Exploring digital didactics: An explorative case study on learning to teach online

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Abstract: Online teaching became increasingly popular during the last decennia. Therefore, many teachers face a challenge in combining technology with content and didactical approaches. However, not all teachers have experience with online teaching or the didactical approach towards it. For this reason the 'Digital Didactics' programme is developed in the context of teacher professional development in Flanders, Belgium. 'Digital Didactics' strives to provide teachers with hands-on experiences regarding the didactical possibilities of online teaching. These experiences could be implemented immediately in the teachers' own practice. The programme builds on scientifically supported knowledge on teaching with technology such as the Technological, Pedagogical and Content Knowledge (TPACK) framework. The research question this study addresses is first to investigate the reasons to participate in the Digital Didactics programme, and second how the participants and the coaches are experiencing this programme. Data was collected through qualitative online structured interviews and focus group interviews and analysed by using an inductive approach and thematic analysis. This paper presents the outcomes of the programme and clarifies the identified strengths and challenges of the 'Digital Didactics' programme. There are three main reasons for participation identified, namely: personal, professional and peer related motives. Next to that are the participants' experiences divided into three levels, namely: content level, guidance level and practical level. The experiences of the coaches and participants were found to be similar: they agree on both the perceived merits as well as on the weaknesses of the programme. Conclusively, the study contributes to the knowledge on effective professional development strategies for online teaching and learning. This can be useful for practitioners or researchers in the field of online teaching and related professional development.

Keywords: digital didactics, online teaching, teacher professional development, technology integration, TPACK

1. Introduction
1.1 Theoretical background
Since information and communication technologies (ICT) made their way into education, teachers at various educational levels are more frequently required to teach their courses (partially) online. Besides the fact that teachers need a sound understanding of the nature of their teaching subject, and suitable pedagogical theories and practices (Chikasanda et al, 2013), they nowadays also need be trained in teaching online (Salmon 2011). Providing training on teaching online can enhance teachers' technological, pedagogical and content knowledge (Walker et al, 2012). The concept of this Technolocial, Pedagogical and Content Knowledge (TPACK) has been considerably described by Mishra and Koehler (2006). Mishra and Koehler (2006, p.1017) describe their TPACK framework as follows: "It attempts to capture some of the essential qualities of teacher knowledge required for technology integration in teaching … thoughtful pedagogical uses of technology require the development of a complex, situated form of knowledge … Technological Pedagogical Content Knowledge". Teachers whom are teaching (partially) online should thus be able to know which pedagogical strategy and technology to use, to teach a certain subject.

Online teacher professional development (OTPD) has been originated due to the need for professional development that provides authentic support and that is tailored to teachers' busy schedules (Dede 2006). OTPD that is aimed to enhance teachers' knowledge on teaching online, serves in this matter a dual goal. Not only is the content of the professional development important but also how it is being taught and delivered. This is due to the fact that how it is being instructed – the online delivery mode – is also a form of content. Thus, what is being taught and how it is being taught are in this case both content. If teachers are not trained

to teach online or are not prepared for their new role (Redmond 2007), then it could be that they merely will try to transfer their classroom practices to the online environment (Kelz 2011). Additionally, Meloncon (2007) indicates that teachers need to redefine themselves when they are changing their teaching place, e.g. the change to an online learning environment. This stresses the importance and the need for a TPD on learning how to teach online. In this respect, recent research emphasises the need for more studies on effective professional development for online teaching and learning (Philipsen, Tondeur and Zhu 2015).

Training teachers in teaching online implies that the training programme should address adult learning principles. Herrington et al. (2009) argue in this respect that the modules of an OTPD should reflect the principles of adult education. Furthermore, they show that the different modules need to address the current needs of the teachers, and that teachers need to be stimulated to transfer that what they have learned to their own practice. However, recent research (e.g. Watson and McIntyre 2012) still shows that teachers face some barriers when it comes to online teaching, which could impede the implementation of it. Watson and McIntyre (2012) identified for example some barriers related to the lack of time, the lack of collegial support and the lack of relevance. Teacher professional development for online teaching is therefore a complex process of addressing important components in striving towards effective results. How this effectiveness is described, greatly differs between different professional development initiatives. Therefore the local context and needs should always be taken into account, when one starts to evaluate a TPD programme on its effectiveness.

