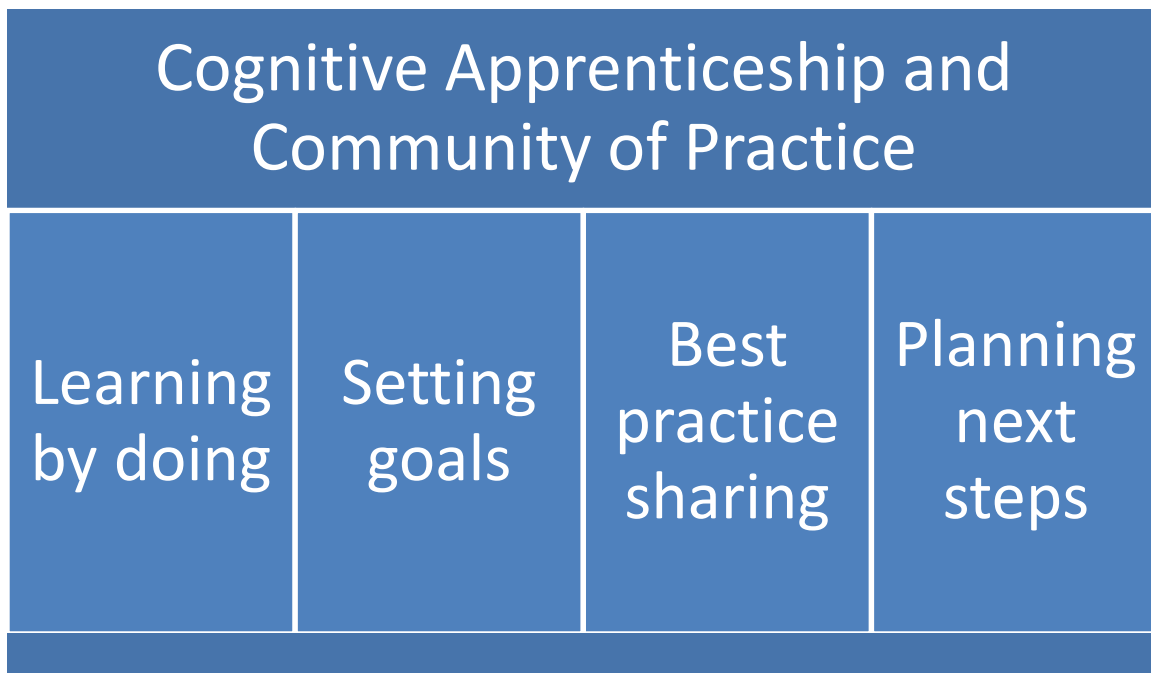


Design Pattern: Coaching teachers with Cognitive Apprenticeship



Title	Cognitive Apprenticeship
Version	3
Author	M.A. Simone Dinse de Salas
<p>Context</p> <p>One issue in continuing professional development is that used devices or software often differ from the ones at school. The challenge to apply new knowledge in classroom is therefore often too elevated for the teachers. Hence it is important that professional development is embedded in school life instead of taking place in a training classroom.</p>	
<p>Solution</p> <p>Cognitive Apprenticeship is about learning social situated knowledge and processes. That means that the coach is an expert in technology integration, while the coachee is a novice. The coach and the coachee co-teach the class with the available devices. In this process the coach accompanies the teacher transferring new knowledge to school life.</p>	
<p>Further aspects</p> <p>Depending on the knowledge of the coachees different levels of the cognitive apprenticeship model are applied in coaching. In the “modeling”-phase the expert demonstrates how to use digital tools in classroom and explains what the coachee has to take into account. This phase can take place with or without students. During the “coaching“-phase the coach can either support the teacher in the planning process of his concept, or offer assistance while the coachee applies it in class. This is especially helpful when a technical problem arises. In the „fading“-phase the coach withdraws the support slowly. In the final phase the coachee tries to implement new knowledge alone and no further meetings take place.</p>	
<p>Problems</p> <p>The risk of accompanying in class is that the coachee distances himself from the classroom activities while the coach teaches. Another challenge might be, that the coachee becomes insecure and starts to believe: “The expert did it, but I can’t”. This often occurs when the technical knowledge level of the the coach and the coachee differs too much. It is very important to built a relationship of confidence to facilitate co-teaching. The coachee shouldn’t feel evaluated by the coach.</p>	
<p>Advantages</p> <p>Learning is socially situated. This is especially important to keep in mind, when you are working with digital technologies. The technique meets the teacher, that feels insecure and has little technical knowledge. But also computer science teachers benefit from cognitive apprenticeship. They have a high level of technical knowledge, but often do not know how to arrange teaching with digital technologies. The transfer rate to classroom teaching is high. Another advantage can develop if two or three teachers co-assist during the modeling-phase, because they can later on support each other during the fading process.</p>	
<p>Disadvantages</p> <p>Teachers’ continuing professional development with cognitive apprenticeship is expensive, because a lot of human resources are required.</p>	
<p>Examples</p> <p>The coach accompanies the teacher in the production process of the learning videos or during the introduction of collaborative writing with Wikis in class. The coach and the coachee plan the concept together. It is recommended that the coachee realises the easy parts alone, like e.g. writing the script or collecting letters of agreement, while the coach</p>	

