



## Blended Teachers' Professional Development (TPD) pathway

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<b>Author(s)</b>	Marcello Passarelli, Francesca Maria Dagnino, Donatella Persico, Francesca Pozzi (CNR-ITD), Nikolina Nikolova (UniSofia)
<b>With contributions by:</b>	Temenuzka Zafirova-Malcheva, Pencho Mihnev (good practices linked in Section 4.6.4)
<b>Revised by:</b>	Kleio Anagnostou (Avgouleia-Linardatou school), Marilina Lonigro (Rocca-Bovio-Palumbo school)
<b>Abstract</b>	<p>This document is the first Intellectual Output of the Erasmus+ project "PLayful Environment for Inclusive leArning Design in Europe" (PLEIADE), and describes the teachers' development pathway to be delivered as one of the main project activities. The pathway will take the form of 12 months of blended training activities (BTAs) and will involve — as learners — 75+ teachers from the four PLEIADE schools (in Bulgaria, Cyprus, Greece, and Italy). The main aim of the pathway is the appropriation of methods and tools for the design of collaborative learning activities in view of social inclusion. To this end, participants will be guided to design collaborative and inclusive activities to be enacted in their classrooms in a subsequent phase of the project (the "Enactment"); will be encouraged to practice sharing between peers; and will contribute to the identification of criteria for evaluating the inclusive potential of a collaborative learning activity. The BTAs will have a participatory and playful approach, in which teachers will be actively involved and practice sharing will be extensively promoted.</p> <p>This document describes in a top down fashion the design of the BTAs, and provides the rationale of the decision making process that led to it. This process started with a Needs Analysis involving teachers from the four participating schools. The BTAs will be articulated in 7 modules: 4 periods of non-intensive online collaborative activities, and 3 short-term joint staff training events, which will take the form of intensive events that will be carried out either online or in a hybrid context (depending on future</p>

	evolution of the pandemic and consequent travel restrictions). The last sections of the document describe BTAs evaluation and assessment procedures, as well as accreditation arrangements.
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## Internal project peer review process

Reviewed by	Role, Organisation	Date
Kleio Anagnostou	Team Leader, Avgouleia-Linardatou school	20/04/2021
Marilina Lonigro	Team Leader, Rocca-Bovio-Palumbo school	20/04/2021
Approved by		
Donatella Persico	Project Manager	30/04/2021
Marcello Passarelli	Quality Manager	30/04/2021

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# 1 Executive Summary

This document is the first Intellectual Output of the Erasmus+ project "PLAYful Environment for Inclusive leArning Design in Europe" (PLEIADE), and describes the teachers' development pathway to be delivered as one of the main project activities. The pathway will take the form of 12 months of blended training activities (BTAs) and will involve — as learners — 75+ teachers from the four PLEIADE schools (in Bulgaria, Cyprus, Greece, and Italy). The main aim of the pathway is to foster the teachers' uptake of methods and tools for the design of collaborative learning activities in view of social inclusion. To this end, participants 1) will be guided to design collaborative and inclusive activities to be enacted in their classrooms in a subsequent phase of the project (the "Enactment"); 2) will be encouraged to practice sharing between peers; and 3) will contribute to the identification of criteria for evaluating the inclusive potential of a collaborative learning activity.

After a brief general introduction to the Intellectual Output (Section 2), the document describes the approach and the design of the BTAs as follows:

- Section 3 (Theoretical framework and terminology) explains the meaning and framework of some key terms that are used throughout the document and the BTAs themselves. These include teachers' professional development, communities of practice, learning design, collaborative learning, and gamification. A closing subsection details how these concepts come into play in the BTAs.
- Section 4 (BTA pathway) describes the BTAs themselves. This section is divided in the following subsections:
  - Section 4.1 (Aims, objectives and learning outcomes of the BTAs) introduces the main goals and outcomes the BTAs would be designed for;
  - Section 4.2 (Needs Analysis) describes the process used to identify and analyse the needs of the schools involved in the project, including how these results informed the BTA design process;
  - Section 4.3 (BTA macro-design) outlines the structure of the BTAs, i.e. its articulation in 7 modules, 3 of which are intensive events, and 4 of which represent extended periods of less concentrated activity;
  - Section 4.4 (BTA approach) describes the principles and methods used for the BTAs, as well as the rationale for choosing them. These include the use of the 4T model for learning design, the use of gamification elements to foster participants' engagement, the decision to include some optional content tailored to specific school needs, and the approach to tutoring adopted during the course.
  - Section 4.5 (The BTA learning environment) describes the digital environment the BTAs will take place in, and provides a link to the online storage that will include teaching materials;
  - Section 4.6 (BTA micro-design) is a detailed outline of all BTA activities, each described in terms of the 4T model.
- Section 5 (Evaluation of the BTAs) describes the methods and tools that will be used to measure the effectiveness of the TPD.



- Section 6 (Recognition) describes the ways participants will be offered recognition for their effort in taking part in the course. These include both a Europass Mobility document, and credits from the University of Sofia.
- Appendix A (Hybrid SJSTEs variant) will describe the steps that will be taken in case one or more of the three intensive events could be organised face-to-face (as at the moment, due to COVID travel restrictions, they have all been designed as fully online).
- Appendix B (Course Guide) represents the document that will be provided to BTA participants to help them understand the structure and approach of the course.
- Appendix C (Needs Analysis Survey in-depth results) contains a more detailed report of the results of the quantitative part of the Needs Analysis, as Section 4.2 has more of a focus on how results were interpreted and used during the BTA design process.

## 2 Introduction

The PLEIADE project entails several activities with the eventual aim of fostering the inclusion of marginalized children, educating students to diversity, and preventing early school leaving by promoting an emotionally supportive school environment from a young age. The project work plan comprises four main phases, namely: the preparatory phase, where the partnership will design the BTAs and develop the necessary tools to support the design of inclusive collaborative activities; the training phase, where the BTAs will be carried out according to the pathway described in this document; the enactment phase, where the teachers involved in the training will use the designs produced during training in their classes; and the amplification phase, devoted to engage a wider community of stakeholders with project outcomes and disseminate its results.

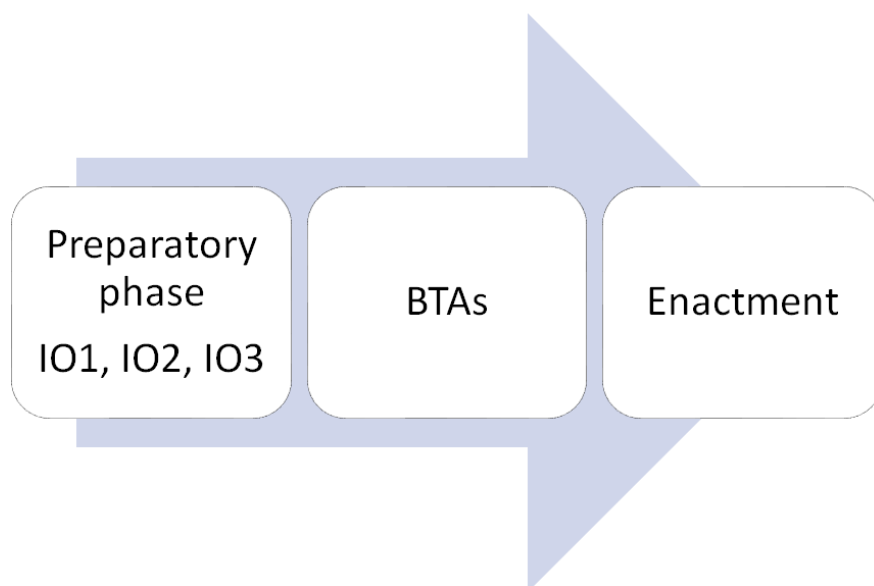
This report describes the results of one of the activities belonging to the preparatory phase of the project: the design of the teachers' professional development (TPD) pathway (IO1) that will be implemented in the Blended Training Activities (BTAs).

The implementation of the BTAs thus relies on the outcomes of the project preparatory phase, comprising the first three PLEIADE intellectual outputs: the blended training pathway of the Teachers' Professional Development pathway (IO1, i.e. this document); the hybrid I4T game (IO2; Bicocchi et al., 2021), which will be used during the training as a tool for the facilitation of learning design; the gamified platform for the BTAs (IO3; Manganello, Persico, Georgiev, Minhev, & Peltekov, 2021), which will constitute the online environment that will host the interactions between the PLEIADE teachers during the BTAs and the Enactment phases.

This pathway is the output of a design process carried out by CNR-ITD in collaboration with the University of Sofia and it specifies how the Teacher Professional Development (TPD) process will be carried out, that is, how PLEIADE's teachers will be introduced to the PLEIADE methods and tools for fostering inclusion (Figure 1) and how, thanks to the teachers' reflections on their own and their peers' practice, the partnership will lay the bases for the development of the project final outputs.

According to the project proposal, the pathway will:

- get participants to improve their praxis in terms of inclusion through design-based collaboration;
- introduce them to the PLEIADE methods and tools for fostering inclusion in their classes;
- help them apply the PLEIADE methods and tools in practice;
- build the foundations of a peer community that shares know-how about the content and experience that the pathway addresses.



*Figure 1. The planned process for teacher professional development in PLEIADE.*

The BTAs will last 12 months, from May 2021 to April 2022 (M9-M20). During this period, 75+ teachers from Bulgaria, Cyprus, Greece, and Italy will be actively involved in TPD activities on the core topics of PLEIADE (social inclusion, collaborative learning, and learning design). According to the proposal, the pathway will entail a blend of online activities and three face-to-face intensive training events (called Short-term Joint Staff Training Events, in short, SJSTE) hosted, respectively, by the Sofia, Athens and Trani school. Due to the pandemic, these events will be replaced, at least partly, by intensive online events. In the last months of the BTAs, activities will focus on the transition to the subsequent phase of the project (the enactment), in which participants will apply what they learned during the BTA by using collaborative techniques to foster social inclusion in their classes. This phase encompasses 14 months of the project (M18-M31), and will have a direct impact on the students of the 4 involved schools, as well as serving as the testing ground for an open collection of good practices (IO4).

The general approach of the project, therefore, is to provide ample scaffolding for PLEIADE teachers to participate in the definition and application of innovation in their teaching practice. The BTAs themselves have an extensive duration, so that teachers have time to appropriate themselves of the proposed methods, reflect on their practice and thus improve it (Weiss, Montgomery, Ridgway, & Bond, 1998). In the enactment phase, teachers will be supported and guided in the implementation of their designs of collaborative activities, so that they don't feel plunged in the use of unfamiliar techniques.

The design of the BTAs has been developed grounding on the premises presented in the proposal, which informed the identification of the aims, objectives and core content of the BTAs. Moreover, an analysis of the school contexts where the PLEIADE teachers work (Needs Analysis) was carried out in conjunction with IO3 and allowed tailoring the pathway on the needs of PLEIADE schools.

In the design, we kept in mind that the BTAs will play the triple role of training teachers on collaborative learning and learning design, encouraging international cooperation, and setting the stage for the interventions to be enacted. Additionally, during the BTAs teachers will be actively involved in identifying the principles for the evaluation of the inclusive potential and inclusive

power<sup>1</sup> of a teaching activity, which is another key output of the project (feeding into IO4 — an evaluation kit for inclusive-aware collaborative learning activities and IO5 — a collection of good practices for inclusion). It follows that the BTAs are going to play an essential role for achieving most of PLEIADE's goals.

This document, however, is not carved in stone. It states the structure of the BTAs and explains the rationale for this structure but, as the BTAs will last one year, some decisions are still pending, for at least three good reasons. The first is that the evolution of the pandemic in the countries involved in PLEIADE at the time of writing this document is still uncertain and the partnership intends to be flexible to leave room for change in the BTAs based on (hopefully) positive developments; the second is that some changes may be advisable based on the experience of the first modules, and the third is that some of the learning materials will be developed by recording webinars while others may be retrieved or produced in a bespoke manner for the training events. Therefore, the final and complete version of this document will be the one available at the end of the BTA themselves.

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<sup>1</sup> By inclusive potential, we mean an evaluation of the extent to which the design of a collaborative activity could potentially affect the inclusion of students. By inclusive power, we mean the actual measured effect on inclusion of an enacted activity. Therefore, while inclusive potential can be estimated before enactment, merely based on the activity design, the inclusive power can only be measured *ex post*, after use of a specific technique on the intended target.

## 3 Theoretical framework and terminology

The design of the PLEIADE BTAs is underpinned by a number of research constructs that need to be contextualized for the sake of clarity, as a premise to this document. In the following, we draw from different research fields, among which teachers' professional development (TPD), Communities of Practice, Learning Design (LD), Collaborative Learning (CL), and Gamification, to clarify and discuss the meaning of these terms in the context of IO1.

### 3.1 Teachers' professional development

In the last decades research on learning, cognition and teaching has moved away from behaviouristic models of learning, while cognitive, situative and socio-constructivist models have been embraced by several scholars, especially when it comes to the role of technologies in the learning process. These changes have been accompanied by parallel shifts in ideas about Teacher Education and Teacher Professional Development (TPD). Most experts in the field advocate moving away from in-service training models where teachers are expected to learn a clearly defined body of skills through a well-specified process, often delivered in one-shot workshops or courses taught away from the school premises (Trust, Krutka, & Carpenter, 2016, Borko, Jacobs, & Koellner, 2010). These approaches to TPD revealed to have poor impact due to their fragmentation, disconnection from classroom practice, and scarce alignment with current theories of learning and new ways of learning related by technological development. New approaches to TPD are more closely aligned with constructivist and situative theories and take into consideration recent developments in the way most professionals learn in knowledge intensive domains; specifically, they are grounded in reflective practice and involve the formation of professional learning communities and communities of practice (Lave & Wenger, 2001).

### 3.2 Communities of practice

Communities of practice (Lave & Wenger, 2001) are regarded by many researchers as one of the most powerful concepts for individual professional development and organizational learning (Chalmers & Keown, 2006). A community of practice is based on the idea that learning is social (i.e. constructed by the individuals based on their interactions with others) and situated (i.e. largely derives from our daily life and work experience). According to Wenger (1998), a community of practice features the following "ingredients": a joint enterprise, shared and continually renegotiated by its members; mutual engagement, that is an explicit or implicit commitment of its members to the same enterprise; a shared repertoire of practices, i.e. common physical, methodological or conceptual resources (tools, procedures, routines, documents, terminology, etc) developed by its members. In particular, in teachers' professional development, online communities of practice and online collaboration have been suggested as a powerful way to sustain teacher professional development because they overcome the typical isolation of teachers and constitute ideal contexts for collective reflection on practice (Knight, 2002; Vescio, Ross, & Adams, 2008; Delfino, Dettori, & Persico, 2010; Lock, 2006). Virtual communities of practice add to this that they enable an even wider range of perspectives of participants, extending the community beyond the physical boundaries of the school or the local community. However, participation in these communities only takes place if there is a strong motivation, that is, if the joint enterprise is of core importance for the members of the community. For example, success stories are frequent for virtual communities

engaging in the exchange of resources, initiatives and design ideas to improve students' learning, such as those that develop around databases of Open Educational Resources and/or intend to promote the dissemination of best practice in the learning design of Technology Enhanced Learning events (Koohang & Harman, 2007). In other words, these communities are more likely to succeed when they become a valid support for their members in solving problems frequently met in their daily work practice (Persico, Milligan, & Littlejohn, 2015).

### 3.3 Learning Design

By Learning Design we identify the complex decision making process through which teachers plan educational interventions based on their pedagogical beliefs, their knowledge about affordances of technology, the target population they address, and the contextual constraints where they operate. Research in this field has striven to support this decision making process by developing methods and tools that make it easier and more systematic, and by favouring the exchange of good practices among teachers. The reasons for concentrating efforts in these directions include the need to align teaching practice to developments in pedagogical theory and the urge to further teachers' competence in harnessing the potential of the rapidly evolving and increasingly complex technological landscape. According to many researchers (Winters & Mor; 2008, Laurillard, 2012, Asensio-Pérez et al., 2017), these challenges cannot be faced by teachers in isolation. Rather, learning design competence can only be developed if teachers as professionals embrace a participatory culture, one where powerful ideas, such as effective pedagogical plans and their half-fabricates, are shared and discussed with colleagues throughout the whole development process.

### 3.4 Collaborative Learning

According to Godsell and colleagues (Godsell, Maher, Tinto, Smith, & MacGregor, 1992), Collaborative Learning is an "umbrella term for a variety of educational approaches involving joint intellectual effort by learners, or learners and teachers together" (pp. 11). In collaborative learning, students work in groups, mutually searching for understanding, solutions, and meanings. This process of negotiation is usually triggered by a collaborative endeavour of "reification", that is, the creation of a common product. Collaborative learning activities vary widely, but they represent a significant shift away from the typical teacher centered and transmissive teaching approach, as collaborative learning is rooted in socio-constructivist theories of learning, according to which new knowledge and understanding is constructed via social negotiation and interactions between learners (Garrison, Anderson, & Archer, 1999; Stahl, Koschmann, & Suthers, 2021).

In collaborative learning, the teachers' role becomes that of facilitator, as opposed to that of the expert who should transmit to students knowledge in a given content domain. In collaborative learning, the teachers create the conditions for students to discuss and work together by designing a context where students have a common goal and interact to achieve it. It is through these interactions that learners achieve deep understanding of content and develop critical thinking skills, as well as a range of social skills necessary to live in harmony in their social context (Dillenbourg, 1999; Kanuka & Anderson, 1999; The Cognition and Technology Group at Vanderbilt, 1991; Scardamalia & Bereiter, 1994; Palloff & Pratt, 1999).

However, "truly collaborative learning processes" are not easy to achieve and it is widely acknowledged that, in spite of teachers' efforts, learners often fail to engage in collaboration (Bell,

2004; Persico & Pozzi, 2011). There are several ways for teachers to facilitate collaborative learning processes. For example, the development of a joint artefact has been acknowledged to be a good catalyst for collaboration, as it enhances students' interdependence. In addition, there are ways teachers can scaffold collaboration, by making decisions about the social structures, the tasks that learners should carry out, and supporting teamwork until the students become independent. Technological environments can also play an important role either in hosting interactions, in supporting artefact production, or both.

### 3.5 Gamification

Gamification has been defined by Deterding, Dixon, Khaled, & Nacke (2011) as the use of game elements in non-game contexts. The concept has become increasingly popular in the last decades as a powerful way of motivating, engaging, and promoting desired behaviors in learners (Caponetto, Earp & Ott, 2014), including adult professionals such as teachers. However, especially when it comes to this last kind of target, some important limitations and caveats concerning gamification should be taken into consideration (Bogost, 2013). Indeed, gamification intended as "pointification" and mechanics that foster competition may turn out to be counterproductive (Esteves, 2017). As an alternative, Lane and Prestopnik (2017) propose an alternative approach to gamification that eschews "metric" and competition focused design in favour of what they call "diegetic connectivity," where "story, world, and aesthetic presentation tightly bind mechanics to purposeful tasks and vice versa" (pp. 229). They posit that a story-focused mindset can help participants to overcome the non-trivial challenge of complex tasks and enhance their motivation, engagement, and task performance. In particular, in the case of teacher training initiatives, previous research has demonstrated how the adoption of a metaphor (such as, for example, the journey metaphor) may facilitate reflection and, specifically, meta-reflective thinking, which is an essential component of professional learning (Saban, 2006). More details about the rationale for this choice is provided in section 4.4.3.2.

### 3.6 Role of the above constructs in PLEIADE and its BTAs

The PLEIADE project acknowledges the growing recognition of the importance of the role of teachers as designers of their educational interventions (Goodyear & Dimitriadis, 2013; Kalantzis & Cope, 2010; Laurillard, 2012; Asensio-Pérez et al, 2017). The term teaching as design dates back to 1989 (Goodyear, 2015), but only in recent years research in learning design has been focusing on the need to promote best practice by supporting teachers in the exchange of good practice. Teaching as design assumes that teaching quality largely depends on making the right pedagogical and technological decisions for providing more favourable conditions for effective learning. Thus, teaching should be regarded as a design science with teachers continuously engaged in improving their practice in a principled way, 'building on the work of others' (Laurillard 2012, p. 14). A similar self-regulated process takes place in many other knowledge-intensive fields (Milligan et al., 2014), where professional development increasingly relies on communities of practice. Based on these assumptions, learning design research has focused on developing frameworks, approaches (Persico et al., 2013, Bower & Vlachopoulos, 2018) and dedicated tools (Prieto et al. 2013, Celik & Magoulas, 2016) to facilitate both the learning design process and the sharing and reuse of its products by educators. On the one hand, within the community of learning design researchers, there is a widespread belief that the impact of these research efforts is still quite limited (Celik and Magoulas

2016, Asensio-Pérez et al., 2017, Oliver et al., 2018). On the other hand, research on professional learning communities (Prenger, Poortman, & Handelzalts, 2018), personal learning networks (Trust, Carpenter, & Krutka, 2017; Trust et al., 2016) and teachers' communities of practice (Little, 2002; Schlager & Fusco, 2003) suggests that in many knowledge-intensive fields, including school teaching (Barron, 2006, Dogan et al. 2016, Trust et al. 2016), participatory approaches to professional development are taking hold. However, these participatory processes cannot be ignited by short term training initiatives, neither can they be effective if they do not intertwine with reflective practice.

