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Content

1   Introduction

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PIONEERED is a Research and Innovation Action (RIA) that has the objective of identifying pioneering policies and practices seeking to mitigate intersectional inequalities in access to and uptake and completion of education, in formal, non-formal, and informal educational settings, and to propose research-informed policy measures that have the potential to do just that. This involves three research actions: a) mapping emerging and existing sources of educational inequalities over the course of educational careers from early childhood to tertiary education; b) mapping responses to inequalities as pioneering policies and practices from a comparative perspective; and c) synthesising the findings and identifying the most promising tools, pioneering policies and practices within and across European countries (PIONEERED 2020a).

The empirical research is carried out in nine European countries (Finland, Germany, Hungary, Ireland, Lithuania, Luxembourg, Norway, Spain, and Switzerland) and is organised in four work packages (WP), each employing a specific research methodology. They relate to policy analysis (WP3), the re-analysis of existing quantitative data (WP4), practice research on the school and classroom levels regarding measures against educational inequalities (WP5), and the triangulation of findings and identification of the most promising policies and practices (WP6). Thus, PIONEERED is a mixed-method and comparative research project. To be successful, the project requires a common ground shared by all partners, but it also needs to be open, both to integrating different research methodologies and to encountering ground-breaking, unexpected findings. The present document introduces a common heuristic framework that integrates Multilevel, Intersectional, and Life-Course (MILC) approaches; it discusses its implications for WP3–5 and simultaneously stresses the importance of an open approach that makes it possible to go beyond this common heuristic MILC framework.

For comparative studies like PIONEERED, analytical frames – such as the heuristic MILC framework – have their specific importance, as they "constitute ways of seeing" (Ragin and Amoroso, 2019, p. 57) and can be used for selecting and comparing cases. Thus, analytical frames are used in comparative case studies to specify what about the cases is of interest. This emphasises the need for developing analytical tools before collecting certain data and stands in contrast to more inductive approaches, which try to explore further or transcend prior analytical framing. The MILC framework provides the analytical tools for PIONEERED and guides the mapping, identification, choice, empirical categorisation, and analysis of cases of pioneering practices and policies.

However, PIONEERED comparative researchers' strategy also invites us to look out for aspects that complement, transcend, or even modify the MILC framework based on inductive, critical, and problem-focused reflexivity. Hence, MILC is not conceptualised as dogma in PIONEERED but rather as a starting point for the project research endeavour. Therefore, the PIONEERED research strategy prompts us to be attentive for pioneering practices and policies which might

address other or additional aspects not covered by the heuristic MILC framework (Ragin and Amoroso 2019, p. 131). In this regard, we argue that both more confirmatory and more inductive reflexive approaches are to be used in conjunction, as it is a distinctive feature of PIONEERED to incorporate an open, "going beyond" (thus "reflexive") approach to analysing educational inequalities and identifying pioneering measures tackling these (PIONEERED 2020b, p. 2).

The present general guidelines serve the specific needs of PIONEERED. They are limited in scope, preliminary, and open for adjustment, provide a common ground, and facilitate the triangulation of the findings in WP6. Building on these general guidelines and on their specific expertise, task leaders and involved partners will develop specific analytical approaches to address a given research question. In a similar vein, the section on triangulation outlines how the results will complement each other, without defining a detailed triangulation methodology at this stage. Finally, it is important to note that the present document includes guidelines for investigating policies and practices but does not elaborate on the identification of pioneering measures; a framework for this will be provided in report 2.3 (deliverable 2.3).

The report is organised as follows: chapter 2 introduces the basic conceptual elements of the heuristic MILC framework, considering a broad range of formal, non-formal, and informal educational settings, a multilevel approach, an intersectional stance, and a life-course perspective. Chapter 3 discusses implications for empirical research, both in general and specifically in respect to WP3, WP4, and WP5. Finally, chapter 4 outlines how the findings from various contexts can be combined by discussing comparative methods and questions pertinent to the triangulation methodology, preparing the ground for identifying the most promising pioneering policies and practices seeking to mitigate intersectional inequalities in access to and uptake of education.

2 Key conceptual approaches of PIONEERED

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2.1 Formal, non-formal, and informal education

The PIONEERED project is interested in educational inequalities in terms of systematic advantages and disadvantages in access to and uptake of education, not only in schools and other explicitly educational organisations but in various settings. Educational inequalities not only manifest themselves in schools and universities, but also in the family, early childcare settings, day care, and extracurricular activities (such as drama and music lessons/clubs). These different educational settings can be systematised employing the taxonomy of formal, non-formal, and informal settings (Coombs and Ahmed 1974, La Belle 1982). Learning in formal educational settings such as schools and universities is characterised by a high degree of institutionalisation, a phased or staged curriculum, defined educational stages including transition rules, standardised approaches to assessment (at least in some systems), and strong determination by education system characteristics and thus by educational policies. Non-formal educational settings such as early childhood care settings (beyond the more and more formalised part of the Early Childhood and Care sector) and as well as day care settings for children after school in the afternoon are also institutionalised, but to a lower extent as they are not situated within the formal education system and thus much less frequently targeted by (educational) policy interventions. As Coombs and Ahmed (1974) and La Belle (1982) point out, non-formal education relates to organised and systematic educational activities of a more selective character, as these only involve selected types of learning that are provided to particular subgroups (children, youth, adults). Informal education settings include families and peer environments where learning takes place at all stages of the life-course. In informal settings (such as museums, galleries, and science centres), education processes are not institutionalised and range from non-intentional or non-deliberate to explicit learning activities.

Considering these three types of learning, beyond the settings in which they most visibly occur, PIONEERED's approach entails analysing the cognitive aspects to and measures of learning processes, such as skills and competences, school marks/grades, certificates, and degrees, as well as non-cognitive educational aspects and measures of learning, such as attitudes and values towards education, wellbeing in school, and motivation (Hadjar and Gross 2016). The PIONEERED methodological frame acknowledges the complex interplay of formal, non-formal, and informal learning across explicitly and less explicitly educational settings, albeit with a slightly stronger focus on formal and non-formal education settings, given their particular importance in contemporary European societies.

That said, the links between formal, non-formal, and informal education can be theorised employing, among other prisms, Bourdieu's habitus concept. According to Bourdieu (1984), habitus is shaped by family practices early in life. As the education system is rooted in the legitimate/dominant culture, being able to navigate it from an early age creates educational

advantages. In this regard, lifestyle and practice are conceptualised as fundamental expressions of habitus (and thus, class, gender, and other differences and similarities; Reay 2001; Rea, David, and Ball 2001). In this regard, informal and non-formal education (such as family practices, access to and participation in leisure time activities, etc.) contribute to the development of dispositions that prepare young people to succeed in formal education, perpetuating middle-class values and dispositions. Indeed, empirical studies have thus shown that, for instance, children and young people from the middle classes more often participate in organised leisure activities than their working-class peers (Sjödin and Roman 2018). Eccles, Barber, Stone, and Hunt (2003) in turn have shown that organised leisure activities have a positive effect on academic achievements, with class-based links between informal and formal education having been empirically demonstrated.

In effect, individual progress in formal education goes beyond personal efforts and resources. Success or failure is a result of actors supporting the process in both formal and informal educational settings. During children and young people's formative years, schools and the broader social structures in which they are embedded are among the most crucial settings, while informal learning – i.e., informal support of educational activities by family and peer group environments and non-formal education (e.g., society groups and community) – creates advantages or disadvantages affecting an individual's success or failure in formal education.

In PIONEERED, significance is attached to education as a phenomenon embedded in each country's social and cultural context. This requires an understanding of the dynamics between and interplay of formal, informal, and non-formal education and identification of pioneering policies and practices that are sensitive to the embeddedness of education, fostering targeted action to reduce educational inequalities. Informal education has gained increasing importance in European countries (Smyth 2009, Tsiplakides 2018). Incorporating specifically informal learning into the analytical frame of PIONEERED research can shed light on processes of cumulative disadvantage and educational inequality across different levels of education and stages of the life-course. During early childhood, the roots of inequality can be detected in both formal and informal education, as two significant socialisation agents and spaces (Kim and Dopico 2016, Bollig 2018). This is also the case at other stages of the life-course. Although informal education is believed to be more strongly associated with ascriptive characteristics (such as social origin or gender) of individuals than the formal curriculum (La Belle 1982), it can also have a positive impact on the educational trajectories of individuals. For instance, it can reduce gender-typical career choices among young people and improve individual performance, regardless of the stage of education (Burrows *et al.* 2018, Mesiti *et al.* 2019). Research has long highlighted that emotional skills, which are acquired in informal and non-formal contexts as much as formal ones and transferred across these, might be crucial predictors of success, not only in education but in a wide range of life outcomes (Arum and Roksa 2011, Hyytinen *et al.* 2018, Kankaraš and Suarez-Alvarez 2019, Tuononen 2019). PIONEERED therefore adopts a wide view of skills and outcomes, and will assess, whenever possible, generic skills in formal, non-formal, and informal settings at different education stages. Likewise, it includes other key elements, such as wellbeing, health, and related (inter)actions, attitudes, and dispositions of children and young people.

In sum, the PIONEERED project distinguishes between formal, non-formal, and informal settings as well as formal, non-formal, and informal learning and considers the linkages between these, as this strategy is likely to reveal mechanisms and aspects of education which have remained hidden in previous research, and thus insusceptible to new, effective education policy.

2.2   Multilevel and general approach to educational inequalities

Multilevel approach

Educational disadvantages are likely to develop not from one singular factor but from a range of factors that – according to seminal approaches in sociology (Coleman 1986) and socialisation studies (Bronfenbrenner 1979) – relate to different analytical levels. Employing a multilevel perspective implies searching for measures of educational inequalities on different levels including the individual level (micro level: e.g., students, parents, peers, teachers), the institutional level (meso level: e.g., schools, institutions), and the societal level (macro level: e.g., educational policy, policies regarding income distribution, welfare), as well as the linkages between these levels. While PIONEERED follows Coleman's approach in the first instance, it may also be beneficial to consider other multilevel approaches such as Bronfenbrenner's (1979) model that differ in terms of the number and specific kinds of levels identified.

Focusing on the structural-individualistic, explanatory schema by Coleman (1986), the core argument is that individuals' (such as students) perceptions of situations, thoughts, and actions are shaped by institutions such as schools. These institutions are shaped by higher-level agents of society, each with their specific characteristics (e.g., education systems and policies, the broader social and cultural fabric, climate, etc.). According to this model, abolishing educational inequalities and particular individual disadvantages such as the lower performance of male working-class students in school implies implementing specific educational policies (macro level) to tackle educational inequalities that may impact institutional school features (e.g., classroom composition, provision of compensatory pedagogical measures to compensate for lack of access to learning resources, etc.) and, via this level (meso level), affect individual educational opportunities. However, the model not only assumes a top-down impact but also accommodates bottom-up impacts. By the logic of aggregation from micro to macro, lower individual inequalities or disadvantages also translate into less inequality in the system, with the potential to (re-)shape both the institutional level (e.g., school features) and society (e.g., societal structures, educational policies, and cultural climate). Even beyond the sphere of education proper, reducing individual disadvantages by increasing access and uptake of education would thus also have consequences for the socioeconomic and cultural spheres (e.g., chances of employment, income, marriage, social class, world view, social values, lifestyle, etc.).

