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# Personalized Learning within Teacher Education
# A Framework and Guidelines



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|---|---|
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## Abstract

A key challenge for teacher education globally is to 'equip all teachers for effective learning in the 21st century' (OECD 2011). In Higher Education, as well as schooling, the ground is shifting, 'quietly but steadily', away from a teacher-centred to a learner centred approach, through which educators increasingly 'adapt their teaching in accordance with a more complex understandings of human learning' (Bok 2006, p. 342). The learning paradigm is consistent with the view that, in an ever changing world, which requires creative minds, the best thing we can do for our students is to teach them 'how to learn' (Weimer 2002, p. 50).

This shift from a teaching, to a learning, paradigm demands a new generation of aspiring teachers who are themselves, self-directed learners. To achieve this, teacher education programmes need to facilitate student teachers to fully understand and experience the importance and transformative impact of personalised learning so that they, in turn, can help future students to be confident, reflective, autonomous learners.

This paper describes the outcomes of an Erasmus + project[2] to develop *a Framework and Guidance for Personalized Learning within Teacher Education* and to implement and test innovative personalised learning practices across teacher education institutions to promote creativity, critical thinking and the active participation of learners in taking responsibility for their own learning and achievement.

The paper explores the theoretical and practice elements that together inform the concept of personalised learning. These insights are then used to develop a *Framework for Personalized Learning within Teacher Education*. In addition, the final chapter outlines pedagogical strategies to support the development of personalised learning that were tested during the project within the participating universities.

The *Framework and Guidelines* are intended for use by to teacher educators and their students, as well as by teachers and students in schools, to support the on-going shift towards a personalised learning and collaborative paradigm which forefronts learner agency and autonomy and encourages learners of all ages to assume increased responsibility for their own learning and achievements.


[2] Undertaken by a Higher Education consortium of Lithuanian Universities (Siauliai University, Vytautas Magnus University, and Vilnius University) which partnered with the University of Iceland and University College Cork in Ireland to form an international partnership known as INTERPEARL.

# 1. Introduction

## 1.1 The Traditional Education Paradigm

Many traditional education systems continue to provide a one-size-fits-all approach, where learning remains undifferentiated and all learners are expected to progress at the same time through the same courses. The hallmark of traditional learning of this kind has been the separation between knowing and doing in which there is often a failure to access and apply knowledge that is relevant to solving the problem at hand. Information is often stored as facts rather than tools or the knowledge gained remains 'inert' (Bransford et al., 1990). Additionally, there is often a failure to take account of participants' existing knowledge, beliefs and practice When learning and context are separated in this way, learners tend to see knowledge itself as the final product of education rather than as a tool to be used dynamically (Herrington & Oliver, 2000).

## 1.2 Project Rationale

As life-long learning has become an indispensable facet of globalization, so learning in any place at any time has become increasingly important (Grant and Basye, 2014). Empirical data confirms that to achieve meaningful progress, change agents must take account of participants' existing knowledge, beliefs and practice (Elmore, 2004; Fullan, 2005). While significant strides have been made in many sectors of education to shift the traditional teaching paradigm towards one which is more learning focused, nevertheless, personalized learning within teacher education has remained a relatively new concept in many countries, where HE institutions still tend to follow a traditional teaching model. To ensure quality education for all teachers themselves must have both the theoretical understanding and the pedagogical skills to enable learners to develop the competencies to work in a rapidly changing education environment.

## 1.3 Project Aim and Objectives

The on-going transition from a traditional teacher-dominated to a learner-dominated paradigm requires a major shift in the culture of Higher Education towards much greater personal involvement of learners in the design implementation and evaluation of their own personalized learning journey. This project has explored the theoretical underpinnings of the concept of Personalised Learning (PL) with the aim of developing and testing a PL framework within teacher education in order to enhance and transfer innovative PL practices across teacher education programmes. The objective is to provide a personalized learning journey for aspiring teachers that enables them to understand and experience its potentially transformative impact so that they, in turn, may enable their own future students to become confident, reflective, autonomous learners. By employing participatory approaches that emphasize the personalization of learning it is also intended to support teacher educators and their students to address issues of social, ethnic, linguistic and cultural equity, diversity and inclusion in education.

# 2. Literature Review

## 2.1 Purpose

To ensure that the proposed *Personalised Learning Framework for Teacher Education* is well-grounded in educational theory and practice, the project team conducted a literature review of prominent theories and approaches that are relevant to personalised learning[3]. These are summarised below.

## 2.2 Exploring Theory and Practice

### *2.2.1 Funds of knowledge and learner resources*

The concepts of funds of knowledge (Gonzalez et al, 2005) and learners' resources (Rodriguez, 2007) help frame the concept of Personalized Learning (PL). They are responsive practices built on an understanding of learner development, individual differences and inclusion. These concepts challenge teachers to search for pedagogy and practices that will help them addressing diversity in their classroom (Guðjónsdóttir, 2000). Educators and teachers are committed to the education of all learners and have a knowledge base, which enables them to differentiate the curriculum according to the learners.

### *2.2.2 Social theory of learning*

A traditional view of learning has tended to view it as an individual process that arises from teaching, that has a beginning and an end and that tends to be separate from other activities. By contrast, the social theory of learning considers learning as social participation, where learners are active participants in social communities and construct identities in relation to these communities. Communities of practice exist amongst groups of people 'who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis' (Wenger et al. 2002, p. 4). Wenger identified four components of a social theory of learning (Wenger, 1999). The key components include:

i. **Meaning**. A way of talking about our (changing) ability – individually and collectively – to experience our life and the world as meaningful;

ii. **Practice**. A way of talking about the shared historical and social resources, frameworks, and perspectives that can sustain mutual engagement in action;

iii. **Community.** A way of talking about the social configurations in which our enterprises are defined as worth pursuing and our participation is recognizable as competence; and

[3] Viz: *Funds of Knowledge and Learner Resources; Social theory of learning; Learner Agency and Empowerment; Inclusive, individualised, differentiated learning; Environment and Collaboration; Learning Communities; Communities of practice; Universal Design for Learning (UDL)*; *Reflection; Reflection in Action and Core Reflection, Blended Learning and Situated*

iv. **Identity.** A way of talking about how learning changes who we are and creates personal histories of becoming in the context of our communities.




***Figure 1:*** *The components of a social theory of learning (modified according Wenger, 1999)*

### *2.2.3 Learner agency and empowerment*

The goal of PL is to increase students' agency and empowerment over their own learning at every level (Freire, 1998). As such, personalized learning includes several essential aspects of effective learning (Williams, 2013) viz:

- Good knowledge of the individual as a learner;
- Shared student and teacher responsibility for learning;
- Learner involvement, linking to individual experience, aspirations and motivation to acquire new knowledge and skills;
- Collaboration, participation and involvement in the learning process; and
- Effective use of Information Technology and other learning resources.

### *2.2.4 Inclusive, individualised, differentiated learning*

Personalised learning is closely related to inclusive, individualised, differentiated learning (Abbot, 2014; EDUCAUSE, 2013) although the concept of the latter may be more oriented to teacher considerations rather than to learners (Bray and McClaskey, 2012). PL is also closely

related to personalised teaching (Lupton, 2014) in the sense that the educator's role is oriented to support and facilitate learning, recognising that learning can be messy, non-linear and indirect (Grant and Basye, 2014).

### *2.2.5 Environment and collaboration*

PL addresses the needs of the whole student or the whole learner (Guðjónsdóttir, 2000) and is enhanced by formative assessment (Wiggins, 1998) and a humane school and classroom environment, where educators and teachers create diverse learning spaces (Guðjónsdóttir, Óskarsdóttir, Gísladóttir & Wozniczka, 2015). PL also emphasizes the use of open, flexible, innovative and creative teaching methods and builds on cooperation and collaboration, group work and teamwork ((Guðjónsdóttir & Óskarsdóttir, 2016).

### *2.2.6 Learning communities*

The theory underpinning 'Learning Communities' is rooted in the work of John Dewey (1910), Lev Vygotsky (1978), and Paul Freire (1996), who perceived learning as a reflective, constructivist, shared, and student-centred process. Additionally, Vygotsky observed a horizon, or 'zone of proximal development' within which immediate learning and cognitive development might occur with appropriate and timely support.

Miller (1999) highlighted the concept of transformational learning as a part of the process of creating learning communities. As society becomes more complex and moves at a faster pace, the challenge is to devise learning methods that offer a balance of core content and individualized learning that allows an individual to evolve in her/his own appropriate way.

The shifting context of information will become the new environment of learning. All learners will need to become open to new ideas, to develop the ability to ask appropriate questions, to rethink, reorganize, redesign and experiment with ideas, combining, connecting and integrating disparate ideas in different ways; using new tools of communication; and receiving feedback to support the systemic integration of core competences.

A learning community is any one of a variety of curricular structures that link together several existing courses, or actually restructure the curricular material entirely so that students have opportunities for deeper understanding and integration of the material they are learning, as well as more interaction with one another and their teachers as fellow participants in the learning enterprise (Gabelnick, at al 1990, p. 19). Some communities may include members who share common students, areas of responsibility, roles, interests, goals. Learning communities tap internal and external expertise and resources to strengthen practice and student learning.

Learning communities provide a structure through which students can appropriate and control their own learning. Ideally, students self-navigate, reflect upon, and integrate experiential and academic learning as part of the ongoing process of meaningful knowledge construction. Integrative learning refers to an 'understanding and a disposition that a student builds across the curriculum and co-curriculum, from making simple connections among ideas

and experiences to synthesizing and transferring learning to new, complex situations within and beyond the campus" (Newell, 2010; AAC & U Rubric).

Learning communities provide students with the opportunity to build a network of peer support, easing the transition from their familiar, local, and provincial neighbourhoods and learning culture to the more anonymous, academic and cosmopolitan setting of the school or university, replacing the sense of loss and estrangement with a shared sense of belonging (Tinto, 1997). Diverse students work together toward shared goals, each contributing his or her own perspective, -integrating what is relevant from personal histories, connecting these to current tasks, creating new frameworks, and then referring to collective products to shape and interpret new experiences. Working together, students become proficient at self-re-evaluation of what they think they know and how they know it. Together they learn how to renegotiate old perspectives and make way for new ones, constructing communities of shared knowledge and understandings that bridge their diverse social and academic worlds.