1.2 Purpose of the study and the training programme
The presented study aims to evaluate why the participants enrolled themselves in the Digital Didactics (DD) programme and what they expected from it. In this way the researchers can investigate if the participants' expectations have been met. Next to that, this study aims to identify how the participants and the coaches experienced the DD programme. Their experiences are questioned on three levels, namely: the guidance level, the content level and the practical level. The answers on these questions can add to the existing knowledge of effective OTPD for online teaching and identify further research possibilities.

The website of the DD programme can be found at www.digitaledidactiek.be and is available in a Dutch, English and French version. The programme consists of an online linear trajectory with seven modules. The modules are respectively: Basis, Design, Development, Implementation and follow-up, Cooperative learning, E-coaching and finally Concerns. The programme – only the Dutch version – is developed in such a way that there are two participation opportunities. The first one is that participants go through the programme by themselves without any support from a coach. In this mode participants can see all the theory, cases and extra exercises, but they cannot log in on the website nor do they get any support, tasks or feedback from the coaches. It is in the second mode that participants can register themselves for a professional development trajectory with the support of a coach. In this case the five coaches provide tasks for every module and give synchronous (chat, Skype) or asynchronous (mail, forum) support and feedback. The participants and coaches have the opportunity to meet in real life during a kick-off and kick-down moment at the beginning and the end of the programme. The English and the French version offer only the first option, to go through the programme yourself. The current paper reports on a first pilot test of the programme – with coaching – which started in March 2015 and ended in June 2015. The participants were on the one hand pedagogical and didactical experts and on the other hand lecturers in the Flemish vocational education, colleges and a language and communication centre. The programme was free of charge for the participants and the coaches worked on a voluntary base. At the beginning of the programme there were 40 participants enrolled, from which 20 eventually completed the programme. The participants are mixed male and female, and their ages range from 24 years old to 72 years old. There was a slightly higher percentage of females (n= 24) than males (n= 16) and the most occurring age ranges were 25 to 45 years old (n= 14), and 46 to 65 years old (n= 14). The specific research questions (RQ) were:

- RQ1: What are the participants' reasons to participate in the DD programme?
- RQ2: What are the experiences of the participants and the coaches on the guidance level, content level and practical level?

2. Method
2.1 Data collection and analysis
The data collection and analysis was based on specific questions proposed by the organisation that coordinated the DD programme, namely the Belgian Network for Open and Digital Learning. The data was collected through the participants' answers on qualitative online structured interviews and focus group

interviews with the coaches. The participants were asked – through the online structured interview – the same questions after each module to capture their immediate experiences. The qualitative data was analysed using a thematic analysis (Howitt 2010). This is based on an inductive approach and situated within the paradigm of interpretive research. The coaches' experiences were collected through two focus groups interviews (Patton 2015). One was held halfway during the programme where the role of the researchers was solely to observe the discussion between the different coaches. The researchers did not suggest any discussion topic nor intervened during this discussion. Only at the beginning was a certain discussion topic set by the researchers. In this way the discussion topics and communication originated in a more natural way, albeit that a focus group conversation essentially is not the most natural way of having a conversation (Berg and Lune 2014). The second focus group interview was held at the end of the programme. In this focus group interview the researchers did contribute in an active way by proposing questions and discussion topics. Observation notes were taken during the first focus group and the second focus group was digitally recorded and transcribed using Nvivo 10. Two coding processes were done. First, an open coding (Miles and Huberman 1994) was done were small units of data led to a lot of different codes and which is done to capture the richness of the data. Second, the axial coding (Miles and Huberman 1994) was done to construct larger categories and identify key concepts. The researchers identified and constructed specific themes after the second coding process. All the participants and coaches were informed of the research and signed an informed consent to address procedural ethics (Mortelmans 2013).