While Coleman (1986) considers there to be three general levels (macro, meso, micro) to study human action, the Bronfenbrenner (1979) ecological systems theory focuses on the embeddedness of individuals into environmental systems and interactions between these systems and the individual. This model covers more levels than the Coleman approach. While the micro system relates to institutions and groups that directly shape the individual (in this concept the developing child), such as family, peer groups, and teachers, the meso system

relates to interactions between these institutions or groups (e.g., school–family relations). The exo system relates to environments the individual is not part of but that may indirectly shape the child, such as the experiences of parents at their workplaces that may impact their attitudes, behaviours, and wellbeing, and thus also their behaviour towards the child. The macro system relates to the culture that shapes individual, micro, meso, and exo systems. While in Coleman's (1986) concept the macro level is strongly linked to society and its conditions, Bronfenbrenner (1979) emphasises cultural contexts that can relate to spatial (e.g., regional cultures) or temporal (e.g., generations) or ethnic (e.g., certain immigrant groups) subunits of society. The chrono system in this model relates to life-course patterns that are linked to environmental events and institutionalised transition or pathway patterns, but also to the sociohistorical conditions that may shape these temporal patterns.

General explanations of educational inequalities

Researching how to tackle educational inequalities based on a multilevel approach implies looking at how different levels shape educational inequalities and in particular at the mechanisms that cause such inequalities. In the following, we will introduce two seminal approaches to educational inequalities that focus on individual disadvantages and advantages, but also (sometimes implicitly) relate to levels above the micro level that shape individual inequalities.

On the one hand, educational inequalities and how individual and corporate actors at different levels prevent or even facilitate the development of inequalities can be studied by employing the general conceptual framework of Boudon (1974) on primary and secondary effects of social origin. In the classical concept, primary effects refer to differences in educational achievement structured by social class, while secondary effects relate to social background-specific educational decisions at certain points of educational transitions (e.g., from lower secondary school to an upper secondary school track, or from upper secondary education to tertiary education). The latter are based on cost–benefit evaluations against a background of resources and constraints (Breen and Goldthorpe 1997, Becker 2003). The concept of primary and secondary effects can also be applied to gender (Becker 2014, Hadjar *et al.* 2014), ethnic inequalities (Van De Werfhorst and Van Tubergen 2007, Kristen *et al.* 2008), or the intersection between gender and ethnicity (Fleischmann and Kristen 2014, Dollmann 2017). In the PIONEERED framework, it is also applicable to currently under-researched axes of inequality such as disability (Powell 2010). A major recent extension of, and correction to, the Boudon model relates to tertiary effects (Esser 2016), namely: the stereotype-biased expectations, efforts, and evaluations of teachers who diagnose and treat students differentially in school. Research has shown that teachers hold stereotypes regarding gender, migration background, social background, and inclusive needs/disability (e.g., Glock *et al.* 2015, Krischler *et al.* 2019). Thus, for instance, lower educational attainment on the part of disadvantaged groups can be explained by their lower achievement (primary effects), lower educational aspirations and decisions in favour of less demanding and shorter educational pathways (secondary effects), and differential treatment by teachers (tertiary effects) vis-à-vis an actual and perceived lack of resources.

A second distinct approach in the explanation of educational inequalities is that of Bourdieu (1986, Bourdieu and Passeron 1977), which focuses on group-specific resources, socialisation processes (involving "habitus"), and processes of institutional selection and social reproduction. The principle of formal equality, in particular, is in focus, since it serves to legitimise educational inequalities, inclusion, and exclusion in schooling (Bourdieu and Passeron 1977). The learning of educational content in schools presupposes that the tools for learning – for example, an elaborate language or high educational aspirations – have already been acquired (e.g., in the family). Students also need access to capital resources that facilitate learning processes: cultural capital (e.g., books at home, literate parents), social capital (e.g., relatives and peers that support home tasks), and economic capital (e.g., financial resources for additional lessons and learning materials). Diverse life practices, cultural capital, etc. also play a role in the uptake of education, as this very much depends on the cultural distance between the students and the demands of educational organisations. This argument here builds on Bourdieu's concept of habitus, which is defined as a system of durable embodied attitudes and values (dispositions, here towards education) and behavioural patterns (practices) that are socialised in families, but also in other contexts such as the peer group, and which serve to generate further practice. Schools inhibit an institutional habitus (Reay *et al*. 2001), meaning that they have certain demands regarding student habitus. Some groups (such as working class and male students) are further removed from the demands of actors within educational settings than other groups. A lack of fit between their own habitus and these demands decreases educational opportunities (Helsper *et al.* 2014). Bourdieu's theory challenges the mere deficit perspective and foregrounds how cultural capital or habitus – which often goes unrecognised in the institutional context – constitutes a subjective and collective action resource (Jobst and Skrobanek 2020).

In sum, the conceptual framework of PIONEERED draws attention to the question of how education policies and related education systems (macro level) shape institutional settings where learning takes place such as schools, care or day care institutions, or families (meso level), and how the structure of these settings impacts individual learning processes (micro level). Following the models of Boudon (1974) and of Bourdieu (1986), among other explanatory approaches more specifically applicable to certain cases, key questions are how systems and structures compensate for lack of access to resources in the uptake of education (capital resources), how students of different habitus origins fit into school (habitus), how systems and structures compensate for disadvantages in achievement (primary effects), how they shape cost–benefit calculations and the educational decisions of students and parents (secondary effects), and how they shape the evaluation practices of teachers and prevent certain stereotypes (tertiary effects).

In sum, triangulation of such general frameworks as those of Bourdieu and Boudon, combining habitus and power perspectives with resource and decision perspectives, among other perspectives of specific relevance, as well as differentiating between macro-, meso-, and micro-level factors and linkages between different levels, seems most promising for providing a basis for holistic analysis.

While the selected key approaches provide a general framework, they need to be triangulated by institutional approaches (such as the life-course approach) and approaches that explicitly

focus on discrimination (such as the intersectionality approach), as well as ecological approaches (such as Bronfenbrenner's multilevel approach) and approaches that focus on power, hegemony, and racism. While we describe some of the approaches in this document, others will need to be reflected in the course of the research.

2.3 Inequality as necessarily intersectional

A key general theoretical approach to understanding inequalities explained here in more detail is that of intersectionality (Crenshaw 1991, Walby *et al.* 2012, Gross *et al.* 2016), which raises awareness of specific inequalities at the intersection of certain axes of inequalities. It is crucial to analyse inequalities as always necessarily intersectional, involving race/ethnicity, gender, social and migration origin, disability, and place of residence, to name but a few social categories that account for a diversity of interdependencies between certain axes of inequality.

Intersectionality offers an analytical perspective that, in its early stages, was mainly recognised and anchored in qualitative approaches and fields such as critical race and gender studies. Criticising the invisibility and exclusion of certain groups and the reduction of people "to one category at a time" (Phoenix and Pattynama 2006, p. 187), an intersectional perspective challenges "the singularity, separateness, and wholeness of a wide range of social categories" (McCall 2005, p. 1778).

The intersectional approach has a long tradition in qualitative studies on specific (incremental) disadvantages that arise at certain intersections of axes of inequality (e.g., gender and ethnicity). One example is the discrimination against Black Caribbean women, as described in the seminal work by Crenshaw (1991). Some classical studies focusing on education already considered intersectionalities – such as Dahrendorf (1968), who revealed Catholic working-class girls originating from a rural area as being the most disadvantaged regarding educational attainment in Germany, or Willis (1977), who analysed working-class boys in Britain as a vulnerable group in the education system – if not in as theoretically articulate a fashion as Crenshaw and others.

Intersectional approaches have only recently received more attention by quantitative researchers (Gross *et al.* 2016). However, such quantitative studies of intersectional inequalities remain scarce. In their comparative work involving eight European countries, Breen *et al*. (2010) found similar patterns of declining educational inequalities structured by social origin for both women and men during the post-Second World War educational expansion, but also some indications of intersectionalities. Disadvantage in terms of educational attainment of children of business and farm owners proved less marked for daughters than for sons, a finding which appeared relatively stable and even strengthening over time in some settings. Breen *et al*. (2010, p. 44) also found significant interaction effects between class, gender, and cohort regarding the link between class of origin and class of destination in Poland and Italy, where "inequalities were much greater among women than men in the older cohorts and inequalities declined more rapidly among women". More recent results by Becker (2014) and Blossfeld *et al*. (2015) show that the educational participation of women of working-class origin increased the most during the educational expansion.

McCall (2005) distinguished three not mutually exclusive approaches of intersectional research, each linked to a specific type of intersectional complexity that the respective approach considers. First is the anticategorical approach, which focuses on deconstructing fixed, predefined categories and their underlying normative assumptions of social groups and categories, usually applied in qualitative approaches. Second is the intracategorical approach, which follows the research design of early intersectional studies such as that by Crenshaw (1991). Such studies are mostly qualitative and focus in depth on specific, neglected axes of inequality, but thereby also restrict their focus to these groups. Third is the intercategorical approach, which is mostly the perspective of quantitative intersectionality research, makes use of predefined categories, and analyses the interrelation of these group categories via systematic group comparisons. Thus, "scholars provisionally adopt existing analytical categories to document relationships of inequality among social groups and changing configurations of inequality along multiple and conflicting dimensions" (McCall 2005, p. 1773). As this approach is restricted to a small set of a priori defined dimensions and categories, solid knowledge is a prerequisite (Winker and Degele 2011).

Within the context of PIONEERED, the following conceptual aspects of an intersectional perspective are particularly key (Gross *et al.* 2016):

First, multidimensionality, that is, acknowledging that single dimensions may be too narrow to explain inequality, even just in terms of educational outcomes (Gross *et al.* 2016). In quantitative research, this means either considering the main effects of several axes of inequality or considering heterogeneous effects (Schudde 2018). This could be done by including interaction terms, in cases where it is theorised, for instance, that the effect of one inequality axis on an educational outcome is moderated by another axis (Gross *et al.* 2016; for a good overview on intersectionality and how to implement it in quantitative research see Schudde 2018). Given that the number of effects increase exponentially, considering several axes of inequality simultaneously is complex. Therefore, it is crucial to base intersectionality in sound theoretical grounding.

Second, contextuality, that is, relevant axes of inequality may differ across place and time, given that, for example, the institutional structures that individuals experience differ and thus lead to systematically differing outcomes (i.e., one social group might be disadvantaged in terms of educational outcomes in one national context, but not in another; Gross *et al.* 2016). In particular, this suggests an openness and flexibility of the researcher towards multiple and/or differing axes of inequality across national contexts (where possible).