*2.2.7 Communities of practice*

The concept of communities of practice is grounded in socio-cultural theories of learning and development which contend that all human development is founded upon social interaction in cultural/historical practices that are mediated by the use of cultural artefacts, tools, and signs (Cole, 1996; Vygotsky, 1978; Wenger, 1999). Human social and cognitive development occurs through participation and collaboration with others in cultural activities and practices (Rogoff, 2003; Wenger, 1999). Wenger (1999) proposes that the kind of social theory of learning is not a replacement for other theories that address different aspects of the problem (e.g. neuropsychological theories, behaviourist theories, cognitive theories, etc.).

Reflection refers to systematic thinking – a meaning-making process, which involves a conscious goal of personal and intellectual growth (Rodgers, 2002). During discussion and interaction, all learners critically evaluate their prior understanding of social, scientific, and academic realities to achieve higher levels of awareness regarding 'mind, self, and society'. In tandem, faculty and tutors work together to provide supportive pedagogical structures which support student exploration and evidence-based learning. They create staged and 'scaffolded' assignments, often based on a common theme, facilitating the integrative learning that takes place across the curriculum and the semester. Collective responsibility and participation foster peer-to-peer support for learning and maintain a consistent focus on shared goals within and across communities of practice.

Use of technology can facilitate and expand community interaction, learning, resource archiving, and knowledge construction and sharing. Some educators may meet with peers virtually in local or global communities to focus on individual, team, school, or school system improvement. Often supported through technology, cross-community communication within schools, across schools, and among school systems reinforces shared goals, promotes knowledge construction and sharing, strengthens coherence, taps educators' expertise, and increases access to and use of resources. Communities of learners may be various sizes, with members who have similar or different roles or responsibilities and may meet face-to-face, virtually, or both. Educators may be members of multiple learning communities.

### *2.2.8 Communities of practice in teacher education*

Socio-cultural theories of learning place language, culture and community at the front and centre of the development process, making them ideal organizing principles in teacher courses (Jimenez-Silva, Olson, 2012).

'Communities of Practice' pedagogy in teacher education courses has the potential to help learners to build connections between theory and practice for diverse student populations. Teacher education programs require not just hours of observation and practice teaching, but also hours of structured dialogue as part of the intermediate field experience. Field experiences serve as the intersection of two communities of practice, represented by the mentor teacher / pre-service teacher dyad.

In such an approach, candidates and cooperating teachers would schedule a significant time, at least an hour per week, in which to engage in structured dialogue about teaching practice. Both parties would bring problems of practice to the dialogue, and both would be responsible for generating solutions, and considering the means of implementing those solutions. In an ideal context, multiple teacher candidates and cooperating teachers in the same school or department would meet within this structured dialogue group to maximize the generative nature of dialogue.

One function of this pedagogy is to assist student teachers to get to know the background, cultural practices and skills of a student in the context of local practice. The use of this inherent design feature may help to establish improved norms for teaching and learning in schools, especially for diverse student populations. The success of the field experience depends upon the ability of the student teacher to make connections across the two communities.

### *2.2.9 Universal Design for Learning (UDL)*

Universal Design for Learning (UDL) is underpinned by neuroscientific research and is designed to improve the educational experience of all students by introducing flexible methods of teaching, and assessment and service provision to cater for different learners. UDL proposes a set of principles for curriculum development which guide the design of instructional goals, assessments, methods, and materials so that they can be customized and adjusted to meet individual needs to ensure that all individuals have equal opportunities for learning including students with special needs. These principles have coalesced into the current UDL framework and guidelines (CAST, 2018) which ultimately require teachers to incorporate greater flexibility within and across teaching activities and assessment practices to engage individual students effectively in the learning experience.

UDL as a framework recognizes that students learn best in a variety of ways. This recognition of learner variability forms the basis for creating instructional goals, methods, materials, and assessments that work for everyone – not as a single, one-size-fits-all solution, but rather, focusing on eliminating barriers to learning by considering the needs of diverse learners in the initial design, rather than overcoming barriers later through individual adaptation.
The advent of wider participation in Higher Education means that a cohort of students can include lifelong learners, international students, pioneer /first generation students, students

with disabilities and mature students in one grouping. If we think of students as following a particular profile and consequently forming one homogenous mass, we rob the students of their individuality and can disadvantage those whom we perceive as different. As educators, we need to reflect on our own classrooms and on our practice to ensure that teaching and learning practices in all settings reflect the increasing diversity present in the classroom.

Drawing on neuroscience and cognitive psychology, the UDL framework emphasizes the three main brain networks which are central to learning, namely: the Affective Networks (which inform the "why of learning"); the Recognition Networks (which inform the "what of learning") and the Strategic Network (which informs "the how of learning") (see Figure 3).

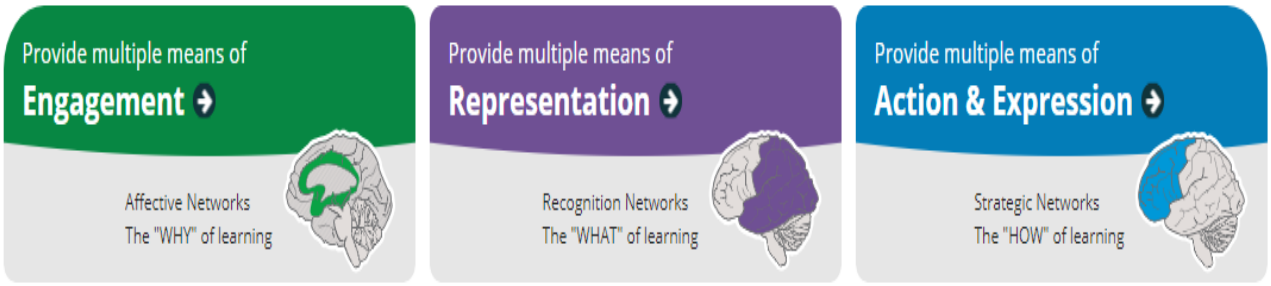



***Figure 2.*** *Brain networks central to learning (CAST, 2018)*

The UDL framework provides a strong curriculum design focus for the development of personalised learning. The three principles of UDL require teachers to provide multiple means of engagement, expression and action to support the development of self-directed, autonomous learners. Through this approach students can become more responsible for their own learning, take more initiative in how they demonstrate their understanding, and navigate their own learning path in response to their interests and needs. The UDL framework can be utilized by teacher educators and by student teachers alike during teacher education.

### *2.2.10 Reflection*

Reflective practice involves assessing our own thoughts and actions for the purpose of personal learning and development. It encourages practitioners to reflect on their normal way of thinking and responding within a given situation in order to gain insights into themselves and their own practice.

The discourse on reflective practice can be traced to John Dewey, who emphasized the importance of teachers integrating theory and praxis, being aware of their decision making, and exploring their everyday practice (Dewey, 1933; Harford & MacRuairc, 2008). Schön (1987) developed the concept of reflective practice further, as one through which professionals become aware of their implicit knowledge base and learn from their experience.

Moon's (1999) model of reflection defines 'common sense' reflection as 'a form of mental processing with a purpose and/or anticipated outcome that is applied to relatively complex or unstructured ideas for which there is not an obvious solution'. Reflection arises from the outcomes of learning and provides material for further reflection and action. First, it is

important to *notice*, and seek to *make sense* and *make meaning* by creating relationships between new material with other ideas, *working with meaning;* to *transform learning* (Moon, 2001) and inform the practice (Jasper, 2003). The reflective cycle involves six aspects of reflection, 1) a clear description of the situation 2) analysis of feelings 3) evaluation of the experience 4) analysis to make sense of the experience 5) conclusion and reflection upon experience to identify what to do if the situation occurred again and, finally 6) developing an action plan.

Gibbs' (1998) model of reflection acknowledges that personal feelings influence the situation and how one reflects upon it. It builds on Boud's (Boud et al, 1985) model by breaking down reflection into evaluation of the events so that there is a clear link between the learning that has taken place as a result of the experience and future practice. Boud's triangular representation (Figure 3) represents the core notion that reflection leads to further learning.

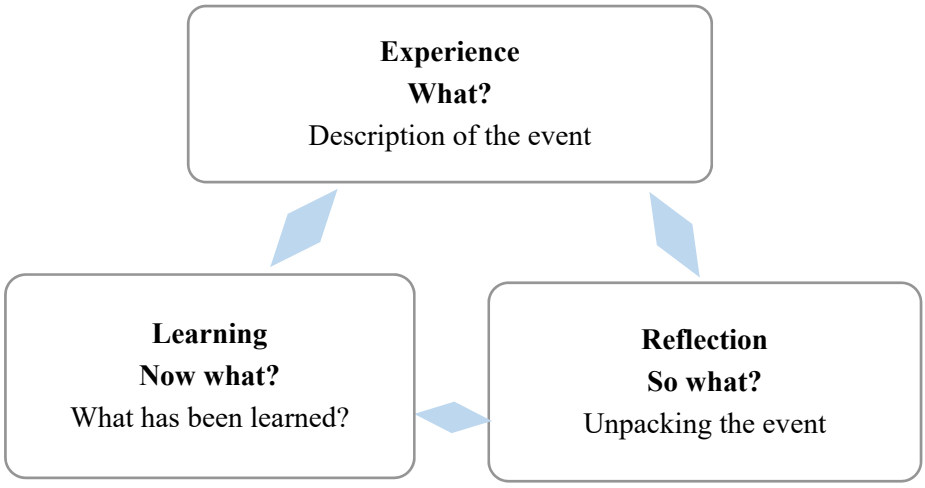



***Figure 3.*** *Boud's triangular representation (according to Boud et al, 1985)*

Kolb's model of reflection (The Kolb Cycle or The Experiential Learning Cycle 1984) identified a constructive way to develop practice. The cycle consists of four different stages of learning from experience (*'do', 'observe', 'think'* and *'plan'*) that can be applied at any stage on the basis that:

- it is not sufficient only *'to do'* in order to learn.
- It is also necessary to
  - *'observe'* to generalise and formulate concepts
  - *'think'* how the learning can be transferred and implemented in new situations
  - *'plan'*, by making a link between the theory and action

### *2.2.11 Reflection in action*

Teachers, including teacher educators, need to be able to negotiate the complex realities they encounter in their everyday practice. Critical reflection is the ability of teachers to think about their practice, develop an understanding of it by questioning and systematically evaluating it,

and make decisions to respond or act. Similarly, student teachers need to develop the ability to critically reflect on their own work and how it evolves through feedback. They can achieve that by exploring theories of teaching and learning, and by planning for effective change (Loughran, 2002; Watts & Lawson, 2009). This ability to analyse and make meaning from one's own experience is crucial for the development of professional knowledge.

