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Agile Learning in Continuing Education

Learning Structures and Materials for Work Based Learning

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ABSTRACT

With the "Agile Learning" concept, competences required in a company are acquired in the processing of real-life problems from the learner's own field of work. This means self-directed learning of teams in short stages, supported by coaches and reviewed by a "project owner". There are already experiences from 4 different companies with this new learning concept. Characteristics are:

- Learning new skills in the work process: no transfer losses
- Real projects, real work, no training simulation: no loss of time.
- Collegial consulting and reflection in the team: no loss of experience

After a short introduction into the learning concept, two methods to support agile learning projects will be discussed:

1. The learning card format
2. Enhancements of the Kanban principle

. These methods are not only suitable for use in companies, but also for project-based teaching methods at universities.

1 INTRODUCTION

Shorter innovation cycles in work require an increasing frequency and intensity with which lifelong learning is required and employees have to train themselves further and acquire new competences (see e.g. [1]). However, there are hardly any suitable continuing education formats for this need to date, since classical forms of qualification (e.g. seminar courses, further education courses) do not fit the individual competence requirements precisely enough and also react too slowly to the dynamics of change in companies.

Three requirements must be fulfilled for in-service competence development under these conditions:

- High scalability to make qualification measures from a few to several hundred hours possible;
- Adaptability of content in order to be able to take up new topics as quickly as possible;
- Connectivity to existing organizational structures and software infrastructure in order to be able to start with little effort.

In order to implement such competence development in companies, the "Agile Learning" approach was developed [2], which is based on the principles of research-based learning [3]. Its aim is to enable learning directly in the work process and on the basis of real tasks and thus to make competence building and knowledge transfer sustainable components of the company organisation.

1.1 Learning on the job at real tasks from practice

For a targeted development of competences that are needed in the company, it makes sense that the employees do not learn from general tasks or case studies from another environment, but rather from real problems from their own field of work. This means that

- first, the new competencies that are relevant for the employees or will become relevant in the foreseeable future ("learning topics") are precisely determined, then
- suitable tasks from company practice, in which these competences are needed ("learning causes"), are identified and finally
- these tasks are carried out exemplarily with technical and didactic support.

This learning directly at and in real practice has several advantages:

- The employees learn exactly what they need for their work and not what is offered in general seminars. The contents as well as the tools used (computer, software, etc.) are directly applicable in everyday life.
- The usefulness of each learning step is immediately apparent. It is not learned "in advance" in the hope of being able to use it one day.
- The learning topic becomes more accessible for the employees, because they have to provide significantly less transfer performance.
- In addition, the employees remain in the work process and are not completely off-site for longer training.

1.2 Organization of agile learning

Learning from real tasks from operational practice needs three types of actors:

- A person who represents the content of the learning topic, i.e. defines the objectives of the competence development project and accepts the results of the learning process: the "project owner".

- The employees, who work on this learning project as a team in stages, present the results to the project owner and reflect the process.
- The "coaches" (see figure 1) are accompanying persons who supervise the learning process from a technical, organisational and didactic point of view.