In sum, considering complexity and intersectionalities and thus the heterogeneity of experience within certain groups that are (dis)advantaged in education is vital in regard to gaining a holistic picture. Increasingly, this becomes the state-of-the-art in social science and educational research.

2.4   Life-course perspective

Educational inequalities, understood comprehensively, can be associated with a myriad of intersectional and interconnected disadvantages accumulated at different stages of an

individual's life-course (Mayer and Müller 1986, Elder 1995, Mayer 2003, 2009). Life-course is defined in terms of a sequence of activities, states, and events in different domains of life understood as institutionalised fields of action (such as education, work life, and family), which span from birth to death (Mayer and Müller 1986, Mayer 2003, 2009). Life-courses can only be analysed considering their longitudinal and processual character, as they need to be understood as endogenous causal relationships, that is: previous stages and events shape later stages and events. Resources needed for later stages of the life-course are acquired during earlier phases (e.g., educational performance determines educational certificates and thus also shapes labour market chances). As the individual is embedded into other social units on different levels – such as the family, educational organisations, or societies (as also outlined in multilevel concepts; Coleman 1986, Bronfenbrenner 1979) – and is shaped by these levels, individual life-courses are also determined by impacts from the meso and macro levels. They are regulated by the institutional rules of education systems and welfare state regimes. Life-courses are particularly shaped by age norms as institutional characteristics of educational or welfare state systems (e.g., duration of compulsory education, age of transition into primary schooling, retirement age, etc.). Thus, life-courses need to be studied as processual phenomena while considering different contexts and employing a multilevel perspective. Life-courses are multidimensional and include different domains of life that are interlinked (e.g., work life also determines family life).

Similarly, following Elder's (1995) life course approach implies careful consideration of the structural context (time and place) and individual characteristics and actions (human agency and self-regulation). It makes sense to conceptualise the production, reproduction, or reduction of educational inequality as a dynamic, open ecological process shaped by the interlacing of structure and individual action throughout the life-course (Skrobanek and Karl 2016), in a way that "takes into account situational and personal conditions, its variations over time and the reciprocal relation/interrelatedness between the levels in temporality" (Skrobanek and Jobst 2019, p. 316).

Identifying some major rules for research following and adapting Levy's (2013) understanding of the life-course perspective, the following is key. Employing a life-course perspective means considering historical developments, such as the impact of (macro-level) social change (e.g., educational expansion), and how these shape life-courses. It is to focus on causal chains between earlier and later processes within the chronology of life-courses. Of special interest are temporal effects and the mechanisms behind these, such as maturation and cumulative effects, as well as cross-level impacts between the macro level, the meso level, and the micro level, that is: how the individual life-course is shaped by institutions and societal conditions. A multiperspectivist stance that integrates different field-specific perspectives (e.g., labour market and family research) and different disciplinary (e.g., educational sciences, sociology, economics, psychology) and methodological (e.g., quantitative, institutionalist and ethnographical) perspectives is vital from this perspective.

However, analysing the role of structural or ecological conditions often leads to overstressing of the impact of the structural vs. the individual. Thus, focusing on the impact of macro and meso conditions increases the risk of neglecting or underestimating the role of the micro

characteristics of the concrete life-course. People in general, and young people especially, "are not objects but subjects of the situation they are confronted with" (Skrobanek and Karl 2016, p. 100). Thus, "[t]hey actively define the situation they live in (Elder 1995) and they create or shape their lifeworld by interpreting and acting while adapting to given opportunities structures" (Roberts 2009, Skrobanek and Karl 2016). Therefore, although it is embedded in structural temporal contexts, they own agentic capacity that varies in extent and power with a view to shaping outcomes over time (Skrobanek *et al.* 2020). In other words, the key balancing act of life-course research in general and PIONEERED in particular consists, theoretically as well as empirically, in preventing structural as well as individual gaps in the multiperspectivist life-course account (Macmillan 2005).

This issue is strongly linked to the controversy regarding how many standardised and/or individualised transitions in particular and in the life-course of a person (as sum of transitions or transitions paths) in general there might be (Macmillan 2005). Terms like "standardised", "fragmented", "individualised", "differentiated", "processual", or even "contingent" have found their way into the debate over recent decades. It is of no surprise, then, that this multifaceted debate has not only led to theoretical but also methodological challenges (Bernardi *et al.* 2019, Piccarreta and Studer 2019).

Considering education as core to the PIONEERED project, the life-course perspective emerges as highly important. While much of the previous work on educational opportunities has tended to focus on particular individual transitions (from elementary school to differentiated tracks, from compulsory schooling to further education or vocational training, as well as the anticipated transition from school to employment), a life-course approach captures cumulative transitions and the trajectories these transitions constitute. Educational inequality – as well as equality – is not a single, one-time event in life, but rather a process characterised by an accumulation of events of unequal or equal treatment. Accordingly, PIONEERED focuses on how practices and policies structure timing, duration, and sequence of activities and events in a person's lifetime (Mayer 2003), all of which are closely linked to cumulative advantages and disadvantages (DiPrete and Eirich 2006). Life-courses and educational trajectories are shaped through various simultaneous mechanisms that are linked to institutions (e.g., schools, day care, and shadow education), individual trajectories, and the collective patterning of life chances (e.g., via age norms regarding entry into schooling, transitions, and graduation). Following the concept of the life-course (Mayer and Müller 1986, Mayer 2003, 2009), analysis of educational inequalities entails focusing on differentials in educational trajectories as part of the social structuring of life. This means investigating the educational chances offered across core education phases of the life-course of different groups who share the same contextual setting, but potentially face very different structures of opportunity and constraint. In capturing the dynamic aspect of agency, the life-course approach is particularly appropriate for researching the practices, experiences, and outcomes at different (educational) stages (Wingens *et al.* 2011). Recent applications include investigations of educational attainment, work careers, family formation, occupational mobility, and labour market integration (e.g. Blossfeld *et al*. 2005, 2008, 2011).

There has been a range of recent methodological developments regarding life-course research in sociology. One of the central shortcomings of this research field, although it is marked by a

promising diversity of theoretical and methodological perspectives, is the lack of clear common principles and methodological approaches (Bernardi *et al.* 2019). To fill this gap, Bernardi *et al*. (2019) propose – based on a certain understanding of the life-course (Elder and O'Rand 1995) – to conceptualise life-course as "interlocking trajectories or pathways across the life span that are marked by sequences of events and social transitions" (Bernardi *et al.* 2019, p. 2). In other words, life-course is understood as a "multidimensional behavioral process performed and experienced by individual actors and shaped by interdependencies and interactions that cross time, domains, and levels" (Bernardi *et al.* 2019, p. 2). Based on this, the authors propose a research tool in the form of a synthetic representation of the life-course, comprised of "three levels of time domains and levels where developmental, behavioral and societal process occur", forming a "cube" (ibid. p. 2). In doing so they hope to contribute with a systemic framework and theoretical foundation for researching behaviour and decision making in the multidimensional and multilevel context of the life-course. This framework "serves as an ordering structure into which all specific mechanisms relevant to study life-course dynamics can be integrated" and lays the basis for weaving together the many similar research practices that today operate as if unique (ibid. p. 8).

Pointing in the same direction, albeit from a methodological perspective, Brüderl, Kratz, and Bauer (2019) propose a triangulation of holistic growth curve modelling (and sequence data analysis) with transition-centred approaches and (fixed-effects) panel regression and state probability models, in the hope of opening new possibilities to explain life-course dynamics (ibid.). The authors put their method to the test, looking at the transmission of social inequality. In doing so, they describe through growth curve analysis how a specific state or outcome develops over the life-course, and how trajectories differ between groups. If group differences are found, they explore probable effects of life events between groups with state probability models, and then the different strengths of those effects between groups through panel regression, analysing the different groups' vulnerability (ibid.). They conclude that this combining of methods provides "a more complete understanding of the life course than any single method could" (ibid. p. 9).

Piccarretaa and Studer (2019) provide an overview and discussion of new and established ways to approach the study of trajectories from a holistic perspective, detailing strengths and weaknesses with Sequence Analysis alone and new attempts to combine this with Event History Analysis, as well as considering model-based approaches. Their goal is to highlight methodological issues and aid in the proper selection and application of methodologies in life course research (ibid.). Sequence Analysis alone is helpful in providing holistic descriptions, but it relies heavily on the researchers' ability to recognise issues in the analysis, which is not always done to a satisfactory degree (ibid.). The solution presented is to mix Sequence Analysis with Event History Analysis in different ways. Two classes of model-based analysis are also considered: Multistate models and latent Markov models. This is done because "[b]oth approaches allow describing the types of events occurring over time and the relationship between covariates, either baseline or time varying, on the sequence of experienced events and transitions" (ibid. p. 7). Again, it is proposed to combine the methods to retain qualitative-based insights while increasing verification through model testing (ibid.).

In sum, tackling educational inequalities requires a life-course perspective properly conceived, as path dependencies need to be considered within a multiperspectivist account.

3 Implications for empirical research within PIONEERED

3.1 General implications

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The heuristic MILC framework has different functions, depending on the nature of a research task (Figure 1 and Table 1). More explanatory/confirmatory focused research tasks – here meant from a top-down perspective, and mainly adopted in WP4 and partly in WP3 – will use the MILC framework as a frame of reference for carrying out the data collection and data analysis. More inductive, reflexive research tasks will focus on aspects of pioneering practice informed by concrete practices. Thus, a bottom-up perspective – adopted in WP5 and partly in WP3 – is used to look for aspects that add to, go beyond, or are not covered by the MILC framework. Regarding the triangulation and syntheses of research results, pioneering policies and practices will be identified and compared by: (a) using the MILC framework; and (b) searching in a more inductive, reflexive manner for pioneering policies and practices, their communalities, and differences between varying contexts.

In terms of structuring results, the heuristic MILC framework provides a common reference point. As outlined in the Introduction above, PIONEERED does not simply apply a predefined framework but accommodates a strong openness to elements that may go beyond the heuristic MILC framework. Looking beyond the MILC framework implies reflecting critically upon the common framework against what is found in the practice field. In PIONEERED, this reflexive aspect is considered in two ways. First, the insights gained through empirical research will be continuously confronted critically with the MILC framework. Commonalities, differences, and blind spots will be discussed and such discussions may lead to adjustment of the framework. However, the proposed strategy also encourages some focus on aspects that lie beyond MILC, which are new and open up new ways seeing. A first opportunity to do so is the postponed kick-off meeting (planned to take place in Madrid on 7 and 8 February 2022), where project partners will discuss first, partly preliminary findings from reflexive research tasks, confront them with the MILC framework, and then adjust, or enlarge the framework, if necessary. This includes incorporating relevant findings from the field, including policy makers' and practitioners' perceptions, framings, and definitions of educational inequality, pioneering practices and disadvantaged groups deemed exposed to educational inequality and thus recipients of potentially pioneering equality-promoting interventions. Second, even just occasionally adapting the heuristic framework may not suffice. Therefore, PIONEERED remains open to the unexpected. This is of special relevance for the practice research in WP5, which may be confronted with practitioners' *ad hoc* responses regarding their practices that may go beyond the initial scope of the MILC framework.