It is on these premises that PLEIADE intends to strengthen the profile of the PLEIADE teachers' profession by proposing a long term pathway lasting one year to foster professional development by leveraging on participant teachers' tacit knowledge on how to design and conduct inclusive teaching. The pathway also recognizes the importance of collaborative learning approaches for inclusive teaching, thus adopting an approach to learning design which is specifically framed to support the design of collaborative and inclusive learning activities. The pathway also adopts a playful approach that is appropriate to professional teachers, based on a narrative whereby their training is represented as a journey (Saban, 2006). In line with the project name, the choice of the metaphor fell on a space journey, with teachers involved playing the role of astronauts and the team of trainers that of Ground Control. The platform where the training takes place has been configured accordingly, by using graphics that recall a space journey.



## 4 BTA pathway

### 4.1 Aims, objectives and learning outcomes of the BTAs

Aims<sup>2</sup> of the PLEIADE BTAs are:

- to make PLEIADE teachers (a) aware of the essential role collaborative learning can play in inclusive learning processes and (b) critically reflect upon criteria for designing inclusive (and collaborative) learning activities;
- to improve their ability to design inclusive, collaborative activities and promote their attitude to share their practices within the PLEIADE community;
- to support PLEIADE teachers in the production of at least 40 learning designs that can be refined and implemented in their own classes during the PLEIADE enactment<sup>3</sup>.

In order to achieve the above aims, the following learning objectives have been identified. BTAs participants will:

- Get to grips with the basic terminology concerning Learning Design, Social Inclusion, Collaborative Learning and related concepts (such as personalisation, individualisation, self-regulated learning);
- Learn how to design collaborative learning activities with the 4Ts approach and the I4Ts game (IO2; Bicocchi et al., 2021) and use the most well known collaborative learning techniques for fostering collaboration among students by collaboratively engaging in the design of a number of activities that will be basis for the PLEIADE enactment;
- Get used to practice the sharing of their designs and provide feedback to their peers in the PLEIADE teachers' community, in order to improve each others designs and reuse colleagues' powerful ideas;
- Contribute to the definition of design criteria for inclusive collaboration based on their professional practice.

As for the learning outcomes, at the end of this course participants will:

- Be able to conceptualize and design inclusive collaborative learning activities for their students, individually and/or together with other teachers;
- Be ready to refine their designs and implement them in their classes, in some cases (at least 5 cases) in collaboration with classes in different countries.

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<sup>2</sup> For the distinction between Aims, Objectives and Intended Learning Outcomes see <https://www.imperial.ac.uk/staff/educational-development/teaching-toolkit/intended-learning-outcomes/aims-objectives-outcomes---whats-the-difference/>

<sup>3</sup> The PLEIADE project committed to creating a collection of at least 20 good practices for social inclusion (IO5). In order to ensure that enough high-quality learning designs are produced throughout the project to meet this goal, in the project Risk Management Plan we set a higher threshold for the number of learning designs to be produced during the BTAs.

## 4.2 Needs Analysis

### 4.2.1 Introduction

As illustrated in the previous section, the BTAs' aims, core topics, and approach were identified in the project proposal according to PLEIADE's aims and objectives. However, the detailed planning of the BTAs could not be carried out using a one-size-fits-all approach; rather, since the BTAs conception, the intention was to tailor the broadly defined BTA structure of the proposal with content and activities tailored to the schools involved. To this end, we conducted a Needs Analysis with the following objectives:

- Identifying the specific schools' needs, so as to make BTAs more relevant for the teachers involved;
- Gathering a baseline measure of teachers' competences, beliefs, and professional habits;
- Investigating teachers' expectations in terms of content, objectives, and commitment;
- Identifying potential barriers to participation, so as to put in place appropriate countermeasures;
- Involving school representatives from the start of the project, increasing their sense of ownership of project results and activities, and overall participation in the project.

In the following sections, we will illustrate the methods we used for PLEIADE's Needs Analysis, and provide an overview of how the information we gathered informed the BTAs design. The results of this work are reported in Appendix C; These results are specific to the PLEIADE partnership and are not generalizable to other schools. For this reason, we advise stakeholders planning to re-use BTA material to perform their own Needs Analysis so as to adapt the BTA structure and content to their own target. Thus, the aim of the next sections (3.2, 3.3 and 3.4) is to guide the readers in their own Needs Analysis and consequent re-design of BTA activities, so as to meet the needs of a target potentially different from the four schools involved in the PLEIADE project.

### 4.2.2 Methodology

PLEIADE's Needs Analysis adopted a two-fold approach: firstly, we conducted interviews with school representatives to gather information on school needs, school culture, and teachers' expectations; and secondly, based on the interviews results, we carried out a larger-scale survey, involving as many teachers as possible, to collect baseline data on competences, barriers, and beliefs.

The interviews were conducted separately for each school (four interviews in total). Each interview was conducted by an interviewer and an observer, both staff members of PLEIADE's Project Coordinator. School representatives were interviewed in pairs: for each school, the school Project Team Leader and a representative from PLEIADE's User Consultation Group were interviewed together. It's important to specify that interviewees acted as *school representatives*: while some interview questions were about their own background and experiences, for the vast majority of the interview they were asked to paint a broad picture of the school context, inferring and communicating what would be the needs of the whole school staff. This expectation was made explicit to interviewees during their recruitment, giving them time to collect information on the school situation in preparation for the interview.

While interviews were conducted on Skype and recorded, interviewees were assured that interview content would be confidential and the recording — and in-depth results — would not be made public.

The interviews were semi-structured, and were guided using a set of slides that were intended as stimuli for the discussion (the slides are accessible at the link <https://drive.google.com/file/d/1ec07HqNx4QUyG78aQ0Bge9y9UTDZJsqf/view?usp=sharing>).

Interviews had no set duration, and interviewees were free to elaborate on each question as much as they felt necessary. In practice, each interview lasted between 60 and 90 minutes.

The interview structure was as follows:

- Request of permission for recording and usage of data for the purposes of PLEIADE's needs analysis;
- Brief overview of the aims of the needs analysis;
- Collection of general information about interviewees and their school;
  - Age, years of experience, background, and subject matter taught by each interviewee;
  - Number of students and teachers in the school;
  - Proportion of disadvantaged students, and type of challenges they face;
  - Teachers' general attitude towards technology;
  - Teachers and students' level of digital skills;
  - School attitudes and policy towards social inclusion;
- Teachers' mission: a broad question about what could be considered the 'mission' of teachers in the interviewees' school. This key question was core to the interview, and was meant to unearth implicit, unspoken beliefs on the purpose of education and inclusion;
- Inclusion-related issues:
  - Overall observed barriers to inclusive teaching;
  - Rate of drop-out (for non-compulsory school levels) and perceived causes;
  - Presence of bullying and/or episodes of discrimination observed at school;
  - School policies, especially towards inclusion (e.g., mixed or separate classes for students experiencing specific types of disadvantage);
  - Barriers related to students' and teachers' (lack of) digital competence and/or access;
- Expectations towards the BTAs:
  - Content they'd like to see explored;
  - Approaches and strategies they'd like to see adopted;

- Technologies they expect to be used;
  - Worries related to any aspect of the BTAs;
  - Timing (since teachers' tasks vary greatly throughout the year, interviewees were explicitly asked which months would be better or worse for participating in the SJSTEs).
- Closing comments and requests for feedback on the interview process;
  - Request for help in distributing the survey among school teachers.

The interview analysis focused on finding commonalities between schools as well as features specific to each school. To this end, the interviewers filled out an information matrix according to what was relayed by interviewees. The matrix includes some factual information about the school, such as its sector (private or public), the number of students and teachers, the proportion of children with a disadvantaged background, the main countries migrant students come from, the type of policy adopted for student integration (e.g., mixed classes or separate classrooms), the technological infrastructure available, the presence/absence of bullying, and the drop-out rate. Following this, the matrix provides information that, while not entirely subjective, was collected via broad impressions from the interviewees. These include the average socio-economic status of students, the level of teachers' and students' digital skills, the main inclusion-related issues faced by the school, the main features of excluded students (e.g., migrant background, SENs, linguistic minorities, etc.), the main barriers to inclusion, the perceived effects of the recent school lockdown on inclusion, and teachers' collaborative learning capabilities, degree of openness and English proficiency. Lastly, the matrix includes what interviewees perceive the school mission to be, their expectations about the BTAs, and any possible problems regarding SJSTEs timing.

Compared to the interviews, the needs analysis survey was more focused on collecting a baseline for teachers' self-reported competence and key beliefs about social inclusion and learning design. The survey structure was as follows:

- Informed consent and data regulation information;
- Anonymized socio-biographical information;
- Learning design habits and competence:
  - How much time do they spend, on average, to design one hour of teaching;
  - Whether or not they reuse their own or others' materials;
  - Whether they previously attended courses on learning design;
  - Ranking — in order of importance — five factors that could influence their learning designs (available learning materials, learning objectives, learning theories, students' needs, available technologies);
- Collaborative learning habits and competence:
  - Perceived degree of familiarity with the concept of collaborative learning;

- Perceived degree of familiarity with specific collaborative techniques (jigsaw, roleplay, pyramid, peer review, discussion, and case study);
- How often they propose face-to-face collaborative activities;
- How often they propose online collaborative activities;
- Whether they attended previous training on collaborative learning;
- Self-regulated learning:
  - Perceived degree of familiarity;
  - Previous training on self-regulated learning;
  - How do they encourage self-regulation in students;
  - How often self-regulation is one of the aims of their activities;
- Social inclusion:
  - Choice between several definitions of "social inclusion": the teachers were asked to select the one that better matched their vision;
  - Ranking in order of preference four common approaches for social inclusion (collaborative learning, individualised learning, peer teaching, personalised learning);
  - General degree of familiarity with social inclusion in education;
  - How often they explicitly address the inclusion of culturally, socially or economically disadvantaged students in their designed activities;
- Educational technology
  - Perceived familiarity with educational technologies in general;
  - Frequency they used technology prior to the COVID-19 pandemic, and during the pandemic;
  - Perceived familiarity with several technologies (remote learning platforms, computers and digital blackboards, video conferencing systems, communication tools such as emails, collaborative writing tools, Open Educational Resources (OERs), presentation tools such as PowerPoint, social media, and communication apps such as Whatsapp or Telegram).

Since the interview results highlighted limited English proficiency on the parts of Italian and Bulgarian teachers, the survey was translated in the local languages with the help of school representatives.

Survey results were analysed quantitatively, using Fisher's exact test for testing differences between schools on categorical questions, ANOVAs to test difference in means between schools on quantitative questions (e.g., degree of familiarity), and Thurstone Scaling Case V to analyse the two ranking-type questions (factors influencing learning designs and preferred approaches for social inclusion). Detailed results are available on Appendix C.

### 4.2.3 Design choices based on needs analysis outcomes

As argued in the Needs Analysis introduction, results from the interviews and survey are not meant to be generalizable. Instead, we encourage trainers intending to re-use the BTA materials to repeat the needs analysis to their own targets.

Therefore, while detailed results are included in appendix C, in this section we will focus on how the results led to restructuring the BTAs according to the identified needs.

First of all, results highlighted stark differences between the four involved schools. The Greek school, for example, being the only involved school belonging to the private sector, reported a far higher average socio-economic status for its students. This does not mean that this school had no inclusion problems; while the few students with migrant backgrounds had little reported inclusion issues, the school reported the presence of bullying cases (usually at the expenses of children with special educational needs), and a general inability of students to understand the needs and perspectives of disadvantaged individuals. On the other end of the spectrum, the Cypriot school reported a very high rate of migrant students (30% first-generation migrants) and great experience in dealing with sociocultural conflict, linguistic integration and management of students’ traumas. The Bulgarian and Italian schools were between those two extremes. The former reported having about 10% of students with a migrant background, and some students with a Roma background facing inclusion difficulties. The latter faced an unusual situation, having two main complexes in neighborhoods with different average socio-economic status. As could be expected, the complex in the lower-income neighbourhoods faced more inclusion challenges, and episodes of discrimination and violence.

In the face of such a variety of contexts, it was clear that BTAs need to be flexible and allow for self-regulated learning paths on the side of the teachers, offering “core” activities aiming to achieve the general aims of the pathway, as well as “satellite” (i.e. optional) events dedicated to meet specific needs emerged during the needs analysis. While the “core” activities, addressing all the teachers, will have to be offered in English, some of the satellite events may be run in local languages, so as to maximize accessibility for teachers of the school most interested by it. In any case, satellite events in languages other than English should hopefully be accompanied by material in English for fruition by all participants.

Some satellite events, on the other hand, are to be organised based on teachers’ self-reported competence. For example, the section on educational technology of the teachers’ survey highlighted that many teachers had low familiarity with some concepts related to practice sharing. Relatedly, even the school with better access to technology reported having had trouble in adopting collaborative learning approaches during distance learning (as was made apparent during COVID-related school closures). Collaborative learning was intended to be a core topic of the BTAs, but the focus on *online* collaborative learning was accordingly expanded to meet this need.

Differences between schools, however, did not always lead to the decision to tailor and personalize content; rather, these differences were also seen as a potential resource. For example, the Cypriot teachers’ experiences with refugees were seen as especially important to address one of the main needs expressed by Greek teachers, i.e. fostering empathy and awareness of social disadvantage in their own students. Therefore, we made sure that Greek and Cypriot teachers would have ample

opportunity to interact during the BTAs collaborative activities, hopefully leading to the development of joint students activities to be enacted further on during the project.

Additionally, the Needs Analysis highlighted that the different schools adopted (often implicitly) different definitions of inclusion, which are partly connected to their different approaches to the promotion of inclusion for their students. How inclusion is defined and conceptualized is at the very basis of a school's inclusion policy. We deemed that exploring these school differences, and the implicit assumptions about what inclusion means, should not be relegated to satellite events, but rather should be a foundational step of the whole BTAs. Accordingly, we decided to devote a core activity to eliciting group reflection on participants' definitions and beliefs regarding inclusion.

Lastly, the Needs Analysis identified a critical problem that needed to be addressed, that is, the presence of substantial linguistic barriers among Italian and Bulgarian teachers. The approach chosen to overcome these barriers is diversified: as already mentioned, some BTA content is meant to be localized; participation in collaborative activities is meant to be facilitated by BTA tutors, recruited among the Italian and Bulgarian partners of the project. Early identification of Italian and Bulgarian teachers with advanced English proficiency will hopefully allow instructors to use them as 'bridges' to relay critical information to their peers, and facilitate their overall participation in the BTAs as a whole.

### 4.3 BTA macro-design

Since the BTAs have to integrate harmoniously with the work schedule of teachers, and in accordance with theoretical findings on best practice in teachers' Professional Development (see section 3.1), they are designed to cover a rather long time span during which participants will be able to self- and co-regulate their learning in terms of time commitment, with the exception of the time when the three SJSTE are planned. In fact, the structure of the BTAs orbits around these three events, which will be the most intensive part of the pathway. During SJSTEs, the pacing of activities will be more demanding<sup>4</sup>, and teachers will be asked to devote a substantial amount of effort.

In the PLEIADE project proposal, SJSTEs were to be entirely face-to-face, and travel budget was limited so that only few teachers would be able to take part in each SJSTE (around 5 teachers per school, plus another 15 from the hosting institution). This led to an original conceptualization in which SJSTEs content was intended to be "reported" by participating teachers to colleagues. However, COVID-related travel restrictions required us to reconceptualize the SJSTEs as online events. While, on the one hand, this carries the risk of substantially hampering teachers' cooperation and engagement due to the lack of physical meeting and in-person socialisation, it also means that participation in the SJSTEs can be extended to all teachers involved in the BTAs. In practice, this means that in the final conceptualization of the BTAs the SJSTEs could play a more

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<sup>4</sup> While a more sensible design choice would have probably been in favour of diluting the online activities replacing the face-to-face SJSTE along a longer lapse of time, the budget regulations issued by the National Agency for funding the project explicitly required to maintain the "intensive" nature of the SJSTE even in their online version. This prevented the BTA designers from turning the SJSTE into online activities lasting several weeks and requiring an equivalent time commitment. However, the same budget regulations will allow the recognition of a small budget (equivalent to 15% of three days subsistence) per participant from each school.

central role, becoming the key events of the BTAs and requiring attendance by the whole cohort of teachers, while maintaining their intensive nature and limited duration (5 days, part time).

Therefore, the resulting BTA structure consists of seven main modules, as reported in Figure 2.

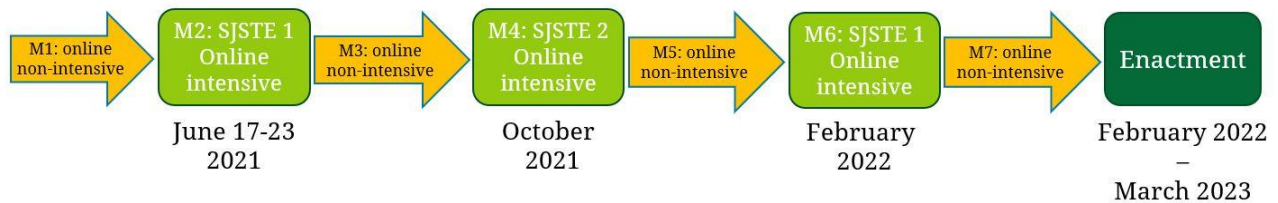


Figure 2. Structure of the BTAs.

1. The first online module (Ice-breaking) will run from the start of the BTAs (May 20th 2021) to the first SJSTE (June 16th 2021).
2. The second module is the first SJSTE, from June 17th to June 23rd, and will focus on the main theoretical content of the course, that is, learning design of collaborative learning activities for social inclusion.
3. The subsequent online module, from June 23rd to October 2021<sup>5</sup>, will consolidate participants' skills on the same topics while also keeping in mind that the time window cannot easily accommodate demanding activities due to teachers' summer vacations.
4. The fourth module, that is, the second SJSTE, will be held in October 2021, and focus on practice sharing and collaborative learning design.
5. The fifth module, between SJSTE 2 and SJSTE 3, from October 2021 to February 2022, will be devoted to the refinement of inclusion-aware collaborative activities to be enacted and reflection on key features of inclusive activities. During this time period, teachers will also be offered additional (optional) training content meeting the diversified needs (see Section 4.3.4, Core content and satellite content).
6. The sixth module, which is the third and last SJSTE, held in February 2022, will focus on practical preparation for the enactment phase, as well as identification, together with the teachers, of indicators for the evaluation of the inclusive potential and power of collaborative activities.
7. Finally, the time after the third SJSTE, from February, 2022 to April 16th 2022, will be fully focused on the transition to the enactment phase, providing support to teachers in the micro-planning and practical arrangements and ensuring they have all the tools needed for enactment and evaluation of results.

Last but not least, as self-regulated learning and reflective practice are important components of teachers' professional development, the BTA design includes an ongoing activity of meta-reflection

<sup>5</sup> Starting from Module 3, starting and ending dates have not yet been fixed. These will be decided according to the COVID travel restriction situation, so as to maximise the number of SJSTEs held face-to-face if the possibility arises.



specifically devoted to ensuring that they control their learning process during the BTAs and make informed choices concerning their learning process.

## 4.4 BTAs approach

### 4.4.1 General teacher training approach

The approach adopted in the PLEIADE BTAs is based on a number of principles, which are in turn rooted in research results in several related fields.

