



IMPLEMENTING PERSONALISED SUPPORT

In Scalable Online Courses



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1. EXECUTIVE SUMMARY

Over the last decade, teachers have faced an increasing number of complex challenges in their daily work in the classroom, caused by changes in education policy as well as more general trends in society. Some of these challenges, such as the increasing digitalisation of classrooms, require teachers to fundamentally innovate and adapt their practices. Teachers require training and support if they are to achieve such transformation of their practice.

There is little doubt that online training formats have the potential to increase accessibility of training for teachers. However, while accessibility at a basic level might be increased through online training, benefiting from it requires a certain level of digital and self-regulated learning competence. Without it, teachers gain little by having access to more training opportunities, if no benefit can be derived from them.

The TeachUP policy experimentation aimed to address this situation by testing a support model in scalable online learning environments¹, like Massive Open Online Courses (MOOCs), which offered a personalised support mechanism that can operate at scale, designed to help learners with low levels of digital and self-regulated learning competence to benefit from the training offered. The hypothesis of the experiment – which used a rigorous methodological design including a treatment and control group – was that such support would result in increased participation and completion rates in scalable online teacher training environments.

The aim of the personalised support provided to the treatment group (only) on the TeachUP courses was to support those participants most in need and at higher risk of dropping out and thereby increase course participation and completion rates. As the support was designed for a scalable environment, it was offered in a very targeted fashion only to those most in need, rather than as a general offer to all course participants. Accordingly, participant profiles and platform data

about course progression were used to pro-actively reach out to those considered most in need with personalised guidance and an offer of 1:1 online support.

The personalised support mechanism as implemented had a sizable and positive impact on enrolled teachers from EU Member states. Course participants in the treatment group showed a probability of 42% to complete a course, compared to 32% for the control group. Hence, personalised support boosted the completion rate by 10 percentage points among the enrolled. This was despite there being a low response to the offer of support and what take-up there was concerned simple technical or organisational issues.

However, in Turkey no significant impact was recorded and for all student teachers an impact was only observed for those with prior experience of online learning. Additionally, an indirect impact was observed in the treatment group in regard to a slightly reduced reliance on others to solve problems.

These results can be partially explained by the various psychological dynamics in play. In particular, the feeling of being observed due to the pro-active nature of the support mechanism, to a certain extent replicating some of the social control dynamics present in face-to-face settings, could be seen as a factor contributing to the impact observed. Furthermore, giving participants personalised guidance at certain key moments during the courses is likely to have contributed to the impact, even if they did not take up the offer of support.

The limited take-up of the offer of support, rather than being a sign of failure, actually offers significant potential for scalability. The human resource cost of the support was lower than expected and the findings indicate that it could be reduced in scope and complexity and still achieve its objective (increased participation and course completion), thereby contributing to higher cost-effectiveness.

¹ The term “scalable online learning environments” refers to any environment that is designed in such a way that there is no practical, technical, or other limit to the number of learners in the environment. While such environment has the potential to accommodate “massive” numbers of learners, it does not necessarily do so. Massive open online courses or MOOCs would be considered a typical example of such an environment – even though the use of the term “massive” could be misleading in this context as numbers of learners are not necessarily high in numbers.

Based on the findings, eleven recommendations for teacher training providers have been identified:



Obtain non-anonymous data about participants: In face-to-face learning settings teachers receive “information” about their learners on an ongoing basis. In online environments this does not happen, and the teacher is often working “blindly” with learners. Consequently, the first step in any attempt to personalise the participants’ experience is to gather specific data about them as individuals. Naturally, the scope and use of such data collection needs to be handled transparently and only upon consent by the participants.



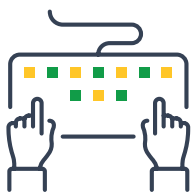
Reach out to non-starters: The experiment’s results show that contacting those who have yet to start a course can have a significant impact on participation (up to 13 percentage points increase in participation, see section 5 for more details). Accordingly, finding a mechanism to reach out to those who do not start a course is worthwhile.



Support newcomers: Lack of previous experience of online learning is a predictor of non-completion according to the research literature and this was confirmed in the experiment. Reaching out to new online learners therefore promises high returns in regard to participation and completion.



Generate a feeling of being observed: The feeling of being observed in the experiment resulted in, on the one hand, a sense of being controlled, and, on the other, a feeling of not being alone. It is likely that these two dynamics, replicating those of social control and support in face-to-face settings, at least partly explains the impact noted in the experiment.



Send personalised messages: Personalising messages to the treatment group of participants in TeachUP is likely to have played an important role in generating a feeling of being observed. Accordingly, finding means to generate messages that take into account information from the participants’ profile and progress promises to achieve positive results in regard to participation and completion.



Pro-actively send messages: The proactive nature of the messages sent out in the experiment is also likely to have played an important role in generating a feeling of being observed. Accordingly, it is not sufficient to personalise messages in response to an initial support request by a participant, but messages need to be sent out pro-actively and in advance of any potential reach-out of participants.



Offer 1:1 support: There was a very limited take-up of the offer to engage on a 1:1 basis with a support agent. Course providers can therefore expect a significant impact with only a small risk of high cost by making direct offers of 1:1 support to course participants.



Ensure communication is short, friendly, and informal: The findings provide some evidence to suggest a more positive response by participants can be achieved if the tone of messages is short, friendly, and informal.



Allocate more time to the course moderator: The findings suggest that the work of dedicated support agents could be equally well done by the usual course team, for example by a course moderator with additional time to send messages and exchange with participants on a 1:1 basis.



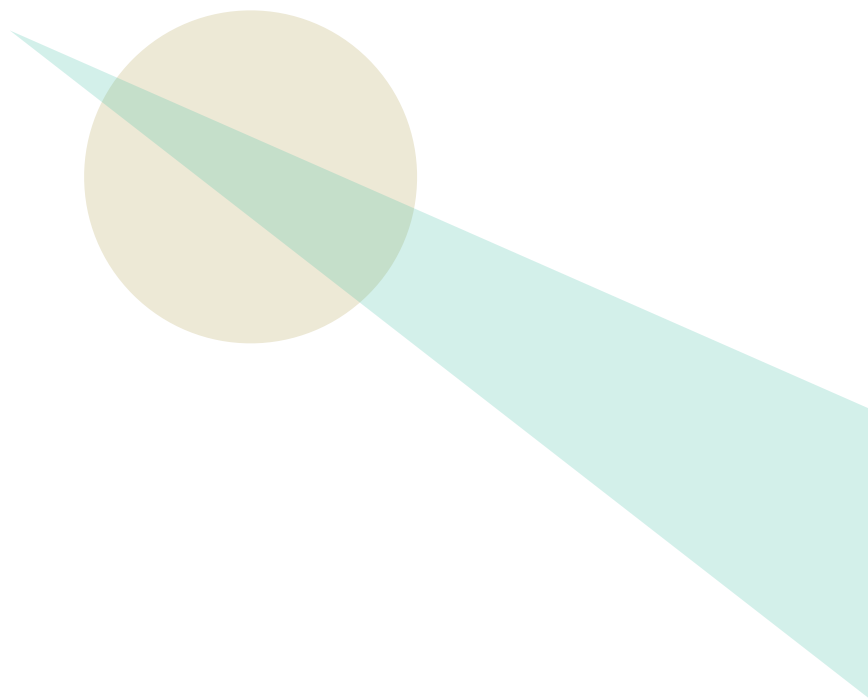
Consider the use of machine-based support systems: Given the limited take-up of the support offer a combination of machine-based systems with human support agents in the background could be a very efficient yet effective way to organise a personalised support mechanism that is in line with the mechanism tested during the experiment.



Offer diverse support mechanisms: The mechanism that was tested in the experiment did not account for a diversity of preferences in how participants would like to receive support or what type of communication channels they preferred. While the content of the support was personalised, the process of offering this support was not. Therefore, a more significant degree of personalisation also needs to occur in regard to the support processes on offer.

2. ACKNOWLEDGEMENTS

This report builds on the contributions of all those involved in the TeachUP experiment. First and foremost, thanks go to the 22 personalised support agents in the 10 TeachUP countries who were crucial for the implementation and the following analysis of the personalised support mechanism. The work of the colleagues at the Research Institute for the Evaluation of Public Policy ensured that the experiment followed a rigorous methodology and their statistical analysis and contributions allowed for a clear presentation and understanding of the results. The remaining 16 TeachUP partners also contributed substantially to the analysis and understanding of the results as well as shaping the overall direction of the project and its outcomes. Their work also ensured that all elements of the field trials were successfully implemented at national level.



3. INTRODUCTION

Over the last decade, teachers have faced an increasing number of complex challenges in their daily work in the classroom, caused by changes in education policy as well as more general trends in society. Some of these challenges, such as the increasing digitalisation of classrooms, require teachers to fundamentally innovate and adapt their practices. Teachers require training and support if they are to achieve such transformation of their practice.

It is generally agreed that initial teacher training and continuous professional development (CPD) is crucial in addressing these changes. However, evidence from the most recent OECD Teaching and Learning International Survey (TALIS) shows that many teachers in OECD countries struggle to access and benefit from the training they need, with very few, if any, improvements registered over the last decade (OECD, 2009, 2014, 2019).

The TeachUP project¹ aimed to address this issue by exploring *how scalable online training formats such as Massive Open Online Courses (MOOCs) could offer an opportunity to increase the accessibility of training for teachers without reducing the learning afforded by such training*, thereby providing ministries of education with an effective tool to support more teachers to address the challenges they face, than is currently the case with more traditional training formats.

This report offers policy makers and teacher training providers an overview of the results and the corresponding recommendations from the TeachUP experiment of introducing personalised support in scalable online courses for teachers. The findings presented offer a clear opportunity to improve the impact of online training of teachers that is effective at scale.

¹ Underlined words are defined in the Glossary in section 9

Personalised Support:

support provided to course participants which takes into account a participants' profile and progression in a course. It is designed to help participants successfully access and benefit from the course content and community. It was the treatment in the TeachUP policy experimentation, so it was offered only to participants in the treatment group.

Scalable Online Courses:

courses designed in such a way that there is no practical, technical, or other limit to the number of learners in the courses. While such courses have the potential to accommodate "massive" numbers of learners, they do not necessarily do so. Massive open online courses or MOOCs would be considered a typical example of such a course – even though the use of the term "massive" could be misleading in this context as numbers of learners are not necessarily high in numbers.

3.1. THE CHALLENGE

There is little doubt that online training formats have the potential to increase accessibility of training for teachers. They are inherently more flexible than onsite formats, usually offering flexibility in when and where they are accessed, allowing teachers to benefit at times that do not conflict with their work schedule and other commitments, and without the costs and inconvenience of travel. Furthermore, teachers can access a wider selection of training from regional, national or international providers, given that participation does not depend on the geographic location of the offer.

However, although accessibility at a basic level might be increased through online training, benefiting from such formats requires a certain level of digital and self-regulated learning competences. Without it, teachers gain little from more training opportunities, as no benefit can be derived from them.

By definition, online training requires a basic level of digital competence, at the very least being able to navigate an online learning environment. However, research indicates that learning online is more effective when the learner is an active contributor rather than simply a passive consumer of learning content (Huang, 2002), suggesting that effective online learning environments require also a more advanced digital competence. In particular, in teacher continuous professional development and initial teacher training contexts, online learning is more effective if it follows the principles of social constructivist and connectivist learning theories (Darling-Hammond, Hyler, & Gardner, 2017; Powell & Bodur, 2019). Constructivism and social constructivism posit that learners actively attempt to create meaning from experience and that the process of creating meaning is usually a social process shaped by interactions with others. Connectivism argues that in a digital age where knowledge is stored and readily available, learning is less about the acquisition of knowledge and more about the process of creating connections to people and content and being able to use and navigate these connections to access the right knowledge when needed. Effective online learning

therefore focuses on the interactions and connections between learners and provides learners with experiences from which they can derive meaning, such as the production of digital artefacts. And interacting with peers online or producing digital artefacts requires a more advanced level of digital competence.

Similarly, all online learning environments require at least a basic level of self-regulated learning competence. Even in highly structured and guided online learning environments, group dynamics and positive peer pressure are usually less pronounced than in onsite settings, which can lead to feelings of isolation and disconnectedness (Willging & Johnson, 2009). This means learners are more left to their own devices to motivate themselves to proceed and succeed. Furthermore, online training formats designed for scalability, such as MOOCs or many mobile learning applications, usually offer high levels of flexibility and little or no personalised guidance to the learner. To succeed in such environments, learners need to structure and organise their own learning, defining for example when and where they will learn or what content or activities to focus on. Accordingly, to benefit from online teacher training, teachers require an advanced level of self-regulated learning competence.