Schön (1987) made a distinction between 'reflection *in* action' and 'reflection *on* action'. He defined 'reflection *in* action' as a reflection on behaviour as an event occurs, in order to optimize action following the event. On the other hand, 'reflection *on* action' refers to reflection after an event in order to explore, analyse, and evaluate the event and gain insight for improved practice in the future. Schön suggests that the process of reflective practice resembles a ladder of reflection, meaning that every action is followed by reflection and every reflection is then followed by an action recurrently. In his understanding, the products of reflections become the objects for further reflections (Schön, 1987).

Professional activity, including the work of teachers, tends to be understood as one of problem solving Biesta (2019). However, professionals, including teachers, do not simply solve problems that are given to them, but are also involved in 'problem setting' (Biesta, 2019) i.e. working out what the problem actually is. Similarly, Schön (1987) argued that when focusing on problem solving, we tend to ignore problem setting, highlighting that, in everyday practice, problems are rarely predetermined or given – they are puzzling, uncertain and ever changing (Schön, 1987). This requires exploring the events that one encounters in everyday practice and conversing with the 'real situations' that enable practitioners to frame the situation within its theoretical underpinnings and develop an awareness and "feel" for their practice (Biesta, 2019).

### *2.2.12 Core reflection - The Onion Model*

Reflection is now widely used in educational settings, especially in teacher education programmes' statements and course content. Yet, it does not always lead to optimal learning or the intended professional development (Korthagen & Vasalos, 2010; Russell & Martin, 2019) because reflective practice involves various epistemological challenges, including reasoning and sense-making (Russell & Martin, 2019). Rather than being a linear and logic process of identifying challenges and responding to them, reflection is much more complex (Korthagen & Vasalos, 2010). Teachers are not only guided by cognitive thinking, but also by their emotions and personal needs. If the practitioner is the central instrument in teaching practice, it is important to acknowledge personal frames of reference.

Korthagen and Vasalos (2010) argue that in order for teachers to make changes in their underlying sources of behaviour, they need to touch upon how their mission as teachers influence their professional identities and the behaviour and competences they develop to carry out their work within different environments. These challenges need to be adequately introduced to students by experienced teacher educators whose role is to construct a learning space for students where they are in control of their studies, where they can reflect on their learning and develop their work through continuous feedback (Guðjónsdóttir, Jónsdóttir, & Gísladóttir; 2017). If teacher educators fail to do this, reflective practice is reduced to being a

technical tool to achieve quick solutions to problems that are superficially defined (Russell & Martin, 2019; Schön, 1991).

Korthagen and Vasalos (2010) built on earlier models of reflection by adding a framework for core reflection. The core reflection model is presented as an "onion" with fi layers which are all equally important and represent different elements of one´s professional identities. The model can assist in identifying, naming and determining how these elements interact. Getting to know the core of one's individual professional identity can be empowering and liberating.

Figure 4 represents the Onion Model for a person in a given environment. In the model, *Environment* applies to everything that is outside of the professional person: for example, *other people, conditions, and events*. For teacher educators, the environment may include students, co-workers, learning environments, educational policies and institutional culture with all its implicit and explicit norms. The questions related to the environment are: *What do I encounter? What am I dealing with?*

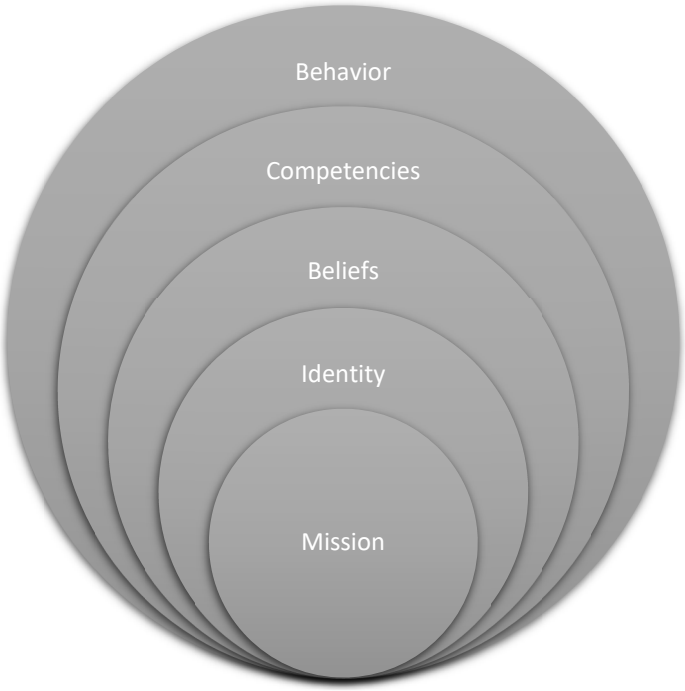



***Figure 4.*** *Environment - The Onion Model (Korthagen & Vasalos, 2010)*

Inside the professional person are the following five layers (together with the corresponding questions) that influence how that person feels, thinks and acts:

Layer 1: *Behaviour* refers to how a person works and responds to challenges at work. *What do I do?*

Layer 2: *Competencies* constitute a person's professional strengths. *What am I competent at?*

Layer 3: *Beliefs* are understood as often-unconscious assumptions about the world. *What do I believe?*

Layer 4: *Professional identity* describes what kind of a professional a person thinks he or she is and what kind he or she wants to be.

*Who am I (in my work)?*

Layer 5: *Mission* includes the inspiration, meaning, and significance in work and life. *What inspires me? What greater entity do I feel connected with?*

According to Korthagen and Vasalos (2010), when a person becomes more in touch with the inner levels of the onion, that core begins to influence the outer levels. Therefore, connecting to all the levels in the Onion Model is helpful in understanding tensions and challenges within a person and in the environment and in a long run, it provides opportunities of bringing innovative ideas and alternative approaches into one's practice (Guðjónsdóttir, Jónsdóttir, & Gísladóttir; 2017).

### *2.2.13 Blended learning*

Blended learning is a combination of face-to-face learning experiences and online learning platforms, content and tools for personalising instruction. The tools used in blended learning can support flexible pacing, differentiated instruction, immediate interventions and ubiquitous learning. As Patrick, Kennedy & Powell put it, 'True blended learning is a modality to realize a fundamental shift in the instructional model toward personalised learning. […] Blended learning instructional designs leverage the strengths of both the classroom and online modalities. The blended learning instructional model shifts have the potential to result in "learning optimisation" to create more personalised learning opportunities" (2013, p. 9).

Horn and Staker's (2013) definition of blended learning suggests that the blended modality should enable the student to have increased control over time, place, path and pace. This warrants the use of personalised learning environments, whose modes may vary to some degree. Importantly, the term 'blended learning' encompasses not only online environments but also an entire set of resources that the learner uses to answer questions, provide context and illustrate processes. Thus, the term refers not to a specific service or application but rather to an idea of how individuals approach the task of learning.

Four blended learning models which imply differences in learning environments (Christensen, Horn, Staker, cited in Patrick, Kennedy & Powell, p. 13) include:

1) **The Rotation Model** in which, within a given course or subject (e.g., math), students rotate on a fixed schedule, or at the teacher's discretion, between learning modalities, at least one of which is online learning. Other modalities might include activities such as small group or full-class instruction, group projects, individual tutoring and pencil-and-paper assignments. The Rotation Model has four sub-models as follows:

    - **Station/**Classroom Rotation Model): students rotate within a defined space.
    - **Lab Rotation Model** – students rotate between a classroom and on-line learning;
    - **Flipped Classroom Model** - students rotate between face-to-face teacher-guided practice (projects) and off-site location/home for online content and instruction;
    - **Individual Rotation Model** each student in essence has an individualised playlist and does not necessarily rotate to each available station or modality.

2) **Flex Model** – Students move on an individually customised, fluid schedule among learning modalities, and the teacher of record is on site.

3) **A La Carte Model** - students take one or more courses online on campus or off-site. At the same time continue to have 'brick-and-mortar' experiences in school/university.

4) **Enriched Virtual Model** students divide their time between attending a brick-and-mortar campus and learning remotely using online delivery of content and instruction.

PL implies that each environment provides the tools, communities and services that learners need to direct their own learning and to pursue their educational goals (see ELI, 2009). Such environments might incorporate, for example, transparent data dashboards showing real-time information; tools to support optimised pathways along a personalised learning journey toward graduation; PL maps for enhancing students' interaction which offer adequate platforms for learner-centric personalisation.

### *2.2.14 Situated learning*

Situated learning is defined as "learning knowledge and skills in contexts that reflect the way the knowledge will be useful in real life" (Collins, 1988; p. 2). A critical aspect of the situated learning model is the notion of the apprentice observing the 'community of practice'. Lave and Wenger (1991) propose that participation in a culture of practice can be observation from the boundary or 'legitimate peripheral participation'. As learning and involvement in the culture increase, the participant moves from the role of observer to fully functioning agent (Herrington & Oliver, 2000). According to the situated learning model, while knowledge must be learned in context, that context can be the actual work setting, a 'virtual' surrogate of the actual work environment, or an anchoring context such as a video or multimedia program (McLellan, 1994; p. 8). The elements of situated learning are described in Table 1.