models the technical introduction, because this is often challenging. The coach can appoint some students as technical experts for the video post-production during the process of cognitive apprenticeship.

Tools

The communication and agreements for planning the teaching concept between coach and coachee can be organized via Email or telephone. The coach can support the teacher when setting up the digital learning environment.

Further information

It is recommended to add student experts to the cognitive apprenticeship model. The development of new technologies evolves quickly and teachers can't be always up to date. It is very helpful for coachees to learn that they are the experts for the organisation and coaching their students. While some students can take responsibility and be experts for technical issues. This paradigm change should take place during the coaching process. Sometimes this is difficult for teachers, because they think that they have to be the experts in everything and take their confidence of lead in knowledge.

References

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Material

(only in the german version)

Title	Community of Practice
Version	3
Author	M.A. Simone Dinse de Salas
Context	
<p>In many cases only one teacher of a school can participate in a continuing professional development, because the principal doesn't release multiple teachers from their duty at the same time. The subsequent first implementations of the new techniques often confront teachers with several problems, which they can't overcome alone.</p>	
Solution	
<p>The Coaching takes place with a small group of maximum 8 teachers from the school. The group forms a community of practice (professional learning community). In the community of practice teachers support each other. The meetings are supposed to reinforce the community and connected with the expectation that the mutual support continues beyond the coaching.</p>	
Further aspects	
<p>Communities of practices are basically informal knowledge groups, that meet voluntarily, based on common interest. The coaching is optional, members are supposed to be motivated intrinsically. The aim is to construct and exchange knowledge over a long period of time.</p> <p>In group coachings the presentation of new ideas and experiences of the coachees inspire the other coachees. The group consists of experts and novices. That means that members differ a lot in experiences in using digital technologies in classroom. But there are advantages to work with homogeneous groups, too. If all members are novices the probability to ask simple questions is higher.</p> <p>Members play different roles, for example it is advisable to have a facilitator, that organizes and keeps the group in contact. The members interchange devices. If there is a technical problem the expert helps.</p> <p>The members identify themselves with their communities of practice and are supposed to live a culture of knowledge sharing, generating knowledge and problem solving. There are several layers: the layer of the individual, the layer of interaction and the layer of transforming knowledge.</p> <p>The coachees should be motivated to participate actively in the coaching. When setting goals they say which level of expertise they want to obtain.</p> <p>In the phase of interaction it is important to have an atmosphere of openness and confidence. Frequency and duration of meetings shouldn't be more than two hours to not overstrain the coachees. The frequency has to be adapted to the workload in school. There are no meetings in peak times. Phone numbers should be exchanged. Emails are good for communicating between meetings.</p> <p>The group members can decide, if they want to share their knowledge and best-practices in a meeting of the whole school community.</p>	
Problem	
<p>Sometimes teachers form a group because there is an interested in the same topic, but not in working together. For a productive collaboration it is important that members understand each other in an interpersonal level. A heterogeneous group can be difficult, because some group members could be ashamed to open.</p>	
Advantages	
<p>The technique is supposed to increase the transfer of knowledge in classroom as well as</p>	

sustainability.

Disadvantages

Because of individual goals it is important to offer single coachings, too. Teachers need patience for further arrangements.

Examples

The teachers work together in an interdisciplinary project. For example they make a wiki with their students in different STEM subjects. Students can work in the context of inquiry based learning, while the same technology wiki is used by several teachers. The advantage is, that teachers can support each other in instructing their students. The same applies to the need of making pedagogical arrangements.

You can have a look at one example of a STEM-Wiki project here:

<http://projektwiki.zum.de/wiki/Mathe.forscher>

Tools

Email and direct communication

Further information

Wenger and Lave are the authors of the model of community of practice.

References

Lave, J., & Wenger, E. (1991). *Situated learning: legitimate peripheral participation*. Cambridge [England]; New York: Cambridge University Press.