These prerequisites for learners to benefit from online training are an important reason why many of these formats – and in particular those that are designed for large-scale – have low take-up and completion rates. Even when learners are convinced to start an online course, many drop out before completing it. This means for example that general MOOC completion rates range from 0.7% to 52.1% with a median value of 12.6% (Jordan, 2015)¹. Consequently, scepticism about the effectiveness of MOOCs and similar models persist, with only few European countries proactively making use of MOOCs for teacher training.

The TeachUP experiment aimed to address this problem by testing a support model in scalable online course environments which offered a personalised support

¹ While the TeachUP experiment focused on the question of how to improve completion rates it is important to highlight that completion rates are only one of many measures of success of scalable online learning environments like MOOCs. In fact, it can be argued, one of the advantages of such environments is that they allow for a “pick and choose” approach in which participants drop-in and out depending on what is of relevance to them. Such an approach might perfectly address the training needs of the participant but would nevertheless be recorded as a “drop-out” in the final course statistics.

mechanism designed to help learners with low levels of digital and self-regulated learning competence to benefit from the training offered. The hypothesis of the experiment was that such support would result in increased participation and completion rates in scalable online teacher training environments.

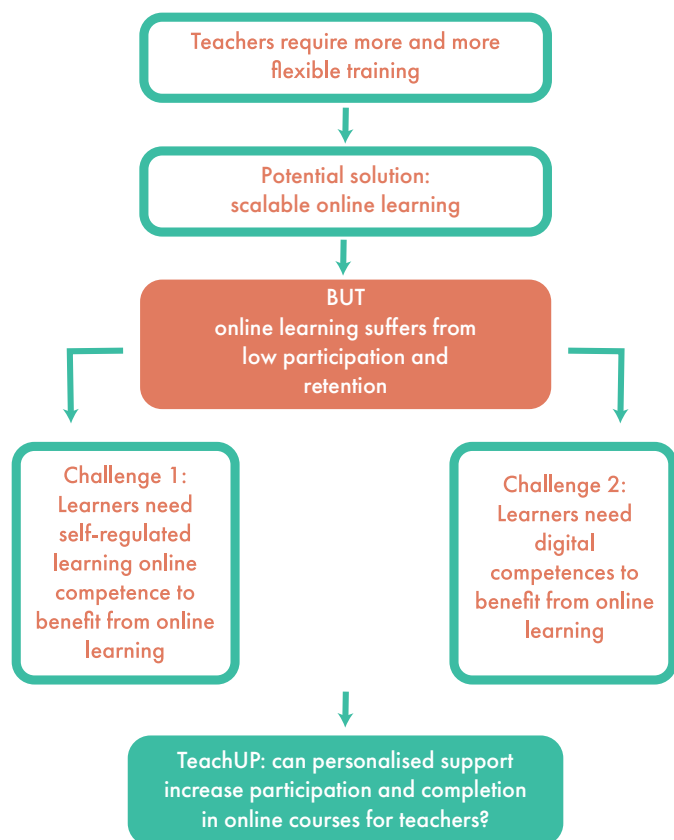


Figure 1: *The Challenge*

3.2. ABOUT THE TEACHUP PROJECT

The [TeachUP project](#) was a major European research project (2017 - 2020) with 17 partners from 13 countries, with field trials run in 10 countries. The KA3 policy experimentation was co-funded by the European Commission and coordinated by [European Schoolnet](#). TeachUP organised a series of four online courses on formative assessment, personalised learning, collaborative learning and creativity (between October 2018 and May 2019).

A fundamental element of policy experimentations is that they start from a concrete policy concern. In TeachUP, this concern was that, while online

courses have the potential to provide flexible training opportunities teachers at scale, only 36% of teachers have already participated in an online course (OECD, 2019). Hence, the first and main research question was how to increase teachers' and student teachers' participation in scalable online courses. To address this question, TeachUP tested whether a personalised support system increased course participation. As part of this, the project also investigated possible impacts on course participants' self-regulated learning online (SRLO) competence. A second research question was whether peer assessment is a valid form of assessment in online courses (the report about peer assessment is available at teachup.eun.org/outputs).

3.2.1. Methodology – the experimental setup

A second key element of policy experimentations is a rigorous research methodology to test possible solutions to policy concerns. TeachUP implemented field trials with over 4000 randomly sampled teachers and student teachers in 10 countries (Austria, Hungary, Greece, Estonia, Malta, Lithuania, Portugal, Spain, Slovakia, Turkey). To answer the first question (how to increase teachers' and student teachers' participation in scalable online courses), TeachUP compared a group receiving personalised support consisting of emails with personalised guidance and an offer of support (the treatment group) to a group not receiving it (the control group), in order to reliably identify the impact of the personalised support on course participation. Teachers and student teachers in both groups were invited to fill in two short surveys (Baseline and Follow-up), as well as shorter surveys after each course. To address the second research question (whether peer assessment is a valid form of assessment in online courses), TeachUP compared the peer and expert assessments of 106 randomly selected pieces of coursework from the third TeachUP course, and their authors were asked to fill in a short survey.

For the analysis of both research questions, the project used data from the surveys and the course platform itself. To enrich the quantitative analysis, qualitative feedback was collected from key stakeholders and in focus group sessions during three workshops – 'Country Dialogue Labs' – in each field trial country.

3.2.2. The Course Series

The series of courses developed as part of the project focused on four key pedagogical topics associated with the changing role of the teacher and students. The topics were identified on the basis of a survey of initial teacher education and continuous professional development organisations, as well as a literature review related to the changing role of teachers. Each course ran for three and a half weeks and provided an introduction to a pedagogical concept and underlying theory followed by examples and ideas for the practical implementation of this concept. Each course ended with the production by participants of a lesson plan related to their context and incorporating the ideas gathered during the course. The courses addressed four topics:

FORMATIVE ASSESSMENT

how to better understand their student's learning processes and how best to accommodate their learning need

2 October - 26 October 2018

PERSONALISED LEARNING

exploring how to empower students to take ownership of their learning

15 January – 8 February 2019

COLLABORATIVE LEARNING

looking at activities and tools that facilitate fruitful and meaningful collaboration between students

26 February – 22 March 2019

CREATIVITY

examining how students can develop creative thinking skills

7 May – 31 May 2019

Figure 2: The TeachUP Course Series

All four courses remain available in all ten TeachUP languages as open educational resources for self-study or reuse by teacher training providers on the [European Schoolnet Academy](#).

At the end of each course successful participants received a digital badge and certificate. Those who completed the entire course series were awarded an additional badge and a certificate acknowledging their achievement. The course series was organised according to a natural progression of pedagogical approaches with formative assessment being the starting point for personalised learning and collaborative learning and creativity being approaches that can support a personalised learning approach.

3.2.3. Course Instructional Design

The courses followed an instructional design allowing for scalability and with constructivist and connectivist principles in mind. The instructional design was based on and inspired by the experience of the [European Schoolnet Academy](#) and the [AprendelNTEF](#) platform, two initiatives each with around 6 years of experience in delivering scalable online courses to teachers.

In principle, the pedagogical approach of the courses followed a range of learning theories with elements of constructivism, social constructivism, connectivism, and to a more limited extent a cognitivist approach. This meant that the instructional design focussed on practice, individual and shared reflection, knowledge construction, collaboration, as well as networking and discussion in combination with more instructive content.

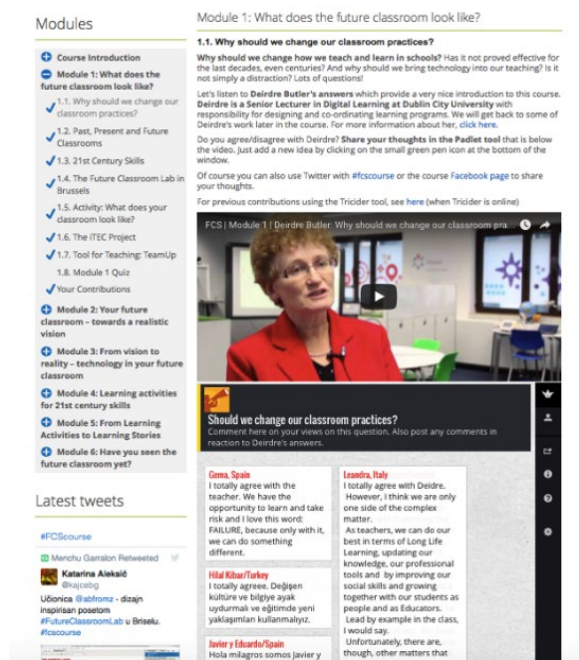


Figure 3: a course section with a short video and associated reflection activity

Accordingly, courses included a basic construct of content around which a number of community building dynamics were implemented, in order to encourage teachers to exchange and share their experiences and expertise with each other. The course content was not made up of videos showing a “sage on a stage” but drew from different types of materials including classroom observation videos, teacher and student interviews, screencasts or short practice-focused researcher presentations.

The emphasis was on content originating from classroom practitioners themselves, designed to trigger reflections and exchanges amongst the participants about day to day teaching practices. This part of a course could be covered by a participant in 1-2 hours a week, whenever and wherever the participant preferred.

However, in order to fully benefit from the course, participants were encouraged to involve themselves in the course community built up as the courses progressed. The community was to a certain extent decentralised and existed in a Facebook group, on the course platform in the forum, and in one of the many [web 2.0 tools](#) used on the courses. The links between different channels were established by dedicated course moderators who connected participants and content across the growing network of activity. Such fuller immersion in the courses increased the total time required for the courses to around 2-4 hours a week.

Throughout the courses, participants were required to transfer their learning to a course product in the form of a lesson plan intended to facilitate transfer of knowledge and competences gained, to day-to-day practice at the end of the course. This work was then formatively and summatively assessed in the form of a peer assessment activity at the end of the courses. To qualify for the course badge and certificate participants had to submit for assessment their own lesson and peer assess the lesson plans of three other course participants selected randomly.

The following diagram shows how each course was organised.

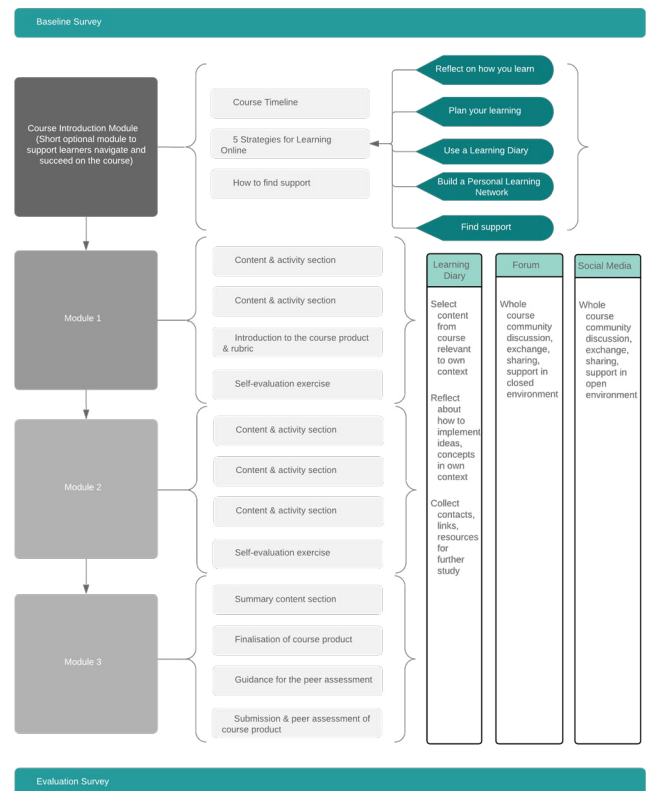


Figure 4: TeachUP Course Organisation

4. PERSONALISED SUPPORT IN SCALABLE ONLINE COURSES

The aim of the personalised support implemented on TeachUP courses was to support those participants most in need and with a higher chance of dropping out – so as to increase participation and completion rates of the courses. However, as the support was to be offered in a scalable environment and the process of offering personalised support is a time-consuming activity, it could only be offered in a very targeted fashion rather than as a general offer to all course participants. Accordingly, participant profiles and platform data about course progression was used to identify those considered most in need and therefore eligible for the personalised support. The following image illustrates the approach used (1. Learner profile data is gathered through a survey. Progress data is gathered via the course platform. 2. The data is used to determine those most likely to drop out. These participants are proactively contacted with an offer of support. 3. The result is personalised, pro-active support to participants that allows for a certain degree of scaling up):



Figure 5: Scalable Personalised Support

A key element of this approach is that the support takes into account the learner's context and offers guidance relevant to that context. Context refers here both to the progression of the learner on the course as well as their previous experience, professional profile and skills. This is unlike the support offered by a course moderator who would usually provide general advice applicable to all course participants regardless of their individual background and situation.