Specifically, the BTAs adopt a long-term, practice-based, collaborative and participatory approach to the development of the learning design skills for collaborative and inclusive education of the teachers involved. In addition, in the BTAs, gamification is adopted to foster participants' engagement in some of the key aspects of the professional development process, such as the practice sharing behaviours necessary for knowledge building. The rationale behind these choices is in line with the following principles:

- The BTAs are collaborative because the best way to train teachers to adopt an innovative teaching method is by using that method in their training, so that they can appreciate it first hand (Kommers, 2006; Delfino & Persico, 2007). If teachers experience a method from the inside (i.e. on themselves), they will be better prepared to use it with their students, as they will feel more aware of its potential and limitations. While it is true that most teachers know the basic principles of collaborative learning and many have already used this approach in their teaching, the 4Ts model as described in IO2 and its related teaching approach are not so popular and this is the specific design method PLEIADE would like to promote. Hence, the 4Ts approach to learning design has been used to plan the BTAs and will underpin the BTAs enactment, so that PLEIADE teachers will appropriate the method almost seamlessly;
- The BTAs are participatory because PLEIADE teachers are professionals with several years of experience of work in contexts where social inclusion is an everyday challenge, so their professional training cannot start from scratch, it should build on top of their extensive, although sometimes tacit, pre-existing knowledge. While the researchers involved in PLEIADE and the experts invited to collaborate to the BTAs have significant academic knowledge in the field of social inclusion, the PLEIADE teachers can effectively contribute to knowledge building in the field thanks to their more pragmatic vision of the topic. Thus, the BTAs intend to engage the PLEIADE researchers and teachers in a joint knowledge building process based on reflective practice (Dewey, 1933; Schön, 1987) and aimed at working out a set of agreed upon principles for the design (and enactment) of inclusive collaborative activities. Such a process will require (and hopefully develop) a high degree of self-regulation and co-regulation on the side of the teachers, which will be supported through targeted ongoing activities and gamification processes.
- Collaborative Learning is the first and foremost teaching method for social inclusion (Doveston, & Keenaghan, 2006; Herbert, 2011), but a well known limitation of this method is the difficulty of "making it work", i.e., make sure that collaboration actually takes place and involves all students. To this end, a number of techniques intended to foster and scaffold collaboration can be used by the teacher (Pozzi & Persico, 2011; Fernández, Wegerif, Mercer, & Rojas-Drummond, 2001). This is where Learning Design comes into play. In fact,

while careful Learning Design is in general a necessary condition for effective teaching, when Technology Enhanced Learning and Collaborative Learning Processes are concerned its importance is even greater (Asensio-Pérez et al., 2017). The 4Ts approach to LD is intended to introduce teachers to a number of techniques to support students' collaboration, as well as to make pedagogically and technologically informed decisions during the design process (Pozzi, Ceregini, & Persico, 2016). More details about this approach are provided in the next section.

- The BTAs are a long-term and practice-based professional development process. According to Borko et al. (2010), among the features that have been regarded as key to success in teacher professional development there are their extension in time and their intertwining with practice, that make reflective practice possible. According to these authors, in the past several years, there has been an increasingly urgent, perceived need for long-term, high quality TPD opportunities. Indeed, as Feiman-Nemser (2001) have claimed, we must offer teachers opportunities that are grounded in a conception of learning to teach as a lifelong endeavor and are designed around a continuum, self-regulated process of knowledge building aimed at improving their practice, and ultimately foster student learning and achievement gains (Guskey, 2000). These ideas are aligned with a vision of the teaching profession as a knowledge intensive profession, one that heavily relies on practice sharing within communities of practice.
- Last but not least, gamification has been adopted to foster participants' engagement in the PLEIADE BTAs. While we agree that gamification can alleviate the cognitive load of a one-year long professional development initiative, followed by a similarly long period of enactment, we also believe that PLEIADE teachers are exactly the type of professionals that cannot be motivated by leaderboards or competition-based learning strategies, but rather they might benefit from a cheerful and relaxed atmosphere of collaboration with the researchers and the other teachers involved in the training. The type of gamification adopted for the BTAs is therefore in line with Lane and Prestopnik (2017) idea of "diegetic connectivity". It relies on a narrative of teacher professional development as a metaphoric journey, which has already been successfully adopted in the context of teacher training by several researchers (Goldstein, 2005; Perry & Cooper, 2001; Delfino & Manca, 2007; Manca & Delfino, 2007). Further details about the gamification approach adopted in the PLEIADE BTAs are provided in section 4.3.3.

#### 4.4.2 The 4T model

When referring to learning design, PLEIADE adopts the 4T model. According to this model, a collaborative learning activity can always be regarded as a task to be accomplished by one or more teams of learners within a certain time frame in a given technological environment (Persico & Pozzi, 2011; Pozzi, Hofmann, Persico, Stegmann, & Fischer, 2011; Pozzi & Persico, 2013).

Consequently, the model identifies Task, Team(s), Time and Technology as the main dimensions along which one may look at a collaborative activity (Figure 3).

During the design process, the teacher/designer has to take decisions regarding:

- the Task to be accomplished by students, which usually envisages the production of a final output;
- the Teams which students should be aggregated into in order to accomplish the Task and their mode(s) of interactions;
- the Time schedule according to which students are to carry out the activity;
- the Technology used to carry out the whole activity and where the interactions among participants will occur.

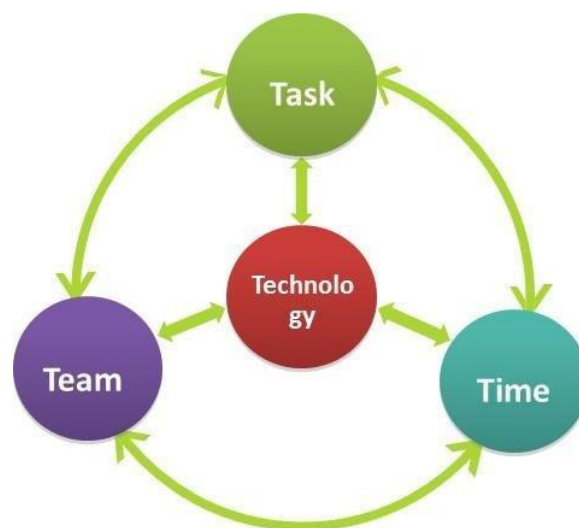


Figure 3. The 4T model for the learning design of collaborative activities (Persico & Pozzi, 2013).

The interactions among these dimensions define the collaborative activity; the teachers can either start from scratch and try to define these elements, or they can start from a collaborative Technique (i.e. a pattern suggesting how to combine these elements) and instantiate it in one specific activity, according to the context at hand. In any case, the teacher will need to take decisions regarding each of the Ts, by taking into account that they are not independent of one another: starting from the definition of the learning objectives, as suggested by the literature in Learning Design and Instructional Design (Conole, 2013; Laurillard, 2012), the teacher will tentatively choose one Technique or one Task that can support achievement of those objectives. However, sometimes the length in Time of the course is given from the very beginning and this might affect the initial choices. Similarly, the target population may be already decided, and its size and composition will influence decisions on the Teams' composition rather heavily (especially if it includes at-risk or minority students), as well as on the Task and Technology components. In other, more techno-centric approaches, a designer may want to try out some interesting Technology and this will influence the choices regarding the other Ts. So, the teacher generally “juggles” around with these four components in a cyclic and iterative process (as shown in Figure 3).

The dependences among the Ts (the arrows in Figure 3) are very important in the design process and the model aims to support teachers-designers by making such dependencies as explicit as possible, stimulating reflection on how decisions on one dimension impacts on the others.

In the context of PLEIADE's BTAs, the 4T model will be used both using: (a), a document template to be used to describe a collaborative activity in terms of the 4Ts, and (b) the I4T game (see section 4.4.1), which scaffolds decisions concerning the identification of tasks, technologies, times, and teams of a collaborative activity.

### 4.4.3 BTA Gamification

The PLEIADE project, as stated in its name, aims to provide a *playful environment* for the design of inclusive, collaborative activities. As such, the BTAs will strive to create a positive, open community of teachers, encouraging them not only to reflect and collaborate towards the design of inclusive activities, but also to explore and experiment in a safe, welcoming environment. To this end, the BTAs will include gamified elements that will help to both engage participants and create a stress-free community driven by curiosity and support.

Several gamification elements are adopted and integrated in the BTA structure: the I4Ts game (that is, IO2; Bicocchi et al., 2021), the narrative metaphor of a space journey, an initial ice-breaking activity intended to foster team building and group identity formation; the "Inclusion stars" mechanics supporting the knowledge building process about inclusive teaching, a dashboard reinforcing self-regulation and meta-cognitive reflection on practice sharing and an award for the most entertaining virtual school visit. These are described in more depth in the following.

#### 4.4.3.1 The I4Ts game

The Hybrid I4Ts game is one of the three PLEIADE IOs produced in the preparatory phase of PLEIADE (Intellectual Output 2 of PLEIADE; Bicocchi et al., 2021), thus its development takes place in parallel with that of this document. It is a board game integrating both digital and tangible components to facilitate teachers' learning design. It engages a team of teachers in collaboratively identifying the phases of a learning activity for their students. The game is based on the 4T model (see section 4.3.2), and therefore it nudges teachers towards the identification of the tasks, technologies, teams, and timings of each phase. These are represented by different decks of cards, from which cards are drawn, manipulated and positioned by a group of players/teachers on a board representing time, with ongoing decision making within the confines of an increasingly restricting design space. Additionally, the game integrates on each card key information about the inclusive affordances of learning design components.

The game is meant to be used by small teams of teachers (possibly guided by a facilitator) to navigate the intrinsic complexity of inclusive, collaborative and technology-enhanced learning interventions (Lakkala, 2007). By providing information and feedback on the expected outcomes of key design choices, the game increases teachers' awareness of intended and unintended consequences of learning design chosen features. Additionally, the interactivity of the game helps engaging teachers in the co-decision making of learning design, as well as in consideration and reflection on the many variables at play when dealing with at-risk minorities or disadvantaged students. The game also helps save and share the created learning designs, allowing for their retrieval and reuse after collaborative gaming sessions.

In the BTAs, the I4T game will be used during SJSTEs 2 and 3, to help teachers interact with each other and produce drafts of what could become learning interventions to be enacted in the enactment phase.

#### **4.4.3.2 The Space Journey metaphor**

The PLEIADE BTAs will use the metaphor of space exploration as a narrative thread both during the BTAs and in the subsequent enactment phase. A narrative component is an important part of engaging gamification (Palomino, Toda, Oliveira, Cristea, & Isotani, 2019). Apart from the connection with the project name — pleiades being a well-known constellation — space exploration is an apt metaphor for PLEIADE's aims, being a collaborative, cross-country endeavor in which tight-knit communities of professionals push the boundaries and strive to transform currently-hostile environment in places in which humanity can thrive. As mentioned earlier, representing a learning process as a journey is a well known metaphor, frequently used in teacher training (Goldstein, 2005; Perry & Cooper, 2001; Delfino & Manca, 2007; Manca & Delfino, 2007). BTAs participants will be encouraged to adopt this metaphor throughout their journey, BTA activities and phases will have titles and descriptions matching this overarching metaphor. For example, the team of trainers and tutors will be called 'Ground Control', SJSTEs will be 'space rendez-vous', and the folder set up for sharing teaching material will be called 'International Space Station'.

#### **4.4.3.3 The Ice Breaking activity**

As for group identity, the ice-breaking activity of the BTAs will see participants organized in groups of around 7-8 participants (labeled 'spaceships', in accord with the metaphor). These smaller groups serve the function of being a 'gentle' introduction to the PLEIADE BTA community, as getting to know seven other people is a less daunting task than getting to know seventy at once. However, these smaller groups will also be guided in the construction of group identity. First, group members will share their expectations and emotions regarding the BTAs, while also providing to group members a self-evaluation of their own starting skills and beliefs. Afterwards, and on the basis of this information, each group will be asked to find a name for their spaceship, and to present themselves to other groups during the first intensive event ('opening up' interaction beyond the group's boundaries). These simple tasks will help group members identify with the group as a whole, and strengthen their bonds with other group members. During the BTAs, the first activities will use the 'spaceship' groups as teams; towards the end of the BTAs, instead, participants will more and more often be grouped in other configurations. This way, participants will be able, at first, to get at ease and build familiarity with a restricted group of people; in later phases, instead, 'spaceship' groups can serve as a reference point and a 'community-within-the-community' in which information and problems can be more easily shared, taking advantage of private spaceships forums on the BTA platform.

#### **4.4.3.4 Inclusion stars mechanics**

While progressing along the pathway, participants will be awarded "inclusion stars", as visual indicators of their partaking with the project's approach and values. The awarding of inclusion stars will be negotiated with participants, asking them to self-evaluate their involvement and interactions, and comparing this self-evaluation with the tutors' observations. This way, the

inclusion stars will not be assigned as grades, top-down, but will rather be an agreed-upon symbolic representation of the achievements of each group of participants and progress of each individual.

#### **4.4.3.5 The practice sharing dashboard**

In order to encourage practice sharing and support self-monitoring of self-regulated professional learning during the BTAs, the platform in which the training will take place (see section 4.4.2 and Intellectual Output 3; Manganello et al., 2021) will include a dashboard developed by CNR-ITD based on the 4C framework (not to be confused with the 4T model; Manganello et al, 2021; Littlejohn et al, 2012; Persico et al, 2015).

This framework classifies SRL and practice sharing behaviour in four categories:

- “Consume”: making use of knowledge and resources created by others;
- “Create”: producing new knowledge or distilling and organising existing knowledge;
- “Connect”: linking others and/or providing feedback on their work;
- “Contribute”: making new knowledge available to others.

The importance of self-regulated professional learning and related practice sharing behaviors is the focus of the second SJSTE. Thus, this dashboard will be activated during this SJSTE. The 4C dashboard will help participants monitor their behaviour in terms of the 4Cs model. By providing automatic feedback on the enactment of these four behaviours, participants will be made more aware of their strengths and weaknesses regarding self-regulated learning.

#### **4.4.3.6 The virtual school visit award**

An important feature of face-to-face SJSTE as they were planned in the project proposal is that teachers, thanks to the project mobility funds, have a unique opportunity to visit schools in other countries and see — in practice — how they are organised. This added value of actual mobility risks to get lost when SJSTEs become virtual. To compensate for this loss, the host school of each virtual SJSTE will be asked to produce short entertaining video clips concerning their school, to be shown and commented during the relevant SJSTE to their colleagues. The most entertaining video clip will be awarded a “virtual” prize, probably in the form of a badge.

#### **4.4.4 Core activities and satellite activities**

As detailed in the Needs Analysis section, interviews and surveys with the prospective participants evidenced a diversity in their needs, which led to the integration of the core activities of the BTAs with additional training events called “satellite”, as participants will be free to attend them or not.

Core activities are those concerning social inclusion, collaborative learning (including both face-to-face and online collaborative learning), learning design, the 4T model, practice sharing, and self-regulation. Participation in these activities will hopefully lead the PLEIADE teachers to achieve a sense of belonging to the PLEIADE community and to increasingly build new knowledge, building on the outcomes of previous activities. Thus, participants are meant to follow the whole pathway from the beginning to the end, or else collaboration with peers may be hindered.

Satellite content, on the other hand, regards more sectorial topics, of special interest for a subset of the teachers involved. These include integration of Roma students, educating socially advantaged students to diversity, bullying prevention, cyberbullying, hybrid classes (i.e. classes in which some students cannot attend in-presence), and synergies with other European projects (the latter did not emerge from the Needs Analysis, but was rather an implication of PLEIADE's dissemination and exploitation strategy). Satellite events are regarded as independent on the core pathway, to be attended or perused according to personal needs and interests. However, participants will be strongly encouraged to take advantage of the offering of satellite content, check out at least a little of the content available, and share their main reactions and insights with the colleagues that did not access the same materials, in the spirit of knowledge-sharing and collaboration. Pending authors' authorisations, learning material of both core and satellite events will be made available in Open Access form.

#### 4.4.5 Tutoring and facilitation

The BTAs will involve tutors that will play the role of moderators and facilitators of the learning process (Bocconi & Pozzi, 2000), orchestrating the various activities and guiding learners towards the achievement of the learning objectives.

The role of the online tutor is to create and transmit the "intellectual climate" of the course (Benne & Sheats, 1948), to make the most of the learners' qualities, and to help overcome the lack of physical contact between them. The main roles of the tutor in online courses are categorized by Berge (1995) as the following:

- pedagogic role;
- social role;
- managerial role;
- technical role.

In Pleiade, tutors will play all four roles.

In particular, when playing the "*pedagogic*" role, tutors will act as facilitators of the learning process, focusing the discussion on key areas of the course contents, asking questions and providing stimuli to trigger opinion sharing and negotiation among participants. The online tutors will be flexible and will adopt a non-directive style, so as to encourage participation and interaction among participants.

By playing the "*social*" role, the tutors will create a friendly, comfortable environment by stimulating participants' interactions and fostering group cohesion, thus helping to develop a collaborative and friendly atmosphere.

As "*managers*", the tutors will coordinate the activities and help learners keep pace with the course schedule, laying down the "rules of the game" and each player's role.

Lastly, BTA tutors will provide *technical* support, helping the learners feel at ease with the gamified platform, so that they can focus on course contents.

Special attention will be given to the facilitation of learner interaction. In any online course, the element that characterises the interactions among members of the learning community is the *written message*. While in face-to-face communication the significance of the message is conveyed through multiple channels (gestures, tone of voice, facial expressions), in text communication the

writer has to make context and significance explicit and make them clearly understandable for the reader. As facilitators, tutors are in charge of supporting course participants with written communication, making them comfortable with written messages and helping them overcome any fear, embarrassment or misunderstanding this may cause.

Accordingly, in PLEIADE tutors will use — and promote the use of — an informal style of language that borders on the colloquial. To overcome the lack of non-verbal signals, which might lead to misunderstandings, tutors will use emoticons, colours and formatted text, and, when needed, will call on participants to clarify the meaning of their messages.

Tutors' written messages will have to play the four above mentioned roles. Thus, in PLEIADE tutors' actions will be translated into *written communication acts* including:

- Opening modules with welcome messages
- Launching activities with specific instructions
- Supporting interactions with progress report messages
- Triggering discussion with analyses of the previous messages
- Moderating discussion with facilitating messages
- Closing modules.

Lastly, tutors — who will be from Italy and Bulgaria — will strive to facilitate interactions for participants with lower English proficiency by translating key oral and written communications for them, and by making sure that groups are balanced in such a way that participants with low English proficiency will always be in a group with a participant from the same Country who is more at ease speaking and writing in English.

#### **4.4.5.1 Tutors' training and support**

In PLEIADE, the group of tutors comprises both experienced and novice tutors. For this reason, they have been involved in a training path, prior to the launch of the BTAs, aimed at developing competences in novice tutors and, at the same time, making sure they are 'on the same page' with experienced tutors.

This training path has taken the form of an online workshop, lasting 3 weeks in total and including synchronous webinars, as well as asynchronous activities. The proposed practical activities of the workshop had the aims of exposing tutors to the same approaches used during the BTAs (i.e online collaborative learning), as well as allowing them to familiarise and practice with tutor's role and style.

- The contents addressed during the workshop include:
- online communication: main features
- online learning community: theory and practice
- online collaborative learning
- roles of the online tutor
- monitoring and evaluating participation in online learning activities.

To be noted that, after the workshop, an online space was created, with Forums and materials, as a private space for tutors to get support during the BTAs. This space will be used to help tutors by



answering questions and clarifying concerns, as well as more in general to coordinate tutors’ actions during the BTAs.

## 4.5 The BTA learning environment

### 4.5.1 The gamified platform

The gamified learning platform (Intellectual Output 3 of PLEIADE; Manganello et al., 2021) is the digital environment that will host the online interactions and teaching materials of the BTAs. According to the socio-constructivist approach adopted by PLEIADE’s BTAs (see Section 4.3.1), the use of a learning environment with appropriate affordances is a necessary condition for knowledge exchange and the creation of a sense of community between participants. As both practice sharing and the promotion of international cooperation between teachers are important goals of the BTAs, tailoring an online platform to the pathway’s structure and approach proved to be especially important.

The platform will also be in use during the enactment phase of the project, as a ‘safe space’ for teachers to discuss outcomes, barriers, and changes to their enactment, as well as a way to receive support from PLEIADE’s staff and other teachers. Additionally, the platform is a way for schools to share knowledge and artefacts, including, but not limited to, those developed in PLEIADE.

The platform is based on the integration of Moodle with a selection of plugins intended to fit the BTAs’ aims. These are:

- tools for webinar delivery (BigBlueButton), allowing for delivery of synchronous video lectures. Additionally, this tool can be freely used by teachers for their synchronous exchange and collaboration;
- collaborative-oriented and teacher-appropriate gamification tools, where “teacher appropriate” refers to the need to tailor gamification mechanics to the target (in this case adult professionals) to avoid ineffective or even counterproductive results in terms of motivation (Westera, 2015; see Section 4.3.3);
- Learning Analytics applications to track networked knowledge sharing practices and teachers’ interaction, collaboration, and connectedness (see Section Evaluation of the BTAs);
- the dashboard described in section 4.3.3.5, intended to promote self-regulated professional learning
- badges and other game mechanics, which will be used to award “inclusion stars” and the virtual school visit award during the BTAs.

### 4.5.2 BTA training materials

The starting training material of the BTA is the course guide (see appendix B), containing all the information needed by participants to attend the BTAs.

Several of the activities described in the following section make use of bespoke training materials, such as presentations, documents, instructions, and video recordings. Some of this material will have to be created during the BTAs themselves (e.g., webinar recordings can only be uploaded after the webinar has taken place). Therefore, we set up a shared document that will be incrementally

updated during the BTAs by collecting all the material generated for the implementation of the BTAs.

