SRL strategies, b) strategies of drawing on the collective, and c) patterns of technology use between professionals who score high and those who score low on self-regulated learning measures?

This project was a partnership with the Chartered Institute of Securities & Investment: CISI. The project team were Colin Milligan, Pia Fontana Allison Littlejohn and George Littlejohn of CISI.

## Methods

### *Data collection procedure and sample*

Workplace learning involves a mix of formal, informal and non-formal forms of learning (Eraut, 2004). Consequently, examining how people learn in complex workplace settings, in which controlled experiments cannot be conducted, is challenging. We used a triangulation of methods, complementing quantitative measures with qualitative research (Denzin, 1978; Jick, 1979) to collect data from target groups of knowledge workers as they learn in the workplace.

The study comprised two phases:

- The first was the development and validation of an Self-Regulated Learning profiling tool to detect participants’ SRL profiles. The sample size for the pilot questionnaire comprises approximately 180 participants provided by the partner organisations for the first part of the research.
- The second was an interview-based study that aims to explore in detail the range and form of learning strategies exhibited by different professionals in the financial services sector.

Each volunteer was invited to complete a short profiling tool. Volunteers were then invited to take part in a telephone interview exploring the way they address their learning needs at work (our interest is in short-term/just in time/ informal learning rather than formal training).. In addition to a one hour interview, we communicated with participants by email before and after the interview to (a) focus the interview topic and (b) collect a short reflection on a specific learning event. These short pre- and post-interview exchanges helped us increase the quality of information we collected.

The research was vetted by our local Research Ethics Committee. Participation in the study was voluntary. **Any personal information was kept private and secure, participants were guaranteed anonymity in any publications/project outputs, and the identity of employers was protected where requested.** . All project outputs and reports are available to all participants on request and individual participants were offered feedback based on the SRL Profiling tool they complete, which may be helpful for their own professional development.

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## Data collection instruments

The data collection utilised two main instruments:

1. Quantitative phase: Development and validation of the SRL instrument (SRLWQ). This phase focused on the validation of an instrument to measure SRL profiles amongst knowledge workers.
2. Qualitative phase. In the second phase the research focused on exploring how participants with different SRL profiles plan, implement and reflect on their learning goals, what are the qualitative and quantitative differences in the strategies they use, how they draw upon others to support their learning, and which tools they use.

## Data analysis procedure

**Questionnaire data** was used to construct an SRL profile for each participant. **Interviews** will be recorded, transcribed and coded in accordance with the three SRL phases (planning, implementation and reflection) and relevant sub-processes. Interviews will also be coded on the basis of other key areas of interest reflected in the research questions (use of collective knowledge, use of tools).

## Outputs

Three academic papers from the study have been published:

- Littlejohn, A. Milligan, C., Fontana, R.P., and Margaryan, A. (2016) [Professional learning through everyday work: How finance professionals self-regulate their learning](#), *Vocations & Learning* [open access]
- Fontana, R.P., Milligan, C., Littlejohn, A., and Margaryan, A. (2015) [Measuring self-regulated learning in the workplace](#). *International Journal of Training and Development*. 19 (1), 32-52.
- Milligan, C., Fontana, R.P., Littlejohn, A., and Margaryan, A. (2015) [Self-regulated learning behaviour in the finance industry](#). *Journal of Workplace Learning*. 27 (5) 387-402.

Some of the work was presented at the EARLI PD SIG Conference in Oslo:

- Milligan, C., Fontana, R. P., Littlejohn, A., and Margaryan, A. (2014) Self-Regulated learning in the financial services industry. 7th EARLI SIG 14 Conference, Oslo, Norway, 27-29 August 2014
- [Extended Abstract](#)

- [Presentation](#) (pptx with notes).

Slightly more detailed analysis of this data was presented by Allison Littlejohn at the EDEN Research Workshop in Oxford, October 2014.

We have also produced a number of other outputs for more general audiences:

- A revised [4 Page WLBK Case Study](#) prepared for a presentation to Chartered Institute of Securities and Investments staff in October 2014. CISI were our main partners in the project, identifying study participants for us.
- Allison Littlejohn has written a comprehensive blogpost describing [Ten things Autonomous Learners do differently](#).

The instruments used in the study are also available for others to use:

- [SRLWQ](#): The SRL in the Workplace Questionnaire.
- [Knowledge Worker SRL behaviour](#): Semi-structured interview script.

## Relevant Research

In addition to research cited in our previous papers (Littlejohn, A., Milligan, C., & Margaryan, A. (2012), Littlejohn, A., Milligan, C., & Margaryan, A. (2011), Margaryan, A., Milligan, C., & Littlejohn, A. (2011) including Eraut, Fuller and Unwin, Billet, Engestrom, Hakkareinen, etc.) we hope to draw upon recent workplace learning literature such as the Intl Journal of Educational Research 47 (4) (2008) Special issue on 'Organisational and Personal Contributions to Workplace learning Environments'. This special issue includes an introduction by Harteis and Billet ('The workplace as a learning environment') and a discussion by Lehtinen ('Bridging the individual and the social in workplace learning and motivation'), along with five papers examining the interplay of individual and organisational perspectives of workplace learning. All these papers demonstrate the importance of considering both individual and organisational factors when conducting workplace learning research. Organisational socialisation and work-role transition literature (Nicholson, Jones, Saks and Ashworth, Gherardi and Nicolini, etc.) may be useful in providing an alternative perspective for the individual-organisational dynamic, showing how factors such as an individual's prior experience, and the organisation's culture and structure determine expectations of how learning and work interplay. Specific empirical studies such as Doos, Wilhelmson and Backlund (2005), (also Doos and

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Wilhelmson (2011)) who studied engineers at Ericsson. Doornbos, Bolhuis, Simons (2004), who argued for non-educational perspectives when describing work-related learning (they discuss experiential learning, self-directed learning and deliberate learning). Their argument focuses on issues such as the way learning at work is not usually structured by learning goals.

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