## 2.3 Connecting Theory and Practice

The project team reflected on the foregoing theoretical and practical approaches to consider what aspects of the theories and practices explored should be taken into account to ensure a theoretically well-informed *Framework for Personalised Learning* grounded in effective practice.

# 3. A Framework for Personalized Learning in Teacher Education

## 3.1 Defining Personalised Learning

Learning is a complex process, through which learners have opportunities to construct conceptual knowledge and understanding in collaboration with others. Personalized Learning (PL) in teacher education is concerned with how modes of teaching influence student-teacher learning and, in turn, how the ways in which student teachers learn may influence their future teaching. PL therefore involves not only *what* and *how* student teachers are learning, but also how the design of the learning process and environment influence the quality of their learning and their own future teaching of others.

The Personalised Learning Framework recognises the interconnection of the learner and teacher journey and their joint responsibility for this endeavour. Personalisation theory therefore places the co-creation of learning upfront, encouraging educators to think outside the box by emphasising the need for learners to be involved in designing and reflecting on their own learning process (Campbell & Robinson, 2007). Personalised learning also focuses on the student agency and the personal resources and active role, interests, choices and priorities that learners bring to the learning process, i.e. deciding *what, how, where and how* to learn and *how to use learning* in a constantly changing learning environment. PL is therefore a progressive learner-driven model, through which student teachers engage actively, deeply and reflectively in rigorous challenges and meaningful authentic tasks to demonstrate desired outcomes (Zmuda, Curtis and Ullman, 2015).

The concept embraces four core elements:

a) Collaborative dialogue, co-construction, personal reflection and mutual ownership by learners and teachers;

b) Flexible content, tools, and learning environments to facilitate learners' interests and needs and teacher-learner collaboration;

c) Targeted support in response to learner interests and needs, through learning communities and communities of reflective practice.; and

d) Data driven reflection decision-making and continuous improvement, drawing on self-evaluation and feedback to inform next steps in learning and teaching.

The INTERPEARL model envisages Personalised Learning as an interactive Learner and Teacher Journey involving four core dimensions: ***Person, Process, Practice*** **and** ***Environment***.

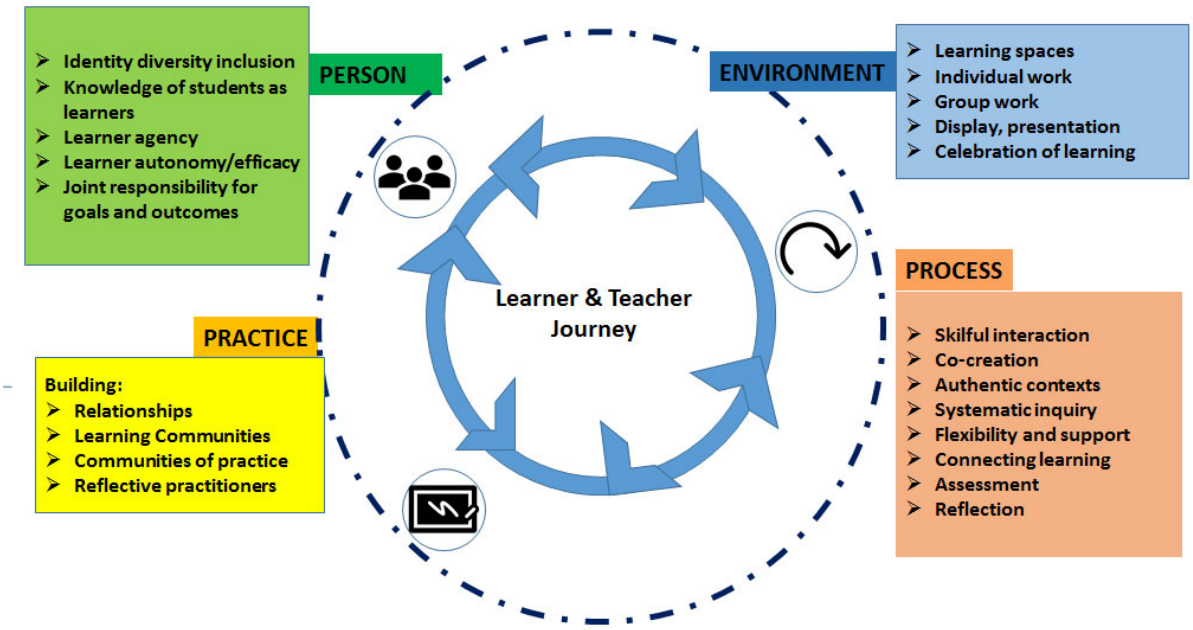



***Figure 5:*** *Model of personalized based teacher education* (*INTERPEARL team 2020*)

### 3.2 The '*Person*' Dimension

The distinguishing attributes of the '**person'** element of PL includes:

- **Embracing diversity and inclusion** as a positive means to enhance learning by valuing and making use of the different agency, resources, goals and motivation that each learner brings to the learning space.

- **Detailed knowledge of each student as a learner**: ensuring that every learner is a respected and valued participant; Learning is orientated to learner interests, strengths and areas for improvement.

- **Learner agency** by taking account of learner voice and choice in what, how, when and where they learn and supporting learners to set their own goals for, and management of, their own learning.

- **Learner autonomy and self-efficacy** by promoting intrinsic motivation ownership and enabling the development of skills such *as: goal setting, planning, information management, problem-solving, decision-making, creativity, monitoring self-reflection, self-assessment/evaluation and identification of next steps in learning*.

- **Joint learner-teacher responsibility** for the quality of learning and its outcome by enabling learners to make choices and decisions throughout their learning journey and

to evaluate their work using assessment criteria (Lupton, 2013) so that learning and mastery are the result of the learner's activity.

### 3.3 The *'Environment'* Dimension

An effective, personalised learning environment varies from classroom to classroom and institutional context to context and will give consideration to**:**

- **Learning spaces**, blended approaches and technological resources to support learning;
- **Individual learning spaces –** when learners are engaged in individual tasks;
- **Group-work:** when learners are grouped in pairs or small groups to allow learners collaborate of different abilities to collaborate with appropriate incentives for whole group collaboration and achievement; and
- **Display**, presentation, defence and celebration of learning.

### 3.4 The '*Process'* Dimension

Personalisation theory emphasises the need for learners to be deeply involved in designing their own learning process (Campbell & Robinson, 2007). The distinguishing attributes relating to the *process* element of PL focus on:

- **Skilful interaction** to progressively facilitate the collaborative organization, design, enactment and assessment of personalized learning, with teachers drawing on diverse methods to encourage greater learner agency and co-creation of learning. PL today is hardly imaginable without technology.
- **Co-creating learning** by progressively enabling learners to take an active role in the design and development of the learning idea and process (Campbell & Robinson, 2007) (Olsen, 2011).
- **Authentic tasks/contexts for learning** with 'rich situational affordances' that:
    - reflect the complexity of real-life settings and ways of learning for example *open-ended activities or a single complex task with real-world relevance*;
    - provide opportunities for substantive investigation over a sustained period of time.
- **Systematic inquiry** using a range of resources that are sufficiently rich to sustain repeated examination involving:
    - knowledge building by accessing, selecting, collating, analysing and integrating data (ELI, 2009). And evaluating, making connections and collaborating in effective application.
    - opportunities to identify different perspectives and express different viewpoints through collaboration.

- **Flexibility and support** to develop mastery (Patrick, Kennedy & Powell, 2013) The teacher's role is to support rather than lead by recognising strengths and challenges and taking account of individual needs, aspirations and cultural context.

- **Scaffolding** and fading teacher support and providing coaching at critical times as necessary or access to expert thinking; and encouraging learners to compare with others at various stages of accomplishment.

- **Connecting learning** both in and outside the classroom and across the curriculum about topics of mutual interest and connecting/exchanging insights with other peers, staff, and instructors.

- **Assessment as, for and of learning** within the activity through multiple indicators and ensuring the validity and reliability of outcomes against appropriate criteria.

- **Reflection on process and outcomes** and ensuring action upon reflection.

### 3.5 The *'Practice'* Dimension

The distinguishing attributes relating to the *practice* element of PL include:

- **Building teacher /student relationships** as collaborative, reflective practitioners who gain insights into self and practice and translate their new understanding into action to inform the practice (Jasper, 2003);

- **Building 'learning communities' and 'communities of practice'** which facilitate collaboration as an integrated social and academic experience; and

- **Building reflective learner/practitioner** through reflection on experience – whether positive or negative -as part of everyday learning so that each experience contributes to personal and professional growth by:
    - Making use of reflective tools and methods such as: *journals, diaries, logs, blogs; lists, bullet points, tables; audio-visual recordings; visual representations such as mind maps, diagrams, sketches etc to support self-evaluation*;
    - Evaluating learner feedback, progress, gaps and areas for improvement;
    - Evaluating own learning and gaps in knowledge/pedagogy and identifying areas for personal and professional development to support and enrich professional practice.

# 4. Pedagogical Strategies to Support Personalised Learning

## 4.1 Introduction

The pedagogy of teacher education is concerned with the co-dependent relationship between teaching and learning which cannot be separated. The notion is that teaching influences learning and that learning influences teaching. The development of pedagogical expertise combines theory and practice in ways that help build knowledge (Cochran-Smith & Little, 1999; Dewey, 1964; Freire, 2005; Loughran, 2010; Van Manen, 1999). Teaching is not just about doing, it is about informing and capturing practice, reflecting upon, deconstructing, and reconstructing in the effort to learn from the experience. The pedagogy of teacher education, therefore, involves not only *what* student teachers are learning and *how*, but also the role of teacher educators as learners in the same process. Personalisation theory thus, pushes educators and learners to think outside the box by emphasising the need for all learners to be involved in designing their own learning process (Campbell & Robinson, 2007). For this reason, the Personalised Learning Framework proposed here places co-creation of learning upfront and recognises the interconnection of the learner and teacher journey and their joint responsibility for this endeavour.