The document is accessible at the following link:  
<https://docs.google.com/document/d/1iWYtyfNXe-qPtJuV1yfA9TFpG32YIH2jeMsUxUdumU/edit?usp=sharing>

Additionally, the structure and activities of the BTAs may change during their implementation, according to teacher trainers' evaluations of learners' engagement, feasible commitment from the involved teachers, external collaboration opportunities, and general social climate. These changes will also be documented and accessible through the shared folder.

## 4.6 BTAs micro-design

In the following, we describe in detail the main activities planned during each of the BTAs modules illustrated in Figure 2. Each activity is described using the 4 Ts model. In accordance with the narrative chosen, the activities are described using the space metaphor terminology; for example, the team of teachers and tutors will be called 'Ground Control', while the initial groups formed during the icebreaking activity will be called 'spaceships'.

Lastly, for each activity we will report whether we consider it a Consume, Create, Contribute, or Connect SRL behaviour in the 4C dashboard (see Section 4.3.3 and 4.4.2, as well as Manganello et al., 2021). This attribution will be automatically done by the dashboard.

### 4.6.1 Module 1: Ice-breaking



Module title	Three, two, one, zero, Ignition!
Aims:	<ul style="list-style-type: none"> <li>- To start building the PLEIADE teachers community, easing familiarization among participants, especially between participants of different schools;</li> <li>- To familiarize participants with the online learning environment (IO3);</li> <li>- To familiarize participants with the course's aims, objectives, and general approach;</li> <li>- To motivate participants to active engagement and participation in the BTA;</li> <li>- To provide a definition and understanding of the concepts of inclusive potential and inclusive power.</li> </ul>
Time window	May 20th— June 16th, 2021
Duration	4 weeks

<b>Phase 1: Astronauts' briefing.</b>	
Task:	Presentation by Ground Control to illustrate the BTAs, their aims and approach to all participants.
Team	Whole cohort of astronauts
Technology	Videoconference
Time	1.5 hours
Type of event	Online synchronous event
SRL behaviour	Consume

<b>Phase 2: Meeting the crew</b>	
Task:	Each astronaut briefly introduces him/herself, including one "personal information", possibly playfully presented (e.g. "my favourite hobby is ..." or "I have a dog whose name is ..."); what they bring with themselves on the spaceship in terms of competence in learning design, collaborative learning, social inclusion, technology-enhanced learning; previous erasmus plus projects; foreign languages spoken, discipline taught and any other relevant competence; what are their feelings and emotions in view of the BTAs/Project (fear, curiosity, enthusiasm, irritation, anger, optimism, surprise, trust, caution, acceptance, apprehension, boredom, indifference...); what are their expectations regarding the Project and the BTAs in particular. These should be expressed in terms of the metaphor. Participants will also update their profile on the platform to reflect the information shared.
Team	Around 10 teams of around 7/8 astronauts, formed by Ground Control with help by school Team Leaders. Each team will be heterogeneous in terms of gender, disciplines taught, school of provenance. Each team will be the "crew" of the "spaceship" (henceforth, these groups will be referred to as 'spaceship groups').
Technology	10 forums, one per team. Each forum will be the team "spaceship".
Time	1 week
Type of event	Online asynchronous event
SRL behaviour	Connect

<b>Phase 3: Triangulating the spaceship's position</b>
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Task	Participants will mark their team's position on two maps: one showing the team's competences using a radar chart, and one identifying the feelings within the group using Plutchik's wheel of emotions (Plutchik, 2001)
Team	Spaceship groups
Technology	Online asynchronous event <sup>6</sup>
Time	1 week
SRL behaviour	Connect

Phase 4: Naming the spaceship	
Task	Participants will choose a spaceship name using whatever method they prefer (it could be a discussion, a voting procedure, or any other method). They will also prepare a brief presentation of their group (5') to be delivered at the start of the first SJSTE. The presentation will show the two maps prepared in the previous phase and some of the personal information provided by team members in phase 2.
Team	Spaceship groups
Technology	Online asynchronous event + any other needed
Time	2 weeks
SRL behaviour	Create

#### 4.6.2 Module 2: First SJSTE



Module title	First Space Rendez-vous: Take Off
Aims:	<ul style="list-style-type: none"> <li>- To provide an introduction to the concept of social inclusion, stimulating critical reflection on its definition(s) and how they interact with participants' practice;</li> </ul>

<sup>6</sup> Participants will be able to use the BigBlueButton plugin to organize videoconferences autonomously, if they so wish. Participants will be encouraged to keep interactions on the IO3 platform, in order to allow us to accurately track activity.

	<ul style="list-style-type: none"> <li>- To introduce the concepts of learning design and (online) collaborative learning, with special focus on the 4T model for learning design;</li> <li>- To help participants achieve familiarity with the 4T model through hands-on practice.</li> </ul>
Time window:	June 17th -June 23rd, 2021
Duration	5 days, with 3h30' of activities each (including breaks)

<b>Day 1, Phase 1: Ground control briefing</b>	
Task	Presentation by Ground Control to present the organization of SJSTE activities, aims, objectives and timetable
Team	Whole cohort of participants
Technology	Online synchronous event
Time	30'
SRL behaviour	Consume

<b>Day 1, Phase 2: Crews presentations</b>	
Task	A referee from each of the groups formed during the ice-breaking activity will present their group to the whole cohort of participants. The presentation will use the two maps (competences and feelings) prepared during Phase 3 of the ice-breaking activity. After each presentation, the group will briefly discuss with Ground Control the inclusion stars that should be awarded for the ice-breaking activity.
Team	Spaceship groups presenting to the whole cohort of participants
Technology	Online synchronous event
Time	5' of presentation per group + 5' for discussion on inclusion stars per group + 30' as buffer (2h10' total)
SRL behaviour	Connect

<b>(All days, to be used as interlude) Pictures from the surface</b>	
Task	A representative from the hosting school will show brief videos taken around their school structure. The videos will show the school both in its physical organization (e.g. classrooms, labs, mess hall, gym) and the people who

	populate it (headmaster, teachers, school staff, if possible children whose parents provided consent). Videos will be prepared before the SJSTE and will have an informal and playful tone, providing as authentic a glimpse as possible of ordinary school life.
Team	Hosting school representatives presenting to the whole cohort
Technology	Online synchronous event
Time	Around 5 videos of 10' each, one for each SJSTE day
SRL behaviour	Connect + (for the presenting school) contribute

<b>Day 2, Phase 1: Introduction to social inclusion</b>	
Task	Presentation by Ground Control on the concept of social inclusion, its main features, the main barriers, and the predominant approaches for fostering it. The presentation will not present a single approach to deal with diversity, but will rather present integration and inclusion approaches noting how they lead to different policies (e.g. separate vs. mixed classrooms)
Team	Whole cohort of participants
Technology	Online synchronous event
Time	45'
SRL behaviour	Consume

<b>Day 2, Phase 2: National presentations</b>	
Task	Each team leader will present their school and the main challenges they face in terms of inclusion. Each presentation will include, when possible, an episode in which inclusion appeared to be critical (and, in case, how the school/teachers acted upon it). The presentations will have been prepared by team leaders prior to the start of the SJSTE.
Team	School representatives presenting to the whole cohort
Technology	Online synchronous event
Time	20' per school + 10' as buffer (1h30' total)
SRL behaviour	Contribute + Consume

<b>Day 2, Phase 3: Finding the spaceship's flag</b>
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Task	Participants will be divided in the 'spaceship' groups and will be asked to find a spaceship slogan/motto that represents their view of inclusion (starting from the introduction to approaches to diversity provided by Ground Control).
Team	Spaceship groups
Technology	Online synchronous event, using break-out rooms
Time	20'
SRL behaviour	Create

<b>Day 2, Phase 4: Hoisting the spaceship's flag</b>	
Task	Participants will present their mottos (and, possibly, the rationale for choosing it) in the plenary session.
Team	Plenary session
Technology	Online synchronous event
Time	25'
SRL behaviour	Create

Note: at the end of Day 2 (before the weekend), participants will be informed that the Day 4 activity will require them to work on describing an inclusive, collaborative activity that has already been implemented in their school. Participants will be encouraged to start thinking about which activity they'd like to describe.

<b>Day 3, Phase 1: Introduction to learning design and collaborative learning</b>	
Task	Presentation by Ground Control on learning design, with special focus on the 4T model. The presentation will also include detailed descriptions of six collaborative techniques (jigsaw, pyramid, discussion, peer review, case study, and role play) using the 4T model.
Team	Whole cohort of participants
Technology	Online synchronous event
Time	1h
SRL behaviour	Consume

<b>Day 3, Phase 2: Space probe launch</b>	
Task	Each spaceship group will be assigned one collaborative technique (jigsaw, pyramid, case study, peer review, discussion or role play) and will be tasked to identify its pros and cons in terms of inclusion using a role play technique (detractors vs appreciative).
Team	Spaceship groups working in pairs
Technology	Online synchronous event, using break-out rooms
Time	45'
SRL behaviour	Create

<b>Day 3, Phase 3: Space probes return</b>	
Task	Each of the groups formed in the previous activity will present to the whole cohort the pros and cons of the collaborative technique they examined in the previous phase.
Team	Spaceship groups, in pairs, presenting to the whole cohort of participants
Technology	Online synchronous event
Time	15' per group (1h15' total)
SRL behaviour	Contribute + Consume

<b>Day 4, Phase 1: Filling in the mission report (briefing)</b>	
Task	Brief presentation from Ground Control of the simplified version of the 4T template for collaborative inclusive activities
Team	Whole cohort of participants
Technology	Online asynchronous event + any other needed
Time	15'
SRL behaviour	Consume

<b>Day 4, Phase 2: Learning from past expeditions</b>
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Task	Presentation by Ground control of three good practices of collaborative learning for inclusion already described using the simplified 4T template ( <a href="https://drive.google.com/drive/folders/167Rm_5ZfGETI3C8XMSmZw5_gvXgAUXIY?usp=sharing">https://drive.google.com/drive/folders/167Rm_5ZfGETI3C8XMSmZw5_gvXgAUXIY?usp=sharing</a> ). These will be used as examples for the subsequent activity.
Team	Whole cohort of participants
Technology	Online synchronous event
Time	30'
SRL behaviour	Consume

<b>Day 4, Phase 3: Filling in the mission report</b>	
Task	Participants will describe a collaborative learning activity (the one they were asked to identify at the end of Day 2) with positive inclusion outcomes, using the 4T template.
Team	8 intra-school groups (2 for each school)
Technology	Online synchronous event, with break-out rooms
Time	2h30'
SRL behaviour	Create

<b>Day 5, Phase 1: The space explorers' summit</b>	
Task	As part of the SLERD (Smart Learning Ecosystems and Regional Development) 2021 conference, participants will attend a round table where members of the advisory board will tackle and discuss the main topics of the PLEIADE project.
Team	Whole cohort of participants
Technology	Online synchronous event
Time	3h
SRL behaviour	Consume

### 4.6.3 Module 3: Online activities



<b>Module title</b>	<b>Travel time: Leaving the Earth's atmosphere</b>
<b>Aims:</b>	<ul style="list-style-type: none"> <li>- Consolidate understanding of the 4T model through hands-on practice.</li> <li>- Reflecting on one's own practice as well as on others' practice</li> </ul>
<b>Time window:</b>	June 2021 — October 2021
<b>Duration</b>	9 weeks; as the time window of this module includes the summer break, the planned activities will be less intensive than the ones envisioned for other modules.

<b>Phase 1: Finalizing the mission report</b>	
<b>Task</b>	Participants that didn't manage to finish in time the activity of Day 4 of the SJSTE (describing a past collaborative, inclusive activity using the simplified 4Ts template) will have a short time window to complete the work. These activity descriptions will be the main material for the subsequent phases.
<b>Team</b>	8 intra-school groups (2 for each school)
<b>Technology</b>	Text editor
<b>Time</b>	1 week
<b>SRL behaviour</b>	Create

<b>Phase 2: Re-planning, re-tracing the route (part 1)</b>	
<b>Task</b>	The activities described in the previous phase will be peer-reviewed by the other groups. Each group will review the work of 2 other groups (so that each activity will be reviewed by 2 groups). The reviews will point out what changes could be made to make the activities even more inclusive for the students involved.
<b>Team</b>	8 intra-school groups (2 for each school)
<b>Technology</b>	Text editor, forum

Time	1 month
SRL behaviour	Contribute

Phase 3: Re-planning, re-tracing the route (part 2)	
Task	The groups that originally wrote down each activity will now change it according to the reviews they were provided with, as well as their own reflections and ideas. While the first description of the activities focused on detailing <i>how they were originally implemented</i> , participants are now tasked with changing them to future plans, activities that have not yet been implemented, but that would hopefully be more inclusive and effective than their first iteration.
Team	8 intra-school groups (2 for each school)
Technology	Text editor, forum
Time	1 month
SRL behaviour	Create

#### 4.6.4 Module 4: Second SJSTE



Module title	<b>Second space rendez vous: Rocket man and women work together to Conceptualize Collaborative Learning</b>
Aims:	<ul style="list-style-type: none"> <li>- To learn to use the I4T game for the design of inclusive-aware collaborative activities;</li> <li>- To start preparing ideas that could be used in the Enactment phase of PLEIADE;</li> <li>- To familiarise with the eTwinning platform as a means of supporting transnational activities and cooperation;</li> <li>- To familiarise with the 4C dashboard implemented in the gamified platform;</li> <li>- To familiarise with the concept of self-regulated learning and how it comes into play in the teachers' professional development pathway.</li> </ul>
Time window:	October 2021
Duration	5 days, with 3h30' of activities each (including breaks)

<b>Day 1, Phase 1: setting the course (part 1)</b>	
Task	The group of participants that worked together in the previous Module will present their revised design to the whole cohort of participants, illustrating how peer feedback informed their revision.
Team	8 intra-school groups (2 for each school)
Technology	Online synchronous event
Time	20' per group, including discussion + 20' as buffer (3h total)
SRL behaviour	Contribute + Consume

<b>(All days, to be used as interlude) Pictures from the surface</b>	
Task	A representative from the hosting school will show brief videos taken around their school structure. The videos will show the school both in its physical organization (e.g. classrooms, labs, mess hall, gym) and the people who populate it (headmaster, teachers, school staff, if possible children whose parents provided consent). Videos will be prepared before the SJSTE and will have an informal and playful tone, providing as authentic a glimpse as possible of ordinary school life.
Team	Hosting school representatives presenting to the whole cohort
Technology	Online synchronous event
Time	Around 5 videos of 10' each, one for each SJSTE day
SRL behaviour	Connect + (for the presenting school) contribute

<b>Day 2, Phase 1: setting the course (part 2)</b>	
Task	The whole cohort of participants will vote for inclusive potential for each of the revised designs that have been presented. While the vote will be anonymous, participants will have ample time to publicly discuss the criteria they are using in their evaluation.
Team	Whole cohort of participants
Technology	Online synchronous event + voting on the gamified platform
Time	1h

SRL behaviour	Contribute
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<b>Day 2, Phase 2: introduction to practice sharing and SRL</b>	
Task	Presentation by Ground Control on practice sharing and SRL, with special focus on the 4C model. Participants will also be introduced to the 4C dashboard on the gamified platform, that will now be made visible.
Team	Whole cohort of participants
Technology	Online synchronous event
Time	1h
SRL behaviour	Consume

<b>Day 2, Phase 3: finding SRL barriers</b>	
Task	Each 'spaceship' group will rank the 4 Cs in order of perceived importance. Then, they will identify and list barriers and facilitating factors to SRL for one of the Cs (assigned to the group by Ground Control).
Team	Spaceship groups
Technology	Online synchronous event
Time	20'
SRL behaviour	Create

<b>Day 2, Phase 4: finding SRL barriers</b>	
Task	The lists of barriers and facilitating factors to SRL will be presented and discussed in the plenary session for each C.
Team	Plenary session
Technology	Online synchronous event
Time	40'
SRL behaviour	Connect

<b>Day 3, Phase 1: I4T game practice</b>	
Task	Participants will familiarise with the I4T game in a guided session. Course tutors will provide first instructions and help in the activity, but will also leave participants free to explore the game and see how it responds to their learning design decisions. This activity will not have the goal of producing learning designs to be used in the enactment; rather, it will be an opportunity to familiarise with the design environment prior to the proper learning design sessions.
Team	Spaceship groups
Technology	Online synchronous event
Time	2h per group
SRL behaviour	Create

<b>Day 3, Phase 2: Call to adventure!</b>	
Task	Each participant will be tasked with either proposing a collaborative activity to be enacted in the Enactment phase of PLEIADE, or to subscribe to an activity proposed by someone else. Activity proposals will be posted on a subforum created for the purpose on the gamified platform.
Team	Individual participants
Technology	Online asynchronous event (forum)
Time	1h (but can be continued until the subsequent day, if needed)
SRL behaviour	Connect + Create (if posting an activity proposal) + Contribute (if subscribing to someone else's proposal)

<b>Day 4, Phase 1: Introduction to eTwinning</b>	
Task	Brief presentation on the eTwinning environment. Participants that will design and enact activities that involve the participation of students from multiple countries may want to use eTwinning for the activities themselves.
Team	Whole cohort of participants
Technology	Online synchronous event + any other needed
Time	30'
SRL behaviour	Consume

<b>Day 4/5/6: Setting off in uncharted space</b>	
Task	The groups created at the end of Day 3 (henceforth, Enactment groups) will start designing the activities using the I4T game. Each group will be followed by a tutor during the design session; therefore, since the number of groups will likely vastly exceed the number of tutors, the sessions will have to be scheduled at different times — and possibly different days — across groups.
Team	Enactment groups
Technology	Online asynchronous event + any other needed
Time	3h per group
SRL behaviour	Create

<b>Day 5, Phase 1: Introduction to Creative Commons</b>	
Task	Brief presentation from Ground Control on the Creative Commons licenses. This presentation has the goal of making sure that participants will be aware of copyright issues when reusing materials, and of which license they should use to share their own designs and materials.
Team	Whole cohort of participants
Technology	Online asynchronous event + any other needed
Time	30'
SRL behaviour	Consume

#### 4.6.5 Module 5: Online activities



<b>Module title</b>	<b>Travel time: Space Oddities taking shape</b>
Aims:	<ul style="list-style-type: none"> <li>- To start setting the stage for the Enactment Phase by refining the activities drafts produced during the second SJSTE;</li> </ul>

	- To provide opportunities to participants to deepen their knowledge of specific topics that could be of interest for them or their schools.
Time window:	October 2021 — February 2022 (could be changed according to the dates of the second and third SJSTE)
Duration	~ 12 weeks

<b>Phase 1: Exploring the unexplored (part 1)</b>	
Task	Participants continue to design the activities for the Enactment Phase, using the 4T template and going into more detail regarding the phases and steps to be taken in the activities. In this phase, for example, they will need to identify or create the learning material to be used and consider ways to achieve personalisation. For international activities, suitable technological environments will have to be identified. Participants will still be free to change which group they are working in, or which activity they'd like to enact. At the end of this Module, however, enactment groups should be finalised.
Team	Enactment groups
Technology	Online asynchronous event + any other needed
Time	8 weeks
SRL behaviour	Create

<b>Phase 2: Exploring the unexplored (part 2)</b>	
Task	Participants will prepare a presentation of their design(s) for the third SJSTE. Participants will also be encouraged to upload designs and materials on the platform, sharing them with the whole cohort of participants even before the SJSTE.
Team	Enactment groups
Technology	Online asynchronous event + any other needed + Database
Time	3 weeks
SRL behaviour	Create + Contribute

<b>Satellite communications</b>
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Task	<p>Throughout the time between the second and third SJSTE, and in parallel with the activities outlined above, participants will have the opportunity to attend optional 'satellite' events. These events will be tailored on specific learning needs of participants and possibly arranged according to participants' requests and interests. Some of the webinars will be in the local languages. When participants attend a satellite event, they will be strongly encouraged to produce, individually or in teams, the highlights of the event (better if in a language other than that of the original event), so that even participants that didn't or couldn't attend can also be aware of what was presented or discussed. Potential satellite events could focus on:</p> <ul style="list-style-type: none"> <li>● Accessibility and resources for special education</li> <li>● Hybrid classes</li> <li>● Cyberbullying</li> <li>● Integrating Roma students</li> <li>● Other projects on social inclusion</li> </ul>
Team	Individual participants (with possible highlights production in different language)
Technology	Online synchronous event + collaborative writing tools
Time	12 weeks
SRL behaviour	Consume + Contribute (for highlights production)