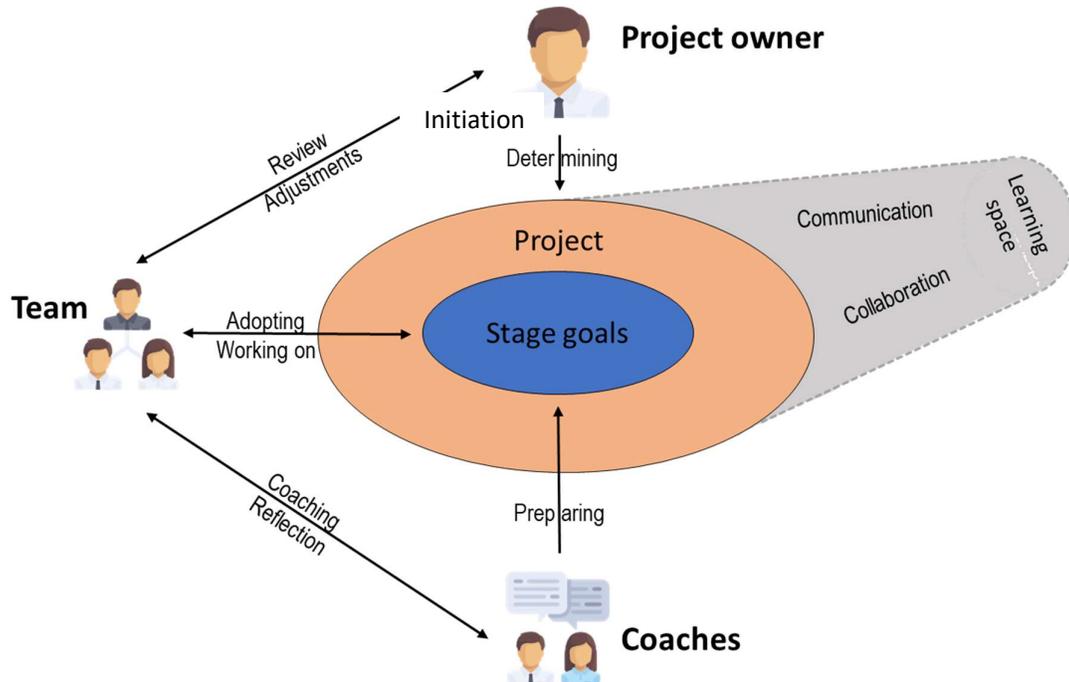


Figure 1: Roles and interactions in the agile learning project

The work on the learning task takes place alternately between individual and group work, with each phase of the individual work being followed by a stopover at which results are exchanged and compared in the team. At longer intervals - the learning stages - the learning progress is presented to the project owner and accepted by him/her or necessary reworking is made clear. This is followed by reflection on the learning process and an adoption of goals and procedures for the next stage (see figure 2). The coaches rather play the role of a learning facilitator or a supporter than of a traditional teacher.

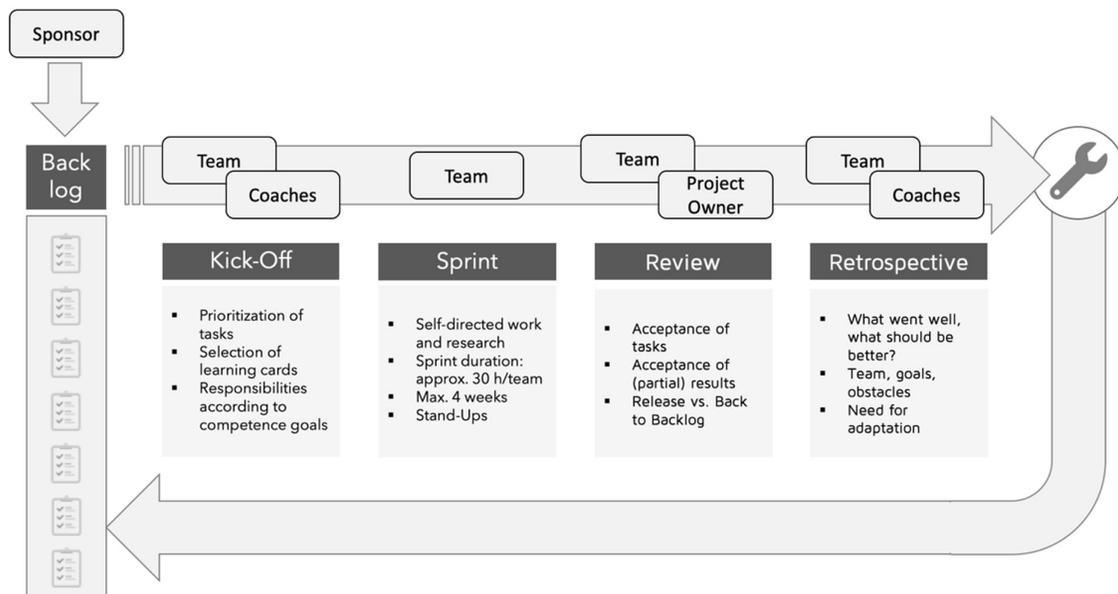


Figure 2: Stages of an agile learning project

This form of learning – in stages on the basis of tasks from one's own practice in interaction with a project owner and coaches – has been established in the last years in about ten German companies, from start-ups to big international enterprises and with learning topics ranging from project management or spread sheets to communication techniques (for details see [11]). It is mainly named "Agile Learning", although other terms are used, too (e.g. [4], [5], [6]).

Agile Learning has a structural similarity with agile methods of project management, especially "Scrum" (e.g. [7]). There are several differences, e.g. the team members are not yet experts for the tasks to be done in agile learning. Nevertheless, in many cases the extensive methodological toolbox developed for Scrum can be used to support a working process with the above mentioned roles.

2 METHODS TO SUPPORT AGILE LEARNING

Although IT-tools like SharePoint, Jira or Trello may support the general cooperation of the team both internally and externally, it does not take into account the special requirements of Agile Learning. To this end, the authors have developed various approaches, two of which will be presented in more detail here, as they particularly support Agile Learning in practice. These are

1. Learning Cards: A format specifically developed for the transfer of knowledge and
2. Kanban: the adaptation of a common method of work organization in Scrum.