The following section presents the reflections conducted during the INTERPEARL workshop in Iceland in June 2019 and during a five-day Intensive Programme in October 2019 organised by the University College Cork, participants had the opportunity to experience and practice various strategies, methods and approaches that can be applied to support Personalised Learning, depending on the needs of the individuals and the group. The approaches and methods described here are by no means exhaustive and are enriched with vignettes from the INTERPEARL workshops.

## 4.2 Professional Working Theory (PWT)

The teaching profession calls for professionals with theoretical, pedagogical and critical abilities to influence teaching and learning and the regeneration of schools. One of the challenges in teacher education is to draw out teachers' theoretical backgrounds from their daily experiences, and introduce them to the skills and resources that will enable them to critically reflect on their practice together and to analyse and recognize their personal and professional resources. It is critical that such professional dialogue permeates all aspects of initial and continuing teacher education, and that the facilitation of this dialogue is an essential aspect of reflective practice and the professional capacitation of teachers. Circumstances that are related to situations in the life of each individual, especially events that are related to personal or professional challenges, affect teachers' commitment and their abilities to be resilient. For teachers to see the relationship between what they do and why, to see the theory behind it, or the reason for it, can therefore be crucial. It can make them a stronger professional and enable them to judge alternatives (Dorovolomo, 2004).

Professional Working Theory (PWT) is a process that offers teachers (and academics) opportunities to frame their reflection on the living theories implicit in their practice. The PWT

is a way for teachers and student teachers to uncover their practice, theories and ethics and to uncover their tacit knowledge The Professional Working Theory Instrument (PWTI) (Dalmau & Guðjónsdóttir, 2017) contains questions which encourage practitioners to critically reflect on their practice and the interplay of theory and ethics within it. It is based on reflection **in** and **on** practice, indicating that they originate from, and develop through experiences in teaching and work. The PWT of teaching are the conceptual structures and visions that provide teachers with reasons for acting the way they do in order to be effective. They are propositions that underpin and guide teachers' appreciation, decisions and actions. Such theories are crucial to the success of teaching for the reason that educational problems are practical problems (Dalmau & Guðjónsdóttir, 2000a; 2002a; 2002b).

The term PWT is used to symbolize the professional identity that evolves through the constant interplay of professional knowledge, practices and believes (Dalmau & Guðjónsdóttir, 2000a). Teacher professional identity represents how teachers define themselves both to themselves and others. Professional identity is multifaceted, brought together through multi-dimensional, multi-layered, and dynamic processes formed through lived experiences and shaped by historical, sociological, psychological, and cultural influences (Dalmau & Guðjónsdóttir, 2000a). Reflecting on practical experience, educational theories or knowledge, and ethical or moral principles can help teachers clarify their professional identity. Explicit PWT is developed through systematic and comprehensive critical reflection and collegial dialogue, and also contributes to the construction of professional identity, the creation of professional knowledge, and the development of collegial approaches to practice (Dalmau & Guðjónsdóttir, 2017). The graphic below, illustration PWT in process, using three interlocking gears to represent the interrelatedness of the three components and the idea of constant movement.




***Figure 6.*** *The Professional Working Theory (PWT)*

The PWT process was designed to enable teachers and student teachers to systematically explore the socio-cultural and historical influences on the practice of teaching. Three levels of reflective questions encourage the inclusion of perspectives from outside the classroom. For each component, three additional levels of reflective questions are provided to cover close/local, medium/distance, and broad/societal perspectives.

- **Practice:** This gear represents teachers' practice. It provides a space for teachers to explore their experience of their professional work and roles, including teaching, assessment, evaluation, collaboration with colleagues, and relationships with students and parents.

- **Theory:** This gear represents knowledge and the way teachers understand and relate practice to theory. It reflects teachers' theoretical framework and their explanations for what happens in the classroom. It represents their method of relating self-understanding and reflective practice to theory.

- **Ethics:** This gear represents how teachers explain the reasons behind their practice. It relates to their beliefs and values about the world. It reflects what they are becoming, and what they want to be as teachers.

The PWT Instrument contains three sections: (a) an introductory overview, (b) a page for mapping their thoughts, (c) double pages for entries related to "Practice," "Theory" and "Ethics", with reflective questions that are designed to encourage users to explore each of the three areas represented by the gears, and (c) space to develop a personal statement (Dalmau & Guðjónsdóttir, 2008). There are also some open spaces that can be used for writing, drawing and/or concept mapping. The PWT includes extended scaffolds at three levels. For example, the "Practice" element of the PWT now includes reflective questions related to:

- ✓ Close/local: What educators see in their daily work?
- ✓ Medium distance: Factors that directly affect the working environment.
- ✓ Broad/societal: Societal/global connections that affect practice.

These questions are introduced to prompt critical reflections in the dialogue; they are not intended to be answered in a linear mode:

*What can I see happen in my daily work?*

E.g. What does my day look like? What did I teach? What methods/ approaches did I use? What spontaneous teaching did I do? How did I respond to students? Did I treat some students differently? What made me proud/satisfied/happy? What troubled me? What relationships were great? Difficult? What did I learn today/this week? What data did I collect?

*What directly affects what I do?*

E.g., What "rules" affected what I did today? What local/state/federal policies or legislation did I follow? Which other professionals/adults did I interact with? How is

authority and power configured in my work situation? How did these things affect what I did today/this week?

*What broad connections am I aware of?*

E.g., What does my town, my state, my country expect schools to do? What societal issues do I see in my school (e.g., beliefs about outcomes for different groups; relationships between school and work, school and taxes) and how do I see these reflected in my practice (e.g., priorities, curriculum, assessment)? What are the powerful groups in the community? How do their priorities affect schooling?

The *Ethic* and *Theory* sections are followed by three further dimensions of reflective questions. The quality of the discourse does not reside in the PWT instrument itself, but in how and why it is used. The PWT can be used individually or in pairs or groups. The *Participatory Interview Approach* (PIA) or the *Three Step Interview* is a helpful way to analyse the PWT. For the list of reflective questions for all three components, please see Appendix A.

### 4.3 Think-pair-share

Going beyond the classroom is initially countercultural to teachers' experience or expectations. This is a difficult step, and participants need support to begin to work together and to grapple with these understandings. The stories of practice and learning become richer and new questions will emerge. However, focusing on theories or ethics is more challenging.

Using "think-pair-share" strategy with groups of students can help. The activity can begin with the question: "How do you see ethics in your work?" After taking few minutes to think for themselves and write down brief reflections, students are asked to form small groups and discuss what they have written down and come to an agreement on a report to the larger group. This activity is simple but can be powerful.

During the INTERPEARL workshop in Iceland, the participants had a chance to practice: **Think-pair-share,** to identify their **Core Qualities**. (A core quality is an individual's specific strength, something she/he is good at, or for which she/he is often praised by others). Core qualities carry with them a seemingly contradictory appearance. For example, sensitivity could be considered a strength or a weakness or it can be both. The participants had to consider various dilemmas, including: *What is the relationship between what I want to do and what I do? Shall I focus on product or process?*

First, they had to think and then name or pick four or five core qualities from the list (see Appendix B) and write them down. They were also asked to describe each of them and how do they appear in the everyday life and practice in 2-4 sentences. This phase was followed by the discussion with the fellow participant. Finally, all participants shared their core qualities and reflected on the task with the entire group.

### 4.4 Individual Work and Peer Feedback

Another challenge is getting students and teachers to explore theories and/or to relate theory and practice. The aim of this activity is to support teachers to explore, in a systematic way, the theories on which they build their teaching and consider how they relate them to their practice:

1. Participants work individually and brainstorm all the theories they could think of or have affected their job.
2. Participants work in pairs where each one introduces their list, discuss what is behind the words, and get new ideas.
3. Participants work individually and the task is to choose two words from the list and then write down a description of word or theory, and how/why it has affected their practice.
4. Participants work again in pairs and introduce the writing, receive and give feedback.
5. The final step is to write a description of at least one theory.

Each task takes from three to ten minutes, depending on how complicated they are. The following questions may be supportive as the participants critically reflect on each other work:

- *Tell me, why do you relate this to your work?*
- *Tell me, how does this appear in your practice?*
- *Tell me, why do you choose this?*
- *Tell me, how does it help your understanding?*
- *Explain your work…*

According to Dalmau & Guðjónsdóttir (2017), their use of PWT approaches extended the theoretical dialogue with their students and effectively extended the scope of the discussions. The quality of discourse does not reside in the PWT instrument itself, but in how and why it is used. One exciting outcome was that the process enabled participants to engage in situated theoretical dialogue in ways that they had not hitherto experienced (Dalmau & Guðjónsdóttir, 2017). The ensuing discussions began a shared process of knowledge generation to identify critical elements in the dialogic process of understanding the professionalism of teachers. The participants are asked to express their opinions about their professional practice in a manner that can be easily understood. The PWT instrument is to help them organize their thinking and to understand more deeply their actions and rationale. The teachers that have used the PWTI have been innovative and expanded the vision of how the PWT process can be useful to them. The following are some examples of how different groups of participants have used the PWT to support their understanding or evaluation of their practice (Dalmau & Guðjónsdóttir, 2017):

- Describing and analysing their approach to teaching by responding to questions such as: *What should I emphasize in my teaching this year? What is the overall approach to Math in the curriculum – in my teaching practice? …Special Education? …Inclusive practice?*
- Reviewing a particular aspect of their work by questioning particular elements, such as: *How is the alternative approach working with diverse group of students? Does the*

*'reading bingo' involve the different groups of students in the class? How do rewards effect ethics and beliefs? How does my teaching relate to the national curriculum?*

- Framing participatory research by planning systematic projects, such as: *Expanding and systematically inquiring into inclusive practice in partnership with the special educator. Informing other teachers about teaching methods my colleagues have developed and used in their classroom.*
- Communicating with others and supporting collegial dialogue and collaboration by using the PWT instrument to frame the discussions as they reflected, rationalized, made decisions, and created ideas about their teaching methods, planned collaboration with others, and reviewed their status in the professional world and the community.
- Reflecting on professional growth and planning for professional development by reviewing how and why they typically used theories and methods, and identifying issues, areas they would they like to explore further, with their colleagues, and opportunities for professional learning.
- Developing a personal statement by synthesizing the information, they collected through the PWTI.