#### 4.6.6 Module 6: Third SJSTE



<b>Module title</b>	<b>Third Space Rendez-vous: Orbital calculations</b>
Aims:	<ul style="list-style-type: none"> <li>- To consolidate the groups for the Enactment Phase;</li> <li>- To evaluate and further refine the activities to be used in the Enactment Phase;</li> <li>- To reflect on the indicators to be used for evaluating inclusive potential and power;</li> <li>- To familiarise participants with the tools used to measure inclusive power.</li> </ul>
Time window:	February 2022
Duration	~ 5-6 days

<b>Day 1, 2: Space settlement plans</b>	
Task	Each Enactment group will present the activity (or activities) they designed and receive feedback on clarity and completeness of the design.
Team	Enactment groups We expect a high number of enactment groups (up to 30-40, as they could involve as little as two people, and the same participant can take part in multiple groups) so we might need to organise 'parallel sessions' to ensure that everyone will have time to present and receive feedback on their activities.
Technology	Online synchronous event, possibly with breakout rooms
Time	30' per presentation (including feedback), 10 presentations per session (+ 30'/session as buffer; total 3h per day). Exact timing could change according to the number of enactment groups formed. Parallel sessions could be scheduled to ensure that all activities are presented in the 2 days.
SRL behaviour	Consume + Contribute

<b>(All days, to be used as interlude) Pictures from the surface</b>	
Task	A representative from the hosting school will show brief videos taken around their school structure. The videos will show the school both in its physical organization (e.g. classrooms, labs, mess hall, gym) and the people who populate it (headmaster, teachers, school staff, if possible children whose parents provided consent). Videos will be prepared before the SJSTE and will have an informal and playful tone, providing as authentic a glimpse as possible of ordinary school life.
Team	Hosting school representatives presenting to the whole cohort
Technology	Online synchronous event
Time	Around 5 videos of 10' each, one for each SJSTE day
SRL behaviour	Connect + (for the presenting school) contribute

<b>(All days, to be used as interlude) Pictures from the surface 2</b>	
Task	This activity will be the same as the previous one, but will be carried out by the one school that does not host any SJSTE (Neapolis Gymnasium)
Team	Cypriot school representatives presenting to the whole cohort

Technology	Online synchronous event
Time	Around 5 videos of 10' each, one for each SJSTE day
SRL behaviour	Connect + (for the presenting school) contribute

<b>Day 3, Phase 1: The space settlement founding principles</b>	
Task	Participants will be divided in groups and presented with a preliminary list of criteria for evaluating inclusive potential, prepared by Ground Control. Groups will be asked to integrate and edit this list, adding their own insights and considerations.
Team	Spaceship groups
Technology	Online synchronous event, with breakout rooms
Time	1h for group work
SRL behaviour	Create

<b>Day 3, Phase 2: The space settlement founding principles (part 2)</b>	
Task	The lists of tips created during the previous phase will be merged together and the full list of criteria for inclusive potential will be read in the plenary session. The plenary session will discuss, further change, and vote for criteria for inclusive potential. The vote will be focused on the perceived importance and relevance of each tip, with the aim of ranking the criteria according to importance/relevance.
Team	Whole cohort of participants
Technology	Online synchronous event + voting system
Time	1h
SRL behaviour	Create

<b>Day 3, Phase 3: The space settlement founding principles (part 3)</b>	
Task	Each enactment group will use the final list of criteria for inclusive potential to evaluate another group's designed activity. The criteria will be used as a checklist, controlling whether the design has substantial pitfalls. Participants will produce a written feedback to be sent to the authors of the design.

Team	Enactment groups
Technology	Online synchronous event
Time	1h
SRL behaviour	Contribute

<b>Day 4, Phase 1: The space settlement founding principles (part 3)</b>	
Task	Enactment groups will tweak their design(s) according to the feedback received in the previous activities (Day 1, 2 and Day 3, phase 3).
Team	Enactment groups
Technology	Online synchronous event
Time	1h
SRL behaviour	Create

<b>Day 4, Phase 2: Measuring inclusive power</b>	
Task	Presentation by Ground Control of the main tools that can be used to measure inclusive power, with a special focus on sociograms.
Team	Plenary session
Technology	Online synchronous event
Time	30'
SRL behaviour	Consume

<b>Day 4, Phase 3: Collecting data about inclusive power</b>	
Task	Participants will be asked to use fill in tools for measuring inclusive power themselves, both as practice for using the tools they will use in the enactment, and as an evaluation of the inclusive power of the BTAs themselves.
Team	Individual participants
Technology	Online synchronous event

Time	30'
SRL behaviour	None

Day 4, Phase 3: Analysing data about inclusive power	
Task	Participants will be guided in the process of analysis of inclusive power results for the BTAs, based on the individual data collected in the previous phase merged together.
Team	Spaceship groups
Technology	Online synchronous event
Time	1h
SRL behaviour	Consume

Day 5, Phase 3: Freeform play	
Task	Participants will have some time to play with the less structured version of the I4T game (see Intellectual Output 2; Bicocchi et al., 2021). The designs they will produce during this activity are not necessarily meant to be enacted; they are just an exploration of other ideas they could experiment with on their own. Importantly, participants will be asked to provide feedback on the cards included in the game, possibly suggesting cards to add for a re-release of the game or new inclusion tips to be added.
Team	Spaceship groups
Technology	I4T game
Time	3h
SRL behaviour	Create

#### 4.6.7 Module 7: Enactment arrangements



Module title	Travel time: Outer space
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Aims:	This module will not feature structured activities, and will instead be used as a time for planning the transition to the Enactment Phase (including practical arrangements). Tutors and trainers will support the enactment groups on-demand.
Time window:	February 2022 — April 2022
Duration	~ 12-16 weeks (depending of the third SJSTE timing)

## 5 Evaluation of the BTAs

### 5.1 Approach

The overall evaluation of PLEIADE's BTAs and enactment is rooted in Guskey's model for the evaluation of professional development (Guskey, 2000). According to this model, the main goals of a teachers' professional development pathway are to change teachers' classroom practice, to change their attitudes and beliefs, and to affect the learning outcomes of their students. Importantly, the model assumes that a training intervention can change teachers' knowledge and skills, but their attitudes and beliefs will only change after a successful implementation in which participants are able to directly see the positive effects on students. As PLEIADE includes an extensive phase of guided enactment, which will hopefully directly — and positively — impact students' social inclusion, Guskey's model is especially suitable for a comprehensive evaluation of project outcomes.

Guskey's model sees the evaluation of a teacher training intervention as a systematic process that should be conducted on five levels of increasing complexity. These five levels build on each other, and thorough evaluation of each level makes it easier to evaluate the next:

- 1) Participants' reactions (and satisfaction) with the training experience, usually assessed through self-report questionnaires at the end of a training intervention;
- 2) Participants' learning during the course, i.e. change in their skills and knowledge;
- 3) Change and support from the participants' organization(s) following the training;
- 4) Participants' continued use of new knowledge and skills;
- 5) Outcomes on the students of trained teachers.

The evaluation of these levels starts in the BTAs, but bleeds into the enactment phase and, in the case of levels 3-5, encompasses a period after enactment. In-depth description of the evaluation of all levels is, therefore, outside the scope of this document; however, the evaluation of levels 1, 2 and 3 should be carried out during and just after the BTAs, as these levels specifically deal with the short-term outcomes of the training pathway. Note also that level 2 (participants' learning) will be evaluated through self-reported data and quali/quantitative analysis of the learning process and outcomes.

Specifically, the BTAs aim of promoting international cooperation will be based on an evaluation of participants' interaction, collaboration, and connectedness supported by the learning analytics tools of the gamified learning platform (IO3; Manganello et al., 2021).

On the other end, the BTA's impact on practice sharing behaviours will be monitored through the 4Cs dashboard integrated in the gamified platform (IO3).

### 5.2 Data collection and tools used

As said above, data will be collected both during the BTAs and the enactment phase. We identified the following schedule:

- Needs analysis: baseline data already collected during the Needs Analysis (December 2021);
- T0: before the BTAs start (May 2021);
- T1: at the end of the BTAs (April 2022);
- T2: at the end of the enactment (May 2023);
- T3: Follow up after the enactment

Table 1 describes the tools that will be used to collect data for each Guskey level at the different times.

*Table 1 — Tools to be used at each data collection time point*

Timing	Guskey level	Tools
<b>Needs Analysis</b>	Level 2 (self-reported baseline)	Needs Analysis survey
	Level 4 (baseline)	Needs Analysis survey
<b>T0 — BTAs start</b>	Level 2 (evaluated baseline)	Pre-BTAs test
<b>T1 — BTAs end / start of enactment</b>	Level 1	Post-BTAs survey quali-quantitative interaction analysis
	Level 2 (self-reported and evaluated)	Post-BTAs test, post-BTAs survey, tutor feedback, quali-quantitative interaction and learning outcomes analysis
	Level 3 - 4	Post-BTAs survey
	Level 5 (baseline)	Sociograms
<b>T2 — Enactment end</b>	Level 3	Post-enactment survey
	Level 4	Post-enactment survey, quali-quantitative analysis of interactions during enactment
	Level 5	Sociograms
<b>T3 — Follow up</b>	Level 3	Follow-up survey
	Level 4	Follow-up survey, activity indicators



During the BTAs, participation and collaborative behaviours will be tracked through the data collected by the gamified platform (see IO3; Manganello et al., 2021).

In the following sections, the main tools and resources used to collect data during the BTAs (T0 and T1) will be briefly described.

### **5.2.1 Pre-post BTAs tests**

Participants will fill in a multiple choice test on PLEIADE's core content in order to assess their knowledge acquisition. According to the Needs Analysis results, many participants have prior knowledge about some topics that will be tackled in the BTAs, and they report having already attended courses on collaborative learning, learning design, and/or social inclusion.

Therefore, the test will be used both before and at the end of the BTAs, so that knowledge at the end of the course can be compared with knowledge prior to the course. It will be stressed, prior to and during the BTAs, that this test is not meant to evaluate the performance of single participants or assign grades to them; it's meant to support the evaluation of the BTAs effectiveness and improve their materials.

The test will provide information about factual knowledge and skills, but in order to assess the evolution in time of competence levels qualitative-quantitative analysis of participants interactions and outcomes of their learning activities will provide more in depth information.

### **5.2.2 Post-BTAs survey**

A post-BTAs survey will be delivered to participants through the platform (IO3) at the end of the BTAs.

The survey will be developed with the aim of exploring the Level 1, 2 and 3 of the framework proposed by Guskey (2002), therefore it will include questions about the following topics:

- Participants' self-reported satisfaction about the training in terms of contents and methods — Level 1
- Self-reported efficacy of the training and participants' intention to put what they learned into practice — Level 2
- Presence and type of support of the organization (the schools) during the training — Level 3 (e.g., did the school allow participants to take time to participate in SJSTEs and asynchronous activities? Were they supported if and when they tried to apply PLEIADE's tools in their classes?)

The survey will be developed starting from a set of criteria and related indicators that will be identified by CNR-ITD based on Guskey's model. In part, these will overlap with some indicators used in the needs analysis survey (e.g., hours devoted on average to designing one hour of teaching).

### **5.2.3 Other data**

Data collected through the tools described in the above sections have been integrated with other data such as:

- Data collected through tutors feedback regarding efficacy of the training and participants' acquisition of knowledge;
- Learning analytics collected through the platform (IO3) about participation and collaboration among the participants (e.g., time spent in the platform, number of messages exchanged, etc.);
- Sociograms: a sociogram is a tool for drawing the relationships within a group. Sociograms will be used to explore the relationships among the students that will be involved in the collaborative activities before the enactment phase so as to have a picture of the initial situation. The same tool will be used after the enactment phase to detect possible changes;
- Post enactment activity indicators: long-term efficacy of the BTAs will also be monitored in terms of actual implementation of the methods learnt during the BTAs. In practice, this means that during and after the enactment phase participants will be monitored using indicators for the interiorization of PLEIADE tools on teaching practice (e.g. the number of collaborative activities independently designed in the time frame, practice sharing actions taken without prompts from course tutors and trainers)

## 6 Recognition

In order to provide participants recognition for their work, and to motivate them to take part in the BTAs from the start to the end, we arranged for official recognition of course participation. This takes the form of Europass Mobility and Sofia University credits.

### 6.1 Europass

Europass Mobility is a system for the recognition of learning outcomes achieved while traveling abroad. Due to COVID travel restrictions, several face-to-face events will be carried out online. During the pandemic, these events can, as an exceptional case, be recognised as mobilities even if participants did not travel. In our case, this means that for all SJSTEs — including those that will have to be carried out online — participants will be recognised a Europass Mobility Document as formal recognition of their training.

In order to set up this process of certification, the participating schools have to register in their National Europass Center (NEC), a national organization in charge of guiding sending partners in the creation of the Europass Mobility Document for learners.

Before each SJSTE, the hosting school will have to describe the objectives and contents of the program and to provide organization details (name, address and status of institution) to the sending schools to insert them in the NEC portal. Sending schools will have to record each SJSTE in the NEC platform and then prepare the Europass Mobility Document, one for each teacher that takes part in the mobility, filling in the template received by the NEC with the information provided by the hosting school.

Finally, after each SJSTE, the hosting school and the sending school have to sign the Europass Mobility Document of each participating teacher, that will receive it as proof and recognition of their attendance.

### 6.2 Sofia University credits

Sofia University "St. Kliment Ohridski" is the oldest and biggest university in Bulgaria. Its profile includes development of high-level professionals as well as European-wide research activities. Erasmus+ charter (Charter # 67256-LA-1-2014-1-BG-E4AKA1-ECHE) provides the University with the opportunity to educate Bulgarian and international students in the form of continuous professional development (CPD). Having resources and professional background in the area, Sofia University can certify BTA participants' professional development in the area of inclusive education.

According to Bulgarian policy regulations, certification need the following requirements to be met (Ordinance #15 / July 22, 2019, for the status and professional development of teachers, principals and other pedagogical specialists):

- Approval of the Faculty Union of the faculty offering the training certification in terms of:
  - a syllabus and detailed training agenda;

- learners' engagements in terms of academic hours (for synchronous and self-learning activities);
  - training leaders (academic professionals from European academic institutions);
  - offered qualification credits (1 qualification credit is obtained for 16 learning academic hours, at least 8 of which in face-to-face or synchronous remote learning);
  - type of assessment.
- Participation and monitoring by at least one representative of the Faculty of Mathematics and Informatics.
  - Provided list of learners' achievements in terms of learners' outcomes and assessment results.
  - Provided evidence that trainees are legal teachers according to the regulations of the country where they practice (diploma, etc.).

The CPD program syllabus and detailed training agenda are published on the Faculty's website (<https://www.fmi.uni-sofia.bg/en/lifelong-learning>).

In the case PLEIADE's BTAs, accreditation will consider the BTAs as a whole, assessing participants both via ongoing assessment based on teachers' interactions during training, and assessment of the outcome of a collaborative project (i.e. the final designs for the enactment) .

Sofia University provides each trainee that successfully completed the program with a personal certificate, into Bulgarian or English, containing the University attributes (logo and header), the course name, the project name, the academic hours, the Erasmus+ charter number and, optionally, the qualification credits awarded.

In such a way, the PLEIADE consortium will promote the active participation of each trainee in the learning activities as well as the quality of the learning outcomes.

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## APPENDIX A — Hybrid SJSTEs variant

As described in the BTA macro-design (section 4.3), COVID-related travel restrictions led to a restructuring of the role of the SJSTEs compared to what was originally envisioned in the project proposal. The shift of SJSTEs from a face-to-face to a distance context went hand-in-hand with the decision to broaden SJSTEs participation to the whole cohort of teachers involved, rather than the lower number for whom the mobility could be arranged. On the other hand, at the time of writing, it's still unclear if, after all, we will be able to carry out at least part of the SJSTEs face-to-face. Participating teachers expressed strong interest in attending SJSTEs face-to-face whenever possible. While for the second SJSTE this is unlikely, for the third SJSTE this remains a possibility.

According to the project contract, the mobility budget saved by holding previous SJSTEs in the online mode can be reallocated to face-to-face SJSTEs, increasing the amount of teachers that will be able to travel. However, we should still expect that not all 75 teachers will be able to take part in the SJSTEs face-to-face. As of now, the pathway assumes that SJSTEs can be attended by everyone, and therefore the core content of the pathway is concentrated in these events. Rather than restructuring the SJSTEs to include satellite content, we decided to take arrangements for carrying out SJSTEs as hybrid synchronous events, with part of the teachers physically present and part remotely connected.

In practice, this means that:

- Face-to-face participants will be able to use the I4T game, in its full version, which is hybrid, i.e. comprising tangible components (cards and board). The tangible components, through a camera and QR code, can be connected to the digital component of the game, that serves the purpose to provide feedback to users according to their design choices;
- Remote participants will be able to participate from a distance, using the digital version of the I4Ts game. As the hybrid version of the game requires all participants to be able to use the tangible components, game groups will be set up so that they comprise either only face-to-face participants, or only remote participants;
- Plenary sessions will be streamed, so that face-to-face participants can attend them in presence, while remote participants can follow them in BigBlueButton. Tutors will make sure that questions and comments from remote participants are relayed efficiently (that is, remote participants will not be 'left behind' compared to face-to-face ones);
- School visits will be carried out in-person but, at the same time, they will be streamed via BigBlueButton for remote participants. Arrangements for protecting the privacy of individuals included in the videos will have to be taken in advance;
- Group work will be carried out either face-to-face, when all group participants are present, or online, when not;
- For groups that will have to be formed during the SJSTE itself (e.g. play groups during the second SJSTE), we will strive to compose groups in which participants are either all physically present or all remotely connected;

- Timing of activities will be changed so that each SJSTE comprises three full days (as in the original planning), at least for face-to-face participants, rather than 5-6 half-days.

## **APPENDIX B – PLEIADE Blended Training Activities guide**

### **1. Introduction**

This document is a guide for participants in the Blended Training Activities (BTAs) of the PLEIADE project. It is recommended that participants read it before starting the training path, so that they familiarize with its aims and with the context where it will take place, as well as some of the rationale behind its design. To this end, the guide will provide the readers with background information about the PLEIADE project, and useful information about the training path structure, contents, aims, and participants.

### **2. The PLEIADE project**

#### **2.1 Aims**

The PLEIADE project (PLAYful Environment for Inclusive leArning Design in Europe)<sup>7</sup> is a three years European project funded under the Erasmus Plus programme - KA201 - Strategic Partnerships for school education - Cooperation for innovation and the exchange of good practices. PLEIADE started in September 2020 and is due to end in August 2023.

PLEIADE intends to support the efforts of European teachers to systematically integrate inclusive practices in their teaching. It does this by helping them to work together on the design, implementation and sharing of inclusion-aware learning designs. These designs centre on carefully orchestrated learner collaboration, a widely recognized approach not just for strengthening acquisition of curriculum contents but also for supporting inclusive classroom dynamics and attitudes.

To this end, PLEIADE has designed a blended (onsite + online) pathway of teacher training and peer collaboration for teachers working in the 4 partner schools, who are facing different challenges in terms of learner diversity. The pathway features advanced game-like elements that draw on physical and digital tools designed to support teacher interaction, cooperation and, ultimately, collaboration. The pathway will be put into practice by the partnership by carrying out the BTAs, lasting approximately one year, to foster co-creation and sharing of inclusive activity designs. After the BTAs, the trained teachers will be involved in classroom enactment for approximately another year. The final months of the project will be devoted to promote the sharing and propagation of successful inclusive practices in a teacher community.

PLEIADE engages an immediate target population of about 75 teachers at primary and secondary schools in Italy, Bulgaria, Cyprus and Greece, which are consortium members. The collaborative learning activities they design and implement in their classrooms during the project are expected to benefit around 600 pupils, many of whom experience educational disadvantage due to cultural, linguistic and socio-economic diversity.

#### **2.2 Project Partnership**

The PLEIADE Partnership comprises 8 partner organizations (including the coordinator), plus an associated partner, from 5 different EU countries. Among the PLEIADE partners there are research

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<sup>7</sup> <https://pleiade-project.eu/>

and academic institutions, a small game development company, four schools and two professional associations.

More specifically, the PLEIADE partners include:

- CNR-ITD, National Research Council - Institute for Educational Technology, (in short CNR-ITD), which is the PLEIADE project coordinator;
- Sofia University St Kliment Ohridski, (in short Sofia Univ.);
- OPEN LAB SRL, Florence, (in short OpenLab), ;
- European Distance and e-learning Network (EDEN), (in short EDEN);
- 144 Secondary School "Narodni Buditeli", (in short Sofia School);
- Scuola secondaria di 1° grado "Rocca Bovio Palumbo", (in short Trani School);
- "S. Avgouleia-Linardatou" School, (in short Athens School);
- Neapolis Gymnasium, (in short Limassol School);
- Association for Teacher Education in Europe (ATEE), which is an associated partner.