4.1. PERSONALISED SUPPORT VERSUS TUTORING VERSUS MODERATION

Although in this report we refer to the concept of personalised support, the experimentation originally used the term "tutoring". Dedicated "tutors" were to support learners in 1:1 sessions and exchanges with academic support and feedback, the development of certain skills, as well as more general help and organisational support, all under the premise of having some knowledge of the learners' context. Such broad support, covering also academic and content-based support, is best described as tutoring (Lofthouse, Leat, & Towler, 2010; Roberts, 2010; Wisker, Exley, Antoniou, & Ridley, 2008). However, the actual nature of what happened during the experiment did not hold up to this definition as few participants took up the offer of a 1:1 session and exchanges primarily focused on one-time pastoral, organisational and technical support issues. Consequently, the term "tutoring" was dropped and replaced with "personalised support" for the purpose of clarity in the findings. It should be noted here, however, that the "tutors" did introduce themselves as such and this could have had an impact on the expectations of what to expect from the support offered.

As outlined in section 3.2.3, the instructional design of the courses incorporated the use of moderators. Although moderators can offer support to learners, their primary purpose is to develop an active learning community. On the one hand this is done for the purposes of learning (a more active learning community results in improved learning outcomes (Benbunan-Fich & Hiltz, 2003)), but on the other hand this is borne out of the necessity to manage support with few resources in scalable environments. In theory, rather than respond to the queries of individual learners (which increase by an order of magnitude in large-scale courses), the moderator should encourage other participants to respond to the query. In practice however, moderators often answer learner queries directly, but they do so

usually in a generic way, without considering the learner's background or profile, information to which a moderator does not normally have access.

moderator role and the personalised support agent role. These roles should not be seen as opposing each other but rather as a complementary way to manage a course community.

The following table provides an overview of the

Moderator Role ¹	Personalised Support Agent Role
Main Aim	
Develops an active learning community where participants support and learn from each other	Helps individual learners benefit from the course content and community
Target Audience	
All course participants	Individual course participants
Example Tasks	
Encourages participant engagement and discussion, for example by posting a question or statement in the forum or social media	Has one-to-one sessions with learner, answering questions about content, process, or technology and taking into account the learners' background and progress
Highlights generally useful resources in forums or social media	Highlights specific resources relevant to the learner's profile
Posts reminders about deadlines to all participants on forums or social media	Reminds learner about upcoming deadlines with a personal message
Highlights notable participant contributions in forums or social media as a form of recognition, motivation, and example	Helps to develop a personal learning plan for the learner
Organises a synchronous session available to all participants, such as a webinar, Twitter chat, or Teachmeet	Proactively contacts the learner to offer support
"Likes" participants' posts	Shares personalised advice on how learner can self-regulate learning

Table 1: Moderator & Personalised Support Agent Roles

¹ A moderator was in place in both the test and control courses. Personalised support agents were in place only in the test courses.

4.2. THE PERSONALISED SUPPORT MECHANISM

The following section describes the original setup of the personalised support mechanism during the experiment. Section 5 then outlines the observations made during the implementation of the mechanism as well as the impact observed

4.2.1. Overview of the setup

The personalised support mechanism was organised around a concept of interventions consisting of triggers and actions. Triggers determined which course participants were eligible for the personalised support, for example a lack of online learning experience. Each trigger had an associated action which was addressing the specific characteristics of the trigger, for example an email highlighting resources that can help to succeed in online learning and an offer for a 1:1 video call to conduct a “walk-through” of the course interface. Actions were adapted for each participant taking into account their profile, for example by adding references to the participant’s profile into the email and by highlighting in the video call content on the course which might be of particular relevance to the participant. Triggers and actions were determined by the aim of an intervention which focussed on either getting participants to start a course, complete a course, or improve their satisfaction with the course.

Actions were implemented by personalised support agents (experienced teachers or teacher trainers, see section 4.2.3) who each had a course cohort of a maximum of 100 participants assigned to them. Support agents conducted spot checks at specific times before and during each course to see which participants of their cohort were eligible for the support offer. These checks were done via an online tool which displayed lists of eligible participants by interventions. The tool also allowed support agents to see the whole set of a participant’s responses to the baseline survey, offering a detailed overview of the participant’s profile, beliefs, and confidence levels. The tool received data from the baseline survey as well as from the course platform. Support agents used the tool to identify those qualifying for an intervention and to “research” about the participant in question so as to personalise the support offer.

4.2.2. Interventions

A total of nine interventions were created for the experiment. These interventions were based on research showing which characteristics or actions of course participants have an impact on the likelihood of course completion. Furthermore, interventions addressed key elements of the instructional design and course timeline which were more complex and potentially problematic for learners (e.g. the final submission of a course product and associated peer assessments). Finally, interventions were also shaped by the technical possibilities of which data could be collected by the course platform. This meant that not all elements highlighted as important in the literature could be accounted for in the final interventions. The exact determinants of each intervention with triggers, actions, and aims are identified in Table 2 further below.

Overall, the interventions reflect the findings found in the literature on self-regulated learning competence and online learning in general (Triquet, Peeters, & Lombaerts, 2017). For example, Yukselturk and Bulut (Yukselturk & Bulut, 2007) show through a quantitative and qualitative analysis of online learners that self-regulated learning competence is a key determinant of success in online courses. More precisely, Kizilcec et al. (Kizilcec, Pérez-Sanagustín, & Maldonado, 2017) highlight that self-regulated learning competence is critical in learning environments that provide low levels of support and guidance, as is the case for most MOOC designs. To incorporate the concept of self-regulated learning competence as a trigger in the interventions, Zimmerman’s (Zimmerman, 1989) widely used model of self-regulated learning was used to identify individual components of self-regulated learning. The model highlights a combination of beliefs and skills, such as goal setting, task strategies, time management or self-efficacy as key parameters of a self-regulated learner.

In line with this model, Muilenburg and Berge (Muilenburg & Berge, 2005) (Muilenburg & Berge, 2005) find four critical barriers to successful online learning: lack of social interaction, administrative/instructor issues, learner motivation, and time/support for studies. However, these barriers apply differently to users with different expectations and beliefs, which are in line with those identified in Zimmerman’s model. According to their study the following five variables determine if the barriers actually stop a user from succeeding in online learning:

- Reported ability and confidence with online learning technology
- Beliefs about their own effectiveness at online learning
- Beliefs about their own enjoyment of online learning
- Expectations about the likelihood of taking more online courses in the future
- Expectations about completion and activity on the course

While Muilenburg and Berge look at online learning in general, Pursel et al (Pursel, Zhang, Jablokow, Choi, & Velegol, 2016) specifically investigate behaviour in MOOCs. According to their analysis of a MOOC with close to 95,000 enrolments the following indicators predict the likelihood of completion on MOOCs:

- Time of joining the course (after the launch)
- Number of videos watched
- Number of original posts made
- Level of education completed
- Expectations about completion and activity on the course

It should be noted that all these research results focus on 'general' students, i.e. not specifically teachers or student teachers. No research results could be found that determine factors of success in online learning of teachers and student teachers specifically. In addition, the majority of courses examined in the existing literature were not aimed at introducing a change in the professional practice of their participants, something that was very explicitly a part of the TeachUP courses. This could have an impact on the determinants of a participant's success in an online course. The results of the experimentation in fact show that the choice of triggers for the interventions based on the participants' profile was only to a limited extent determinant of non-completion in the TeachUP courses (see section 5.2). To take this into account, in the fourth TeachUP course, an additional intervention was added which used triggers that had proved more determinant of non-completion in the first three TeachUP courses. These included a weighted mix of motivation, English proficiency, subject of teaching, age, previous experience, internet access, gender, and level of education.

The table in the next page offers an overview of the triggers and actions of the 9 interventions used. It also identifies on which basis the intervention was constructed.

Interventions				
Nº	Trigger	Action	Aim	Evidence used
1	<p>User indicates low levels in at least 2 of the following indicators:</p> <ul style="list-style-type: none"> • belief about effectiveness at online learning, • expectations of likelihood to take online courses in the future, • education level lower than Masters 	<p>In course 1-3 the agent contacted the user with a personalised message that included an offer for a video call, template and guidance for succeeding in online learning using a learning plan.</p> <p>In course 4 the agent contacted the user with a general message offering support of any kind at any point during the course should the user like to reach out.</p>	Course Completion	(Muilenburg & Berge, 2005; Pursel et al., 2016)
2	<p>User indicates low competence in at least 2 of the following self-regulated learning components:</p> <ul style="list-style-type: none"> • Goal setting • Task strategies (includes time management) • Help seeking • Self-evaluation • Elaboration 	<p>In course 1-3 the agent contacted the user with a personalised message that included general guidance on the importance of SRLO, an example of how to develop the SRLO components, as well as an offer for a video call to discuss specific SRLO strategies.</p> <p>In course 4 the agent contacted the user with a general message offering support of any kind at any point during the course should the user like to reach out.</p>	Course Completion	(Kizilcec et al., 2017; Zimmerman, 1989)
3	<p>User has low experience of online courses or reports low ability and confidence with online learning technologies</p>	<p>In course 1-3 the agent contacted the user with a personalised message that included an offer for a video call to “walk-through” the course interface and tools or to identify a set of questions they have about the course. The agent would then provide answers to these questions. In course 4 the agent contacted the user with a general message offering support of any kind at any point during the course should the user like to reach out.</p>	Course Completion	(Muilenburg & Berge, 2005)

Interventions				
Nº	Trigger	Action	Aim	Evidence used
4 (only in course 4)	Weighted mix of low motivation, low English proficiency, subject of teaching, age, previous experience, internet access, gender, and level of education	Support agent contacted the user with a general message offering support of any kind at any point during the course should the user like to reach out.	Course Completion	Data from TeachUP courses 1-3 about factors predicting likelihood of non-completion.
5	User has not started 5 days after module launch.	Support agent contacted the user with a personalised message reminding of the importance to stay on track and encouraging the user to keep going as well as offering advice on how to plan their learning time and self-motivate	Course Start	(Kizilcec et al., 2017; Pursel et al., 2016; Zimmerman, 1989)
6	User has not submitted their work for the peer assessment activity 2 days prior to the deadline	Support agent contacted the user with a personalised message about the deadline, offering tips on how to complete the work and where to find support, including the possibility for a video call prior to the deadline, in order to answer any final questions.	Course Completion	Experience from other teacher MOOCs where support queries increase shortly before the deadline of the peer assessment activities.
7	A user has made two or more support requests via the contact form of the course platform within a period of 1 week and has never visited the course FAQ page.	Support agent contacted the user with a personalised message highlighting ways how users can find answers to their questions, including finding peer support but in particular highlighting the FAQ page and the support section of the forum.	Course Completion	Instructional design focusses on a strong community and peer support infrastructure with limited resources dedicated to answering queries via the contact form. This means that users need to be encouraged to find solutions by themselves or amongst peers. Also: (Kizilcec et al., 2017; Zimmerman, 1989)
8	User indicates dissatisfaction/ confusion with the feedback provided by peers in the peer assessment activity	Support agent provided feedback to the work submitted.	Course Satisfaction	(Kurtuldu & Özkan, 2019; McGarr & Clifford, 2013; Ratminingsih, Artini, & Padmadewi, 2017; Struyven, Dochy, & Janssens, 2008)

Interventions				
Nº	Trigger	Action	Aim	Evidence used
9	User has visited less than 70% of module sections 1 week after module launch	Support agent sent a personal message offering support to help user benefit more from the course content, including a possibility to book a 1:1 session to discuss how to use the content.	Course Completion	(Pursel et al., 2016)

Table 2: Interventions

It is important to note that some interventions offered the qualifying participant the opportunity to book a 1:1 video call while others simply provided further guidance or, in the case of intervention 7, offered some feedback. However, all interventions incorporated an offer to the participant to reach out further in case of questions.