3. Results

3.1 RQ1: What are the participants' reasons to participate in the DD programme?

Stemming from the data all participants indicate that they participate out of their own free will. The participants show three great motives to participate. The first one is out of personal interest, which is not necessarily linked to their profession. This study identified that this personal motivation is very often in combination with professional motives. These professional motives are clearly linked to the everyday practice of the participants. In alignment with these professional motives, these participants expect a certain professional growth. Specifically on their didactical expertise and their knowledge on the didactical possibilities with online teaching. Some participants even make a clear reference to their students. In this case the participants want to know what the merits are for their students and how it benefits them. The following quotes from two participants illustrate these findings.

> *Professionally I would like an overview of the different didactical possibilities offered by the digital world. I am convinced that this is a very exciting world that allows us to guide our students to be self-reliant in their learning and to enhance their intrinsic motivation. I would like to try new things and see in how much this works to achieve my objectives. Personally I just want to be part of this digital era. (Female, age 61)*

> *I enrolled due to professional motives and personal interest: I always experiment with new digital tools and I always try to help others with it. Yet, I still have a lot to learn on how you offer an entire course digitally. There was also an extra motive why I enrolled and this was due to the fact that I enrolled together with a colleague. (Female, age 34)*

As this last quote shows, personal and professional motives are not the only reasons why participants enrol themselves. Although it occurred with only one participant, the possibility to enrol with another colleague is also found to be an important reason to participate. This is placed under peer related motives. In summary, the three main reasons why participants of the DD programme enrolled include: personal motives, professional motives and peer related motives.

3.2 RQ2: What are the experiences of the participants and the coaches on the guidance level, content level and practical level?

3.2.1 Guidance level

The guidance level aims to identify the participants' and coaches' experiences in relation to the received and provided coaching. The participants are asked to comment the general received support of the coach, the amount of feedback, the quality of the feedback and the availability of the coach. This last one pertains to how well the coach responded to their questions in a timely manner. Generally, most of the participants agreed on the fact that the guidance was done very well. All of the four previous mentioned parts – i.e. general support, amount of feedback, quality of feedback, and availability – were found the be very positive and helpful.

Specifically, the coaching motivated many of the participants to persist in the DD programme and to complete the tasks. In that way the participants indicated that the coaches had a motivational function and content-related function, where the latter refers to offering new knowledge and skills.

> One of the strong points of the programme is that you are being coached. You are being motivated to complete your tasks and you actually work on something that you could use in your own practice. (Female, age 41)

> Generally, it [the digital didactics programme] went well. The material was easy accessible and the coaching was good. (Male, age 32)

When the coaches look back at their own role in the DD programme, they indicate that the fact of having a coach is highly beneficial. They predominantly see it as their task to provide feedback and to motivate the participants of the programme. However, they also argue that it is one of their greatest challenges to keep participants motivated.

> The reaction is really that the coaching is very beneficial. If they would go through the programme by themselves, that would be totally different. We had someone who said that this was the best course ever. (Coach 1, female)

> I think that a lot more people would have quit the programme [without the coaching]. That is also the feedback that we get from them. (Coach 2, female)

The experiences of the participants and the coaches show a great resemblance. Where the coaches see it as one of their main tasks to keep the participants motivated, the participants indicate that the coaches actually succeed in doing so. Nevertheless, there was still a great deal of participants who dropped out of the programme, indicating that coaching alone is not enough to keep participants enrolled in a professional development programme.