2.1 Learning cards

Learning on the basis of practical tasks reverses the usual form of continuing education – and also the usual teaching at universities. There the teaching form of the "course" ([8]) prevails: First, a defined canon of knowledge is presented (in a lecture or in a script), which is then - in the best case - to be applied in more or less practice-

oriented tasks. In agile learning, the practical problem is the starting point. The learners have to work on it, similar to Problem Based Learning (PBL, see e.g. [9], [10]), following the steps

1. Define the problem first
2. Develop solution strategies
3. Research the required knowledge
4. Develop solutions

This poses two questions for the coaches who prepare the learning:

- Which contents should be conveyed within the framework of competence development?
- How are the contents made available to the team?

In contrast to PBL at universities, for example, the knowledge required for processing should not first have to be researched in general sources. University libraries, etc., are usually too extensive to find specific information in a timely manner, and online searches often lead to sources of low trustworthiness. This leads to loss of time and to uncertainty, which is difficult to justify in a job-integrated competence development.

The task to be completed should therefore be prepared by the coaches in a form that is adapted to the goal-oriented, step-by-step process. For this purpose, the authors developed the digitally supported format of the "learning card". These are knowledge units whose processing usually takes no more than 30 minutes. This makes them easy to use even when learning at work, because they do not block long periods of time.

For these learning cards, this structure has proven to be effective:

- Name the occasions (e.g. "moderation of a small group") when it is necessary / helpful to process the learning card,
- Give exemplary results (e.g. "Can create a schedule for a work meeting") that can be achieved with the application,
- Present and explain the relevant content, and finally
- Set assignments in which the content must be applied.

These tasks should be formulated in such a way that the processing of the learning card also means a direct progress in the processing of the learning task, e.g. "List the work packages necessary for your project" or "Determine the communication strategy for your next stakeholder meeting?". In this way, the processing of the entire learning card as a whole or a single task from it can be integrated directly into the work planning of the learning group.

On the website <https://academy.agile-learning.eu> you may find some examples of learning cards which meet these requirements and are used for agile learning projects. For a better understanding, figure 3 shows a sketch of the structure – without graphics and content. This format is also suitable for other activating teaching/learning formats in which learners are to acquire knowledge on their own.

Burn Down Chart

Occasions

You want to visualize continuously,

- how much effort is still required to complete a project,
- how fast it's coming along and
- when it is likely to be completed.

Results

The learner is able to determine:

- The effort still needed to complete a project
- The pace at which the work is progressing
- The work status (ahead of schedule or behind schedule)

Burn Down Chart

A "Burn Down Chart" shows ...

For example, a burn down chart can look like this:

Insert graphic ...

Variants

The burn-down chart is available in two variants ...

Assignments

- Select one of your current projects, which you have an approximate overview of ...
- Estimate as carefully as possible how much effort is involved - measured in working hours, working days or task packages etc. - and mark the starting point on the vertical axis.
- Decide for on-schedule or resource-faithful planning and define the end date.
- Create a burn down chart for this project and draw the idealized process as a straight line ...
- ...

Links for further studies

A detailed presentation of the requirements and details of burn down charts can be found at ...

Figure 3: Sketch of a learning card

2.2 Kanban / Kanboard

Kanban (Japanese for "card") is widely used in production systems and is a simple way to divide the work on complex projects into smaller tasks and visualize them. The principle is well suited for agile (learning) projects, because at the beginning of a learning project not all tasks are already known and priorities may change. In its simplest form, a Kanban board consists of three columns (To Do, Doing, Done) in which the tasks are organized, one card per task. For the organisation of an agile learning project it has become established to work with four columns (To Do, In Progress, Check, Done). The check column is introduced to signal that a task has been completed from the team's point of view. If the result was approved in the review meeting, the card with this task can be moved to Done.

Learning cards can easily be integrated into the work with a Kanban board. They are sorted as individual tasks under To Do. Shifting it to Check and then Done indicates the content has been processed. Thus, for the project owner, the status of the acquisition of knowledge is clear at the same time as the work status of the team.

If an analogue Kanban board is used, it should be visible and easily accessible to all team members and be updated regularly. If the status of the tasks cannot be seen "in passing by", regular stand-up meetings should be held between the team members

(approx. 15 minutes) to inform all participants about the status of the processing. The team members have to take care on their own that they remain informed about status changes.

An alternative to analogue Kanban is the introduction of a digital Kanban board. This makes it possible to implement an automated notification in case of a status change of tasks, to allow comments on the status or to upload documents to the cards. Commercial tools such as Jira or Trello are often too complex for learning projects. In the project MeDiAL4Q (Media Competence in Digitisation - A New Agile Learning Culture for Part-time Qualification), the open source tool "Kanboard" was developed especially for use in agile learning projects (see figure 4) and is already in use in several companies.