The PLEIADE project website can be found here: <https://pleiade-project.eu/>.

### 3. The PLEIADE BTAs

The training path developed in the framework of the PLEIADE Project is directed to the teachers of the 4 schools partner in the project. Participants will be guided in deepening the inclusive potential of collaborative learning and, therefore, in the design of collaborative activities through the Hybrid Game (the I4Ts), a tool mixing tangible and digital elements developed with the specific purpose of supporting the design process. Besides a common core part, the training will also address specific aims, tailored to the schools profiles and needs, such as dealing with bullying, inclusion of Roma students, etc.

#### 3.1 Aims, objectives, and learning outcomes of the BTAs

Aims<sup>8</sup> of the PLEIADE BTAs are:

- To make PLEIADE teachers (a) aware of the essential role collaborative learning can play in inclusive learning processes and (b) critically reflect upon criteria for designing inclusive (and collaborative) learning activities;
- To improve PLEIADE teachers' ability to design inclusive, collaborative activities and promote their attitude to share their practices within the PLEIADE community;
- To support the production of at least 40 learning designs that the same teachers can refine and implement in their own classes during the PLEIADE enactment.

In order to achieve the above aims, the following learning objectives have been identified. BTAs participants will:

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<sup>8</sup> For the distinction between Aims, Objectives and Intended Learning Outcomes see <https://www.imperial.ac.uk/staff/educational-development/teaching-toolkit/intended-learning-outcomes/aims-objectives-outcomes---whats-the-difference/>

- Get to grips with the basic terminology concerning Learning Design, Social Inclusion, Collaborative Learning and related concepts (such as personalisation, individualisation, self-regulated learning);
- Learn how to design collaborative learning activities with the 4Ts approach and the I4Ts game and use the most well known collaborative learning techniques for fostering collaboration among students by collaboratively engaging in the design of a number of activities that will be basis for the PLEIADE enactment;
- Get used to practice the sharing of their designs and provide feedback to their peers in the PLEIADE teachers' community, in order to improve each others designs and reuse colleagues' powerful ideas;
- Contribute to the definition of design criteria for inclusive collaboration based on their professional practice.

As for the learning outcomes, at the end of this course participants will:

- Be able to conceptualize and design inclusive collaborative learning activities for their students, individually and/or together with other teachers;
- Be ready to refine their designs and implement them in their classes, in some cases (at least 5 cases) in collaboration with classes in different countries.

### 3.2 Activities

The PLEIADE BTAs will alternate online activities with three online or face-to-face Short-term Joint Staff Training Events (SJSTEs). The pathway will allow participants from different countries to collaborate both at distance and in presence and to make use of the PLEIADE tools: the Hybrid I4Ts game [O2] to design inclusive collaborative activities and the gamified platform [O3] for participants interactions.

The proposed training activities will include:

1. online lectures (in the form of webinars) and/or F2F lectures;
2. collaborative activities aiming to produce various kinds of artefacts, carried out under the guidance of staff of the PLEIADE partners' institutions;
3. design activities based on the I4Ts game, a game intended to support decision-making in the design of inclusive collaborative activities.

Theoretical sessions will be always coupled with hands-on activities, to be carried out individually or collaboratively. Moreover, participants will also be expected to actively participate in discussions with trainers and colleagues through forums.

The pathway includes both "core" training events and "satellite" ones. While the former type of events is meant to involve all the PLEIADE teachers, the latter are optional events, focusing on select topics potentially interesting but not necessarily relevant to the whole cohort of teachers. Satellite

events will mostly take place between SJSTE2 and SJSTE3, and the programme of the training offer will be defined during the BTAs.

### 3.3 Language

The official language of the BTAs is **English**; online contents and learning materials will be delivered in the official language, and most of the interactions in forums will be in English. Specifically, most of the training activities will involve groups of teachers from different Countries, and will thus take place in English, while other groups will carry out intra-school activities that could be carried out in the native language of the teachers. Accordingly, the outcomes of the latter activities could be in the native language of the participants, even if at least a summary in English should always be available to favour practice sharing.

Occasionally, Italian and Bulgarian speaking tutors could be available to support intra-school teamwork. The same is not true for Greek-speaking tutors, due to the lack of academic partners who speak the language. Fortunately, the needs analysis carried out at the beginning of the project suggests that there should be no need for tutoring in Greek.

### 3.4 Duration

The training path officially starts May 2021 and ends April 2022.

At the end of this period, the platform will remain open so that the PLEIADE teachers can discuss among themselves enactment details and find further support for refining their designs.

## 4. Contents, structure and time schedule of the training path

During the PLEIADE BTAs, participants will be invited to see their training as a journey, specifically, a space journey, starting at the beginning of the BTAs and ending with the conclusion of the enactment. The rationale for adopting such a metaphor is provided in sections 3.5 and 4.4.3.2 of Intellectual Output 1 (<https://doi.org/10.17471/54009>). Accordingly, the BTAs modules have been deployed in the gamified platform around the space travel metaphor. In the main page of the course there are 8 modules (see Figure 1), 7 representing the 7 different modules as described below, while the 8th is intended to host interactions between teachers during the enactment.



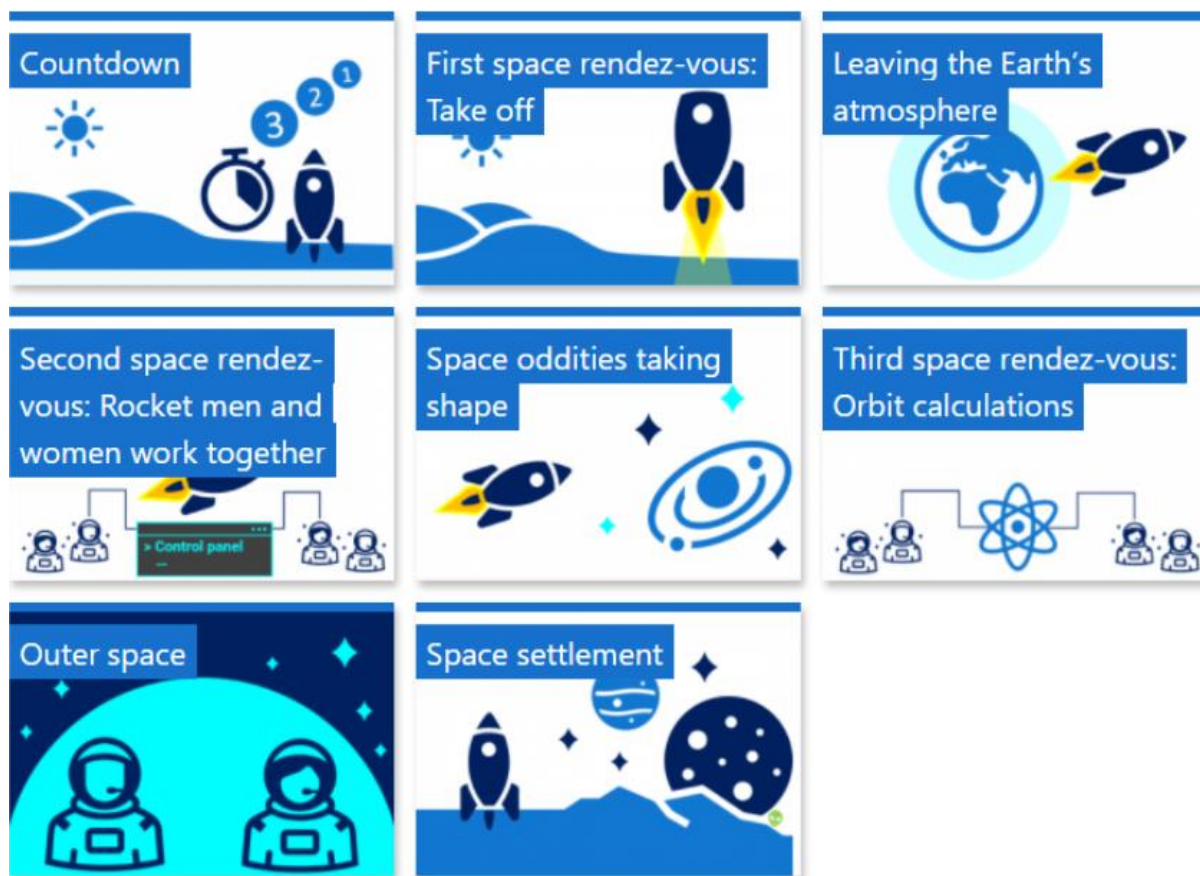


Figure 1 — BTAs platform home page

During the BTAs, participants will mostly work in teams, alternating inter-school groups, also called Spaceship groups (involving teachers of the 4 different schools) and intra-school groups (that is, teams of teachers from the same school). These groups will be formed by Ground Control. However, when teachers will start to plan the activities to be implemented during enactment, they will be free to form new groups, including all the teachers involved in the enactment of each design. These will be called Enactment groups.

The first module (Countdown) will host the ice breaking activities, consisting in 4 weeks devoted to familiarisation of participants among themselves and with the learning environment. The subsequent activities form the backbone of the BTAs, that is, the three SJSTEs and the online activities between them. The last BTA module, called "Outer Space", lays the ground for the enactment, whose interactions will be hosted in the "Space Settlement" module.

Table 1 — BTAs synopsis

Modules	Contents	Interaction modes	Schedule
Countdown	Opening and familiarisation phase	Webinar	May 20th 14:30-16:00 CEST
		Online asynchronous collaborative activities	May 20th – June 16th, 2021
First Space Rendez-vous: Take Off (SJSTE 1)	Social inclusion, learning design, collaborative learning	Webinars and online synchronous collaborative activities	June 17- 23, 2021 14:30-18:00
Leaving the Earth's atmosphere	4T model practice & design	Online asynchronous activities	July-September, 2021
Second space rendez-vous: Rocket men and women work together (SJSTE 2)	Practice sharing, Self-regulation, eTwinings	Webinars and online /hybrid synchronous collaborative activities	October 2021
Space oddities taking shape	Design of activities to be enacted	Online asynchronous activities	October 2021- January 2022
Third Space rendez-vous: Orbit calculations (SJSTE 3)	Inclusive potential evaluation	Webinars and online /hybrid synchronous collaborative activities	February 2022
Travel time: Outer space	Preparation to the enactment	Online asynchronous activities	February-April 2022

## Module 1 – Countdown

This online preparatory phase has the following aims:

- To start building the PLEIADE teachers community, easing familiarization among participants, especially between participants of different schools
- To familiarize participants with the online learning environment (IO3 - [https://drive.google.com/open?id=12ROkRMG1O4BA\\_kyJvMhi5GLzbCSiiyYt](https://drive.google.com/open?id=12ROkRMG1O4BA_kyJvMhi5GLzbCSiiyYt))
- To familiarize participants with BTA's aims, objectives, and approach
- To motivate participants to active engagement and participation in the BTA
- To provide a definition and understanding of the concepts of inclusive potential and inclusive power

To reach these aims after the start up webinar, we will propose a socialization activity where participants will be asked to introduce themselves in groups and — thanks to a gamified approach — we will trigger motivation and engagement, and support collaboration among colleagues. Moreover, a survey will be proposed to help participants placing themselves with reference to their knowledge and skills about the topics of the course.

## Module 2 – First Space Rendez-vous: Take Off (SJSTE 1)

The aims of this first SJSTE are the following:

- To provide an introduction to the concept of social inclusion, stimulating critical reflection on its definition(s) and how they interact with participants' practice
- To introduce the topics of learning design and (online) collaborative learning, with special focus on the 4T model for learning design
- To help participants achieve familiarity with the 4T model through hands-on practice

These aims will be reached through three webinars dedicated to the above mentioned topics alternated with collaborative activities to be carried out in inter (spaceship) and intra school-groups; this structure will foster exchanges between the schools but also will allow the teachers working in the same school grounding on their previous experiences and work in view of the specific school needs. During the last session of the SJSTE, participants will attend a workshop organized in the framework of the SLERD2021 conference<sup>9</sup> where experts of the PLEIADE advisory board will discuss the core topics of the project.

Due to the pandemic travel restrictions, the SJSTE will be carried out online in 5 half-day sessions. Webinars will be delivered through a web conferencing system, small groups synchronous collaborative work will be made possible through break-out rooms in the same system.

## Module 3 – Leaving the Earth's atmosphere

The aim of this part of the training is consolidating the participants' knowledge of the 4Ts model through a collaborative work.

Participants will be involved through a collaborative technique (peer review) in the analysis of a collaborative activity already carried out in their school context to approach it in the light of the 4Ts model.

## Module 4 – Second space rendez-vous: Rocket men and women work together (SJSTE 2)

The aims of the second SJSTE are the following:

- To learn how to use the I4T game for the design of inclusive-aware collaborative activities;
- To start preparing ideas that could be used in the Enactment phase of PLEIADE;
- To familiarise with the eTwinning platform as a means for supporting transnational activities and cooperation;
- To familiarise with the 4C dashboard implemented in the gamified platform;
- To familiarise with the concept of self-regulated learning and how it comes into play in teachers' professional development.

The SJSTE will be carried out online in 5 half-day sessions, during which participants will be involved in 3 webinars and collaborative activities carried out in intra and inter school groups. During this

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<sup>9</sup> <http://slerd2019.uniroma2.it/satellite-event/>

SJSTE, participants will continue the activities of the previous module and start new ones. In particular, participants will familiarize with the I4Ts game for designing collaborative activities. As in the first SJSTE, webinars will be delivered through a web conferencing system integrated in the gamified platform, while online collaborative activities will be carried out through break-out rooms in the same conferencing system for synchronous sessions.

## **Module 5 – Travel time: Space Oddities taking shape**

This module will be carried out between the second and the third SJSTE and will be aimed at setting the stage for the Enactment Phase by refining the activities drafts produced during the second SJSTE and providing opportunities for participants to deepen their knowledge on specific topics that could be of interest for them or their schools.

The first aim will be reached through collaborative activities carried out in teams interested in implementing the same designs in their classrooms - the enactment groups. The second aim will be addressed through satellite events (e.g., webinars) tailored to the needs of specific schools involved and arranged according to participants' requests and interests. Some of the events will be in the local languages. Participants who will attend these events will be strongly encouraged to contribute to the body of knowledge of the teachers' community by sharing a critical summary, called "Highlights", possibly in different languages from those of the event delivery..

## **Module 6 – Third Space Rendez-vous: Orbit calculations**

The aims of the third SJSTE are the following:

- To finalize the groups for the Enactment Phase;
- To evaluate and further refine the activities to be used in the Enactment Phase;
- To reflect on the indicators to be used for evaluating inclusive potential;
- To familiarise participants with the tools used to measure inclusive power.

The SJSTE will be carried out online in 5 half-day sessions, during which participants will be involved in webinars, individual and collaborative activities carried out in enactment and spaceship groups. As in the previous SJSTEs, webinars and collaborative activities will be carried out in synchronous sessions through the web conferencing system integrated into the gamified platform, with collaborative activities making use of the break-out rooms functionality.

## **Module 7 – Travel time: Outer space**

This module will not feature structured activities, and will instead be devoted to enactment micro-design as well as arranging the transition to the PLEIADE Enactment Phase (including practical arrangements). The basic idea is that teachers will be able to self- and co-regulate while co-designing enactment. Tutors and trainers will support the enactment groups on-demand.

## 5. The learning environment

The BTAs will be delivered online and F2F (SJSTE). The online component of the BTAs will be carried out through the gamified platform (IO3; Manganello et al., 2021). The platform User Manual is available here:

[https://drive.google.com/file/d/1DOS6U3P\\_FqBDH6H9RC0BtOcw4OhgOKFc/view?usp=sharing](https://drive.google.com/file/d/1DOS6U3P_FqBDH6H9RC0BtOcw4OhgOKFc/view?usp=sharing)

The platform configuration will reflect the modules structure of the learning pathway of the BTAs. Accordingly, the platform will provide access to a different workspace for each module (see fig.1). Each of these workspaces will provide access to the tools needed to carry out the respective module activities, such as:

- web conferencing tools for Webinars (recordings will remain available after each webinar is conducted);
- textual and/or audio-video materials to be downloaded to cover the theoretical part;
- tools for submitting outputs of collaborative activities;
- forums intended to host discussions and collaborative activities.

The platform is also endowed with the following "general" forums, open throughout the whole BTAs:

- "News from Ground Control": here the tutors will provide information concerning the BTAs that are of interest for all participants, such as opening of new activities, changes to schedule, urgent matters arising, etc.;
- "Technical forum": here participants can ask for help in case of technical issues;
- An informal forum: where participants can informally discuss and strengthen the relationships born during the training
- "About the BTAs" : here participants can share their opinions and reflections about the learning process ( their personal experience or the community). In other words, this forum is intended to foster meta-cognitive processes within the community.

Several tutors will facilitate and monitor the progress of the participants in the BTAs and will be available for support in forums.

## 6. Suggestions for a fruitful attendance

As said above, the BTAs include online webinars, collaborative activities and individual study. Given their collaborative nature, the BTAs require synchronous and asynchronous interactions.

Online asynchronous activities may be challenging since there is not a tight schedule or fixed times for participating; this flexibility may bring participants to underestimate the commitment required or to forget deadlines.

Therefore, below we provide some suggestions for a fruitful attendance of asynchronous collaborative activities. It is recommended that participants:

- **Attend the activities with regularity**, by connecting frequently (possibly once a day for half an hour), instead of concentrating participation in a unique slot of time. Frequent access to the online platform will allow participants to make best use of peers' contributions.

- **Use this Guide** as a reference document during the whole training, so to have an overview of the whole path, be aware of the point reached, and keep an eye on the envisaged time schedule.
- **Consult the gamified platform User Manual** to learn about the main platform functionalities or for any technical doubt.
- **Attend webinars** whenever possible. Webinars have the great advantage of allowing a direct interaction with the trainers to ask for clarifications if needed and respond to their stimuli.
- The path envisages **group work**. Try to actively and constantly participate and collaborate because the outcome should reflect the work of the group. When working in groups, organize the work by negotiating with others tasks and responsibilities, so as to collaborate effectively and deliver the outcome on time.
- **Use the general forums** for support by tutors regarding any aspect related to the whole course or for technical problems.
- Respect the structure of the discussion by sending your contributions to the related forum, answering a message in a forum if you actually reply to that message, and opening new threads when you start a new discussion topic. This will make it easier to orient yourself in the discussion.

## 7. Participation certificate

Two different certifications will be released for the BTAs attendance:

- BTA credits from Sofia University;
- Europass (for each SJSTE).

**Credits** will be recognized from the **University of Sofia** to participants for the BTAs as a whole. Therefore, to obtain credits, participants will need to participate in all the BTAs (both SJSTE and asynchronous activities).

Participants will be assessed during the training and at the end, through the assessment of a collaborative project (i.e. the learning designs created during the activities).

Sofia University provides each trainee that successfully completed the program with a personal certificate, in Bulgarian or English, containing the University attributes (logo and header), the course name, the project name, the academic hours, the Erasmus+ charter number and, optionally, the qualification credits awarded.

A **Europass mobility document** will be awarded for the participation in each of the three SJSTEs. This document reports in a clear and organized way the skills a person develops on a particular mobility experience. Due to the pandemic, online training events that replace mobility can be certified as well.

The document will include information about the skills (job-related skills, language skills, digital skills, etc.) acquired during the training.

To get the Europass mobility document participants need to address the following criteria:

1. in case of online SJSTE, participate in 4 half-day sessions out of 5 of the online SJSTEs. Each session lasts 3 hours and half.

2. in case of face-to-face SJSTE, participate in the mobility and attend the SJSTE.

## 8. The community

Our community is composed of:

- *Ground control*: staff of CNR-ITD and University of Sofia have designed the BTAs and will act as tutors during its enactment. Ground Control are researchers in Technology Enhanced Learning, with a background in innovative teaching and learning methods. They will deliver most of the webinars, (while for some webinars external experts will be invited), supervise the online activities, will provide technical and logistic support and answer questions about the training path contents.
- *Astronauts*: teachers of the four schools involved as partners in the PLEIADE project (see section 2.2). The group is heterogeneous in terms of subjects taught and native language.

### 8.1 Ground Control

#### ITD-CNR

**Andrea Ceregini** (technical tutor): Andrea has been working as a Technical Officer for ITD-CNR since December 2010, participating in various research projects through the years (UniSchoolLabs, MAGICAL, i-Treasures among the others). His work focuses on supporting researchers and their activities by designing, developing and maintaining IT solutions of various kind, including websites, web services and software.

**Francesca Maria Dagnino**: is a researcher at ITD-CNR, where she started as a research fellow in 2010. She is a psychologist and cognitive-behavioural psychotherapist. Her main research interests are Game Based Learning, Learning design and e-inclusion.