All interventions were implemented by means of a set of email templates which the agents sent out to qualifying participants. All emails were sent in the course language which was the local language of the participants. Agents had to adapt the email templates in certain places taking into account the information provided by the participants' profile and course progression. An example of an email template is available in Annex 1. While agents were instructed to adapt the messages to fit the context in which they were sent, they were advised against changing the templates substantially so as to avoid significant discrepancies between country implementations. Furthermore, a timeline was set out when agents conducted the spot checks and sent the emails, including the sending of reminders.

With the support agents at the forefront of the implementation and their experience of interacting with the designated participants, their feedback and input to the processes and templates used as part of the support infrastructure were of key importance to the experiment. Feedback was gathered in weekly meetings during the implementation phase as well as via a survey after each course. Furthermore, a follow-up onsite workshop was organized where the implementation and the experiment results were discussed with the agents.

4.2.3. The Support Agents

The support agents were experienced teachers and teacher trainers who received dedicated onsite training in the TeachUP personalised support mechanism and their role in it. The training did not address the course topics and only to a limited extent self-regulated learning online competence. Rather, agents were expected to have some knowledge already about the course topics and how to learn online. Agents had prior access to all courses so that they could familiarise themselves with them before launch.

5. IMPLEMENTATION AND IMPACT OF THE PERSONALISED SUPPORT MECHANISM

The previous section outlined how the personalised support mechanism was set up. This mechanism was based on the available literature, previous experience of running MOOCs for teachers at the level of the [European Schoolnet Academy](#) and the [AprendeINTEF](#) platform, and assumptions about course participant behaviour. However, the implementation of the mechanism as part of the four courses ended up partly different than expected. This section now looks at the observations made as part of the implementation and the impact recorded in the experiment.

5.1. NUMBER AND DISTRIBUTION OF INTERVENTIONS

Table 3 shows the number and distribution of interventions activated during the whole project depending on what triggers they were based on. Interventions 1-4 and intervention 5 outnumbered all other interventions (*Note: Numbers refer to the interventions delivered, not to participants. One participant could receive more than one intervention*):

Intervention	Basis of trigger	Aim	Occurrences
1-4	Intervention in course profile	Course Completion	3532
5	Behaviour on course platform - not starting a module 5 days after start	Course Start	3692
6-9	Behaviour on course platform	Completion and Satisfaction	718

Table 3: Numbers of interventions activated during the whole project

Overall, interventions 1-4, which were based on a participants' profile, and intervention 5 which was based on a participants' actions on the course platform (in this case not starting a module 5 days after launch) made up 91% of all interventions (intervention 5 accounting for 46.5% and interventions 1-4 for 44.5%

of all interventions). It should be noted here that due to technical limitations interventions 5-9 were only implemented from course 2 onwards.

A first, important implication emerging from these figures is that the occurrence of enrolling at but not starting in time an online course is widespread in the studied population. This is an important message for future developments in online courses targeting teachers, as it suggests that special attention has to be paid to the critical passage between enrolment and course start. In this regard, considering the impact outlined further below, intervention 5 worked as an effective prompt that succeeded in reducing the gap between enrolment and actual course start.

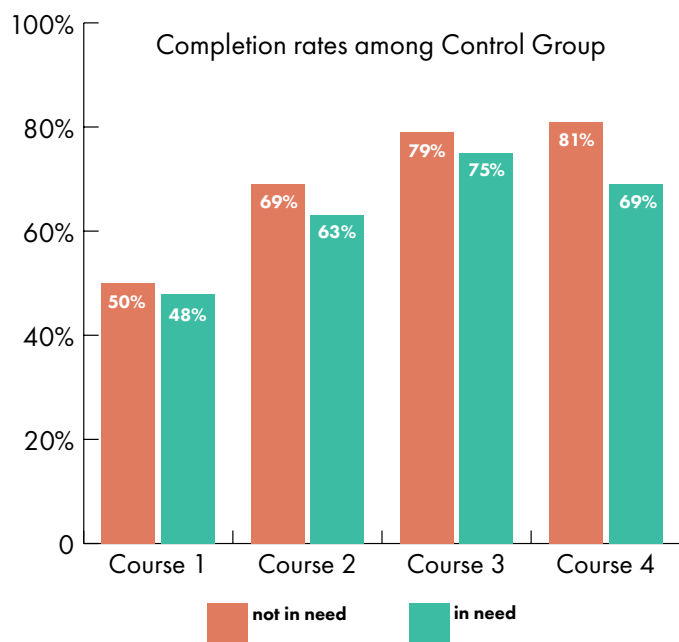
The second implication is that a substantial fraction of participants turned out to be identified as "at risk" of not completing the courses because of a mix of limited past experience in online learning, low digital competence or low self-regulated learning online competence. These teachers were offered interventions 1-4.

5.2. LOW RESPONSE AND TAKE-UP OF THE SUPPORT OFFER

Of all the interventions made by the agents only 6% resulted in some kind of response from the participant contacted. It should be noted here that a response was not necessarily required of participants, although those interventions which included the offer of a 1:1 session did ask for feedback about availability should there be an interest in the session. Nevertheless, this figure is only marginally better for the interventions including the offer of a 1:1 session, which had a response rate of 7%. In line with these figures, only around 5% of those receiving the offer of a 1:1 session actually accepted the offer. These figures represent averages across all TeachUP countries with slightly higher figures if separating out Turkey; for example, acceptance of the 1:1 session was 8% in EU countries but only around 3% in Turkey.

These low results might be partly explained by an

imprecise targeting of those most in need. This was somewhat the case in courses 1-3 where targeting identified many participants who, based on a comparison to equivalent profiles in the control group, were in fact not in need of the support offered (i.e. they did not have a low likelihood of non-completion). This was addressed in course 4 with the introduction of an additional intervention using the data from courses 1-3 to identify those with a high likelihood of dropping out. Graph 1 shows that for course 1-3 those identified as in need had a lower completion rate than those identified as not in need. However, this difference is not significant, suggesting that participants were targeted who were not necessarily less likely to complete a course than those not targeted. In course 4, due to the addition of an extra intervention that used data from courses 1-3, the difference becomes significant, suggesting that targeting was more precise.

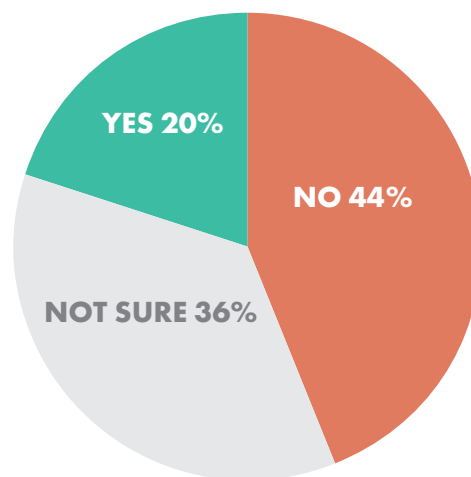


Graph 1: Completion rates among Control Group

The imprecise nature of the targeting in courses 1-3 is confirmed by the qualitative assessments of the support agents of their exchanges with participants. Support agents identified 44% of the participants they exchanged with as not in need of support, compared to only 20% who were in need of support. However, it is clear from the support agents' feedback that in most cases this assessment was based on participants' opinion rather than a comprehensive assessment of their needs. In other words, if the participants wrote back to them indicating that they do not require support, then

support agents usually classified these participants as "not in need of support". This means that the data coming from the support agents about the participants' needs is more a reflection of the participants' own perception of being in need rather than their actual need for support.

Support agents' assessment if the participant they interacted with was in need of support

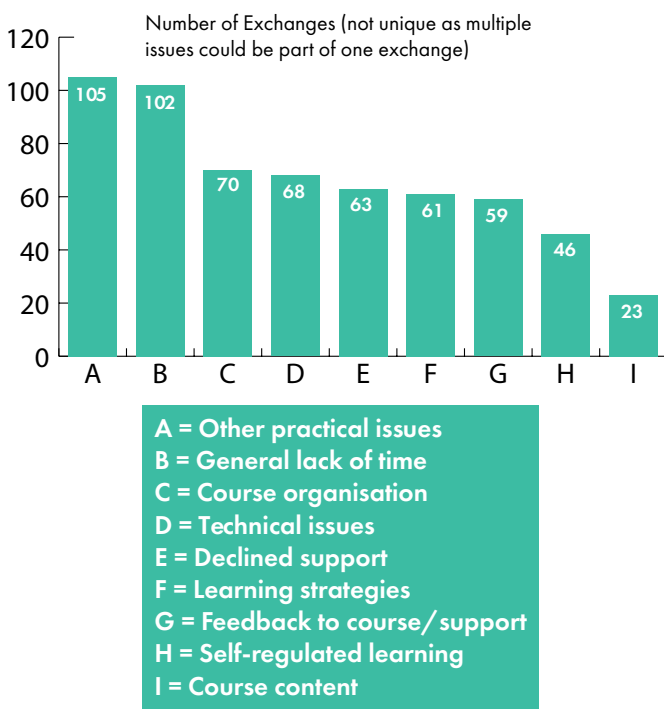


Graph 2: Support Agents' Assessment of Participant's Needs

The support mechanism originally included safeguards to avoid an overload of work for the support agents due to the expectation that they would have to engage in a substantial number of exchanges and 1:1 sessions. For example, the 1:1 sessions were supposed to be focused on specific issues rather than a general offer of support, and the communication with participants highlighted certain limits to the support agents' availability. Taking into account the low take-up rate of the 1:1 sessions, these kinds of safeguards were removed in course 4. For example, this meant that during course 4, the email templates of interventions 1-4 (which were sent out at the beginning of the course) were adapted to include only a generic offer of support, indicating that the participant could reach out for support regarding any issue and at any point during the course.

5.3. SUPPORT FOCUSED ON PRACTICAL ISSUES LINKED TO THE COURSE RATHER THAN THE COURSE TOPIC OR LEARNING STRATEGIES

79% of the interactions registered between support agents and participants focused on practical issues linked to the course. This included exchanges about a lack of time to complete the course, technology issues, appreciation or criticism of the course or the offer of support, as well as other practical issues such as deadlines, timelines and live events of the course. Only 21% of exchanges focused on discussions regarding the course topic or its content, aspects linked to self-regulated learning, or other learning strategies and approaches. Graph 3 shows the number of exchanges addressing certain issues.



Graph 3: Focus of Exchanges between Agents and Participants

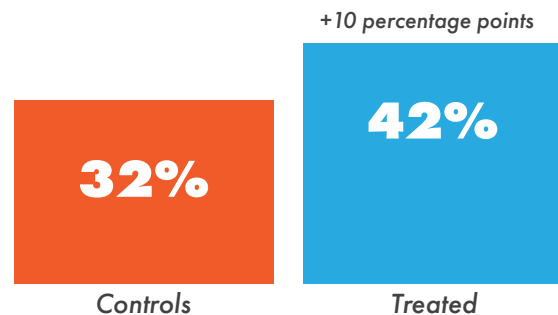
It should be added here that these figures refer to any form of interaction between the support agent and a participant, ranging from a substantive discussion as part of a 20 minute 1:1 video call (few) to simply a short email from the participant to the support agent without any further follow-up (many).

To a certain extent the distribution of issues addressed during the exchanges is not so surprising. There is some evidence showing that most support queries on

MOOCs address such practical issues rather than substantive questions regarding the course content or learning strategies (Watolla, 2016). However, given that most of the email communication implemented as part of the interventions specifically addressed more substantive questions, the low take-up by participants of referring to them remains notable.

5.4. OVERALL IMPACT

The analysis shows that the personalised support system had a sizable and positive impact on enrolled teachers from EU Members states. Course participants in the treatment group showed a probability of 42% to complete a course, compared to 32% for the control group. Hence, personalised support boosted the completion rate by 10 percentage points among the enrolled.