According to Dalmau & Guðjónsdóttir (2017), time is an important factor. Short term and one-off sessions of professional development do not allow time to build strong conceptual knowledge and understanding, and the skilful practice that will enable people to feel confident in their ability to transfer their learning and experience into new environments (Connelly, Clandinin & He, 1997; Sanders & McCutcheon, 1986).

### 4.5 Whose Learning Is It?

The pedagogy of teacher education involves empowering both teachers and as learners to combine theory and practice in ways that builds experts knowledge. Space and time are needed for teacher educators, teachers and student teachers to collaborate as they develop their practice. By creating learning communities where professionals learn together we can support teachers to deconstruct and reconstruct their practice and create personalized learning for all students.

Jónína Vala, one of the teacher educators participating in the INTERPEARL workshop, introduced a project she worked on with mathematic teachers. She emphasized that when teachers were empowered to rethink their own way of solving mathematical problems they started to pay attention to the communication in their classrooms and focus on the learning of their pupils. In tackling concerns on diversity, the participants refined their perception of the meaning and practice of inclusion in activities in the mathematics classroom. As the project progressed the teachers gradually took the lead in deciding what to focus on at the workshops. The spiral of reflecting on the developmental cycle in reference to the research cycle supported actions taken in their collaborative work. The developmental cycle affected the research cycle as they learned to accept the knowledge that each of them brought into the community and think of ways to cultivate it. From learning about this experience and having an opportunity to practice some of the activities the teachers went through our

participants gained opportunities that gave them possibilities for transferability into their own practice. Theories about co-learning and community building affected the local theories about teachers' need to rethink their own way of exploring with mathematics and work with their pupils. They in turn affected the developmental cycle when they decided what to attend to at the workshops and how to communicate about their work (Goodchild, 2008).

Partnership between teachers in schools and teacher educators is crucial, because the knowledge both parties bring adds to their understanding of teacher development. Teachers need opportunities to develop and enhance their knowledge about teaching and learning in an environment that reflects the very same aspects they are expected to foster in their own classrooms. Teachers are professionals who can work at developing their teaching in order to cultivate inquiry in teaching within their classrooms. They must have opportunities for further empowerment to participate in educational research.

### 4.6 Innovation and Entrepreneurial Education (IEE)

In a changing world we need creative skills and the spirit of enterprise and engagement to deal with difficult issues, enhance economy, secure sustainability and to make the world a better place to live in. Therefore, the capacities for innovation and entrepreneurship are important in modern societies. One response in education to cultivate creative capacities, engagement and agency is *Innovation and Entrepreneurial Education* (IEE) (Jónsdóttir & Macdonald, 2013). The pedagogy of IEE has been analysed as emancipatory pedagogy, where the learner has ample agency and the teacher gradually gives control to students. Innovation education is flexible in organization, giving value to student voice, eliciting the tacit knowledge of students and situated learning. Emphasis is on connection with society, including work life and students' lives. IEE's aim is enhancing and improving the conditions of social life through inventing/creating new objects or redesigning those that already exist. IEE is cross curricular, i.e. it can be implemented across the boundaries of subjects, school and society. In practice, this means that students search for solutions to issues that are important to them for example, personal solutions, new designs, technological innovations or social innovations and or business ideas (Jónsdóttir & Gunnarsdóttir, 2017).

In Iceland, Innovation Education (IE) is a school subject somewhat similar to Design and technology education or CDT (Craft, Design and Technology). The curricular subject Innovation and Entrepreneurial Education (IEE) has been developing in Iceland in the last 20 years. In compulsory school setting IEE is more commonly called Innovation Education and on upper-secondary level Entrepreneurial Education. On both school levels IEE has been effective in enhancing students' innovative capacities and entrepreneurial spirit (Jónsdóttir & Macdonald, 2019).

IEE is a curricular area that is about using creativity and knowledge to solve problems that learners identify themselves and analyse. It aims at developing critical and creative thinking in design, science, technology, marketing and enterprise. The main emphasis in IEE is about enhancing creative skills and actualizing learner ideas with their active participation. The process involves the following steps:

- Identifying a need;
- Brainstorming solutions;
- Choosing one and developing it;
- Presenting solutions on a poster (A 3 paper) preferably including: a catchy title and slogan, description of the need, who might benefit from it (e.g. buy it/ target group), a drawing, a description of its use;
- Sharing your idea.

By using this process as a frame for creating personalized learning, teacher educators and learners have become innovative in personalised teaching and learning (Guðjónsdóttir & Jónsdóttir, 2016).

### 4.7 A Three Step Interview (Participatory Interview Approach)

A *Three Step Interview* is a form of participatory interview approach, developed by the International Women's Group, Eugene, Oregon (Bodone, 1997; Bodone, Dalmau, Doucouré, Guðjónsdóttir, Guðjónsdóttir, Ishak, et al., 1997; Dalmau & Guðjónsdóttir, 2016). It was designed to support participative, equitable and reflective approaches to life history research interviews in small groups of 3–5 participants. In this interview format, all participants take turns in three rotating roles (as interviewer, interviewee and reflective note-taker). If there are more than three people in the group, the group asks two people to share the note taker or facilitator roles. It is imperative that each group member is responsible for a role. The following describes each role:

1. Interviewer: facilitates the discussion, and asks the questions.
2. Interviewee: shares her practice and experience with the group.
3. Reflective Note-taker: takes notes and at the end of the session gives brief feedback on the process of the interview, including what impressed him/her in the discussion.

In order for *the Three Step Interview* to be effective, several steps must be followed:
1. Participants are paired or in-group of three. One participant interviews the other on a given topic. One participant takes notes or records the interview.
2. Participants reverse roles and repeat step 1.
3. Pairs or trios join another pair or a trio. Then, in Round Robin format, share what they have learned from their interviews.
4. Variation: Report to the whole group.
5. Agree on an amount of time for each person to share before the interview begins.

it is important to:
1. Model good listening and interviewing skills, such as eye contact and active listening. Remember this is an interview not a conversation.
2. Model good open-ended questions, such as *How did you…?, Tell me about…*
3. Model good follow up questions, such as: *Tell me more…, Explain…*

With advances in technology, most participants now use their phones to record the interview and then have the opportunity to listen to themselves again and again, which helps in thinking about their practice and writing it up.

The whole group participating in the INTERPEARL workshop in Iceland was grouped into ten groups with three to four participants in each group. The participants were given three rotating roles (interviewer, interview, reflective note-taker) where all participants took a turn in each role. Each group had interview questions to follow but they could also add their own questions depending how the interview developed. The aim of this activity was to map out the resources in the group and the funds of knowledge each participant brought into the big group (Rodriguez, 2007). This activity can be transferred to our teaching, in individual courses but also for the teacher education in whole. The activity can be useful with students because it gives opportunities to organize personal learning according to information of each student. It opens a space for all participants to get to know each other and to get to know themselves, their strengths, and what do they need to work on.

### 4.8 Walk & Talk

The Walk & Talk method provides a space for learning that is different form sitting in the classroom, by creating an informal atmosphere that helps learners to connect more easily to their creative and analytic insights. Groups can be sent out to walk a predetermined route or for a predetermined time, and asked to discuss a particular issue or question and either write an answer on the poster or report orally when they get back. All groups have either the same issue or question to discuss or each group a different content. Walking and talking creates an informal atmosphere and can be used in different ways, for example:

1. At the end of day in a course. The group walks through a forest or an area outside for a distance (15-30 minutes) and discuss what they learned today – what they take away with them from the day. At the end of the walk one writes on a piece of paper in 2-3 sentences the core of what the group learned and hands to the teacher or hangs on a wall – or all groups report orally.
2. Responding to questions, issues, problems or challenges using walk and talk. This is similar to *Graffiti-wall*.
3. To work out understandings or finding solutions to issues they have been learning about or are starting to learn about.

Different questions are written on large pieces of paper (posters), one question on each paper as a heading and numbered and hung in distributed places around the school, inside and or outside. Each group gets a piece of paper with all the numbered questions or issues. Group one starts with question one and as they head towards the location of poster 1 they discuss their views and responses to question 1 and when they reach the first poster they agree on and write an answer, solution or response on the poster. Then they look at question 2 and head towards poster 2 discussing that question. At the same time group two heads towards poster 2 and discuss on the way their response to question 2 and do the same as group 1 and then head towards poster 3. Group 3 starts at poster 3 and so on.

Walk & Talk was used during the INTERPEARL workshop in Iceland to explore how the group understands three related concepts that focus on organizing teaching and learning according to the students, their knowledge, experience, needs, abilities, interest and so on. These are: differentiating learning, personalized learning, and individualized learning).

The focus was on the following questions:
- *What does differentiating learning mean to you and what does it look like in teacher education?*
- *What does personalised learning mean to you and what does it look like in teacher education?*
- *What does individualised learning mean to you and what does it look like in teacher education?*
- *How do you work with views and beliefs that are discriminating in teacher education?*
- *How do you work with issues of equality, social equity, diversity, and inclusion in your practice of teacher education?*

The participants were divided into groups of three/four and were send out of the classroom for a walk inside the university building and discussion on the above questions. As they arrived at each poster, they summarised their discussions and wrote the answers on the poster. When the groups were finished with all the posters, they brought the back to the classroom for a collective discussion.