Figure 1: How the heuristic MILC framework relates to different types of research tasks (compare Table 1 for task numbers)
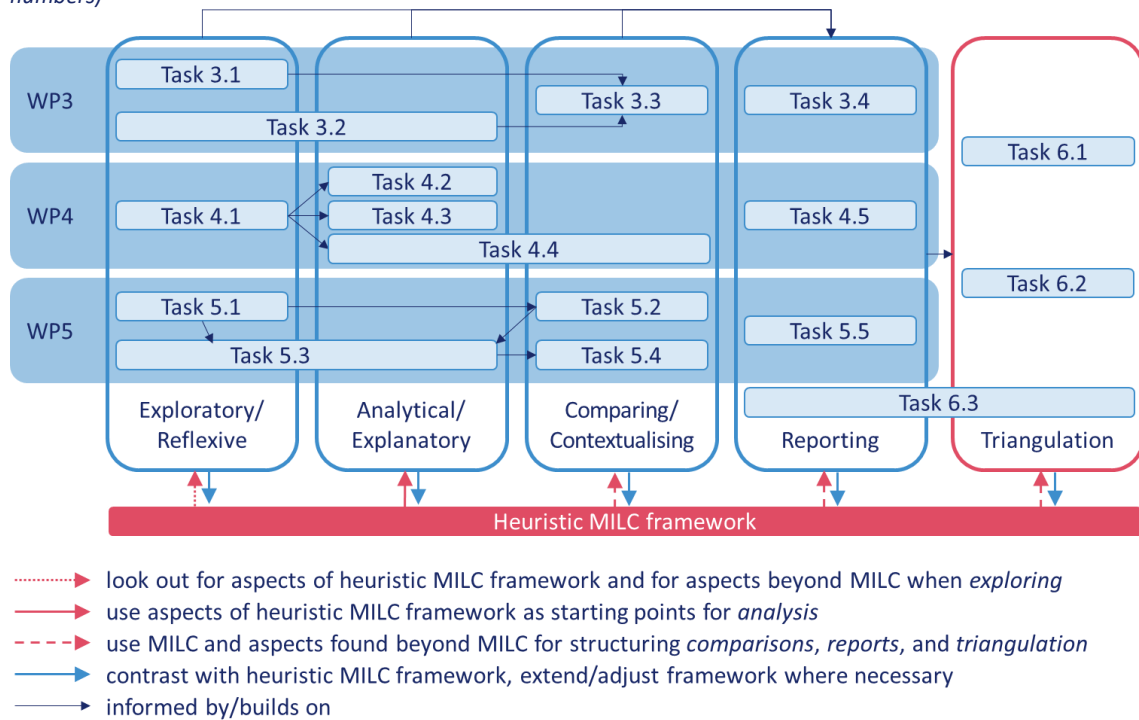

look out for aspects of heuristic MILC framework and for aspects beyond MILC when *exploring*

use aspects of heuristic MILC framework as starting points for *analysis*

use MILC and aspects found beyond MILC for structuring *comparisons*, *reports*, and *triangulation*

contrast with heuristic MILC framework, extend/adjust framework where necessary

informed by/builds on

Table 1: Research tasks

	Task titles
WP3	Task 3.1: Mapping concepts, definitions and prioritisation in policy documents.
	Task 3.2: Policy analysis.
	Task 3.3: Re-contextualisation of results of policy analysis.
	Task 3.4: Writing up report, working paper, and preparation of data inventory.
WP4	Task 4.1: Harmonising country-specific and international datasets.
	Task 4.2: Identifying and explaining patterns of intersectional educational inequalities based on the MILC methodology from a national country perspective.
	Task 4.3: The interplay between informal and formal education and its impact on academic achievement.
	Task 4.4: Contrasting and comparing results from an international perspective.
	Task 4.5: Preparation of a public report.
WP5	Task 5.1: Exploring stakeholders' knowledge and experiences of current practices that aim to tackle educational inequality in each country.
	Task 5.2: International comparison of the findings on stakeholder knowledge with regard to practices to overcome educational inequalities in each country.
	Task 5.3: Analysing selected cases of pioneering educational practices in each country.
	Task 5.4: Conducting comparative cross-national analyses of pioneering educational practices.
	Task 5.5: Preparing a working paper and practice input for the comparative report.
WP6	Task 6.1: Mapping and triangulating level-specific results regarding policies (WP3), the findings of data analysis (WP4), and practices (WP5) from a comparative perspective.
	Task 6.2: Identifying the most promising pioneering policies and practices based on the empirical data.
	Task 6.3: Writing up report on most promising pioneering policies and practices.

Structuring findings flexibly within a common framework is reasonable, as the major research activities of WP3–5 with their specific methodologies run in parallel. In this respect, the PIONEERED research strategy could be characterised as a parallel mixed-method design with a triangulation step at the end, bringing together the insights from WP3–5 (see the section on triangulation for more details). The aim of triangulation in PIONEERED is to provide "added value" over and above the outcomes of specific country studies to leverage insights into commonalities and differences across the countries studied and to the extent to which their education systems and provisions shape the nature and outcomes of education practices. For these purposes, "triangulation" relates to the systematic integration of data from different sources and across different levels. The challenge is to allow for flexibility at the country, site, or group level so as to capture accurately the nuances of a specific PIONEERING programme, policy intervention, or practice, while at the same time gathering sufficient comparable data to make the integration of information on pioneering policies and practices feasible. Therefore, researchers will provide "thick descriptions" of PIONEERING policy interventions and practices, providing detailed accounts of their varied features. However, to compare and contrast pioneering policies and practices across and within countries, regions etc., a common framework connected to information along "key dimensions" can offer researchers some focus while exploring different levels of education.

General recommendation

Research within PIONEERED should be performed:

- with the heuristic MILC framework in mind; and
- from a looking beyond perspective – critically confronting and potentially adapting the framework or even finding new aspects lying beyond MILC based on the insights from the empirical research.

When reporting results, researchers should try and relate findings regarding the sources of, and measures against, educational inequalities to the key dimensions within the heuristic MILC framework. Insights going beyond this framework need to be characterised in detail ("thick descriptions").

The remainder of this subsection gives an overview of the approaches of the heuristic MILC model and links these to aspects relevant to empirical research in PIONEERED. It also links these to the key dimensions for reporting results, as per data to be included in the triangulation step. Note that most key dimensions relate to findings either concerning sources of inequalities or pioneering policy interventions or practices tackling educational inequality.

Concerning formal *educational settings*, PIONEERED focuses on settings along the "main routes" or the usual trajectories within a given education system. In addition, as PIONEERED has a special focus on disadvantaged children and young people, educational settings of relevance for them will also be in focus, even if these are situated outside the usual school bound trajectories.

Non-formal educational settings focus on areas that are either not or are only partially covered by formal settings, such as Early Childhood Education and Care (ECEC) or solutions bridging gaps between compulsory and post-compulsory education in educational trajectories. With respect to informal education, PIONEERED includes those settings with obvious connections to formal education, such as doing homework and learning for school within the family or together with peers, as well as shadow education, for instance in the form of private tuition. Other informal educational settings may be included based on results from exploratory research.

Key dimension for reporting with respect to educational settings:

- Type of setting: formal, non-formal, informal;
- Interactions with other settings (if applicable: intended, unintended)

Additionally relevant for reporting on pioneering policy interventions and practices:

- How prevalent is the intervention or practice (e.g., what share/type of schools/students does it cover)?

Turning to the *multilevel approach*, PIONEERED focuses on young learners, their instructors, advisors, parents, or other relevant actors on the micro level, schools and other educational institutions, as well as non-formal or informal institutional agents such as shadow education providers on the meso level, and national states or subregions with specific policies, markets, structures, and cultures on the macro level.

Key dimension for reporting with respect to levels:

- Context (thick descriptions) in which the analysed case is embedded (relevant cultural, societal, or local features, pertinent characteristics of the education system and institutions or groups (e.g., schools or classes; other educational institutions, e.g., universities, etc.))

Relevant for reporting on pioneering policy interventions and practices:

- How it relates to "mainstream" provision (e.g., integrated, pilot project, standalone provision?)
- Level at which an intervention/practice has been initiated (top-down, e.g., government ministry, local authority, vs. bottom-up, e.g., school/other educational institution, community group)
- Level(s) at which main actors can be located
- Interlacement between levels: intended, unintended, absent

Relevant for reporting on sources of educational inequalities:

- Level(s) at which factors increasing or alleviating inequalities can be identified
- Dimensions addressed regarding educational inequalities, namely treatment, access, or outcome
- Cross-level interlacement of factors increasing or alleviating inequalities

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PIONEERED takes an open approach to *intersectional inequality* when it aims at identifying and understanding which axes and intersections are of relevance for policy makers and practitioners. Therefore, results from the inductive reflexive part of PIONEERED research will provide starting points for analysing axes of inequality and their intersections. A special focus will be put on race/ethnicity, gender, social class, place of residence, disability (and potentially other axes such as sexuality) and their intersections.

Key dimension for reporting with respect to intersectional inequalities:

Relevant for reporting on pioneering policy interventions and practices:

- Whether there are specific target groups in terms of axes of inequality such as race/ethnicity, gender, social class, migration background, place of residence, school setting, opportunity structures, subculture, and their intersections
- If so, the characteristics of these target groups
- Whether intersectional complexity is considered

Relevant for reporting on sources of educational inequalities:

- Analysed axes and intersections
- Relationship between analysed axes and intersections (e.g., if differences along one axis or intersection can be explained by differences along another, intersecting axis)
- Whether (or to what extent) differences found can be explained by underlying mechanisms (e.g., differences in resources, aspirations, treatments)

Studying educational inequality from a *life-course perspective* can, of course, be done with longitudinal data and observations that cover a long period of an individual's life, including their entire school trajectory. While such analyses will be part of PIONEERED for some countries (depending on data availability), this is not the only way research benefits from a life-course perspective on educational inequality. When investigating sources of, and measures against, educational inequality, PIONEERED will, whenever feasible, consider how the life-course of the children and young people is temporally structured by the educational provisions system and other societal factors (such as experience of recession), how earlier events in their life and school trajectories shape their current educational opportunities, and how measures taken at a given time affect their prospects. Wherever possible (depending on data availability), PIONEERED will investigate all education stages and trajectories (from ECEC to upper secondary education, to potentially tertiary education) as well as all relevant transitions.

Other relevant dimensions not directly related to the MILC framework include the range of educational aspects in terms of which inequalities can manifest themselves. In general, inequalities may occur because of differences in opportunities, treatments, and outcomes. As outlined while introducing formal, non-formal, and informal educational settings, PIONEERED adopts a broad definition of skills and outcomes. The choice as to what inequalities are to be investigated depends on the research question and opportunities of a research task, but researchers will aim at covering different aspects. Such aspects include directly observable outcomes (e.g., early school leaving, track allocation, enrolment in tertiary education), interaction with and treatment by teachers, the involvement of children and young people in education (engagement, active participation, and/or motivation), and (educational and broader socioemotional) wellbeing.