Graph 4: Impact of Treatment on Professional Teachers in EU Countries

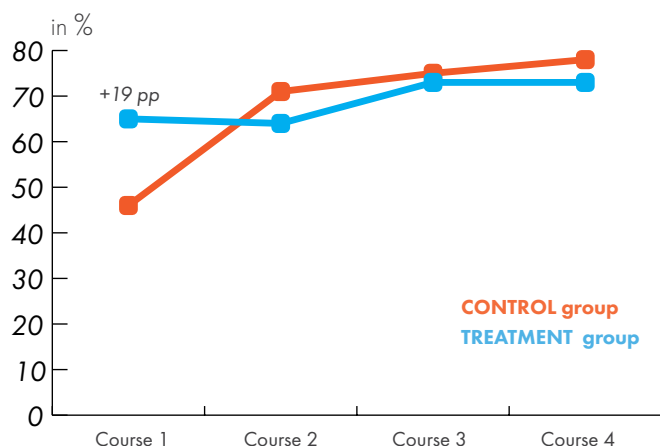
This overall impact of the personalised support was based on two different mechanisms: Interventions 1-4 which were based on participant profiles showed an impact on course completion in course 1, while interventions based on participants' behaviour on the course platform (notably intervention 5) showed an impact on course start in courses 2, 3 and 4.

Participants who were targeted with intervention 5, which addressed non-starters, also had a higher likelihood of receiving interventions 1-4. Given that non-starters had a lower likelihood of completing a course (because of less experience with online courses) but no drop in completion was recorded in courses 2-4, it could be plausibly said that interventions 1-4 were effective, even maybe to a lesser extent, also in courses 2, 3 and 4.

5.4.1. Emails based on participant profiles

Interventions 1-4 were based on participant profiles. They were triggered by certain information collected from course participants via the Baseline survey prior to the courses (e.g. low digital competence, no prior experience with online courses, low expectation to complete the course, see section 4.2.2 for more details). Interventions 1-4 increased the likelihood of teachers in the treatment group that started the first course to complete it by 19%. For the teachers in the treatment group who actually received an offer of support via email because they had been identified as 'in need', the likelihood to complete the courses increased even by 28%. Based on the Baseline Survey information, around 38% of teachers in the treatment group were identified as 'in need' in courses 1, 2 and 3 (54% in course 4 due to intervention 4 that was newly introduced in the last course, see section 4.2.2 for further information).

The orange line in the graph below shows the natural completion rate (i.e. the completion rate observed in the control group), while the blue line shows the completion rate in the treatment group.



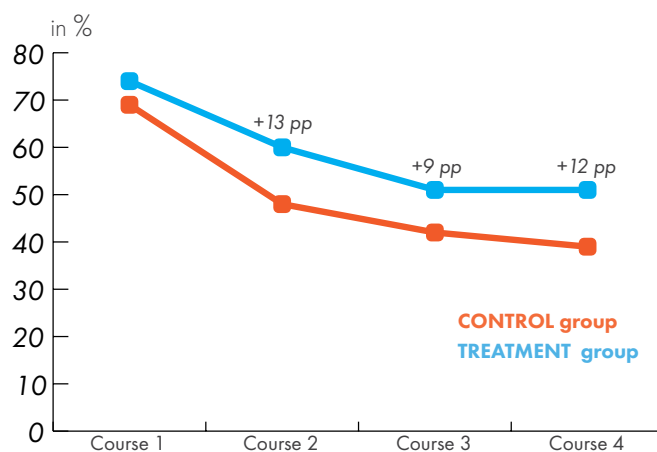
Graph 5: Completion Rate Among Starters

As regards completion rates, we can only note this large and statistically significant difference between treated and control teachers in course 1, and no significant differences in courses 2, 3 and 4.

5.4.2. Emails based on actual behaviour during the course

Interventions 5-9 were triggered by actual behaviour on the course platform. It can be safely assumed that it was intervention 5 that made the difference on the probability of starting a course. Intervention 5 induced teachers to start courses 2, 3 and 4 who might not have done so otherwise. This group of teachers who started the courses because of intervention 5 had on average less prior experience with online training than those who started on time.

The orange line in the graph below shows the natural start rate (i.e. the start rate observed in the control group), while the blue line shows the start rate in the treatment group. Starting rates were higher in the treatment group across all courses but only statistically significant in courses 2-4, with up to 13 percentage points difference recorded in course 2.



Graph 6: Starting Rates

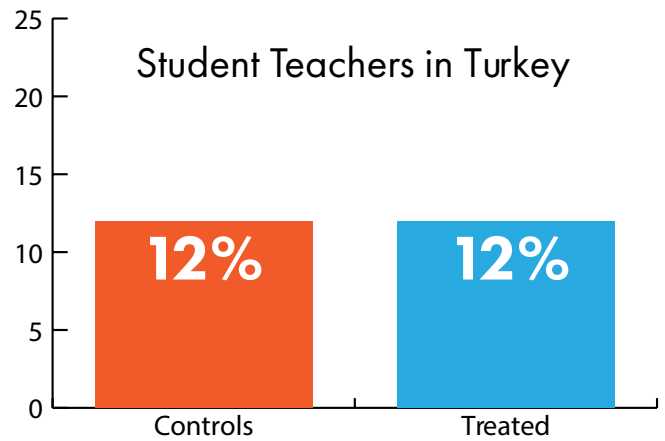
Intervention 5 consisted of a personalised reminder sent to those in the treatment group who had not started the course after 5 days. In courses 2, 3 and 4, more than 90% of those in the treatment group were identified as 'in need', mainly due to intervention 5. The impact of the other interventions triggered by behaviour on the platform seems to be more negligible; some of them were triggered very few times.

This positive impact on the probability of starting a course could only be found in courses 2,3 and 4 since the interventions based on behaviour on the platform were not in place in course 1.

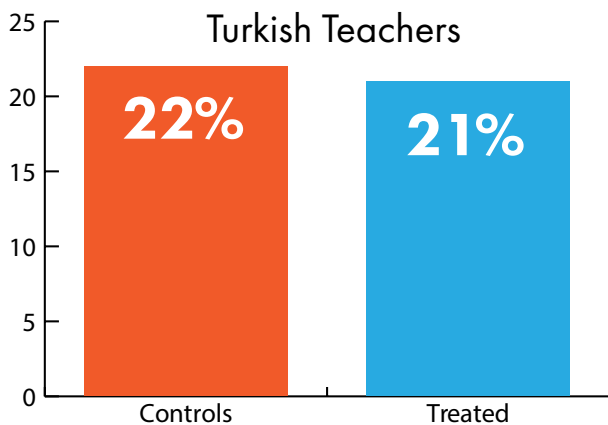
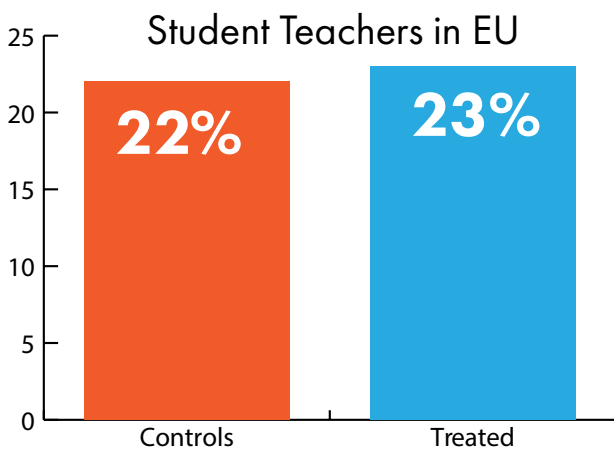
5.4.3. No impact for student teachers and teachers in Turkey

Although a substantial impact of the personalised support was found for teachers from the EU countries participating in the project, the same result was not there for three other groups (Graph 7). For student teachers in EU countries, and both student teachers and teachers in Turkey, no statistically significant differences between the completion rates in the treatment and control groups were observed. Interestingly, the natural completion rates of EU students and Turkish teachers are quite similar, and clearly below EU natural completion rates, while Turkish student teachers' completion rates are notably lower.

There is one notable exception, however, for student teachers. The personalised support increased the likelihood to complete the TeachUP courses only for those students who had completed more than one online course per year in the past three years. This result suggests that having at least a minimal past experience in online training is a precondition for benefiting from personalised support.



Graph 7: Completion Rates for Student Teachers and Turkish Teachers



5.5. IMPACT ON SELF-REGULATED LEARNING ONLINE

The second evaluation question in TeachUP asked whether personalised support improves teachers' Self-Regulated Learning Online (SRLO), and, if yes, whether it is improved directly or indirectly i.e. through the process of receiving personalised support or via more online course experience (see figure 5). In TeachUP, SRLO was measured via a set of skills such as the ability to set your own goals, plan your time, or reflect about your learning (based on Zimmerman's model of SRLO (Zimmerman, 1989).

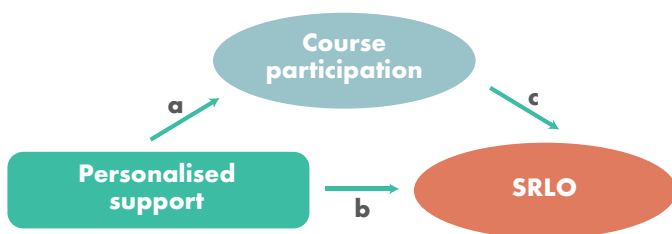


Figure 5: Impact on SRLO

As regards a possible direct impact of the personalised support on SRLO (figure 5, b), no short-term or medium-term impact on SRLO was observed. However, there is some evidence that personalised support decreased teachers' reliance on others to solve problems (the help-seeking dimension). As regards a possible indirect impact via increased course participation (figure 5, a+c), the more courses teachers completed the lower their reliance on others and the higher their ability to set goals.

Overall, the evidence on SRLO competence collected through TeachUP is not very revealing and warrants more explicit SRLO research. A full overview of the data collection and results regarding SRLO is provided in the [final evaluation report](#).



6. DISCUSSION

The results of the experiment described in the preceding sections show that implementing a personalised support offer in a scalable online course environment is possible and can result in positive improvements in course participation and completion. In this section we discuss the results of the experiment in more detail so as to understand better the underlying dynamics observed, thereby allowing more specific recommendations to be formulated on how to improve participation and completion in scalable online courses for teachers.

Before going into the discussion, a quick recap of the impact of the personalised support mechanism is useful. We can say with certainty that course participants who potentially were in need of support were offered what we define as personalised support – a proactive outreach in the form of an email that includes guidance (personalised to the recipient’s situation and profile) as well as an offer of support. We can also say with certainty that most of those participants did not respond or take-up the offer of personalised support. For those who did, the support focused primarily on technical, administrative, and organisational elements with very few support conversations addressing the course topics or aspects of self-regulated learning. Despite this limited response we do see a significant impact on course start and completion rates amongst professional teachers from the EU countries in the experiment. No impact however is seen on student teachers and serving teachers from Turkey.

6.1. WHY DID THE PERSONALISED SUPPORT MECHANISM HAVE AN IMPACT ON PROFESSIONAL TEACHERS FROM EU COUNTRIES?

It is not possible to offer a conclusive answer to this question but qualitative evidence from focus groups and follow-up workshops with course participants,

support agents, teacher trainers, and other stakeholders suggests that a set of different dynamics were at play, working in combination and affecting different users to different extents:



The personalised offer of support created **a sense of “control”** – The fact that participants received messages which were clearly tailored to their respective situation resulted in a feeling of being monitored, suggesting that if they did not proceed/succeed someone would notice. The support offer thereby replicated, to a certain extent, the social control dynamics that play an important role in face-to-face scenarios. Comments in focus groups indicate that this might have indeed been a powerful motivator for continuing on the course. However, at the same time, some focus group participants commented that such monitoring was perceived as intrusive and demotivating. It is therefore possible that this dynamic had opposite impacts on different participants.



The personalised offer of support created **a sense of “not being alone”** – Unlike the point above about a sense of “control”, the feeling of being monitored could also be perceived more positively: if participants did not proceed/succeed, then someone would be there to help them. The support offer thereby alleviated the feeling of social isolation that can easily be experienced amongst those who do not engage with the course community.



The personalised offer of support **acted as a “prompt”** – At a more basic level the support offer might have simply acted as a reminder and prompt to do certain things which the participant had forgotten about – such as start the course, plan for time to do the course or reflect about how to succeed on the course. As teachers are particularly busy and many different activities call for their attention, the emails might have provided a key tipping point for some of them to start prioritising course participation.



The personalised offer of support **acted as “guidance”** – It is also likely that the personalised support offered, genuinely addressed questions and needs of those contacted. Especially for those who responded with particular questions or concerns (e.g. where and when to submit work on the course), the support provided resulted in their being able to proceed, which they otherwise might not have done. However, it is possible that also those who never responded to the offer benefited from the specific guidance offered in the emails sent to them, such as to check the FAQs or to make appointments for the course in their calendar, resulting in them to proceed with the course.