3.2.2 Content level
The content level aims to identify if the content offered within the DD programme is relevant to the participants' practice. Questions at this level focus on how well the content of the programme offered new knowledge, and how well this is aligned with the participants' current knowledge about online teaching. Furthermore, the participants are asked how well they would be able to implement this new knowledge, skills and tools in their own practice. Generally, the participants see the programme as relevant for their own practice. They indicate that relevance mainly comes from an alignment with their current professional needs and their institutional context. This means that when the participants are faced with an institutional transition towards more online teaching, they indicate that the programme is highly relevant for them. The following quotes elaborate on this part.

> In itself, the content does nicely fit the questions that I have and the problems that I face when I am developing [digital] learning paths. (Female, age 24)

> It is [relevant] because I can apply it immediately in what I am doing now: making my courses digital. (Female, age 52)

Besides the link to professional and personal needs, there is also a form of relevance identified due to the fact that the programme creates a certain 'viewpoint' towards online teaching. Some participants argue that it provides them with a new lens to look at their own practice and to critically question their current educational practices. Furthermore, the participants advocate that the programme offers them a kind of awareness pertaining to the possibilities inherent to online teaching and that it connects with their current knowledge. Some participants even make the transition towards how their students will use this new technology. However, most of the participants look from their own point of view and how the possibility of online teaching affects their own teaching practices.

> Looking with a different perspective towards your own teaching practice, can only be beneficial after 30 years of teaching. (Female, age 55)

It is not too difficult but it [the DD programme] still offers enough new insights. The overview of the different digital aids and design principles are very useful for my own practice. It gives me the chance to think about whether or not this [online teaching] would be relevant to my students. (Male, age 48)

The content part of the online structured interviews also asked the participants on how they perceive the implementation possibilities of the content offered within the programme. On this part the participants were less positive. There was a difference between the perceived usefulness of the content and the perception on the implementation of it. Although there was no doubt on the usefulness of the content, the participants indicated that they were doubtful if they could actually implement it in their practice. The participants mainly indicated two reasons for this, namely: not having enough time to implement it thoroughly, and the lack of institutional support or institutional barriers (e.g. infrastructure, institutional culture).

I think it certainly can be integrated, if it will be simple, that I do not know. There is a lot to take into account. Specifically, the time investment for the development and the dissemination is very intense. There are some limitations as to the tools and the type of platform. (Female, age 41)

In alignment with the answers of the participants, the coaches indicate that the content offered in the DD programme proves to be relevant and useful for the participants. The coaches see the greatest merits in the fact that the programme makes use of relevant cases and the immediate transfer to practice for the participants. Constructing a product that the participants can use in their own practice, by working with practical tasks in a case chosen by the participants, is highly favoured by the coaches and adds to them a matter of relevance to the programme. However, the coaches also acknowledge that they do not view the actual implementation of online teaching as an easy part. Therefore the coaches advocate to ask the participants at the beginning of the programme to their perceived implementation possibilities of online teaching, to create a more realistic product as end.

A strong point is certainly the content offered. That do all my participants tell me, that the content is good and that they see how it can contribute to their practice. Although, there was one who started and it was not sure if she was able to implement it [online teaching] … she continued but I noticed that is was not with the same motivation anymore. (Coach 2, female)

I think that it [relevance] comes because of the tasks, which I heard from [X], that she could effectively apply it [the content] because of the practical tasks. If you do not give any tasks, then I think that would be more difficult … because of the tasks you get a concrete final result towards which you can work (Coach 4, female)

3.2.3 Practical level
At the practical level the participants evaluated if the tasks were available on time and if they had enough time to complete them. Commonly, all the necessary information and tasks were found to be online on time. However, there was a very strong indication that the entire DD programme was very intense for such a short amount of time. Many participants struggled to finish their tasks or modules, which resulted in the fact that many participants were in different modules throughout the programme. This also may have contributed to the drop-out of some of the participants. Of course, this time investment is highly personal, and most of the participants estimated quite well the amount of time that they would need to accomplish a module or task.