3.2 Implications for WP3

P2-UBERN: Simon Seiler, Andrea B. Erzinger

The policy analyses in WP3 investigate the institutional and regulatory framework of education on the level of national states, complemented by information from the subnational level (especially for countries with a federal system) in as far as policies are designed and modified at these levels. Its main objective is to identify pioneering policies aiming at alleviating educational inequality. Furthermore, it will also contribute to a better understanding of how particular aspects of educational inequality are identified in given countries, and how (or if) they are acted upon. In WP3, researchers will analyse policy documents and existing evaluations and, where necessary, interview stakeholders to explore educational policies both (a) in general and (b) with a special focus on policy interventions aiming at addressing educational inequalities pertinent to the country by looking at policy formulation, implementation, and outcomes.

On a general level, WP3 will chart policies defining access to (e.g., conditions of access to tertiary education or specific tracks in segmented systems) and ensuring the quality of formal education at each stage, as well as those detailing the organisation of teacher education (initial and continuing) and regulating non-formal educational settings (public or public–private partnerships if directly connected to educational inequalities). This mapping will start from existing knowledge bases, such as Eurydice (see European Commission 2021), and will be complemented by analysing legal documents from the nine countries. Furthermore, based on the definitions and perceptions of intersectional educational inequalities by national stakeholder panels, specific cultural and institutional conditions will be identified that directly lead to certain definitions of vulnerabilities and educational inequalities and contribute to a given formulation of policies. The knowledge acquired concerning these conditions will be used to (re-)contextualise the results from the policy analysis (polity analysis in task 3.3). Thus, seen from the perspective of the MILC framework, WP3 will provide valuable policy context information on the macro level regarding formal and non-formal educational settings, which will also make it possible to locate and contextualise the time frame of stages and transitions in the life-course of students. This will contribute to addressing the research question on how educational inequalities are affected by policies and reforms implemented in different countries that relate to different levels of the education sector, both directly and through providing policy context information as a basis for the contributions of WP4 and WP5 to this research question (PIONEERED 2020b, p. 4).

Regarding the special focus on policy interventions aimed at increasing access to and uptake of education and decreasing educational inequality, WP3 will, in a first step, explore which intersectional inequalities are identified in educational and related policy documents. This exploration will also cover the aspects of education that are the focus of the investigated policy documents. As outlined in section 3.1 above, "exploring" should be done bearing the heuristic MILC framework in mind as well as looking beyond, while critically confronting MILC with the findings.

The policy analyses conducted in a second step, which include the evaluation of policy implementation and policy outcomes, will deepen the results from the exploration and ask what policy interventions work for what disadvantaged groups, including in terms of core intersecting axes of inequality. The policy analyses will contribute to addressing the research question of how inequalities are tackled and possibly mitigated by policies at the societal level (education system, social and welfare protection, family policy), and by residential and geographic specificities at other policy levels (PIONEERED 2020b, p. 4, fourth and sixth research question).

Drawing on MILC, these analyses, complemented by polity analyses[3] undertaken in a third step, will specially emphasise the specific contexts in which policy interventions create an impact. From a multilevel perspective, the interactions between the level of the policies (the macro level) and the target levels of the intervention (i.e., what agent will implement or directly be affected by the intervention; e.g., schools on the meso- and students on micro level) will be studied, whenever the necessary information is available. Similarly, from a life-course perspective, a temporal contextualisation will contribute to understanding of which interventions work at which moment of learners' educational trajectories. The analyses will explicitly account for the possibility of a same intervention producing different impacts depending on its timing, e.g., whether it takes place at the middle or end of a given stage. Besides looking at timing, the analyses will also explore whether previous experiences (e.g., related to previous interventions) have been taken into account when designing or evaluating policy interventions. With respect to intersectionality, the policy analyses will critically scrutinise the target population of a policy intervention. This includes looking out for "forgotten" groups (i.e., disadvantaged groups not considered in a policy document) and a comparison of the intended target group with the groups that in practice benefit or are affected most by the intervention, but, importantly, it also includes a critical analysis of the labels used. Does, for example, the label "student with migration background" include all genders and social backgrounds or does the use of this label result in the exclusion of certain groups?

In sum, WP3 aims at identifying pioneering policies by approaching policy analysis relating to educational inequalities from both confirmatory and explorative perspectives, asking researchers to critically analyse not only existing policies and their impact but also what is missing from policies, e.g., which target groups have been excluded from the policy discourse. In doing so, WP3 employs the MILC framework but also looks beyond.

> The following recommendations further help to ensure a strong common ground with other WPs when researching pioneering policies:
> - WP3 has marked explorative elements. Being explicit about aspects captured and not captured by MILC (axes and intersections of inequality, aspects of education, educational settings) and where findings go beyond MILC will facilitate triangulation.

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[3] There is a conceptual and methodological distinction made between policy and polity research. While policy analysis is about the laws and policy measures in a certain country or on a supranational level, polity analysis focuses on the (historically and spatially varying) institutional and cultural context of policies and political decisions and actions, for example the general ideas of educational policies (such as the country-specific value of education) and the evolution of the education system in general (Palonen 2003, Jobst 2013).

- WP3 researches the macro level in the first place. Carefully examining the target levels and possible interactions between the levels helps to establish "docking points" for connecting results from WP3 with results from research on the meso and micro levels.

- WP3 focuses on educational settings with some degree of formalisation (formal and non-formal settings). Considering, wherever possible, informal settings (e.g., policies aiming at integrating parents or at explicitly compensating for lacking parental resources) will further contribute to a comprehensive view on educational inequalities at the level of policies.

- While presumably only few policy interventions and their evaluations will take an explicit life-course perspective, WP3 can strengthen this perspective by pointing to longitudinal dependencies when discussing policies targeted at a specific stage or transition. In other words, WP3 can discuss how outcomes at earlier stages or previous life events influence opportunities at the stage at hand and how this stage could predetermine outcomes in later life, given the logic of the present education system and local context.

3.3 Implications for WP4

P2-UBERN: Simon Seiler, Andrea B. Erzinger

WP4 aims at the exploration of country-specific intersectionalities in educational trajectories and transitions across all stages in formal, informal, and non-formal educational settings, starting from the heuristic MILC framework. Mechanisms that are associated with existing and emerging inequalities should be identified and explained within this WP. An international comparison will uncover similarities and differences in the interplay of factors behind intersectional educational inequalities across contexts. Thus, WP4 helps us to better understand pioneering policies and practices by identifying disadvantaged groups, by investigating sources of educational inequalities, and by providing macro- and meso-level information on the contexts of such measures.

In the first task of WP4 (task 4.1), PIONEERED researchers prepare different datasets for analysis to make educational settings across countries comparable. To do so across country-specific and international datasets, the measures used for reporting key dimensions of the MILC framework need ex-post harmonisation (i.e., existing data are made comparable where no harmonisation with other data or transformation to standard variables was sought at the time of data collection). Whenever various datasets are combined, the categories of measures need to be summarised with as little loss of information as possible to arrive at commonly applicable categories. To ensure comparability of findings, for this step PIONEERED researchers will draw on insights gained from consultations with all partners on issues surrounding the standardisation and harmonisation of relevant educational settings. The data preparation undertaken in this step will make comparisons across countries possible and thus contribute to the aim of PIONEERED, namely the mapping of existing and emerging sources of educational inequalities (PIONEERED 2020b, p. 3). Task 4.1 looks for aspects of MILC when exploring the

country-specific empirical data identified in the project preparation stage (PIONEERED 2020b, p. 18, Table 3). At this stage, too, it is important to retain openness to aspects that have been identified as relevant when exploring stakeholders' perceptions, definitions, and knowledge in WP3 and WP5.

The consecutive tasks of WP4 use aspects of MILC as starting points for the analytical and explanatory research tasks. When studying educational inequalities from a national perspective, WP4 will analyse longitudinal datasets originating from studies such as the German National Educational Panel Study (NEPS), or the Swiss studies "Transitions from Education to Employment" (TREE), and "Competence and Context" COCON (see PIONEERED 2020b, p. 18, Table 3 and other useful datasets identified in WP4) that make it possible to study longitudinally students' entire or partial educational trajectories, which aligns with MILC's life-course perspective. Such datasets make it possible to assess the impact of the timing of specific life events (as proposed in PIONEERED 2020b, p. 3, first research question), such as key educational transitions but also relocations, divorces, or unemployment of parents, to cite but a few examples. Often, even if no longitudinal datasets are available, temporal aspects can still be considered via retrospective information (e.g., on grade repetition, age at immigration, etc.) or incorporating external information about the education system (e.g., on the duration of certain stages or on the timing of relevant transitions). In the event that the aforementioned datasets are not available or the focus of investigation is on temporal aspects (e.g., grade repetition), the potential use of cross-sectional data might be considered.

In general, WP4 has a focus on the multilevel approach as it investigates the micro, meso, and macro levels of educational settings in various tasks. Technically, this will be done through multilevel modelling (also known as hierarchical linear modelling, cf. Hox *et al.* 2017), which reduces biases resulting from unobserved confounders at the meso and macro level. Depending on the task and research question, different granularity of contextualisation is necessary, i.e., how many levels are modelled simultaneously (e.g., whether students, instructors, and schools [task 4.2 or 4.3] or whether students, classrooms, schools, and countries [task 4.4] are modelled). Thus, when studying patterns of intersectional educational inequality from a national country perspective (e.g., task 4.2), many of the datasets used will make it possible to scrutinise explicitly schools in the analyses as meso-level agents. Where study countries are included by random effects on the macro level (especially the case in task 4.4), additional European countries will be added to the estimated model to ensure proper estimations of country effects (Bryan and Jenkins 2016). If datasets do not allow for explicit consideration of other levels than the micro level, the PIONEERED project will examine the macro and meso level in the interpretation and contextualisation of the results.

As PIONEERED is interested in explaining differences or gradients along axes of inequality, interaction effects – including cross-level interactions – will be studied, which requires including random slopes for the variables of interest (Aguinis *et al.* 2013, Heisig and Schaeffer 2019). As an alternative to the basic specification of random effects models, researchers will examine the specification of "hybrid models", also known as the "Mundlak formulation" (Mundlak 1978) or correlated random effects modelling approach. This approach allows for a full separation of between- and within-effects and includes the possibility of considering random slopes (Bell and

Jones 2015, Antonakis *et al.* 2021). If the nature of the data and the research question better suit an alternative approach to the modelling, because the advantages of multilevel modelling cannot fully be exploited due to a small number (N<25) of macro-level units or because the model suffers from omitted variable bias, task leaders might opt for another modelling approach, such as fixed-effects modelling (see Möhring 2012).