It is not possible to conclusively determine which of these dynamics was most important or even if there were other factors at play not mentioned here. It is also unclear how they interacted with each other and how each of them interacted with different groups of users.

In consequence, and in the absence of further investigation, any replication of the approach used should include the elements from the approach that could cause each of these dynamics. For example, simply sending an automated reminder email to all those users who have yet to start a course might not produce the same result as the intervention in the TeachUP experiment that targeted those who have not yet started the course. This intervention included not just a reminder to get started but also an offer of support. While a simple reminder email would surely replicate the “prompt” dynamic, it would not replicate the “not being alone” dynamic which could also have played a role why some participants got started with the course after receiving the email in the TeachUP courses.

As part of the focus group discussions some stakeholders commented that they would have expected an even larger impact on course participation. A likely explanation for why the impact recorded was not even larger is that natural course completion rates were already high. (Natural completion rates refer here to the completion rates of the control group, to which the personalised support was not offered.) They were caused partly by the nature of running the experiment as part of a course series. Out of ten teachers and student teachers in the control group, seven started at least one course and about three completed at least one. The natural starting rate decreased sharply from course 1 (58%) to course 2, and then decreased further,

even if slowly, in courses 3 and 4 (20%). Conversely, the probability of completing a course among starters increased from 48% in course 1 to 75% in course 4. This pattern reveals the possible existence of a ‘self-selection’ mechanism. In courses 2, 3 and 4 fewer than 20% of participants had not completed a previous TeachUP course and in both the third and fourth course, about 70% had completed all previous courses. As these teachers already knew how to navigate the platform and how the courses were organised, this accumulated TeachUP-specific experience could have reduced the room for personalised support to have had an impact.

6.2. WHY WAS THERE SO LITTLE RESPONSE AND TAKE-UP OF THE SUPPORT OFFER?

Although a significant impact was recorded for part of the target group, the question still remains why there was such a limited response from participants across all target groups to the personalised support offer and what can be learnt from this for future implementations. The answer might also suggest ways how to increase the impact of the tutoring generally. For example, if the originally planned approach of tutoring, rather than personalised support, had played out, resulting in a substantial number of participants engaging in conversations with tutors about how to plan and structure their learning and discussing the course content, it is possible that a different impact would have been observed.

Results from the focus groups and feedback from the support agents highlight some reasons why the design of the personalised support mechanism might have played a role in achieving only a limited response. These points should be considered in any future implementations of a similar type of support mechanism:

- **Lack of personalisation on the support agent side**
 - Feedback from the support agents responsible for the 1:1 support to participants indicated that the language used in the emails they sent was too formal, too long or too standardised with little opportunity for the support agents to highlight themselves as individuals who participants could get in touch with (see Annex 1 for an example email). Accordingly, a more personal message which was not just personalised according to the

status and profile of the recipient of the email but also offered the sender of the email the opportunity to bring in their own character and experience might have resulted in a wider response from course participants. Furthermore, support agents were not visible on the course platform with a photograph, personal profile or similar, meaning that participants had no reference point to find out more about the person getting in contact with them. Something that might have further inhibited an open exchange in response to the email received.

- **Limited efficiency of the communication through emails** - It is also possible that reaching out to participants using email as a communication channel resulted in fewer responses. In particular the Turkish support agents highlighted the fact that email would not be commonly used as a communication channel by Turkish teachers and that many might have never read the emails sent. Support agents from other TeachUP countries offered mixed views on this with some countries indicating that email would be a common and practical communication channel with teachers whilst others would have preferred using other more formal or informal channels¹.
- **Lack of familiarity with online environments** - In this context it is also important to be aware that offering participants with low digital competence support via digital means, primarily email and online video calls, is a challenge and another possible reason for the limited take-up of the offer. Nevertheless, given that responding to an email only requires a low level of digital competence and there were only few email responses from participants, it is unlikely that this was a major determining factor, at least in regard to the emails. It is, however, more likely that a lack of digital competence or familiarity with online video calls was a factor that explains why there was so limited take-up of this opportunity by participants.
- **Lack of familiarity with 1:1 sessions** – Even for participants who might have had the technical capacity to engage in an online video call with the support agent, the idea of joining such meeting might have been strange due to its unfamiliarity (see also comment above about little information

being available about who they would talk to). This is confirmed partly by research in the behavioural sciences which shows that people primarily focus on the challenges or mental effort required to perform a new action instead of the benefits (Castelo et al., 2015). Accordingly, participants might have shied away from the 1:1 sessions simply because they were not used to engaging in a 1:1 fashion in the context of online learning or teacher professional development more generally.

The above points reveal the need for further research building on the present results, investigating in particular the role of communication styles and channels in online courses for teachers and student teachers, as well as ways how support can be offered in online courses to participants with little digital competence.

6.3. WHY DID THE PERSONALISED SUPPORT OFFER NOT WORK FOR STUDENT TEACHERS AND TURKISH TEACHERS?

The research results from the field trials do not provide conclusive answers why the personalised support did not work for all groups. No impact was found for teachers and student teachers in Turkey. For student teachers in EU countries, personalised support only had an impact on student teachers with previous online course experience.

When comparing these three groups to teachers in the EU countries, some potentially relevant differences regarding their participant profile become apparent. Student teachers from EU countries were obviously on average younger. Turkish teachers and student teachers overall had less experience with online courses, were more likely to expect a formal recognition of the TeachUP course certificates, less proficient in English and less likely to have a master's degree. Teachers in Turkey were also overall younger, more likely to be male, less likely to teach more than 36 hours per week and less likely to participate to a continuous professional training every 3 months than their colleagues in TeachUP EU

¹ While using different communication channels across the countries in the experiment was discussed, for reasons of comparability in the experiments' evaluation methodology this was not possible.

countries. Finally, student teachers in Turkey were less likely to have access to the internet and good quality internet at school and at home.

Moreover, some differences in how the courses were delivered in Turkey might have reduced the impact of personalised support. Notably, the course moderator was particularly active and experienced and might have made additional support less relevant by establishing a vibrant and supportive course community where participants supported each other. Furthermore, reports from personalised support agents in Turkey suggest that some contamination between treatment and control groups occurred with information from the agents and details about their role passed to the control group.

6.4. TO WHAT EXTENT IS THE PERSONALISED SUPPORT OFFER SCALABLE?

A key aim of the TeachUP experimentation was to understand how to address drop-out rates in scalable online teacher training formats like MOOCs. It approached this problem primarily from the perspective of the learner, for example focusing on a lack of self-regulated learning or digital competence of learners. The results of the experiment showed that most support-focused exchanges addressed quite practical issues and there was little exchange addressing specifically the competence development of the learner.

In the light of this and in the context of addressing the issue of scalability, it is worth mentioning that apart from the problem of equipping learners with sufficient digital and self-regulated learning competence to benefit from the courses, there is also a resource-related issue linked to the provision of user support in scalable online services. Unless a provider of such service has substantial resources at hand, providing suitable 1:1 user support in these contexts is very challenging. In the context of education, this is a common issue faced for example by most MOOC providers (Goel & Polepeddi, 2019).

Given that the majority of support queries consist of similar, ever-repeating questions, a possible solution is to outsource 1:1 support to a machine, for example in

the form of the Teaching Assistant chatbot Jill Watson on a MOOC offered by Georgia Tech University (Goel & Polepeddi, 2019). Alternatively, support to learners is considered as a task of the community, with course providers encouraging learners to support each other using gamification systems, study buddy concepts, or other approaches that generate an active supportive community. Many course providers also use moderators and/or teaching assistants who offer support to users.

Unfortunately, neither of these solutions is fully satisfactory in practice. Using the community to offer support only works if the person in need of support has the capacity to engage with that community. Learners with limited digital competence or low experience of online communities will not usually use such channels to look for support. While machine-based solutions increasingly have the capacity to effectively emulate human-like support exchanges, developing an advanced system that uses machine learning to do so requires adequate resources and specialised expertise. Less advanced systems usually still require users to have knowledge of how to “communicate” with the machine in order to receive satisfactory support, quickly alienating those who lack this capacity (Scott, 2016). Those lacking this capacity are usually also those with low digital competence and who are most in need of support. Using moderators or teaching assistants to address user support queries can work well depending on the scale of the learning environment but requires substantial amounts of time from those involved.

Consequently, finding new mechanisms that offer personalised support in scalable online learning environments is of key importance not only for supporting the development of digital and self-regulated learning online competence but also to ensure training providers can offer the required and desired support to learners who want to benefit from the training on offer.

The results of the experiment show that the potential scalability of the personalised support mechanism tested is greater than originally envisioned. A non-automated approach to personalisation, incorporating the provision of 1:1 exchanges, was always going to have limits to the degree of scalability possible. Even though the design incorporated mechanisms to ensure some degree of scalability, such as the identification of those most likely in need, it was always clear that the larger the number of participants, the more support agents would be required.

However, contrary to expectations, the response and take-up rate of the personalised support offer was minimal, less than 6% of participants providing any kind of response to the emails and only 5% of those who were offered a 1:1 session taking up the offer. This means that less time and expertise was required by support agents for the implementation of the approach. Accordingly, fewer support agents than originally expected would be needed to scale up the personalised support offer. In fact, depending on their availability, course moderators or other key actors involved anyway in the delivery of a course could also cover the role of support agents, removing the need to recruit additional resources to support an online course. Furthermore, given the findings, alternative models could be tested which could further improve scalability while maintaining some of the key dynamics that led to the impact recorded. For example, support agents could organise meetings with small groups instead of on a 1:1 basis. Naturally, scalability would be reduced if adaptations which address some of the factors that possibly inhibited the take-up of the offer (see section 6.2) would be implemented.

Of course, limits to the scalability of the approach remain as the amount of resources required necessarily goes up with the number of participants. Integrating the approach in online learning scenarios therefore does pose a limitation to the scalability of formats like MOOCs which are usually designed in such a way that a fixed set of resources can maintain a potentially unlimited number of participants. Nevertheless, it is possible to conclude that the approach tested is scalable to a significant extent given that a significant increase in participant numbers does not result in an equivalent increase in required resources.

6.5. TO WHAT EXTENT IS THE PERSONALISED SUPPORT OFFER COST-EFFECTIVE?

Closely associated to the question of scalability is the cost-effectiveness of the approach used. Modelling based on estimations about the time spent by support agents and coordinators in preparing and implementing the mechanism offers an idea of its cost-effectiveness. This modelling shows that approximately three participants needed to be supported in vain to

make one additional participant complete a course, resulting in a cost of around €130 for one additional participant completing a course as a result of the personalised support in the TeachUP context (for a detailed overview of the modelling methodology and how this figure was calculated see the final evaluation report at teachup.eun.org/outputs). This is a significant cost and substantially counteracts the scalability mentioned in the previous section.

It is however important to recognise that this estimation is based on the entire approach used in the TeachUP experiment and not just those interventions and processes that are responsible for the impact observed. Furthermore, the estimation also incorporates time spent on actions that are unlikely to be implemented in a non-experimental context, such as a full day workshop (including preparation and follow-up) for support agents introducing them to the experiment and approach to be used. It should also be acknowledged that costs varied widely across countries and the figure presented is an average estimate. Differences in costs between countries did not only stem from average wage costs of support agents but were also based on the number of participants in the courses and the time support agents took to implement the interventions. For example, in Austria very few participants joined and completed the courses which meant that the fixed costs of the mechanism (training, recruitment, planning, etc.) was part of the reason why Austria had the highest costs per registered user (around €180), while in countries with high numbers like Turkey costs per registered user were much lower (around €4). In Greece, despite relatively average wage costs and average participation numbers, the support agents took substantially more time per intervention (average of 26.6 minutes) than in other countries (average of 10.3 minutes) which resulted in the third highest cost per registered user (around €34).

Accordingly, it can be said that the personalised support mechanism introduced in the experiment has the potential for cost-effectiveness, given that there are substantial parts of the mechanism which could be cut or adapted in such a way that costs would be significantly reduced without risking an equivalent reduction in impact (see also section 7).