### 4.9 World Café

The *World Café* is a method of providing space for a larger group dialogue that can be tailored to diverse needs. It consists of five main components:

1. Setting – it is important to create a welcoming environment, reminiscent of a café, e.g. with flowers, candles and comfortable chairs. It is also good to have paper, sticky notes and coloured pens on each table. There should be no more than five chairs around each table.
2. Welcome and Introduction – the host of the World Café should welcome all participants and introduce the purpose of the meeting and idea behind the method (the process and rules). The host should also reassure that all participants feel comfortable and safe.
3. Small-Group Rounds – the World Café begins with a first round of a 20-minute dialogue in small groups of maximum five participants by each table. After the first phase, each participant moves to a different new table. It is possible to keep one person at the same table as a table host for the next round (or for all rounds). In this case, his/her role is to welcome the new members and sum up the previous round. Usually there are three small-group rounds.
4. Questions – the purpose of each round is to answer a question, crafted for the specific context and purpose of the World Café. Depending on the purpose of the meeting, diversity of the group and development of discussion the same question can be used

for more than one round, or a new question, which helps to focus or expand the discussion can be introduced.

5. Harvest – when the small-group rounds are finished, participants are given the floor to share their thoughts and results from the group discussions to the whole group. Usually also a visual form of presenting the results is applied, e.g. a poster with sticky notes or other graphic presentation (The World Café, n.d.).

The World Café method was applied in the end of the five-day Intensive Programme organised by the University College Cork as part of INTERPEARL project. It consisted of three progressive rounds of conversation with each round addressing one question.
Participants could choose a table with a topic that interested them most of the following:
*1: Identity: what does it mean and what does it mean for teaching?*
*2: How do we learn together? What method enable co-creation?*
*3: How might UDL support personalised learning? What one change would I make/*
*4: How do we develop the capacity of students to implement personalised learning?*
*5: How do we document our teaching?*
At the end of each round, participants were asked to move to another table, where new questions were discussed while linking to previous ideas. Sheets on table were provided to be used to capture these discussions. Each group had a table host identified by the group in first round, who stayed at the table during three rounds. Host's role was to welcome newcomers and share the main ideas, themes and questions. At end of the three rounds, the whole group shared their ideas and summarized the discussions with three questions in mind:
*1. What was a key insight or discovery?*
*2. What was considered a barrier or challenge?*
*3. How do we implement this in our teaching?*

By incorporating the World Café method, the participants of the Intensive Programme had an opportunity to meet new people, actively listen and contribute to other's thinking and link it to own thoughts. As the participants took their ideas to the new tables, they exchanged thoughts and perspectives that led to gaining new insights and ideas by the whole group.

### 4.10 Cases and Case Commentary

Cases are professional stories that teachers (and other professionals) write in order to "stimulate inquiry and analysis on the real challenges and dilemmas of their practice" (Schulman, 1992). Cases "focus on a specific event or series of events". The narratives are often complex and represent cases of many things. There may be one main story that the author wants to tell, but embedded in that story are other problems that can be discussed. The other characteristic of the narratives is that they 'ring true', which means that others can identify with them. The visual imagery enables [teachers] to 'see' the students and problems. There is enough information and detail in the case - often with quotes from the students or the teachers - to stimulate substantive discussion and analysis of key issues. Without this detail, discussion can turn into an "opinion swap" rather than critical inquiry, because there is not enough information to work with (Schulman, 1992). Case writing consists of six stages:

1. Choosing a critical incident

2. Describing the context
3. Identifying the players
4. Reviewing the critical incident and person's response to it
5. Examining the effects of actions
6. Revising the incident

The Case writing can be followed by a Case Commentary which records what one can learn through reflecting on and questioning experiences. It consists of four stages:

1. Practice described: *What are my questions?*
2. Practice explained: *How can I understand and explain this event/issue/dilemma?*
3. Practice theorised: *What is my personal theory of action (Why do I do what I do?)*
4. Practice changed: *What have I learned and what could I do?*

For detailed Case writing instructions as well as for developing a Case Commentary framework, please see Appendix C and Appendix D.

### 4.11 The Learning Outcomes Form and the Self-Assessment

The crucial element of Personalized Learning (PL) is the learner's active role, interests, choices and priorities, i.e. what, how, in what ways and where to learn and how to use all of this in the rapidly changing environment. One method of stimulating student's ownership of his/her learning is through the task of completing a The Learning Outcomes Form. In this method, the students are asked to review the learning outcomes and competencies they need to acquire by the end of a particular course. For example, the learning outcomes for the course: *Working in inclusive practices* offered by the University of Iceland, state that the student should acquire the following competencies:

- ✓ has knowledge and understanding of the ideas on learning and teaching in inclusive school
- ✓ can design learning environments that are based on and nurture learners' resources
- ✓ can apply learning strategies and learning assessment that take into account learners' diversity
- ✓ is able to build on learners' resources in teaching
- ✓ is aware of and can build on his/her own Professional Working Theory (PWT) when teaching diverse groups of learners
- ✓ can approach learning and teaching in inclusive school in a holistic and creative way

For each of the listed competencies, (see Appendix E) the student needs to answer the following questions:

1. What can you do to acquire this competency?
2. What kinds of tasks will help you to acquire this competency? On what topic and in what form?
3. How would you like to demonstrate that you can do this/you acquired this competency?

At the end of the course, the students are asked to hand in a Self-Assessment paper, in which they evaluate their participation in the course and give themselves a grade which counts for 10% of the final grade. The paper is a critical reflection of what they have done during the course and how they approached and performed different tasks. In order to support their arguments in the paper, the students are asked to give descriptive examples of their participation in the course. In this context, excerpts from a study journal where students write down their thoughts, questions and reflections about material they read, discussions they participated in and broader societal issues they were engaged in is very helpful. Below are examples of supportive questions that can be used while writing a Self-Assessment paper:

- Have I acquired the competencies in accordance with the Learning Outcomes form that I filled out at the beginning of the course?
- What have I done in this course? Have I worked well?
- Have I read a lot? Have I written about what I read? Examples of such notes?
- Have I written reflections regarding the topic of the course? Often? Examples of such reflections?
- Have I been actively involved in the discussions during the course? Have I contributed to the tasks I was involved in? Evidence of my involvement?
- How did I find working on various tasks during the course? Did I have a chance to include my interests, choices and priorities in the tasks? Can I give any examples? How did it feel?
- How did I find the organisation, level of flexibility and freedom of this course?
- Have I used the feedback I received from teachers and peers to in my learning process? Do I have any evidence of that?

Self-Assessment of this kind is a useful tool for reflection and continuous self-growth and professional development not only for student teachers, but also for teacher educators as they evaluate, reflect on and develop courses and learning environments based on the ideas of Personalised Learning.

### 4.12 Tickets Out of the Classroom (TOC)

*Tickets Out of the Classroom (TOC)* are index cards used by students to write an answer (anonymously) to a certain question posed by a teacher at the end of the lesson. The teacher needs to set aside a specific amount of time for students to complete the TOC and either collect the tickets as students leave the classroom or ask them to post/leave their tickets in a particular place in the classroom. TOC can be used as a method of:

- Verifying students' understanding of the lesson, application of the content
- Learning of what was the most important thing the students learnt
- Gaining ideas for the topics of next lessons and for organising student into groups according to their needs

It is important for the teacher to read the tickets carefully and reflect on students' answers to plan next lesson. It is also good to begin next lesson by highlighting the main messages from the TOCs collected in the previous lesson.

At the end of each day, all participants had to write their TOC (Tickets Out of the Classroom). The aim of this task is to gather information on the learning that has happen over the day. We ask everyone to write What he or she have learned or what they take with him or her after the day and then we ask him or her to write what they would like to focus on the next day. We then analyse all the TOC and prepare for the next day according to the participants whish. This task helps us plan our teaching accordingly and to give the leaners a voice in their learning. In case of master students' seminars at the University of Iceland, at the end of each meeting students give anonymous responses on TOCs detailing what they had learned and what they wished to learn more about. The mini-lessons topics are then determined according to students' requests and to the issues the teacher educators believe are relevant for students' progress (Guðjónsdóttir, Jónsdóttir & Gísladóttir, 2017)

## 5. Conclusion

The shift from a teaching to a learning paradigm throughout all stages of education is now inevitable and demands a new generation of aspiring teachers who are, themselves, self-directed learners. It is hoped that the Personalised Learning Framework and Strategies outlined in this paper will assist teacher educators to model and promote a major shift in the culture of Higher Education towards the much greater personal involvement of student teachers (and through them, all future learners) in the design implementation and evaluation of their own personalized learning journey.

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## APPENDICES

### Appendix A.
### Reflective Questions for Professional Working Theory (PWT)

**Practice: What I do**

—Dimensions of inquiry —

| *Close Local* | *Medium Distance* | *Broad/Societal* |
|---|---|---|
| What can I see happen in my daily work?<br>• What does my day look like? What did I do today?<br>• What methods, approaches did I use?<br>• What spontaneous teaching/work did I do?<br>• How did I respond to clients/students? Did I treat some of them differently?<br>• What made me proud/satisfied/happy? What troubled me?<br>• What relationships were great? Difficult?<br>• What did I learn today? This week?<br>• What data did I collect? | What directly affects what I do?<br>• What "rules" affected what I did today?<br>• What local/state/federal policies or legislations did I follow?<br>• Which other professionals/adults did I interact with?<br>• How is authority and power configured in my work situation?<br>• How did these things affect what I did today/this week? | What broad connections am I aware of?<br>• What does my town, my state, my country expect my work to do? *E.g., expectations of schools, nursing, businesses?*<br>• What societal issues do I see in my work situation? *E.g., beliefs about outcomes for different groups, relationships between schools and work, relationships between care and community.*<br>• How do I see these reflected in my practice?<br>• What are the powerful groups in the community? How do their priorities affect my work? |

These questions are simple examples that may or may not be useful.
What are your questions?