**Eleonora Giglio**: is a PhD student in Digital Humanities (Languages, cultures and digital technologies curriculum) at University of Genoa. Her main research interests are French linguistics, discourse analysis, computer-mediated communication and metaphors.

**Flavio Manganello**: received the M.S. degree in communication sciences from the Università La Sapienza, Rome, Italy, in 2003 and the Ph.D. degree in 'engineering science, e-learning curriculum' from the Università Politecnica delle Marche, Ancona, Italy, in 2011. He is a Researcher at the Institute for Educational Technologies of the Italian National Research Council, Genova, Italy. His research interests include self-regulated learning, personalized learning, learning design, and quality in online learning.

**Marcello Passarelli**: is a Research Fellow at ITD-CNR since 2017. During his stay there, he worked on the H2020 Gaming Horizons project, focusing on the social impact and applications of video games and gamification, and on the Erasmus+ CODUR project, which had the goal of identifying criteria for quality assurance of e-learning institutions.

**Donatella Persico**: is a director of research at CNR-ITD and has been active in the field of Technology Enhanced Learning since 1981. Her main interests include learning design, teacher training, collaborative learning, game-based learning, and self-regulated learning. She has been in charge of several research projects and teacher training initiatives (online, blended and f2f) and has produced

several digital resources for teacher training. She is the editor in chief of the Italian Journal of Educational Technology and serves on several professional and journals' editorial boards.

**Francesca Pozzi:** is a senior researcher who started at CNR-ITD in 1998 and holds a PhD in Languages, Cultures and ICT. Her main research interests are the theory and practice of applying Technology Enhanced Learning (TEL) models and methods. She was involved in several teacher training initiatives oriented to pre-service and in service teachers. She is co-editor of the Italian Journal of Educational Technology and sits on several journal boards..

## UNI-SOFIA

**Albena Antonova:** is a PhD student and lecturer at Sofia University - Faculty of: Mathematics and Informatics. She is involved in numerous studies, related to smart services, knowledge management, gamification and serious games, digital transformation, open science and others. Currently, she works on several EU-funded projects related to raising 21st century competences and digital skills in academia and business. Her main research interests include smart services, serious games, digital transformation, raising digital skills and competences, knowledge management, open science and open innovations, active and inquiry-based learning, HCI and innovative TEL models and methods. She has more than 70 publications.

**Pencho Mihnev:** is a senior lecturer in e-learning at the Faculty of Mathematics and Informatics. He works in the fields of e-Learning, Technology Enhanced Learning, Instructional Design, and Curriculum Design. He has more than 60 publications in international sources, and participated in more than 20 R&D and innovative international projects. He obtained MSc degree in Mathematics (Plovdiv University, Bulgaria), one-year specialisation in Computer Science (Sofia University, Bulgaria), and MSc degree in Educational and Training Systems Design (University of Twente, The Netherlands). .

**Nikolina Nikolova:** is associate professor, is a head of Department of Education in mathematics and informatics at Faculty of Mathematics and informatics, Sofia University. Her professional interests are focused on trends in education in mathematics and informatics as well as in innovative technologies in education, application of digital technologies in teaching and learning, development of computational thinking at school age, profiled education in Computer Science and ICTs. As a researcher, Nikolina Nikolova has participated in many European and national projects related to innovations in education, especially to competence-based approach in education (TENCompetence, Sheherazade, ELITE, CATCH-21) as well as in EU projects and initiatives related to Inquiry-Based Science Education (IBSE) in STEM.

**Ralitz Stamenkova:** is a PhD student at the Department of Education in Mathematics and Informatics at Faculty of Mathematics and Informatics, Sofia University. Her professional interests are in teaching mathematics according to the requirements of 21th century skills. She's working on research about applied mathematical problems as well as the use of technology in math classes. In the past two years, Ralitz Stamenkova has participated in several projects and conferences related to innovations in education and competence-based approach in education. She has working experience in different forms of education, both in teaching Mathematics and in preparing methodology plans and materials for 7-12 degree students.



**Temenuzhka Zafirova-Malcheva:** is an associate professor at the Department of Information Technologies of Faculty of Mathematics and informatics, Sofia University. Her main professional interests are in the field of instructional design and e-learning, technology enhanced learning, design and development of educational resources and software, special education and application of ICT in the education of children with SEN. As a researcher, Temenuzhka Zafirova-Malcheva has participated in different European and national projects related to education (ELITE, Q4ADHD, weSPOT)

## 8.2 Astronauts

According to the space metaphor adopted, the BTAs participants are also called “astronauts”. There will be about 75 of them, working in the four schools involved in the project. In each of these, two teachers have been identified that will have an essential role in coordinating the work of BTAs participants (i.e. the astronauts). These are the school Team Leader and the User Consultation Group (UCG) members. Their names are reported in the table below. Astronauts can refer to them in case of problems that can be solved at the school level, rather than at project level.

*Table 2 — Team Leaders and UCG members of the four PLEIADE schools*

Name	School	Discipline taught
Tsvetelina Georgieva	144 Narodni Buditeli school	English
Vladislav Boyadjiev	144 Narodni Buditeli school	Primary education
Marilina Lonigro	Rocca-Bovio-Palumbo school	English
Francesco Rossi	Rocca-Bovio-Palumbo school	Humanities
Kleio Anagnostou	Avgouleia-Linardatou School	Primary education
Aggeliki Chroni	Avgouleia-Linardatou School	Primary education
Christos Kyriakides	Neapolis Gymnasium	Music
Georgia Aristidou	Neapolis Gymnasium	Greek

## APPENDIX C — Needs Analysis survey in-depth results

### C.1 Socio-biographical data

The survey was filled in by 133 participants. Participation from Italian teachers was by far the highest (84 participants, 63%), followed by the Bulgarian school (19 participants, 14%), the Greek school (18

participants, 14%), and the Cypriot school (12 participants, 19%)<sup>10</sup>. The expected rate in participation to the BTAs, according to the PLEIADE project proposal, is 20 teachers each from Italy, Bulgaria, and Greece, and an additional 15 teachers from Cyprus. As such, the number of needs analysis participants from Bulgaria, Greece, and Cyprus is close to the expected number of participants to the BTAs (and they are very likely to be the same individuals). Italian participation in the needs analysis was higher than expected, and included several teachers that would not take part in the BTAs themselves. While this helps us paint a more accurate picture of the Italian school, it also means that the Italian sample may not be representative of Italian BTA participants.

Gender of participants was severely skewed: 111 participants (83%) reported being women, 21 reported being men, and one skipped the question. The Italian sample had 70 women (84%) and one missing; the Bulgarian sample had 16 women (84%), the Greek sample 14 women (78%), and the Cypriot sample 11 women (92%). Fisher's exact test reports this difference as non-significant ( $p = .875$ ).

Mean ages were  $45.20 \pm 10.66$  for the whole sample,  $49.83 \pm 5.55$  for Italian teachers,  $38.42 \pm 9.87$  for Bulgarian teachers,  $32.72 \pm 8.27$  for Greek teachers, and  $42.67 \pm 6.37$  for Cypriot teachers. Italian teachers' average age is significantly higher than the age of Bulgarian teachers ( $p < .001$ ), Greek teachers ( $p < .001$ ), and Cypriot teachers ( $p = .038$ ). Additionally, Cypriot teachers are significantly older than Greek teachers ( $p = .012$ ). All other comparisons are non-significant. Figure A1 reports boxplots for teachers' age according to the Country they work in.

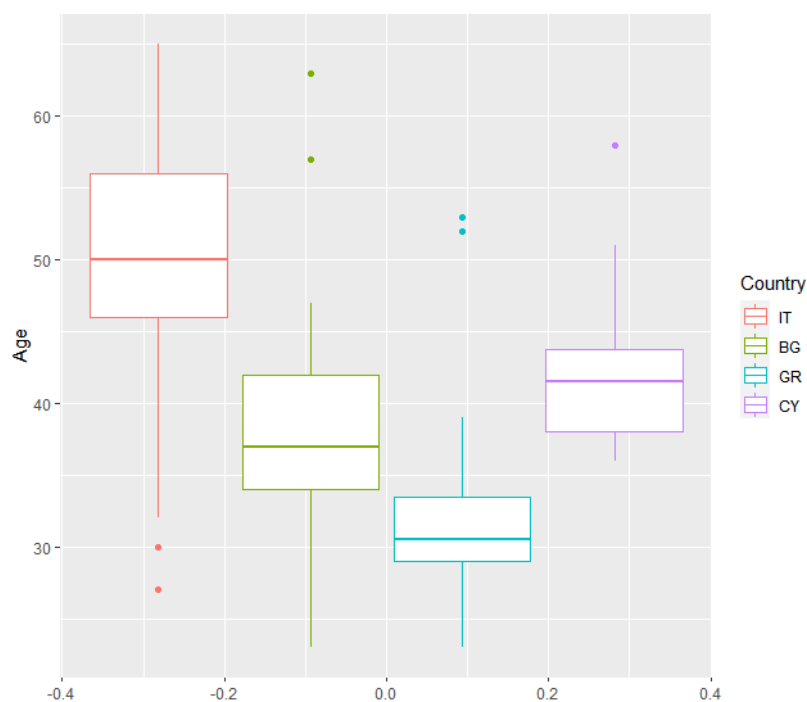


Figure A1. Teachers' average age by Country

<sup>10</sup> In the following, 'Italian school' and 'Italian teachers' will be used as shorthand for 'participants currently working in the Italian school' (and the same goes for participants working in the Bulgarian, Greek, or Cypriot school). Actual nationality or citizenship of the involved teachers was never collected, neither in the survey nor in the interviews.

Regarding educational qualification, among Italian teachers 8 (10%) report having a bachelor's degree, 49 (58%) a master's degree, and 4 (5%) a PhD; among Bulgarian teachers, 4 (21%) report having a bachelor's degree and 15 (79%) a master's degree; among Greek teachers, 3 (17%) report having a bachelor's degree and 13 (72%) a master's degree, and among Cypriot teachers, 5 (42%) report having a bachelor's degree and 9 (75%) a master's degree. The difference in school level distribution is not statistically significant ( $p = .442$ ).

## C.2 Professional background

Table A1 reports the subjects taught by teachers of each Country. Of note, 23 teachers from Italy selected the option "other" and reported being support teachers, i.e. teachers specifically devoted to closely following students with disabilities for all subjects. These professionals have become increasingly common in Italy, and represent a substantial proportion (18%<sup>11</sup>) of Italian teachers.

Table A1. Subject taught by Country

Subject taught	Italian teachers	Bulgarian teachers	Greek teachers	Cypriot teachers
<b>Humanities / Social sciences</b>	14	3	16	2
<b>History</b>	20	1	14	4
<b>Geography</b>	20	0	11	0
<b>Science</b>	12	2	9	2
<b>English / Foreign language</b>	8	4	4	0
<b>Maths</b>	13	0	17	1
<b>Arts</b>	5	1	1	0
<b>Physical education</b>	6	0	0	0
<b>Other</b>	35	6	1	7

<sup>11</sup> <http://scuola24.ilsole24ore.com/art/scuola/2019-10-07/il-miur-insegnanti-in-italia-oltre-800mila-posti-cattedra-170353.php?uuid=ACJ9Wnp>

All Italian teachers teach in lower secondary school, and all Greek teachers teach in primary school. The other two schools are mixed: 11 Bulgarian teachers teach in primary school, and 8 in lower secondary school, while among Cypriot teachers, 2 teach in primary school and 10 in lower secondary school. Years of experience as a teacher are  $18.80 \pm 10.27$  for Italians,  $10.05 \pm 12.22$  for Bulgarians,  $11.56 \pm 8.12$  for Greeks, and  $14.64 \pm 8.46$  for Cypriots. As for years of experience as a teacher *in the current school*, we observe  $9.85 \pm 7.90$  for Italians,  $7.05 \pm 9.23$  for Bulgarians,  $8.89 \pm 6.56$  for Greeks, and  $4.00 \pm 4.00$  for Cypriots. The drastically lower number for Cypriot teachers is in line with information reported in the interviews, as Cypriot ministerial policy requires teachers to change schools at least every 8 years.

### C.3 Learning design and practice sharing

Participants were asked how much time they devote, on average, on preparing one hour of teaching. Responses are reported in Table A2.

*Table A2. Frequency table for the reported average preparation time for each hour of teaching.*

	0-1 h	1-3 h	3-5 h	> 5 h
<b>Italian school</b>	29	45	4	3
<b>Bulgarian school</b>	9	9	1	0
<b>Greek school</b>	4	12	2	0
<b>Cypriot school</b>	5	5	2	0

No significant differences between schools were found ( $p = .752$ ). Results show that teachers devote, on average, ~1-2 hours of preparation for each hour of teaching.

Participants were then asked how often they reuse their own materials and someone else's materials (from 1=Never to 5=Always). Results are reported in Table A3.

*Table A3. means, standard deviations, and confidence intervals for the mean for the frequency of reuse of one's own and someone else's teaching materials*

	Reuse of own materials	Reuse of someone else's materials
<b>Italian school</b>	$3.32 \pm .81$ [3.15, 3.49]	$2.33 \pm .86$ [2.15, 2.51]
<b>Bulgarian school</b>	$2.84 \pm .76$ [2.49, 3.20]	$2.58 \pm .69$ [2.21, 2.95]
<b>Greek school</b>	$3.88 \pm .60$ [3.51, 4.26]	$3.28 \pm .57$ [2.90, 3.66]

<b>Cypriot school</b>	$3.92 \pm .79$ [3.47, 4.36]	$2.75 \pm .97$ [2.28, 3.22]
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As shown by confidence intervals, Bulgarian teachers reported reusing their own materials less often than teachers from the Greek and Cypriot schools. Reuse of someone else's materials is a rarer occurrence than reusing one's own, especially in the Italian and Cypriot schools. In this case, we observe a statistically significant difference between the Italian and Greek school, as Greek teachers reuse someone else's materials more often. It's important to note that a substantial proportion of Italian teachers (18%) reported never reusing other teachers' materials. This was one of the reasons that led to the decision to focus the second SJSTE on practice sharing.

Participants were also asked to rank five factors influencing learning design (available learning materials, available technologies, learning objectives, learning theories, students' needs) in order of importance. Responses to this question were analysed using Thurstone Case V Scaling (Thurstone, 1927) to obtain relative scales of importance between the five factors. Results are reported in Figure A2.

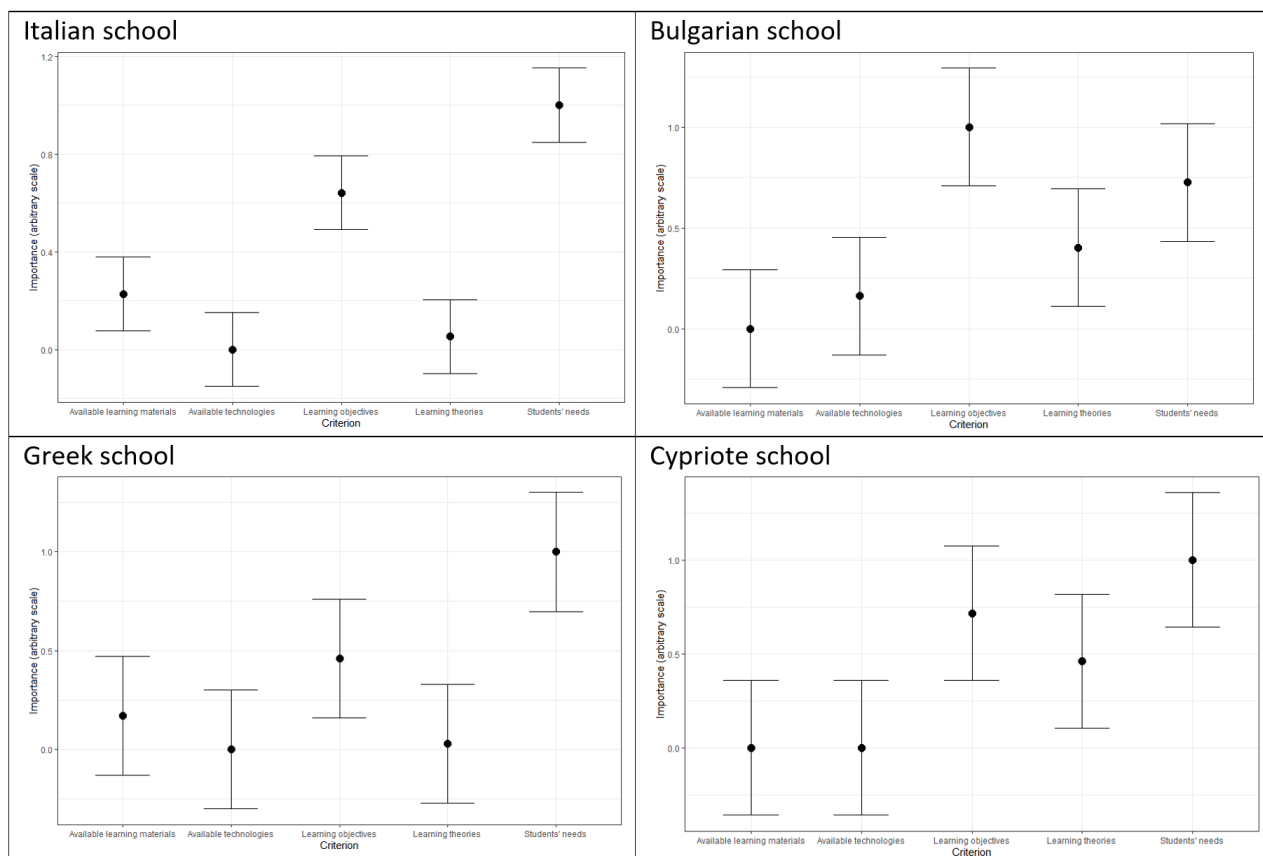


Figure A2. Estimated order of importance (on an arbitrary scale) for the five investigated factors influencing learning design. Results are reported separately for each school.

The pattern is roughly the same for all four schools, with relatively more importance attributed to students' needs and learning objectives, and little importance attributed to available learning materials and technologies. However, some interesting differences stand out: first, for Bulgarian teachers learning objectives have relatively more importance, to the point of surpassing students'

needs. The fact that Bulgarian teachers consider learning objectives of paramount importance was also an highlight of the interview. Secondly, learning theories are relatively more important for Bulgarian and Cypriot teachers, while for Italian and Greek teachers they are of very little importance.

Lastly, participants were asked if they had prior training on learning design. The proportion of teachers who reported having had prior learning design training was 74% for Italians, 78% for Bulgarians, 100% for Greek teachers, and 92% for Cypriot teachers. Therefore, when preparing teaching materials on learning design (mainly used in SJSTE 1), we could assume that most of participants would have at least cursory knowledge of learning design methods and tools.

## C.4 Collaborative learning experience and practice

First of all, participants were asked their degree of familiarity (from 1=not at all familiar to 5=Extremely familiar) both with the ideas and concept of collaborative learning, and with six key collaborative techniques that would be presented in the BTAs (jigsaw, roleplay, pyramid, peer review, discussion, and case study). . Responses are reported on Table A4.

*Table A4. Means, standard deviations, and confidence intervals for the familiarity with collaborative learning in general and with six specific collaborative learning techniques.*

	collaborative learning in general	Jigsaw	Roleplay	Pyramid	Peer review	Discussion	Case study
<b>Italian school</b>	3.35 ± 1.05 [3.13, 3.58]	2.06 ± 1.27 [1.76, 2.37]	3.11 ± 1.32 [2.84, 3.40]	2.01 ± 1.24 [1.73, 2.31]	3.44 ± 1.20 [3.17, 3.71]	4.16 ± .98 [3.97, 4.35]	3.23 ± 1.19 [2.96, 3.49]
<b>Bulgarian school</b>	3.11 ± .88 [2.64, 3.57]	2.78 ± 1.40 [2.15, 3.40]	3.89 ± 1.15 [3.33, 4.46]	2.61 ± 1.38 [2.01, 3.21]	3.28 ± 1.45 [2.72, 3.83]	4.68 ± .58 [4.28, 5.09]	4.32 ± .82 [3.81, 4.82]
<b>Greek school</b>	4.17 ± .79 [3.69, 4.65]	2.94 ± 1.43 [2.32, 3.57]	4.00 ± .84 [3.42, 4.58]	2.50 ± 1.29 [1.90, 3.10]	3.72 ± .89 [3.17, 4.28]	4.72 ± .57 [4.31, 5.00]	3.78 ± 1.00 [3.26, 4.30]
<b>Cypriot school</b>	3.42 ± 1.38 [2.83, 4.00]	2.27 ± 1.56 [1.47, 3.07]	3.25 ± 1.42 [2.54, 3.96]	2.20 ± 1.40 [1.40, 3.00]	2.36 ± 1.12 [1.65, 3.08]	4.17 ± .94 [3.66, 4.67]	3.08 ± 1.16 [2.45, 3.72]

Differences on general familiarity with collaborative learning are statistically significant, as Bulgarian and Italian teachers reported less familiarity than Greek teachers. Importantly, we observe very high variability: among Italian teachers, for example, we observe 17% of teachers reporting only slight familiarity with collaborative learning, but almost the same proportion (18%) reporting extreme familiarity with the concept. We could therefore expect that BTA participants would have very different starting competence on collaborative learning between themselves. This strengthened our belief that group work could benefit BTA participants, as each group could include participants with different strengths and weaknesses (see also subsequent sections), allowing them to learn from each other.