7. RECOMMENDATIONS

The TeachUP experimentation has demonstrated that it is possible to improve participation and completion rates in scalable online courses for teachers by means of a support infrastructure that offers personalised support to learners in a scalable way. Based on this finding we identify the following recommendations for consideration by policy makers, teacher training organisations and teacher trainers when working with teachers in scalable online learning environments:

7.1. OBTAIN NON-ANONYMOUS DATA ABOUT PARTICIPANTS

In face-to-face learning environments teachers receive “information” about their learners on an ongoing basis. Facial expressions, body language, snippets of overheard conversation, or even a quick chat with the learner provide a complex set of details that inform the teacher who she is working with. A good teacher will respond and adapt to these details as a course or workshop progresses. In online environments much of this “information” is lost and the online teacher is often operating “blindly” with learners. Personalising the support offered to a learner is more difficult without such information. Consequently, the first step in any attempt to personalise the participants’ experience is to gather specific data about them as individuals. In the TeachUP experiment there were two sources of data which are reasonably easy to replicate by teacher training providers depending on the technical infrastructure available to them:

- An obligatory survey as condition for enrolment, informing about participants’ experience and profile
- Platform data informing about basic progression of participants

Data obtained should be non-anonymous so that it can be attributed to specific learners, which means that relevant data privacy considerations need to be taken.

It is, however, important to note that overall, completers and non-completers do not differ much on observable characteristics, i.e. there are few teacher characteristics determining probability to complete and their predictive power is rather limited. In other words, with our data, it is difficult to characterise teachers who were more or less successful in TeachUP courses. This makes it more difficult to identify which data to obtain and subsequently use the data in a targeted and precise fashion. That said, our data does offer some indication that among completers there is a slightly higher incidence of women, teachers with higher mastery of the English language, teachers teaching STEM subjects; teachers with some online course experience and some familiarity with professional online learning communities. Accordingly, more investigation is needed into these characteristics as determinants of completion/non-completion so as to be able to make more informed decisions of which data to collect and to shape any support mechanisms relying on such data.

Other data about self-regulated learning competence or beliefs about online learning which are identified in the literature as determinants of non-completion and were used in the TeachUP experiment can also be obtained to ensure a comprehensive picture of the participants. However, these turned out not to be characteristics which helped predict non-completion and are therefore not essential for determining those most in need. Nevertheless, these characteristics can offer valuable insights that can shape any interaction between the participant and a support agent.

7.2. REACH OUT TO NON-STARTERS

The experiment’s results show that contacting those who have yet to start the course can have a significant impact on participation (up to 13 percentage points increase in participation, see section 5 for more details). Accordingly, finding a mechanism to reach out to those who do not start a course is worthwhile. As it is not possible to say if the same result would have been achieved without any personalisation of the reach-out message or an offer of support, it is recommended to

include some element of personalisation in the email and to include a generic offer of being available for support if required. However, the intervention targeting non-starters did not include the offer of a 1:1 video call, so making such offer is not a requirement for achieving the impact recorded in this specific context. In this context it is also worth testing if automated mechanisms that send out a reminder to non-starters, possibly with further guidance on where to receive support, has a similar effect in this regard.

7.3. SUPPORT NEWCOMERS

Lack of previous experience of online learning is a predictor of non-completion according to the research literature and this was confirmed in the experiment. Reaching out to new online learners therefore promises high returns in regard to participation and completion. The reach-out should include some personalisation and an offer of support – given that it is not possible to say if the result would have been the same without these two elements.

7.4. GENERATE A FEELING OF BEING OBSERVED

The feeling of being observed in the experiment resulted in, on the one hand, a sense of being controlled, and, on the other, a feeling of not being alone. It is likely that these two dynamics, replicating those of social control and support in face-to-face settings, at least partly explain the impact noted in the experiment. Using proactive personalised messages was the means by which such feeling of being monitored was generated in the TeachUP experiment, but other ways to reproduce a sense of social control and support might be equally effective in this regard.

It is important to note however that the feeling of being monitored might also elicit negative reactions, and the use of personal data also needs to be carefully balanced in regard to data privacy concerns. Therefore, only non-sensitive information should be used to generate such feeling of being monitored. Furthermore, transparency about where data has been gathered should be maintained at all times and

formulations when reaching out to participants should be highly sensitive to such concerns.

7.4.1. Send Personalised Messages

As mentioned above, personalising messages to the treatment group of participants in TeachUP is likely to have played an important role in generating a feeling of being observed. Accordingly, finding means to generate messages that include information about the participants' profile and progress promises to achieve positive results in regard to participation and completion. However, personalising messages does not necessarily need to be a complex process that requires substantial data collection. In other words, it is not clear from the TeachUP evidence that a substantial degree of personalisation is required to achieve the results recorded. For example, if it is not possible to collect data about participants' profiles, using simple platform data about course progression could be used to organise participants into cohorts which receive standardised or even automatic messages with reminders or other information that takes into account their progress. For instance, sending out reminders for those who are falling behind or have yet to submit a piece of work with a deadline approaching could be enough to generate the feeling of being observed mentioned above. The same applies if it is not possible to collect progress data from the platform but only data about the participants' profile. Participants could be organised into cohorts depending on their profile and receive standardised messages with a reference to the characteristic that made them part of that cohort.

7.4.2. Pro-actively Send Messages to Participants

While the personalisation of messages was most likely an important element in generating a feeling of being observed, the pro-active nature of the messages sent out in the experiment is equally likely to have played an important role in this regard. Accordingly, it is unlikely that personalising messages in response to an initial support request by a participant is sufficient, rather messages need to be sent out pro-actively and in advance of any potential reach-out of participants. Furthermore, participants with low self-regulated learning online competence, in particular those with a low ability to

know when and how to seek help when in need, as well as those with low digital competence, are quite likely to drop out from a course before reaching out themselves for help. Accordingly, the pro-active nature of the support is crucial in particular for those most in need. It is important, however, to mention here again that the feeling of being observed and the receiving of unsolicited emails will most likely have resulted in positive as well as negative feelings amongst different participants, impacting on course participation in both positive and negative ways. Accordingly, the pro-active sending of messages needs to be done very carefully and in the context of a diverse set of other support mechanisms that cater to the diverse set of preferences present in scalable online courses (see also section 7.9).

7.5. OFFER 1:1 SUPPORT

One of the main concerns when designing the TeachUP protocol was that the support agents would be overwhelmed with work due to a high take-up of the 1:1 support offer. The results of the experiment show that this was not the case. While this might have been due to specific design decisions necessitated by the methodology in the experiment (see section 6.2), it is equally possible that teachers or student teachers on online courses are simply not interested in or in immediate need of in-depth 1:1 support. When the support offer is taken up it is usually easily and quickly dealt with and does not require a substantial time investment of the support staff. Accordingly, for the purposes of achieving an impact on course participation and completion, it is possible that the offer of support is more important than the support itself. This means that course providers can expect a significant impact with only a small risk of high cost by making direct offers of 1:1 support to course participants.

7.6. ENSURE COMMUNICATION IS SHORT, FRIENDLY, INFORMAL, AND REFLECTS THE PERSONALITY OF THE SENDER

As mentioned in 7.4.1 it is possible that standardised or even automatic messages could be sufficient for the purposes of achieving an impact. In fact, feedback from course participants in the focus groups suggest that some participants felt the messages sent by support agents were automatically generated, given that the same templates were used repeatedly throughout the course series and in some cases were adapted only minimally by the agents. On the one hand this means that the impact was achieved despite this impression, suggesting that the messaging approach used was effective. On the other hand, this could explain why there was so little response from course participants to the messages sent. Feedback from the support agents indicated that the templates were overly long, too formal, and too strict in how they could be adapted – leaving little room for the support agents to make them more reflective of the 1:1 support that was being offered. Accordingly, it is possible that with a different set of guidelines and no or less strict templates, more course participants would respond and engage with the support agents. Conversely this might have increased the recorded impact even further. Ensuring that the messages sent to course participants are short, friendly, informal, and reflect the personality of the sender can therefore be considered as a mechanism that might further facilitate the impact achieved. It should be clear however that such approach reduces the scalability of the support infrastructure, given the increased time commitment by the support agents.

7.7. ALLOCATE MORE TIME TO THE COURSE MODERATOR

While the interventions conducted in the experiment were implemented by dedicated support agents, the findings suggest that recruiting and training such additional staff for the course team is not necessary. Rather, the work conducted could be equally well done by the usual course team, for example by a course moderator with additional time to send messages and

exchange with participants on a 1:1 basis. Investment should therefore be focused on getting an efficient personalised support infrastructure in place that will make the process of accessing the data and sending out the messages as easy as possible for the course moderator. Moderators would require no additional knowledge or skills to those already required of a moderator's task, except for being able to use any tool that is used to display the data and indicate who to reach out to.

7.8. CONSIDER THE USE OF MACHINE-BASED SUPPORT SYSTEMS

While it is not clear if machine-based systems could replicate some of the dynamics that most likely resulted in the impact observed, there is little question that machine-based systems, for example in the form of bots, could take over some parts of the implemented processes tested during the experiment. This is particularly the case given the low take-up of the support offer. Accordingly, a combination of machine-based systems responsible for sending out pro-active and personalised messages to participants, with human support agents in the background picking up any responses from participants and following through with the support offer, could be a very efficient yet effective way to organise a personalised support mechanism.

7.9. OFFER DIVERSE SUPPORT MECHANISM

Due to their scalability, scalable online courses tend to have a quite diverse profile of participants. When designing any support mechanism, it is important take this into account. First and foremost, this means that understanding this diversity is paramount for course providers (see also section 7.1). The mechanism that was tested in the experiment did not account for a diversity of preferences in how participants would like to receive support or what type of communication channels they preferred. While the content of the support was personalised, the process of offering this support was not. Therefore, a more significant degree

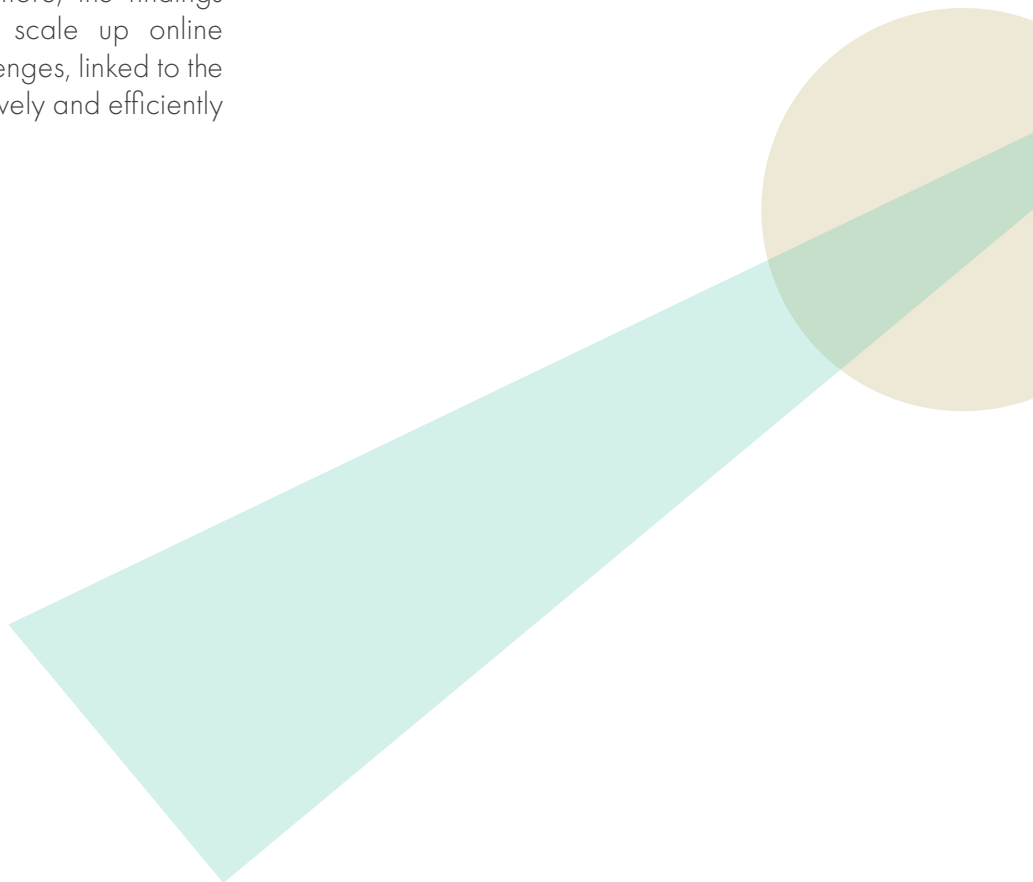
of personalisation also needs to occur in regard to the support processes on offer. For example, the pro-active approach used in the TeachUP mechanism also resulted in negative reactions, as was shown in responses received by the support agents, and later confirmed in feedback provided during the focus groups. This suggests that for a fully effective personalised support to be offered as part of scalable online courses, the mechanism tested is not sufficient. Rather, a more significant degree of personalisation also needs to occur in regard to the support processes on offer, taking into account preferences of participants in how support is available to them and to provide them with more choice. A possible way to do so would be to ask participants prior to starting a course about their preferences from a set of available support mechanisms, and then to personalise any support offered during the course also on that basis.