**Theory: How I understand**

—Dimensions of inquiry —***

| *Close Local* | *Medium Distance* | *Broad/Societal* |
|---|---|---|
| How do I explain what I do? | What are the immediate sources of understanding about what I do? | What theoretical approaches form the basis of my understandings? |
| • How do I explain what I do for:<br>  • Myself and my friends?<br>  • Clients?<br>  • Students?<br>  • Other professionals & administrators?<br>  • Community members?<br>  • Where do I experience conflict between my explanations and what I do? | • What are the most immediate sources of my explanations?<br>  • My own experience of my work? Education? Life?<br>  • Life history/family backgrounds?<br>  • Clients/students?<br>  • Colleagues?<br>  • Mentors?<br>  • My teachers?<br>  • Workshops or courses?<br>  • Media?<br>  • Books & publications?<br>  • Environment and culture?<br>  • Are there implicit theories inherent in my practice? | • What overarching theories about teaching, learning and practice underpin my work?<br><br>• What areas of my practice would I like to know more about?<br><br>• What other theories affect my work? E.g., about:<br>  • What makes my work valuable and effective?<br>  • What to teach students and why?<br>  • Other professional decisions?<br><br>• What theories guide the way I contribute to and organize learning and work relationships?<br><br>• What theories guide how I perceive and enact my professional role? |

These questions are simple examples that may or may not be useful.
What are your questions?

**Ethics: Why I do**

—Dimensions of inquiry —

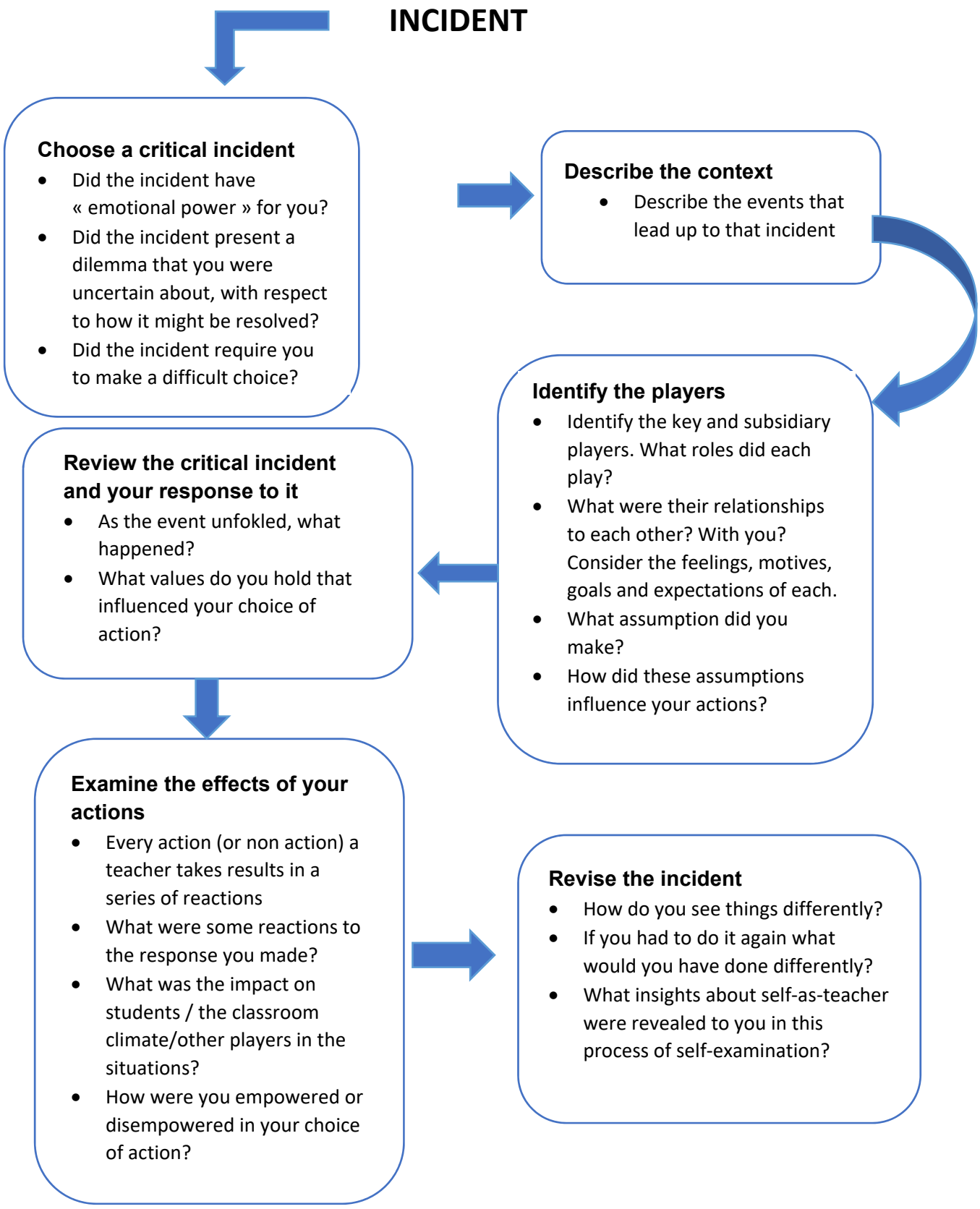
| *Close Local* | *Medium Distance* | *Broad/Societal* |
|---|---|---|
| What are my personal ethics and values? How are they visible in my work? | What are the sources of my ethics and values? | What are the cultural, societal, historical and political impacts on my ethics and values? |
| • When I think about what I did today where can I see the impact of my ethics and values?<br><br>• Were there any conflicts between<br>  • My ethics and values and what happened today?<br>  • What was expected of me and my ethics and values?<br><br>• Did my ethics or values lead to prejudice or discrimination in any situations? | • What is the impact of the local community and other groups on the way I think and the way I do what I do?<br><br>• What thinkers and doers have affected my believing and my practice?<br><br>• How have I either gained or suffered professionally because of my ethics and values? | • How do cultural and social beliefs and systems impact my beliefs?<br><br>• How are unspoken assumptions and beliefs in the culture of my country (or my history) enacted in my practice?<br><br>• How do power/oppression, poverty/wealth, race/ethnocentrism, affect my ethics or values? |

These questions are simple examples that may or may not be useful.
What are your questions?

## Appendix B: Core Qualities

| | | |
|---|---|---|
| Honesty | Sincerity | Passion |
| Willpower | Driving force | Calm |
| Love | Humour | Joy |
| Caring | Considerate | Invention |
| Creativity | Compassion | Trust |
| Hope | Flexibility | Understanding |
| Determination | Courage | Openness |
| Sensitivity | Justice | Delicacy |
| Curiosity | Empathy | Resilience |
| Persistence | Patience | Initiative |
| Enterprise | Organizational | Elaboration |
| Optimism | Resourcefulness | Liberality |
| Faithfulness | Humility | Respect |

**Appendix C: Case Writing**



## Appendix D: Developing a Case Commentary

*Reflecting, questioning and acting in response to a practice example (case)*[4]

Your **Case commentary record** is designed to assist you in thinking about what you can learn by reflecting on and questioning your experience. The numbered question (1-4) focus on four dimensions of reflecting on practice and planning action. The bulleted questions are examples to get the reflection going. You may want to use some of these questions or you may simply develop your own.

### 1. Practice Described: *What are my questions*?

*Initiating questions*[5]*:*

- What happened for the students in this story? Were they all included in the learning, the relationship, and the activity? Etc.
- What did students contribute? How did they relate to one another?
- What looks to be the everyday routine? What methods/approaches to teaching/learning/assessment did I use?
- How did I respond to students? Did I treat some students differently?
- Who else was involved? What was their contribution?
- Who benefits from this situation? Who is disadvantaged?
- Were they any significant "turning points" in the story?
- What are my impressions and emotional responses?
- What confuses or worries me?
- What pleases me?

### 2. Practice Explained: *How can I understand and explain this event/issue/dilemma*?

*Initiating questions:*

- Why do students learn as they do? Why do some students achieve better than others?
- How can I understand and explain this event/issue/dilemma based on my teaching experience?
- What other explanations are there (e.g., from talking to teachers, talking with students, reviewing the literature) what I have learnt in classes?
- How is it that schooling treats ome particular students and groups differently?
- Who decides? Who is powerful? Who benefits from the decisions?
- How could I look at this experience from a fresh viewpoint? What theories of learning and teaching could inform these perspectives?

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[4] Cacciattolo, Dakich, Dalmau, Guðjónsdóttir (2004): Adapted from Kruger, *Praxis Inquiry Protocol.* (2004) & Dalmau & Guðjónsdóttir, *Professional Working Theory* (2000).

[5] Initiating questions are inserted in this table to stimulate thought and discussion. They do not represent all possible questions, nor is it necessary to consider all of the questions shown.

- What levels of relationships and/or controls affected (or could change) the outcomes in this case, e.g.
    - Choose/local intrapersonal responses and interpersonal relationships in the classroom, in the school, between school, home and community?
    - Medium distance: System requirements, state and national politics?
    - Broad societal: the socioeconomic and sociocultural structures and their impacts?

**3. Practice Theorized: *What is my personal theory of action (Why do I do what I do?)***

*Initiating questions*:

- What have I decided to keep doing? Why?
- What have I decided not to keep doing? Why?
- How will I explain what I do to myself (and my friends), to students, to other teachers/professionals and administrators, to my parents and community members?
- What personal ethics and values guide my commitments to all students? How can I apply these personal ethics and value stance in developing curriculum, pedagogical and assessment approaches that support all students?
- Where do I experience conflict between my explanations and what I do?
- What are the most immediate sources of my own explanations of what I do (e.g., my own experience of schooling? other teachers, mentors, workshops or courses, books or other publications?)
- What areas of my practice would I like to understand more about?

**4. Practice Changed: *What have I learned and what could I do?***

*Initiating questions*:

- What can I do to make my practice more inclusive and more responsive to the learning of all students?
- What is supporting/getting in the way of my putting insight my insights into practice?
- How can I know if what I do is good for the students?
- What can I do to improve and change my practice continuously?

## Appendix E: The Learning Outcomes Form

### The Learning Outcomes Form –
### How would you like to acquire this course's competencies?

| Competencies - by the end of the course the student: | What can you do to acquire this competency? | What kinds of tasks will help you to acquire this competency? On what topic and in what form? | How would you like to demonstrate that you can do this/you acquired this competency? |
|---|---|---|---|
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