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Material

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Title	learning by doing
Version	1
Author	M.A. Simone Dinse de Salas
Context	Teachers often believe that many possible applications of digital technologies in classroom, like e.g. producing videos, are challenging and time-consuming. In addition it is difficult to coach students in the use of digital technologies. This often leads to the avoidance of implementing digital technologies in classroom teaching.
Solution	The technique „learning by doing“ is used to practice the production of a short learning video with a given script. Thereby teachers get to know the entire process of a video production and can experience how quickly and simple this can be realized.
Further aspects	The coaching starts with a short introduction of different camera shots and jobs for producing videos. Then teachers receive the script and choose jobs. The camera operator films with a Smartphone and tripod. The actors rehearse the storyline one time before recording starts. It is recommended to use an additional audio recording device to get better audio. The recording lasts only 5 minutes. The cut of (extern) audio and video with windows Moviemaker takes another 5 minutes and then the teachers can watch the film together. The method should be used at the beginning of the continuing professional development - even before the discussion of theory.
Problems	The coachees need to engage in practices.
Advantages	Teachers accept the challenge and practice the process. The availability of the device isn't a problem anymore, because there are always some smartphones in class.
Disadvantages	The script only deals with one subject and one topic, and it might be challenging for teachers to transfer it to another subject.
Examples	Most fitting are topics that are easy to visualize like the description of directions in foreign language class, characteristics of geometrical shapes or the explanation of a handmade model of STEM-subjects.
Tools	Since the teachers need to know how to use technical equipment in their classroom, the devices (camcorder, camera, tablet or smartphone) used for filming in the continuing professional development should be the same ones as available at school. Another possibility is filming screencasts with software or apps like e.g. Screencast-o-Matic, Office Mix, Docery or Explain Everything. To cut the videos WindowsMovieMaker or for Apple devices iMovie is freeware and can be used.
Further information	Before starting continuing professional development the coach should ask which devices are available. If this isn't possible, it is recommended to use Smartphones. The coach should

prepare a short script to show a good example, keep track of time and to make sure that the effect of simplicity is not reduced. This proceeding also exonerates the coachees from searching and producing perfect pedagogical content in the continuing professional development.

References

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Material

(only in German available)

Title	Setting goals
Version	3
Author	M.A. Simone Dinse de Salas
Context Continuing professional developments often only teach theoretical knowledge, but transfer and implementation in the own teaching practice are missing.	
Solution At the beginning of the coaching the coachee sets his or her goals. An alternative is to collect wishes and ideas during the kick off and fix goals after the theoretical input period. Thereby the coaching can be adapted to the needs of the participants. SMART-technique (Doran, 1981) is used to set goals. First the SMART-criteria are introduced and an example of a Flipped Classroom or Wiki implementation is presented by the coach. Following the coachees set their individual goals in teamwork. Afterwards the coachees present their goals in plenum, and receive feedback where the coach can support, for example if cognitive apprenticeship (see also design pattern "cognitive apprenticeship") is needed. In the final phase the coachees reflect on whether or not they achieved their goals.	
Further aspects The coach introduces the SMART-technique with keywords and central questions on moderation cards or slides. Specific What? Learning videos made by student or the teacher? Which subject? Which devices/software/app? Measurable How many learning videos do you want to produce? Achievable Is the goal reasonable enough for me and my students to be accomplished? Realistic Do I have enough time to realise it? Can I realistically achieve it? Time-based What is my timelimit? When will I complete this step (month, date, year)? The coachees note down their individual goal for the coaching on a moderation card. The moderation cards will be collected to check them in the final meeting.	
Problems The coachees hesitate to write down goals and prefer to only name them verbally. This leads to the disadvantage that there isn't enough liability and no possibility to check goals at the end. Furthermore it is unusual in continuing professional development to realise an implementation project. In terms of more transparency it is possible to clarify this already in the announcement, although teachers then might hesitate to participate.	
Advantages Setting goals are of use to augment the probability of implementation in classroom teaching. Of course goals can change during the coaching period. Therefore it is important to check if they change and adapt them during the continuing professional development. The final goal verification demonstrates if coaching was successful. Participants like SMART-technique, because it is easy to remember and it is quickly realized.	

Disadvantages

It might be unusual to set goals in teachers' professional development.

Examples

A participating teacher sets the following goal: I will realize 1-2 learning videos about recurring explanations in the arts and crafts class and upload them to the school server until summer.

Tools

Moderation cards or slides

Further information

SMART is an acronym for the specification of goals and interventions in the field of quality management.

In coachings this technique is suitable, because it is easy to understand and quickly implemented.

References

Doran, G. T. (1981). There's a S.M.A.R.T. way to write management's goals and objectives. Management Review, Volume 70, Issue 11 (AMA FORUM), pp. 35-36.