It is a lightweight, digital Kanban solution that is structured by stages and stories, allows task-specific comments and uploads of final documents. It also clarifies responsibilities for tasks and To Dos. It gives a quick overview and eases implementation of learning projects alongside everyday business.

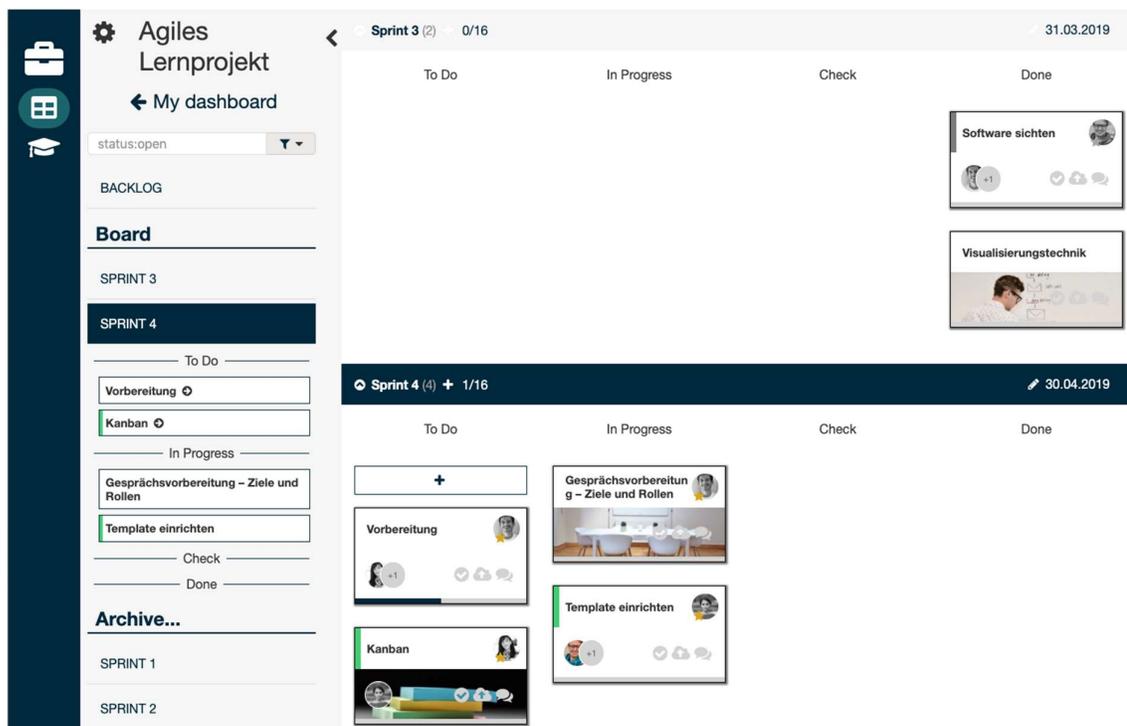


Figure 4: Screenshot of a KANBOARD page

3 PRACTICAL EXPERIENCE

The authors have now been able to use the concept of Agile Learning in several companies, some of them extensively, for the development of professional competencies. The concept had been evaluated using a broad variety of methods from interviews with participants, project owners and coaches over learning diaries and comprehensive reflections to standardised checklists to determine the degree to which the learning objectives were reached. In this, Agile Learning as a format has proven itself throughout [11], [12].

For the methods introduced here, the learning cards as a form of pre-structuring of knowledge and the Kanban board as an agile organizational form, some specific results have emerged:

Learning cards

- Learners are often focused on completing the learning task and try to avoid anything that is not directly related to it. Therefore, a learning card must facilitate and support this path directly and not be perceived as a detour. If the card does not bring a learner closer to her/his problem solution, it is unsuitable and will be disregarded.
- Playful elements such as a quiz increase interest and motivation.
- Further web links and possibly literature stimulate, once the interest is aroused, surprisingly often an additional occupation with the learning topics.

Kanban

- The simple visualization of tasks and their progress is very well received. In some cases the participants of learning projects have built themselves a Kanban board for their everyday tasks.
- Each card with a task that is currently to be processed must also contain a responsible person - who can change during processing. Otherwise it happens again and again that a task is ignored by the whole team.
- The board is only helpful if it is used continuously. If the work status recorded there is frequently not up to date, it is no longer observed.

4 RESUMEN

The combination of these two tools of support for Agile Learning has been successful in the companies where it was applied. The learning progress became more visible and transparent, in particular for the project owner. It made it also easier for the coaches to direct the process. This is an encouraging experience we would like to continue.

At the moment it requires still considerable time and effort to have the learning cards ready on time when required by the learning process. However, once more cards have been produced (within the next months there will be around 60, mainly on different aspects of project management and communication and all under an open licence), it will be easier to work with them because most cards can be used in many learning projects.

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