It takes a lot of time to create something new. I preferred to develop an entire course, but I had to restrict myself to two chapters. It was a very challenging trajectory that I chose, and I did not have much time available. (Male, age 52)

The answers given by the participants on the practical level are in many ways the same as the coaches' answers. The coaches acknowledged that they too had some trouble in finding enough time to provide decent guidance, specifically at the end of the DD programme. Next to that they also refer to the fact that the programme is very intense and time consuming for the participants. Nevertheless, all the coaches do indicate that they would do the coaching process again. They were generally satisfied with the organisation of the programme, albeit that they also identified some points of improvement.

3.2.4 Recommendations from the participants and coaches

The recommendations from the participants focused especially on two aspects, namely: content level and practical level. Even though these recommendations are personal, some general suggestions could be identified. First, most of the participants would like a more thorough an in-depth coverage of the pedagogical part of teaching online. Second, many of the participants indicate that the DD programme should be spread over a longer period of time, making it more flexible to their everyday work practice. Last, a small part of the participants also indicated that there was too much textual information on the website of DD, and that it could be a lot more interactive. According to the coaches, the programme should be more flexible towards the deadlines of the tasks and the workload should be less intensive. The participants should also have a clearer view on the expected workload and deliverables. The following quotes of the coaches indicate that their recommendations indeed align with the recommendations proposed by the participants.

> *It is three months between begin and end date, but it is a lot [of work] in those three months … I also slowed down [on my coaching] due to the amount of work waiting for me on my desk. (Coach 2, female)*

> *They should clearly know where they are going and what we expect from them. That is what we did … we used a brainstorm to gather all the ideas … we also showed a possible product … to make this more concrete because we noticed that it is not evident to make clear with what we [the coaches] mean. (Coach 5, female)*

4. Discussion and conclusion

Due to the increase of online teaching many teachers are now being confronted with a large range of new teaching possibilities. Many teachers are still trying to find their way in this digital environment and thus many institutions are confronted with a need to train their staff to teach online (Wilson 2012). In this respect the Digital Didactics (DD) programme was developed to introduce teachers with the didactical possibilities of online teaching. Based on the results, it is found that the experiences of the participants and the coaches are in a great way similar to each other. The guidance, content and practical arrangements were generally considered very useful and well-planned. However, the intensity of the programme appeared to be a point for improvement. Both the coaches and the participants agreed that the amount of required work from the participants and coaches – within a determined amount of time – led to an overwhelming workload for both. In this respect, future professional developments for online teaching should be more attentive to teachers' everyday practice and professional calendar (Gregory and Salmon 2013).

The participants of the DD programme were generally very positive concerning the perceived merits for their own practice, due to the fact that situating professional development in teachers' practice is a good strategy to make the professional development relevant for the participants (Borko, Jacobs and Koellner 2010). However, the participants' perception on the implementation of online teaching in their own practice indicates that they view this part as a possible barrier. Although this study did not focus on the actual implementation of the programme's content, the implementation of online teaching into one's own teaching practice, remains an important component to consider. The institutional barriers that teachers face when they want to implement certain parts of the professional development (Guskey 2000), prove to be important components that need to be considered by teachers and teacher educators in a professional development for online teaching. Next to institutional barriers, time-related concerns, supportive measures and matters of relevance should also be taken into account (Watson and McIntyre 2012). Furthermore, the participants of the DD programme indicate that the pedagogical aspect of teaching online, should receive a more pivotal role within the training programme. Future research can address more thoroughly this recommendation.

As to the limitations of this study the researchers would like to stress that the results are based on a small group of participants. Due to the small population the results cannot be generalised for all teachers facing a transition from face-to-face teaching to – more – online teaching. Furthermore, it would be interesting to investigate, with a quantitative approach, if the differences between the participants and the coaches show certain patterns or relations. Next to that, the researchers acknowledge that the first research question could be analysed more thoroughly. Due to certain restrictions, the researchers were not able to address the former stated limitations, in this paper. However, the insights of this research do add to the knowledge on contemporary teacher professional development for online teaching. More research is needed on effective professional development models and their translation into teacher professional development strategies. To

conclude, there is a follow-up study already planned to investigate – in-depth – the long term effects of this professional development programme.