There is a broad range of outcomes associated with educational inequalities that are examined in WP4. While some analyses in WP4 may be restricted to differences in single outcomes (such as early school leaving), it might be possible to analyse multiple complementary outcomes to understand comprehensively the complexity of educational inequality (depending on data availability and statistical modelling restrictions). The aim of considering multiple outcomes is not only to broaden the view on educational inequality and its diversity but also to reach a deeper understanding of underlying processes by connecting multiple outcomes. As an example, PIONEERED researchers may study educational aspirations as outcomes in their own right, but also as factors explaining other outcomes, such as educational achievement. WP4 will focus on outcomes that were identified in D2.1 (Chap. 3.1, such as educational achievement, track choice, or student wellbeing). However, PIONEERED researchers can recognise other relevant outcomes relating to educational inequalities, if necessary (e.g., achievement results following the Covid-19 school closure).

Overall, WP4 and especially task 4.2 aim at identifying and explaining patterns of intersectional inequality within and across countries studied using an (quantitative) analytical approach (in line with PIONEERED 2020b, p. 3, first research question). As quantitative analyses within PIONEERED rely on existing data, the quantitative analysis of intersectional inequality will build on crossing existing categories (an "intercategorical approach"; cf. McCall 2005), such as gender and social background. The main aim of considering intersectional inequalities is to acknowledge their multidimensionality and thus avoid glossing over meaningful heterogeneity within an existing category (e.g., "girls"). On the condition that within-group heterogeneity is linked to other measurable categories (e.g., ethnicity), the interaction effects of those categories can help us recognise potential intersectional inequality as defined by MILC. Presuming that intersections between only two axes are of interest, separate models by one axis could be an alternative approach to interaction effects. This latter approach is especially useful if two-way intersections between one axis with several categories (e.g., gender) and multiple other axes (e.g., social origin and migration background and place of residence) are of interest. Here, separate models for female and male children or young people may be easier to interpret than interaction effects. However, there are no substantive differences between the two approaches.

More pertinent than the technical implementation of intersectional inequality is the relationship between the concept of intersectionality and its representation in statistical models. It is important to stress that "intersection" and "interaction effect" are not synonyms. Intersectionality is an approach that favours complexity, with a focus on uncovering differences within categories. One type of intersectional complexity is that certain factors have different relevance for different subgroups. For example, gender roles may vary in consequence depending on the cultural background of a person. In such a case, interaction effects can be

used as a statistical tool for considering intersectional complexity. While in this case significant interaction effects are an argument for taking an intersectional approach, an intersectional lens focusing on subgroups might be fruitful even in the absence of interaction effects. This is the case if disadvantages accumulate in one subgroup. Even if this accumulation is strictly additive (and not multiplicative, as in the case of interaction effects), it is worth highlighting that the real-world consequences of an individual affected by multiple disadvantages are different than for an individual affected by only one of them (the Catholic working-class girls originating from a rural area studied by Dahrendorf (1968) form an example of such an accumulation of disadvantages). In such a case, intersectionality is not about testing interaction effects but rather about making accumulations of disadvantages visible – for example by means of graphical representations of linear combinations of risk factors (e.g., migration background, foreign language, and living in a deprived neighbourhood). A stepwise analytical procedure is therefore recommended for approaching educational inequality intersectionally. In a first step, researchers test for interaction effects between different axes of inequality and different educational contexts through statistical tests such as Wald tests or likelihood ratio tests. For the main analyses in the second step, researchers keep only those interaction effects that significantly improve the model fit. In a third step, researchers look out for accumulations of disadvantages in specific subgroups and present and interpret the results accordingly.

A dedicated task and deliverable in WP4 (task 4.3) will investigate the impact of informal and non-formal education settings (most notably shadow education) on inequalities and their interplay with formal education (in line with PIONEERED 2020b, p. 4, fifth and ninth research question). In a first step, levels of participation in informal and non-formal education across country and family background will be explored via descriptive analysis. In a second step, multivariate analysis might show the interplay between formal and informal/non-formal education by modelling interaction effects. Again, whenever possible, a multilevel approach as suggested by MILC will be considered, for example by examining educational programmes at school level (adding to research question three, PIONEERED 2020b, p. 3). Principally, other-than-formal educational settings will also be studied in further tasks of WP4, for example by considering the support learners receive from family members and peers (informal educational settings). Similarly, non-formal educational settings such as non-formal parts of ECEC or bridging solutions (aimed at overcoming gaps between compulsory and post-compulsory education) will be investigated when studying entire school trajectories in specific countries where data covering these settings are available.

To shed light on potential interventions that are tailored to specific groups with a view to reducing educational inequalities, task 4.4 will contrast and compare results from an international perspective (in line with PIONEERED 2020b, pp. 3–4, research questions two and four). This task analyses and explores patterns of intersectional educational inequalities as well as compares and contextualises the findings across education systems and countries. Thus, multilevel analyses will be the focus of this research task. As stated above, the multilevel approach of this task is technically implemented through multilevel modelling (Hox *et al.* 2017). Special care needs to be taken when including macro-level indicators, as the number of indicators should correspond to the number of degrees of freedom at the country level. Thus,

the complexity of the models (e.g., defined by the axes covered) might be reduced, in order to compare as many countries as possible. Including all three levels, task 4.4 contributes to addressing research questions related to individual factors, institutional (e.g., school) features, and societal factors from a higher level of altitude than the other research tasks of WP4. Hence, task 4.4 is contributing to a better understanding of pioneering policies and practices in varying contexts.

In conclusion, it can be stated that, in an ideal scenario, however unlikely, PIONEERED uses all aspects of the MILC framework simultaneously in WP4 by applying a multilevel longitudinal modelling approach with interaction effects both within and across levels. WP4 will result in a public report that summarises the sources of inequality (research field 1, PIONEERED 2020b, p. 3) by mapping existing and emerging sources of educational inequality over the life-course of a learner, taking the heuristic MILC framework as a starting point.

Starting from the heuristic MILC framework, the following recommendations further ensure that WP4 contributes robust empirical findings to the overall pictures resulting from the triangulation of findings:

- Make sure that measures used are harmonised within and across countries;
- Use longitudinal data when possible;
- Be aware of over-specification of the multilevel models, due to the small number of units on the macro level (Bryan and Jenkins 2016), especially when using cross-level interactions (for best practice recommendations, see Aguinis *et al*. 2013);
- Test interaction effects between relevant intersecting axes; explore all interaction effects improving the model fit;
- Allow for variations between educational contexts (e.g., by cross-level interactions, see Liao and Luo 2021);
- Explore the findings for all feasible combinations of axes and contexts as far as the statistical modelling allows it; and
- Complement the overall results (e.g., table with model coefficients) with predictions for selected combinations of axes and contexts, highlighting context-specific accumulations of disadvantages in (sub)groups.

3.4   Implications for WP5

P13-UiB: Jan Skrobanek, Joakim Jensen

The central aim of WP5 is to identify specific pioneering practices intended to reduce or tackle inequalities within specific educational contexts, to analyse these pioneering practices, and to reflect upon their practicability and usefulness in addressing and mitigating educational inequality from a case-specific comparative cross-country perspective.[4] As outlined in the

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[4] As there is a substantial overlap between the present deliverable and deliverable 2.3, parts of this section will also be included in deliverable 2.3.

application, WP5 focuses on specific practices aimed at mitigating inequalities within specific contexts. It is based on a participatory, practice-oriented, and comparative research methodology and seeks to identify pioneering practices supporting equitable participation in education, thereby reducing educational inequalities (PIONEERED 2020b, p. 17)*. This should provide a deeper understanding of different types of pioneering practices for tackling educational inequalities in and across the different countries, serve to further elaborate patterns of practice by comparing practices across different contexts, and help to develop – through evidence-based knowledge – recommendations for practitioners and policy makers.

PIONEERED uses two strategies for identifying and analysing pioneering practices and policies within and across partner countries.

The first strategy is primarily concept guided. For this strategy, PIONEERED's heuristic MILC framework has a guiding function. It proposes key aspects that partners are supposed to explore in WP3, WP4, and WP5 while performing their data collection and analysis. Thus, researchers look out for and address macro-, meso-, and micro-aspects of different stages of educational processes, and formal, informal, and/or non-formal dimensions to such processes, as well as intersectionality, context, and life-course, while describing, understanding, and analysing educational inequality and pioneering practices tackling it. In contrast, the second strategy involves researching ground-breaking educational practices from a process-oriented, multifaceted dynamic perspective. Based on the assumption that practice has its own autonomy and logic, PIONEERED invites WP3, WP4, and WP5 to go beyond the heuristic MILC framework with its theoretically pre-conceived categories and elements. It opens up the possibility of recognising contradictory processes and dilemmas in professional practice, including those that relativise (previous) theoretical assumptions or further contextualise these[5]. In order to uncover dimensions, issues, and processes beyond MILC, a relational perspective is used that gives agency to practitioners (Bourdieu 1996, Emirbayer 1997, Lenz Taguchi 2010, Murris 2016, Kuby *et al.* 2018, Liang and Liu 2018, Burnard and Colucci-Gray 2020).

In preparation for WP5 analysis, feedback from all PIONEERED consortium partners has been collected regarding understandings of "PIONEERED" or "pioneering" policies and practices in the context of tackling educational inequalities[6]. Two general results emerged from the data:

First, partners' understandings focused on one or more aspects regarding the theoretical dimensions proposed in the heuristic MILC framework: the multilevel, the temporal, different educational stages, the formal, informal, and non-formal, intersectionality, and the life-course.

Second, the statement analysis brought about understandings that go beyond MILC. According to such partners' understandings, pioneering practices are supposed to be "transformative by modifying existing contexts", they are presumed to "change outcomes" and hence to "transcend or overcome or go beyond 'established' approaches and practices", they are about

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[5] The heuristic model approach of PIONEERED states that a life course perspective constitutes the state of the art in terms of identifying PIONEERING practices. However, pedagogical practice has shown that this is not always the case. Under certain conditions, it even makes sense to completely ignore life course-based information for combating educational inequality – for instance, if one thinks about stigmatisation based on earlier life course-related events and practices.

[6] For further information see deliverable D2.3.

"doing something unknown", or, "while implementing the pioneering into practice", fostering the "processual and contingent". Most partners also agreed that pioneering actions or practices are meant to be "reflexive" and "relational", thus not working in a "routinised or pre-reflexive manner". The analysis of partner feedback further revealed that most have a threefold understanding of the expression fields of educational inequality and related pioneering practices. Their understandings of these fields encompass "access", "treatment", and "outcomes". Thus, pioneering practices tackling inequality can focus on, or be related to, one or more of these different fields for reducing educational inequality. This is an important result, reminding partners not only to focus on "outcome"-related educational inequalities but also on treatment- and access-related aspects.

These results have several implications for the concrete methodological steps to be taken in WP5. First, when identifying pioneering practices, partners are invited to look for practices that (a) implicitly or explicitly address key aspects of PIONEERED's proposed heuristic MILC framework or (b) relate to aspects extracted from partners' feedback. Additionally, partners should be aware not only to look for practices addressing "outcome"/effects in the context of educational inequality but also actions/practices relating to processes of "treatment" and "access", which creates a three-dimensional room for analysis.

Taking this result as a starting point, in the following we elaborate on implications regarding the empirically focused steps required for identifying and analysing pioneering practices across country contexts.