Regarding specific techniques, differences are statistically significant only for roleplay and case study. In both cases, it's Italian teachers that report less familiarity: for roleplay, less than Bulgarians, and for case study, less than Greeks. We can also observe that jigsaw and pyramid seem to be the less familiar ones for the survey participants, while high degree of familiarity was reported for the

discussion and — less so — for roleplay and peer review. However, it is possible (and, in the case of the discussion, very likely), that participants reported their familiarity with unstructured tools and techniques, rather than the structured version we will consider in the BTAs. For example, in the 4T framework, the discussion is a 2-step technique that should result in the creation of a shared artefact or report, and not an unstructured classroom discussion of a topic.

Participants were then asked how often they use collaborative learning face-to-face and online (from 1=Never to 5=All the times). Responses to these questions are reported in Table A5.

*Table A5. Means, standard deviations, and confidence intervals for the frequency of use of collaborative learning in face-to-face and online contexts.*

	Face-to-face	Online
<b>Italian school</b>	3.38 ± .51 [3.23, 3.53]	2.78 ± .96 [2.57, 2.98]
<b>Bulgarian school</b>	3.26 ± .81 [2.95, 3.57]	3.17 ± .79 [2.73, 3.60]
<b>Greek school</b>	3.78 ± .81 [3.46, 4.10]	2.78 ± .73 [2.34, 3.21]
<b>Cypriot school</b>	3.50 ± 1.17 [3.11, 3.89]	2.83 ± 1.19 [2.30, 3.37]

Differences are not statistically significant for either question. Italian and Greek participants reported using collaborative learning online less often than in face-to-face contexts. This is in line with interview results, at least for Greek teachers, as they reported having difficulties translating their collaborative learning techniques in an online environment (of note: the PLEIADE needs analysis was carried out during the COVID-19 school closures, which means that teachers all around Europe were struggling with the sudden need to carry out teaching in a fully online environment). Collaborative learning was always considered a core content of PLEIADE's BTAs but, following this result, more emphasis was put into considering both face to face and online collaborative learning core content of the course.

Lastly, participants were asked whether they attended collaborative learning training before. Prior experience with collaborative learning training was reported by 41% of Italian teachers, 38% of Bulgarian teachers, 88% of Greek teachers, and 50% of Cypriot teachers.

## C.5 Self-regulated learning (SRL)

As with previous sections, the first question asked participants their general familiarity with the concept. Results are 2.63 ± 1.00 [2.41, 2.86] for Italian teachers, 2.58 ± 1.02 [2.12, 3.04] for Bulgarian teachers, 3.61 ± .85 [3.14, 4.09] for Greek teachers, and 3.08 ± 1.31 [2.50, 3.66] for Cypriot teachers. Greek teachers seem therefore to be more familiar with the concept than Italian and Bulgarian ones. As with collaborative learning familiarity, we observe high variability within schools, suggesting that participants in the BTAs would have different levels of starting competence even when they work in the same school.

The next questions investigated teachers' SRL-related practice. Regarding how often they have the development of self-regulation skills as one of their teaching aims (from 1=Never to 5=Always), participants self-reported  $3.06 \pm .88$  [2.85, 3.28] (Italians),  $2.94 \pm 1.20$  [2.50, 3.39] (Bulgarians),  $3.89 \pm .83$  [3.46, 4.32] (Greeks),  $3.08 \pm .90$  [2.55, 3.61] (Cypriots). Greek participants seem therefore to consider SRL skill development of higher priority, compared with Italian and Bulgarian teachers.

The last questions of this section investigated how teachers develop their students' SRL. Participants were presented with different techniques that can be used to foster self-regulation, and were asked which of these, if any, they use. Each participant could select more than one response. Table A6 shows how many participants reported using each technique.

*Table A6. Use of techniques for the promotion of self-regulation skills. Cell values report how many survey participants reported they use each technique. Percentages refer to the total of participants from that school.*

	<b>Providing opportunities of choice in terms of aims and objectives of learning</b>	<b>Providing tools for self monitoring</b>	<b>Providing tools for time monitoring</b>	<b>Encouraging students to resort to help seeking</b>
<b>Italian school</b>	16 (19%)	20 (24%)	8 (19%)	31 (37%)
<b>Bulgarian school</b>	4 (21%)	7 (37%)	4 (21%)	9 (47%)
<b>Greek school</b>	8 (44%)	7 (39%)	5 (28%)	12 (67%)
<b>Cypriot school</b>	5 (42%)	4 (33%)	2 (17%)	5 (42%)
	<b>Providing students with opportunities for self-assessment</b>	<b>Providing students with opportunities for formative feedback</b>	<b>Providing students with opportunities of choice of learning strategies and tools</b>	
<b>Italian school</b>	45 (54%)	42 (50%)	28 (33%)	
<b>Bulgarian school</b>	13 (68%)	11 (58%)	4 (21%)	
<b>Greek school</b>	12 (67%)	13 (72%)	10 (56%)	
<b>Cypriot school</b>	4 (33%)	8 (67%)	5 (42%)	

Greek and Cypriot teachers seem to more often provide opportunities of choice of aims, objectives, and learning strategies, and seem also to resort more to formative feedback. Greek teachers, in particular, seem to be especially focused on encouraging help-seeking behavior. Italian teachers seem to rarely provide tools for self monitoring, while Cypriot teachers seem to offer relatively few opportunities for self assessment. Of note, the provision of tools for time monitoring seems to be an approach seldom used in all four schools involved in the project. As with previous questions, the high intra-school variability (as each technique seems to be used by some, but never all, teachers from each school) suggests that teachers' practice sharing, collaboration, and interaction could be especially fruitful.



## C.6 Inclusion

As in the previous sections, the first question asked participants their general familiarity (from 1=Not at all familiar to 5=Extremely familiar) with ideas and concepts related to social inclusion. Results are  $3.70 \pm .98$  [3.49, 3.91] for Italian teachers,  $3.24 \pm .75$  [2.78, 3.69] for Bulgarian teachers,  $3.78 \pm .94$  [3.33, 4.22] for Greek teachers, and  $3.73 \pm 1.01$  [3.16, 4.29] for Cypriot teachers. As with previous sections, we observe substantial intra-school variability; however, overall familiarity seems to be higher, as most participants report having at least cursory familiarity with the concept. This is in line with our expectations, since European projects and strategy put a lot of emphasis on the topic of social inclusion in the last years.

Subsequently, participants were asked how often (from 1=Never to 5=Always) they explicitly address the inclusion of socially, economically and/or culturally disadvantaged students when designing lessons. Results are  $4.23 \pm .71$  [4.07, 4.39] for Italian teachers,  $3.41 \pm .62$  [3.06, 3.76] for Bulgarian teachers,  $4.00 \pm .87$  [3.65, 4.35] for Greek teachers, and  $3.73 \pm .79$  [3.29, 4.16] for Cypriot teachers. Differences between schools are significant, as Italian teachers address social inclusion relatively more often than Bulgarians. It's interesting to note, however, that no teachers reported never addressing social inclusion.

Afterwards, participants were asked to self-evaluate their inclusion-related abilities (from 1=Very poor to 5=Excellent). Results are reported in Table A7.

*Table A7. Self-reported ability in several inclusion-related skills.*

	Ability to promote awareness for cultural diversity	Ability to compensate for economic disadvantage	Ability to prevent early school leaving	Ability to reduce and prevent bullying	Ability to promote gender equality and inclusion
<b>Italian school</b>	$4.23 \pm .77$ [4.05, 4.42]	$4.15 \pm .80$ [3.95, 4.35]	$3.86 \pm .85$ [3.65, 4.07]	$4.21 \pm .80$ [4.04, 4.39]	$4.36 \pm .80$ [4.17, 4.56]
<b>Bulgarian school</b>	$4.12 \pm .70$ [3.71, 4.52]	$3.67 \pm .69$ [3.25, 4.09]	$4.32 \pm .75$ [3.90, 4.73]	$4.32 \pm .67$ [3.96, 4.67]	$4.17 \pm 1.10$ [3.76, 4.58]
<b>Greek school</b>	$4.00 \pm .91$ [3.61, 4.39]	$2.94 \pm 1.11$ [2.52, 3.36]	$3.44 \pm 1.25$ [3.01, 3.87]	$4.22 \pm .65$ [3.86, 4.59]	$4.11 \pm .90$ [3.70, 4.52]
<b>Cypriot school</b>	$3.45 \pm 1.37$ [2.95, 3.96]	$3.45 \pm 1.44$ [2.92, 3.99]	$3.82 \pm 1.08$ [3.27, 4.37]	$4.10 \pm 1.00$ [3.61, 4.59]	$4.36 \pm 1.03$ [3.84, 4.89]

Overall, we can see that participants felt relatively confident in their abilities for the promotion of social inclusion. Some inter-school differences are, however, significant. Cypriot teachers feel less confident in promoting awareness for cultural diversity than Italian ones, despite — or, possibly, due to — working in the school with the highest rate of children with migrant or refugee backgrounds. Additionally, and in line with interview results, Greek teachers reported being less able to compensate for economic disadvantage than Italian ones. Bulgarian teachers feel more confident in preventing early school leaving than Greek ones. We observe no significant differences in self-reported capacity to prevent bullying and promote gender equality. In the interview,

however, the Greek school reported having some issues with bullying, despite the survey results being similar to other schools' teachers' self-reported capacity to deal with it.

Participants were then presented with a list of five different definitions of inclusion, and were asked to select which definition better matched their own vision of inclusion. Each participant could only select one definition. Results are reported in Table A8.

*Table A8. Frequency table for the preferred definition of social inclusion. Percentages refer to the total of participants from that school.*

	Inclusion has to do with learning to deal with students with special needs	Inclusion has to do with offering all students the same learning opportunities	Inclusion has to do with providing each individual student with opportunities to best develop their personality and attitudes	Inclusion requires to educate all the students to appreciate and understand individual differences	Inclusion requires to give special attention to disadvantaged students
<b>Italian school</b>	1 (1%)	17 (21%)	25 (31%)	37 (46%)	1 (1%)
<b>Bulgarian school</b>	1 (6%)	6 (35%)	7 (41%)	3 (18%)	0
<b>Greek school</b>	1 (6%)	3 (17%)	12 (67%)	2 (11%)	0
<b>Cypriot school</b>	0	0	7 (64%)	4 (36%)	0

This question highlights some interesting differences between participants. While the first and last definitions were seldom chosen in all four schools, the other three garnered more attention. The definition "inclusion has to do with providing each individual student with opportunities to best develop their personality and attitudes" was the most popular in all schools except the Italian one, in which "inclusion requires to educate all the students to appreciate and understand individual differences" was instead the most selected definition. Interestingly, no Cypriot teacher selected "inclusion has to do with offering all students the same learning opportunities", which was chosen by ~20-25% of teachers from the other schools. All in all, this question shows that Bulgarian participants seem relatively more interested than the others in providing the same learning opportunities, while Italians and Cypriots are more interested in educating on individual differences. Lastly, Greek and Cypriot teachers seem more interested than the others in providing students with the opportunities to best develop their personality and attitudes. Thus, this question highlighted both intra-school and inter-school differences regarding the main focus and vision of social inclusion. Accordingly, the BTAs included an activity (in SJSTE 1) to foster self-reflection and discussion regarding these different definitions and how they impact teaching practice. In order to try not to stamp out the richness that could come from different views on social inclusion, BTA planning strived not to provide a 'top-down' definition of social inclusion, rather preferring to discuss and negotiate it with the BTA participants.

Lastly, participants were presented with four different approaches to social inclusion (collaborative learning, individualised learning, peer teaching, and personalised learning) and were asked to rank them in order of preference. Responses to this question were analysed using Thurstone Case V Scaling (Thurstone, 1927) to obtain relative scales of importance between the five factors. Results are reported in Figure A3.

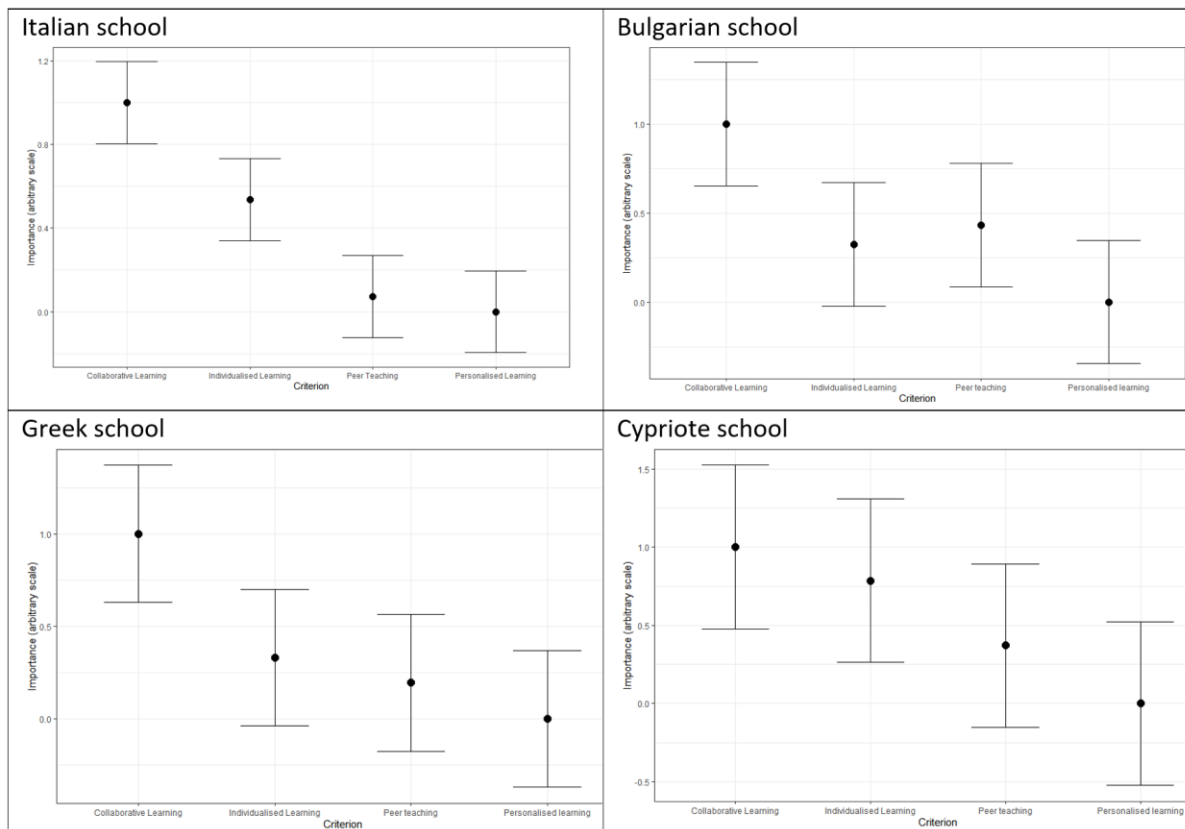


Figure A3. Estimated order of preference (on an arbitrary scale) for four approaches towards social inclusion. Results are reported separately for each school.

The pattern of preference seems roughly the same for all schools, although Italian and Cypriot teachers seem to appreciate individualised learning relatively more. Collaborative learning is the most preferred approach for teachers from all four schools. This results is expected, since teachers participating in the survey are likely to be interested and well-disposed towards PLEIADE's priorities and approaches, that are firmly rooted in the use of collaborative learning.

## C.7 Technological skills

In the last section, participants were asked to self-evaluate their degree of familiarity (from 1=Not at all familiar to 5=Extremely familiar) with several technologies used in education. Results are reported in Table A9.

Table A9. Frequency table for the self-reported degree of familiarity with nine technologies frequently used in education and learning design.

	Familiarity with digital devices for learning purposes (e.g. PCs, notebooks, interactive whiteboards)	Familiarity with remote learning platforms (e.g., Moodle, Edmodo)	Familiarity with video conferencing tools (e.g., Skype, Zoom)	Familiarity with communication and discussion tools (e.g., emails, forums)	Familiarity with collaborative writing and collaboration tools (e.g., wikis, Google Docs)
Italian school	4.14 ± .88 [3.95, 4.33]	4.15 ± .89 [3.96, 4.34]	4.34 ± .89 [4.14, 4.53]	4.10 ± 1.07 [3.87, 4.33]	3.79 ± 1.09 [3.52, 4.05]

<b>Bulgarian school</b>	4.58 ± .96 [4.19, 4.97]	4.47 ± 1.02 [4.08, 4.87]	4.58 ± .96 [4.18, 4.97]	4.63 ± .96 [4.16, 5.10]	4.12 ± 1.41 [3.55, 4.69]
<b>Greek school</b>	4.82 ± .39 [4.41, 5.24]	4.67 ± .59 [4.26, 5.07]	4.56 ± .62 [4.15, 4.96]	4.89 ± .47 [4.40, 5.37]	4.06 ± .94 [3.50, 4.61]
<b>Cypriot school</b>	3.60 ± 1.07 [3.06, 4.14]	4.27 ± .79 [3.76, 4.79]	4.09 ± .94 [3.57, 4.61]	3.73 ± 1.56 [3.11, 4.35]	3.36 ± 1.80 [2.65, 4.07]
	<b>Familiarity with Open Educational Resources (OER) and other web resources</b>	<b>Familiarity with software for presentations (e.g., PowerPoint, Prezi)</b>	<b>Familiarity with social media platforms (e.g., Facebook, Twitter)</b>	<b>Familiarity with instant messaging tools (e.g., Whatsapp, Telegram)</b>	
<b>Italian school</b>	3.12 ± 1.22 [2.82, 3.42]	3.57 ± 1.08 [3.44, 3.90]	3.61 ± 1.39 [3.32, 3.90]	4.33 ± .99 [4.11, 4.56]	
<b>Bulgarian school</b>	4.06 ± 1.26 [3.45, 4.66]	4.47 ± 1.12 [4.01, 4.94]	4.63 ± .96 [4.05, 5.21]	4.53 ± 1.02 [4.07, 4.98]	
<b>Greek school</b>	3.72 ± 1.45 [3.12, 4.33]	4.67 ± .69 [4.19, 5.14]	4.56 ± 1.04 [3.96, 5.15]	4.33 ± 1.19 [3.86, 4.80]	
<b>Cypriot school</b>	2.73 ± 1.62 [1.95, 3.50]	4.27 ± .90 [3.66, 4.88]	3.91 ± 1.22 [3.15, 4.67]	4.18 ± .75 [3.58, 4.78]	

This section of the survey highlights some significant differences between teachers, as Cypriot teachers report lower familiarity than Bulgarians and Greeks with computers, notebooks and interactive whiteboards, which could pose a problem in a blended course. On the other hand, Greek teachers report higher familiarity with communication tools. Bulgarian teachers report higher familiarity than Italians and Cypriots with OER. Lastly, Italian participants report relatively lower familiarity than Bulgarian and Greeks with both presentation tools and social media.

Of note, familiarity with OERs was relatively low, while familiarity was medium to high for all other technologies mentioned. This was especially important for technologies that will be directly used in the BTAs, such as Moodle, presentation software, and collaborative writing tools. As practice sharing will be discussed in the second SJSTE (module 4), some information on the purpose and structure of OERs can be provided there.

Finally, participants were asked their frequency of use of educational technologies (from 1=Never to 5=Always) before and during the COVID-19 school closures. Results are reported in Table A10.

*Table A10. Frequency table for the frequency of use of educational technologies before and during the COVID-19 school closures.*

	<b>Before the COVID-19 school closures</b>	<b>During the COVID-19 school closures</b>
<b>Italian school</b>	3.54 ± .75 [3.36, 3.71]	4.66 ± .53 [4.56, 4.77]

<b>Bulgarian school</b>	3.89 ± 1.20 [3.53, 4.26]	4.84 ± .50 [4.62, 5.00]
<b>Greek school</b>	4.78 ± .43 [4.41, 5.15]	5.00 ± .00 [4.77, 5.00]
<b>Cypriot school</b>	4.18 ± .75 [3.71, 4.66]	4.55 ± .52 [4.26, 4.83]

As could be expected, use of technology sharply increased during emergency remote education. Most of the participants, however, also reported relatively frequent use of educational technology prior to the pandemic (more so for Greek teachers).