8. CONCLUSION

Online courses and in particular those that are scalable offer policy makers a useful tool to address the increasing need for continuous teacher professional development and initial teacher education, while at the same time addressing some of the barriers teachers report when accessing onsite training formats. The TeachUP policy experimentation investigated how to increase the accessibility of scalable online courses to ensure also those with low digital and self-regulated learning online competence could benefit from such offers. The results offer a set of encouraging conclusions about how this can be effectively achieved and which limitations to take into account. Nevertheless, further investigation into the individual recommendations offered by the TeachUP experimentation, as well as an overall adjusted personalised support mechanism, are required to refine and better understand how to more effectively and efficiently support teachers and student teachers in scalable online learning environments.

The TeachUP findings provide policy makers and teacher training providers with opportunities for further investigation but at the same time already provide evidence to develop and enhance existing offers of online training to teachers. Furthermore, the findings should be an encouragement to scale up online teacher training, given that key challenges, linked to the process of scaling up, can be effectively and efficiently addressed.



9. GLOSSARY

1:1 session: video conference calls organised between the personalised support agent and a participant. The technology used for such calls was left at the discretion of the participant based on what was most convenient for them.

Actions: specific actions implemented by personalised support agents as part of an intervention, for example sending out a reminder email, exchanging in a 1:1 session, or looking at a participant's work. Actions were shaped by the triggers which determined if a participant qualified for an intervention.

AprendeINTEF: Spanish platform offering MOOCs for school teachers and other school practitioners. It is run by the National Institute of Educational Technologies and Teacher Training (INTEF) which is the unit of the Spanish Ministry of Education and Professional Training responsible for the integration of ICT and Teacher Training in non-university educational stages.

Baseline survey: the online questionnaire that TeachUP teachers filled as they signed up to TeachUP. The questionnaire collected information about teachers' backgrounds, learning experience, and ICT competences. In TeachUP, these data were used to determine which teachers were to be targeted by personalised support.

Chatbot: a software application used to conduct an online chat conversation via text or text-to-speech, in lieu of providing direct contact with a live human agent.

Cognitivism: a learning theory which posits that mental processes mediate learning. Learning happens through the organisation, sequencing, and presentation of information.

Collaborative learning: topic of the third TeachUP course. A joint recognition and understanding of the nature of a problem that is being addressed together, as well as communication, negotiation and exchange towards a plan to address the problem, and finally coordinated action to carry out the plan.

Completion rate: usually the percentage of enrolled who completed the course. In the TeachUP project the rate was calculated in two different ways: among

teachers enrolled in the courses as well as among teachers who actually started the courses.

Connectivism: a learning theory which posits that in a digital age where knowledge is stored and readily available, learning is less about the acquisition of knowledge and more about the process of creating connections to people and content and being able to use and navigate these connections to access the right knowledge when needed.

Constructivism: a learning theory which posits that learners actively attempt to create meaning from experience.

Country Dialogue Labs: series of one-day workshops that took place at the country-level and provided opportunities for collaboration, knowledge sharing, and co-creation between Initial Teacher Education (ITE) and Continuous Professional Development (CPD) organisations and other relevant stakeholders.

Course moderator: individual(s) who actively animate and moderate an online course. In the TeachUP project the course moderator developed an active learning community where participants support and learn from each other, animated the course portal and Facebook page, encouraged participants to find inspirations and answers from peers.

Creativity: topic of the fourth TeachUP course. The ability to produce work that is both novel (or original) and useful (or valuable), and the extent to which this work is creative will depend on whether the novelty and usefulness is perceived by oneself or by the whole world.

Digital artefacts: any type of item produced and stored as digital/electronic version. This can include blogs, websites, digital lesson plans, videos, podcasts, images, slides, etc.

Digital badge: a digital icon (= symbol or picture) or title that shows you have completed or achieved something in an educational context. In the TeachUP project a digital badge was awarded upon successful completion of a course.

Digital certificate: a digital certificate showing that you have completed or achieved something in an educational context. In the TeachUP project a digital certificate was awarded upon successful completion of a course.

Digital competence: digital competence can be broadly defined as the confident, critical and creative use of ICT to achieve goals related to work, employability, learning, leisure, inclusion and/or participation in society. Digital competence is a transversal key competence which, as such, enables us to acquire other key competences (e.g. language, mathematics, learning to learn, cultural awareness). It is related to many of the 21st Century skills which should be acquired by all citizens, to ensure their active participation in society and the economy.

European Schoolnet Academy: European platform offering MOOCs for school teachers and other school practitioners. It is run by [European Schoolnet](#), the network of 34 European Ministries of Education, based in Brussels.

Follow-up survey: online questionnaire participants in TeachUP courses were asked to complete after the end of the experimentation.

Formative assessment: topic of the first TeachUP course. An assessment method which provides feedback to the students being assessed as well as the teacher organizing the assessment to modify how teaching and learning is organized. The method only becomes formative if it is actually used to change teaching and learning in response to the feedback used.

Gamification: the process of adding games or gamelike elements to something (such as a task) so as to encourage participation.

Interventions: component of the personalised support mechanism. There were nine interventions each consisting of a set of triggers and actions.

KA3: Key Action 3 provides grants for a wide variety of actions aimed at stimulating innovative policy development, policy dialogue and implementation, and the exchange of knowledge in the fields of education, training and youth, under the Erasmus+ programme of the European Commission. Two main instruments are managed through specific calls for proposals: Initiatives for policy innovation giving support to forward-looking

cooperation projects on policy developments, and European policy experimentations led by high level organisations and public authorities to stimulate innovative policies and prepare their implementation.

Learning theories: theories which explain the processes by which humans learn

MOOCs: Massive Open Online Courses are free online courses available for anyone to enroll. Accordingly, they are designed for scalability and can accommodate large numbers of participants.

Peer assessment: In peer assessment, a collaborative learning technique, students evaluate their peers' work and have their work evaluated by peers. Often used as a learning tool, peer assessment gives students feedback on the quality of their work, often with ideas and strategies for improvement. At the same time, evaluating peers' work can enhance the evaluators' own learning and self-confidence. Peer involvement personalizes the learning experience, potentially motivating continued learning. When used in grading, peer assessment can give the instructor needed information on student performance. Especially for large online classes, it may allow inclusion of assignments where students' creative work could not be graded reliably through automation or efficiently by teaching staff.

Personalised learning: topic of the second TeachUP course. It refers to a way of learning where the learner has greater ownership over their learning so as to shape the focus and style of learning according to their needs and to achieve greater learning outcomes. It actively engages learners in the learning process and lets them make key decisions about what and how they learn.

Personalised support: support provided to course participants which takes into account a participants' profile and progression in a course. It is designed to help participants successfully access and benefit from the course contents and community. It was the treatment in the TeachUP policy experimentation, so it was offered only to participants in the treatment group.

Personalised support agent: make interventions for those most in need, i.e. those most likely to drop-out. They monitor and support individual participants by proactively contacting participants to offer them a 1:1 session, to highlight useful learning material, to answer questions, or to develop a learning plan.

Personalised support mechanism: the mechanism designed as treatment in the TeachUP project. It consisted of nine interventions which were made up of “triggers” and “actions”. “Triggers” determined which participants qualified for an intervention. “Actions” were targeted on those participants qualifying for an intervention.

Policy experimentation: initiative that helps ministries and government departments test new ways to solve policy problems within a limited scale, and within a set timeframe

Scalable online courses: as “scalable online learning environments” but just referring to courses.

Scalable online learning environments: any learning environment that is designed in such a way that there is no practical, technical, or other limit to the number of learners in the environment. While such environment has the potential to accommodate “massive” numbers of learners, it does not necessarily do so. Massive open online courses or MOOCs would be considered a typical example of such an environment – even though the use of the term “massive” could be misleading in this context as numbers of learners are not necessarily high in numbers. Another example would be mobile learning applications like [Edupills](#) or [Babble](#) or social media environments like a Facebook Group.

Self-regulated learning: is a cyclical process by which when faced with a learning goal, students are actively planning, monitoring and adapting (performing), and reflecting on their learning strategies in order to succeed. This involves the establishment of goals and then selecting the right strategies by which to reach them. In doing so, students self-regulate their metacognition (thinking about one’s thinking), behaviour (planning, monitoring, and evaluating), and motivation to accomplish the task at hand.

Social constructivism: a learning theory which posits that learners actively attempt to create meaning from experience and that the process of creating meaning is a social process shaped by interactions with others.

Study Buddy: a learning partner who can support the learning process.

Summative assessment: an assessment method designed to determine completion/passing of a certain unit of learning – it is backward looking. It usually

focusses on scores or grades that act as gatekeeper to some kind of certification or qualification.

Targeting: when only a fraction of the teachers, i.e. those most in-need, in the treatment group received the personalised support

Target group: all TeachUP teachers who were identified as “in-need” of tutoring based on static or dynamic triggers. Only those belonging to the treatment group actually received the intervention.

Teachmeet: an organised but informal meeting for teachers to share good practice, practical innovations and personal insights in teaching.

TeachUP project: policy experimentation, co-funded by the Erasmus+ Programme of the European Union. It aims to evaluate new methods of online learning and assessment to meet the challenges associated with the adoption of new ways of teaching.

Triggers: determined which course participants were eligible for the personalised support, for example a lack of online learning experience. Each trigger had an associated action which was addressing the specific characteristics of the trigger.

Tutoring: the process by which learners in 1:1 settings receive academic support and feedback, the development of certain skills, as well as more general help and organisational support, all under the premise of having some knowledge of the learners’ context. The term tutoring was originally used in the TeachUP project to describe the treatment of the experiment.

Web 2.0 tools: tools that emphasize user-generated content, ease of use, participatory culture and interoperability for end users. In the TeachUP project a common web 2.0 tool used was [Padlet](#).

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11. ANNEX 1: EXAMPLE EMAIL TEMPLATE BY SUPPORT AGENTS

The following is an example email template used by the personalised support agents (referred to as tutors during the experiment, see section xyz for more information). The highlighted parts of the template could be adapted by the support agents. Yellow highlights indicate required updates while red and blue highlights indicate optional adaptations dependent on previous exchanges with the participant as well as due to the participants' profile or course progress. The email below offers a typical example of how support agents introduced themselves, the type of guidance offered as well as the specific offer of a 1:1 session for further discussion.

Subject: Personal Tutor on TeachUP course [course title]

Dear [participant name],

My name is [tutor name] and I am a tutor on the TeachUP course [course title] on which you have enrolled. During the course I will reach out to some course participants in order to offer my personalised support. I can offer such support dependent on your answers to the survey you completed when you enrolled for the first time to a TeachUP course as well as your progress on the course.

For example, I have noticed that you have not yet submitted your lesson plan for the final activity with less than [enter time left to deadline] to go and therefore wanted to reach out in case you need support with the work. If you are unsure how to get started with developing creative thinking in your lesson revisit the following video from section 2.2 and try to integrate the same step-by-step approach in your lesson: <https://youtu.be/JGoXzgs6dC8>. You can also find an example lesson plan in section 3.1 of the course. Please know that the deadline of [enter deadline] cannot be changed, so it is important you complete your work on time.

If you have questions about the work or the process of submitting the work there is a dedicated thread about this in the forum and it is also a topic of discussion in the Facebook group so why not check for answers there. There is not much time left but we could also organise a quick 1:1 session to discuss any questions you might have. If this is of interest, I would be available during one of the times indicated here [add Doodle or other link]. Please complete the [Doodle or other tool] no later than [add date] so that we can go ahead with the session and I can plan accordingly.

I look forward to working with you and hope to hear from you soon.

Best wishes,

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