The first step in WP5 aims at identifying pioneering approaches or practices through stakeholders'[7] knowledge and experiences of current practices that aim to address educational inequality in each country. This means that stakeholders inform PIONEERED about contextually related programmes, practices, or actions that are currently in place to tackle educational inequalities at the local, regional, or national level. Partners are free to choose the stakeholders they think are most relevant for identifying pioneering practices. The selection of stakeholders should represent a diversity of national, regional, and local government bodies responsible for educational equality, teacher union experts, educational practitioners, teacher educators, community-led neighbourhood groups, parental organisations, and transnational networks tackling educational inequalities. Although maximum openness and flexibility in choosing the kind of stakeholders is recommended, partners are encouraged to provide clear arguments and details as to why they have chosen exactly those and not others. This will help us to gain an in-depth understanding of the "how-to" dimension regarding stakeholder selection processes. "Relevant" or "to be chosen" stakeholders should be able to provide clear information a) about practices generally aimed at educational inequalities and b) about practices which – from their expert point of view – appear pioneering (that is, again, in terms of treatment or access or outcome).

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[7] Stakeholders are defined in the proposal as "national, regional and local government officers responsible for educational equality and inclusion, teacher union experts, educational practitioners, teacher educators, community-led neighbourhood groups, parental organisations, transnational networks tackling educational inequalities, governmental and grassroots efforts" (PIONEERED 2020a, p. 28).

Based on results obtained from the first step, the second step focuses on commonalities and differences between the "definition of problem situation", the "understanding of pioneering practices", and "programmes, practices, or actions" aimed at affecting educational inequalities (treatment- or access- or outcome-wise) in the different countries and how they are "differentially embedded" in specific institutional contexts. Here, a key aim is to systematically identify, elaborate, and understand pioneering practices from a comparative programme-related (top-down MILC) as well as grassroots/bottom-up reflexive perspective (open PIONEERED understanding). The analysis provided here should enable to compare commonalities and differences of programme-related innovative practices in a cross-national lens. This will (a) facilitate the identification of both context-related variations and common ground in pioneering practices targeted at educational inequalities, and (b) provide deeper insight into the enabling processes and barriers in developing and implementing top-down and bottom-up pioneering practices. While choosing "pioneering practices" partners should be attentive to both the aspects proposed in MILC and aspects related to those named by the partners which go beyond MILC. In doing so, partners are also expected to keep an open mind as to the treatment or access or outcome dimensions. Using this dual approach will enable partners to remain as sensitive as possible to their respective national and more local contexts, as well as to provide the explorative ground for identifying, analysing, and comparing pioneering practices within and beyond MILC.

In this respect, in WP5, the stakeholders/practitioners will have the final say when it comes to "pioneering". This means that the selection of cases (the pioneering practices) will be informed by the stakeholders/practitioners and their definitions of what is to be meant by pioneering, considering their respective work contexts. Obviously, this can produce contrasts, differences, or contradictions between the heuristic MILC framework introduced in PIONEERED and practice field-related judgements and selections on the part of stakeholders/practitioners. However, this is regarded as a central strength of the chosen approach of PIONEERED.

We propose that "pioneering practices" uncovered during the analysis are regarded as "cases" that can be analysed from a cross-national comparative perspective. According to the description of WP5 in the PIONEERED application, the aim is to conduct "practice research in pre-school, primary and secondary school, and informal educational research" (PIONEERED 2020a, p. 28). In this regard, two educational institutions (pre-schooling and schooling) that tackle educational inequalities through pioneering practices will be selected in each country. However, it is emphasised that the analysis should focus on "cases of pioneering educational practices in each country" (PIONEERED 2020a, p. 29), i.e., not necessarily just on the pre-schooling and schooling levels. This is to say that it is the discovered pioneering practices that should be regarded as cases, not the selected educational institutions in each country. Thus, the methodological design of the WP5 case studies may be regarded as that which Yin (2018, p. 48) has referred to as a "multiple-case embedded design".[8] Partner countries or selected educational institutions (and stakeholders within these institutions) can thereby be regarded as

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[8] This approach can be exemplified by a case study of organisations, where the organisations are regarded as the cases while the embedded units of analysis may, for example, be staff within the organisations that provide the actual systematic data (Yin 2018, p. 51).

"embedded units of analysis", while the uncovered pioneering practices are regarded as the cases.

Furthermore, as argued and elaborated on in section 4.1 on comparative methods, different countries may be regarded as configurations on the basis of their respective types of education system. PIONEERED proposes three education system clusters among partner countries, namely low-, medium-, and highly stratified education systems (PIONEERED 2020b, p. 14). Against this background, it is recommended for WP5 to cluster identified pioneering practices in conjunction with the level of stratification of the education system in each country, as outlined in the PIONEERED proposal. This will provide a deeper understanding of how different education systems might affect different pioneering practices tackling educational inequality, and which pioneering practices are most likely to be present (and to succeed) in various contexts.

As previously stated, the outlined implications and propositions are to be understood as "radically processual" in the context of the intended work of PIONEERED. Hence, they are nothing more than starting points, inviting the WP5 research team to develop and adjust the concept to the concrete WP research and, in doing so, further develop pioneering practices ideas – informed by the results produced throughout WP5. Thus, the understanding of pioneering practices in PIONEERED will be informed by WP5's ongoing dialogue between theory and findings, discussion, and research, and will be subject to ongoing critical reflection, discussion, and, if required, adjustment and revision.

4 Combining results

4.1 Comparison and pertinent issues

P13-UiB: Joakim Jensen, Jan Skrobanek

An important aspect of PIONEERED is to analyse education systems, institutions, and reforms targeting educational inequalities from a comparative perspective (PIONEERED 2020b, p. 14).[9] Thus, the identification of pioneering policies and practices that tackle inequalities should enable cross-country comparative analysis of the results among the partner countries. This section proposes a framework for cross-national comparison in PIONEERED[10]. Following the PIONEERED proposal, suggestions are provided on how to configurate the cases – here education systems, pioneering policies, and pioneering practices – to reduce complexity when comparing. Using the MILC framework as a point of departure, first a suggestion is made as to how one may categorise and compare potential pioneering policies and practices in and across partner countries. Secondly, a step-by-step cluster comparison is outlined, framed by the typology of education systems proposed by PIONEERED (PIONEERED 2020b, p. 14). Together, these two approaches will aid in reducing complexity and facilitate identification of key elements of pioneering policies and practices aimed at mitigating educational inequalities. This will foster closer reflection on the pros and cons of the pioneering policy and practice examples from a cross-country perspective. In the following paragraphs, these proposed comparative approaches are detailed.

A general principle of comparative methods is that each case is regarded as a "whole" and compared with (an)other(s). Although cases may be analysed in terms of variables, they are often viewed as embedded "configurations" instead, especially in qualitative comparative research. Thus, cases may be regarded as "combinations of characteristics" (Ragin 2014, p. 3), embedded in certain "environments" where comparison means comparing configurations. Furthermore, the selection and categorisation of cases in comparative research is usually done in relation to an analytical frame, thus being not completely free from theory. As outlined in the Introduction section, MILC can be regarded as "a way of seeing" when comparing cases. In PIONEERED, this framework-guided approach is combined with a "reflexive" and "grounded" approach, according to which the "field itself" may show what is relevant (Christensen *et al.* 1998, p. 80), be it consistent or not with the predefined heuristic MILC framework. This means that theoretical openness should be applied to the empirical data (Glaser *et al.* 1967). To account for both the analytical frame of PIONEERED as well as other unexpected dimensions that might be uncovered through the empirical data, the proposed approach is informed by both a confirmatory and a more "reflexive, going beyond MILC" strategy.

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[9] As there is a substantial overlap between the present deliverable and deliverable 2.3, parts of this section will also be included in deliverable 2.3.

[10] Our focus here is the qualitative approaches of PIONEERED (WP3 and WP5) but elements of the proposed comparative approach may serve as prompts for the quantitative analyses (WP4) as well.

First, we suggest an inductive comparison of pioneering policies and practices informed by the empirical data. In other words, the configurations will be informed by case-specific data where the pioneering policies (WP3) and practices (WP5) are categorised for comparison (similarities/dissimilarities). In this regard, the partners should search for dimensions that are in direct conjunction with the PIONEERED analytical frame (e.g., MILC aspects like "life-course", "intersectionality", etc.)[11]. However, as argued, a "reflexive, going beyond MILC" approach should also be used. Aspects may be uncovered in the empirical data that do not coincide with MILC. Consequently, this step of the analysis should be based on both a combination of a confirmatory and a more open approach. Arguably, the "going beyond" dimension of the comparative approach in PIONEERED may be most central to the qualitative research conducted in WP3 and WP5.[12] For example, the narratives provided by policy makers or stakeholders may or may not match the heuristic framework of the PIONEERED proposal. This approach will provide an overview of commonalities regarding MILC as well as dimensions "going beyond" MILC that may be worth considering. Additionally, this will provide information in regard to which pioneering policies and practices are key in the various partner countries. Thus, it is again strongly recommended that "thick" descriptions are used when comparing policies and practices. Figure 2 provides an example of such a comparative approach.

Second, the different partner countries may be regarded as configurations based on the type of education system. Comparing education systems is indeed a common approach (Bray and Jiang 2014, p. 139). In addition to this, we propose linking education systems to the national welfare regimes, which is common in the field of education research (Beblavý, Thum, & Veselkova, 2011; Moe & Wiborg, 2016; Sass, 2020; West & Nikolai, 2013). The classic typology of "the three worlds of welfare capitalism" as established by Esping-Andersen (1990) has since been both critiqued and further developed by several authors (e.g., Ragin 1994, Bonoli 1997, Korpi and Palme 1998, Kautto 2002, Bambra 2007). Against this background, the welfare regimes of the PIONEERED partner countries are classified in the proposal as "social-democratic", "conservative", "post-socialist", "liberal", or "southern/family-oriented" (PIONEERED 2020b, p. 15). This typology has been regarded as the foundation for the cluster configurations in the comparative analysis proposed below.
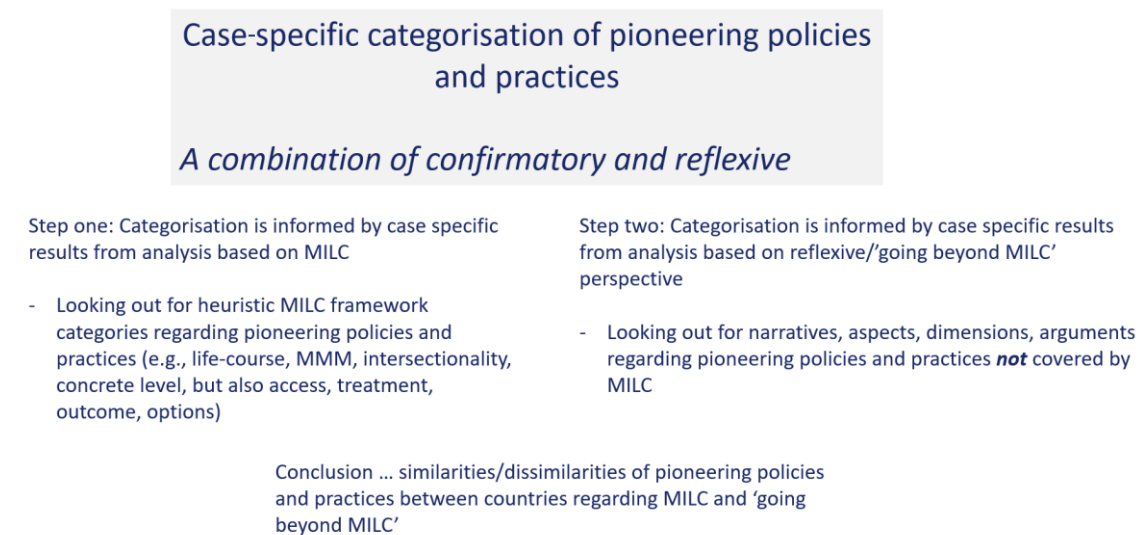
Based on welfare regimes, Walther (2006) describes three types of school system: comprehensive, segmented, and liberal. Social-democratic welfare regimes consist of comprehensive school systems, which are characterised by national frameworks setting standards in education, where "the relation between individual rights and responsibilities is embedded in collective social responsibility" (Walther 2006, p. 125). Access to education is guaranteed for all citizens, and educational stipends are received by students participating in higher education or training. On the other hand, liberal school systems value individual rights