Material

(only in German available)

Title	best practice sharing
Version	1
Author	M.A. Simone Dinse de Salas
Context	
<p>The use of classroom technologies is always influenced by the quick and steady development of new technologies. Furthermore teachers are confronted with increasing restrictions of school administration concerning privacy policies, copyright and data protection.</p>	
Solution	
<p>Under these circumstances it is crucial to exchange best practices and challenges of using technologies in classroom which are according to the laws, thus other teacher can learn of these experiences. On the one hand teachers benefit from the knowledge exchange and they know whom to ask if they want to apply the same method. On the other hand the quantity and most important the quality of pedagogical repertoire enriched with digital technologies increases. A controlled exchange of experiences within the community of practice (also see design pattern: "community of practice") yields to increase knowledge of the whole school community. Self-reflection leads to an improvement of instruction. Teachers can ask the experienced teacher for classroom material and advices.</p>	
Further aspects	
<p>First all coachees write their treasures of experiences one by one on a worksheet during coaching lesson. Learn from experience - treasures of experiences</p> <ol style="list-style-type: none"> 1. Topic 2. Context of experience (grade) 3. Findings (including challenges and statements of students) 4. Consequences 5. Recommendations <p>Second each coachee reports, while the others can ask questions. The coach minds a constructive atmosphere. Nobody can criticize another participant. That would be counterproductive to a positive fault culture. Third the coach introduces another conversation by the question "What helped me?" That promotes the appreciation what the teachers conquered for themselves during the coaching. The technique stimulates new ideas for proper teaching.</p>	
Problems	
<p>Negative critic should not be allowed under any circumstances. Teachers are usually impatient and don't see automatically the benefit of the invested time.</p>	
Advantages	
<p>The quick development of digital technologies requires constant adaptation of instructional repertoires. For the development of innovation it is indispensable to learn from experiences.</p>	
Disadvantages	
<p>It is necessary that the atmosphere within the community of practice is open and appreciative.</p>	
Examples	
<p>The coachees are always surprised about the creativity and variance of classroom projects that are based on the "Flipped Classroom"- Method. It is astonishing, that producing learning</p>	

videos can range from videos of literature, videos about ethical issues up to explanation videos of characteristics and functions of plants in biology class. The coachees are impressed how pedagogical issues, like evaluation are solved.

Tools

Worksheet

Further information

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References

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Material

(only in German available)

Title	Planning next steps
Version	1
Author	M.A. Simone Dinse de Salas
Context	
<p>Using technologies in classroom can come along with technical, organizational and pedagogical challenges. It is possible that devices don't work or that there is no internet available. Sometimes booked devices have not been returned, or an electric wire is missing. Of course teacher have to react to violation of rules, with pedagogical and technical consequences. For example students do not compliance the code of conduct. Then the teacher has to block the account, which makes a novice nervous quickly. The consequence is often, that teachers don't use digital technologies in classroom any more.</p>	
Solution	
<p>For the successful integration of digital tools it is necessary to think about the challenges while planning and to premeditate how each problem can be solved. Thereby the teacher does not become nervous in difficult situations, but reacts sovereign with his planned solution. In case of a pedagogical challenge he can block a user and make a pedagogical discourse.</p> <p>It is particular beneficial to work in interdisciplinary projects together with colleagues, because you can exchange information, compare notes and support each other when challenges arise. If there is a high level of insecurity it is possible to conduct cognitive apprenticeship (see also design pattern "Cognitive Apprenticeship").</p>	
Further aspects	
<p>Before the discussion begins each coachee answers the following questions for themselves to be prepared for the discussion.</p> <ul style="list-style-type: none"> • How would integrative media literacy be implemented in a perfect school that has got all imaginable resources? • What could be the next step? • What challenges can arise? • What solutions are possible? 	
Problems	
<p>Even if the teacher is perfectly prepared unpredictable situations can arise. Then it is important to live a fault tolerant culture and not to be discouraged.</p>	
Advantages	
<p>The teacher is mentally prepared to confront challenges and isn't surprised or stressed.</p>	
Disadvantages	
<p>Constant thinking about challenges can be disincentive.</p>	
Examples	
<p>Collaborative writing with wikis brings a lot of challenges for the teacher. The teacher has to be prepared to prevent and confront violation of privacy policies and copyright. School is an important place for students to learn how to conduct themselves correctly in the internet and to be coached by the teacher in their learning process. Teachers should demand responsibility of parents, too. This can be realized by a letter of agreement for the parents that presents the advantages of implementing new tools in school, but also states the duty to collaborate.</p>	
Tools	

Worksheet: feet, stones and arrows

Further information

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References

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Material

(only in German available)

Acknowledgements

This study is part of the research program „Profil – teachers’ continuing professional development“ and is funded by the state of Baden-Württemberg.

Link: <http://profil.ph-bw.de/>