5. Acknowledgements

6. References

Berg, B. L. and Lune, H. (2014) *Qualitative Research Methods for the Social Sciences,* Pearson Education Limited, Harlow.

Borko, H., Jacobs, J. and Koellner, K. (2010) "Contemporary approaches to teacher professional development" In: Peterson, P., Baker, E. and McGaw, B. (eds) *International Encyclopedia of Education,* Elsevier, Oxford. pp. 548-556.

Chikasanda, V. K. M., Otrel-Cass, K. and Williams, J., et al. (2013) "Enhancing teachers' technological pedagogical knowledge and practices: A professional development model for technology teachers in Malawi" *International Journal of Technology and Design Education,* Vol 23, No. 3, pp. 597-622.

Dede, C. (2006) *Online professional development for teachers,* Harvard Education Press, Cambridge.

Gregory, J. and Salmon, G. (2013) "Professional development for online university teaching", *Distance Education,* Vol 34, No. 3, pp. 256-270.

Guskey, T. R. (2000) *Evaluating Professional Development,* Corwin Press, California.

Herrington, A., et al. (2009) "Transfer of online professional learning to teachers' classroom practice", *Journal of Interactive Learning Research,* Vol 20, No. 2, pp. 189-213.

Howitt, D. (2010) "Qualitative interviewing" In: Van Hove, G. and Claes, L. (eds) *Qualitative research and educational sciences: A reader about useful strategies and tools,* Pearson Education, Harlow, pp. 77-108.

Kelz, A. (2011) "Bridging the gap - From teacher to eTeacher" In: Greener, S. and Rospigliosi, A. (eds), *Proceedings of the 10th European Conference on e-Learning,* Academic Conferences and Publishing International Limited, Brighton, pp. 363-369.

Meloncon, L. (2007) "Exploring Electronic Landscapes: Technical Communication, Online Learning, and Instructor Preparedness" *Technical Communication Quarterly,* Vol 16, No. 1, pp. 31-53.

Miles, M. and Huberman, A. M. (1994) *An expanded sourcebook: Qualitative data analysis,* Sage, California.

Mishra, P. and Koehler, M. J. (2006) "Technological pedagogical content knowledge: A framework for teacher knowledge" *Teachers College Record,* Vol 108, No. 6, pp. 1017-1054.

Mortelmans, D. (2013) *Handboek kwalitatieve onderzoeksmethoden,* Acco, Leuven.

Patton, M. Q. (2015) *Qualitative research & evaluation methods*, Sage, California.

Philipsen, B., Tondeur, J. and Zhu, C. (2015) "Using TPACK to Examine Teacher Professional Development for Online and Blended Learning" In Jefferies, A. and Cubric, M. (eds), *Proceedings of the 14th European Conference on e-Learning,* Academic Conferences and Publishing International Limited, Hatfield, pp. 802-805.

Redmond, P. (2011) "From face-to-face teaching to online teaching: Pedagogical transitions" In: ASCILITE 2011, *28th Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education: Changing Demands, Changing Directions,* ASCILITE, Hobart, pp. 1050-1060.

Salmon, G. (2011) *E-moderating: The key to teaching and learning online,* Routledge, New York..

Walker, A., et al. (2012) "Comparing technology-related teacher professional development designs: a multilevel study" *Education Technology Research Devision,* Vol 60, No. 3, pp. 421-444.

Watson, K. and McIntyre, S. (2012) "Too Hard, Too Busy: A Case Study in Overcoming These Barriers to Online Teaching" In Lam, P. (ed), *Proceedings of 7th International Conference on E-Learning,* Academic Publishing International Limited, Hong Kong, pp. 453-460.

Wilson, A. (2012) "Effective professional development for e-learning: What do the managers think?" *British Journal of Educational Technology,* Vol 43, No. 6, pp. 829-900.