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[11] Terms such as "life-course" or "intersectionality" may be regarded as somewhat abstract, theoretical concepts that are first and foremost used for analytical purposes. Operationalisations of these terms will follow praxis of the research process. For example, policies or practices that encompass transitions may be categorised as having a life-course perspective. Such operationalisations are further discussed under "Key dimensions" in section 3.1 (D2.2).

[12] To a certain extent, the proposed approach may also be used when conducting quantitative research in WP4. For example, this can be done by including other potential explanatory variables than the ones based on the MILC framework.

above collective provisions. In conservative countries, school systems can be described as segmented, as education is to a large extent organised selectively "to allocate the younger generation occupational careers and social positions in different segments" (Walther 2006, p. 128).

Figure 2: Example of case-specific categorisation

Case-specific categorisation of pioneering policies and practices

A combination of confirmatory and reflexive

Step one: Categorisation is informed by case specific results from analysis based on MILC

- Looking out for heuristic MILC framework categories regarding pioneering policies and practices (e.g., life-course, MMM, intersectionality, concrete level, but also access, treatment, outcome, options)

Step two: Categorisation is informed by case specific results from analysis based on reflexive/'going beyond MILC' perspective

- Looking out for narratives, aspects, dimensions, arguments regarding pioneering policies and practices *not* covered by MILC

Conclusion … similarities/dissimilarities of pioneering policies and practices between countries regarding MILC and 'going beyond MILC'

Note: MMM – Macro-meso-micro framework (multilevel)

Note that only Ireland is classified as "liberal" in the PIONEERED proposal. However, the abovementioned typology may also be characterised by the corresponding level of stratification typically associated with the various welfare regimes and education systems. According to the proposal, "liberal" (Ireland), "post-socialist" (Hungary, Lithuania), and "southern/family-oriented" (Spain) welfare regimes may all be clustered as "medium stratified" systems (PIONEERED 2020b, p. 14).[13] Furthermore, the education systems of the conservative countries Germany and Luxembourg are traditionally highly stratified, segregated, and prone to tracking or streaming. This can be contrasted with social-democratic countries that are only stratified at a low level and have more mixed or inclusive approaches, like Finland or Norway.

Thus, three different clusters characterise the partner countries. Additionally, Switzerland is included as the "more liberal of the stratified systems" (PIONEERED 2020b, p. 14) and may either be clustered with Germany and Luxembourg or regarded as a separate configuration outside the three clusters. As proposed in the application, we suggest using these three clusters (based on the different types of education systems) as a second approach to compare

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[13] Other dimensions/clusters should also be considered for cross-national comparison. We propose a more inductive approach informed by partners' experiences, where the choice of comparison may relate to educational level, focus on a certain type of practice, etc. As empirical data is gathered, the categorisation steps in Figure 2 may turn out to be a more reasonable starting point for comparing than Figure 3.

pioneering policies and practices in the partner countries[14]. By comparing the results from the different partner countries based on the level of stratification of the education system, it is possible to gain deeper insight into educational inequalities regarding various education systems, as well as the pioneering practices that exist for combatting inequalities in each country and are potentially successfully.

As such, the "most similar" and "most heterogenous" approaches can be used to compare configurations, first within and then across clusters. These approaches are based on the "method of agreement" and "method of difference" (Mill 1869), which are common methods used when conducting comparative research (Lieberson 1992, p. 105). First using the "most similar" approach, pioneering practices and policies can be compared by analysing similarities and dissimilarities within clusters (e.g., similarities and dissimilarities between policies and practices aimed at reducing educational inequality in all highly stratified countries). In a second step, the "most heterogeneous" approach can be used to compare across the clusters, to find out if there are variations and similarities regarding how to tackle educational inequalities through pioneering policies and practices. For example, the cluster of highly stratified countries will be compared with the cluster of lowly stratified countries. Figure 3 provides an overview of this step.

Figure 3: Example of cluster comparison based on educational systems

Based on the approach described in Figure 3, a working hypothesis of PIONEERED is that pioneering practices emerge and succeed against all odds in education systems with high levels

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[14] Bray and Jiang (2014, p. 157) point out that there has been a tendency in comparative educational studies to overlook sub-national systems, because "education systems are not easy to conceptualise". This is accounted for in the PIONEERED proposal, where it is stated that intra-country case studies (e.g., comparisons of rural and urban areas) may suggest policies and practices that appear fruitful in tackling educational inequality (PIONEERED 2020b, p. 15). For example, in strong federal countries (Switzerland, Germany) each federal state or canton has its own education system with only broad common regulations. Thus, for some research questions, it may make more sense to cluster these countries by federal state/canton when comparing (e.g., comparing Norway to the canton of Zurich).

of stratification (PIONEERED 2020b, pp. 14–15). On the other hand, it is assumed that measures reducing educational inequalities can be found in low stratification and traditionally highly equitable countries. Due to this, the aim should be to uncover pioneering practices that guarantee sustained equality regarding treatment, access, and outcome of educational praxis. The working hypothesis implies there should be some pattern as to what types of pioneering policies and practices predominate in each cluster (and potentially across clusters). Furthermore, if this hypothesis is correct, there should be (at least some) compliance between the comparative approaches in Figure 2 and Figure 3 (nevertheless, this is an empirical question).

4.2   Triangulation and pertinent issues

P2-UBERN: Simon Seiler, Andrea B. Erzinger
P13-UiB: Joakim Jensen, Jan Skrobanek

The project aims to integrate the information collected across the various WPs, utilising a mixed-methods approach. There is a variety of typologies of mixed-method approaches (for an overview, see Creswell and Plano Clark 2018), but the basic designs can be grouped into three groups (again following Creswell and Plano Clark 2018): the "converge" design (sometimes also called concurrent, parallel, or triangulation design (Mayring 2001)), the "explanatory sequential" design, and the "exploratory sequential" design.

The organisation of PIONEERED's empirical research makes it possible to start with a short sequential design element. Exploratory research tasks starting early in the project (tasks 3.1 and 5.1, and to some extent also task 4.1) will explore knowledge, definitions, and perceptions regarding sources of and measures against educational inequalities based on policy documents, interviews with stakeholders, and preliminary explorative data analysis. This exploration not only makes it possible to critically confront and potentially adapt the heuristic MILC framework but also contrast discourse in policy and practice surrounding disadvantaged groups with empirical findings obtained in subsequent analyses, which will be one output of the triangulation step (Deliverable 6.3).

Apart from this sequential design element, the mixed-method approach taken by PIONEERED follows a "converge" or triangulation design. This means that the project's three types of research (policy analysis, quantitative research, and qualitative practice research) hold the same importance and are employed in parallel, organised in WP3, WP4, and WP5. In a separate triangulation step (WP6), PIONEERED researchers will bring together the results of the aforementioned WPs. It should be noted that "triangulation" as a term has led to numerous debates about how it is applied in research and indeed whether the concept is still useful. Denzin (2012, p. 85) has even claimed that "the term [triangulation] has been used, abused, and misinterpreted". In the same vein, Fetters and Molina-Azorin (2017, p. 7) have noted that triangulation "has multiple meanings and lacks sufficient clarity and precision". Given these critiques, it is important to note that, in PIONEERED, triangulation relates to the systematic integration of data from different sources and across different levels. This integration will both add depth – i.e., gaining a complex and detailed picture – and breadth and width – i.e.,

expanding the picture to accommodate the conclusions of PIONEERED. This broad approach helps address some critiques in the literature on the reification of triangulation as a practice.

Adding depth will be achieved by combining different views on the same aspects of educational inequality. This part of triangulation builds on the premise that PIONEERED "cross-investigates" certain aspects of educational inequality, as all researchers will have the MILC framework and its aspects in mind when exploring sources of and measures against educational inequalities. It is to be noted that "cross-investigation" does not mean "cross-validation". Because PIONEERED's three types of research look at the same educational phenomenon in different ways, they will produce pictures that necessarily disagree in some respects. In this sense, rather to validation, triangulation contributes to a deeper, more detailed, and nuanced picture (Denzin 1989).

While three WPs (WP3, WP4, and WP5) will obtain views that partly cover common aspects, they will also produce unique, distinctive insights. These distinctive insights will be key to gaining a comprehensive understanding of what causes educational inequalities and to identifying pioneering policies and practices reducing inequalities. As noted, these insights will not be fully covered by the MILC framework and offer, therefore, the chance to produce novel, surprising knowledge and uncover unexpected aspects to endeavours tackling educational inequalities. With a focus on identifying pioneering policies and practices, D2.3 will reflect in more detail on how PIONEERED will deal with unexpected insights and surprising practices. In this regard, it may prove possible to create bridges to elements of the MILC framework, either by discovering similarities or by contrasting and productively complicating existing concepts. An example of such bridging could be the following: a specific practice works precisely because the practice ignores the past experiences of the children or young people it centres on. At first sight, such a result would be at odds with the life-course approach of the MILC framework, which emphasises the relevance of building on such past experiences.

The general recommendation introduced in section 3.1 suggests reporting findings on sources of, and measures against, educational inequalities whenever possible in relation to the key dimensions included in the MILC framework. In addition, PIONEERED researchers should describe results in detail ("thick descriptions"), which are of special relevance for cases that go beyond MILC. This ensures that both findings fitting MILC and findings going beyond can be integrated into the overall picture produced by PIONEERED. Based on this overall picture and the specific methodological framework that will be developed in deliverable 2.3, PIONEERED will identify the most promising pioneering policies and practices seeking to reduce educational inequalities in varying contexts.

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