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Analytical report on relevant examples of policy and practice from other countries

Supporting young people to succeed – building capacities to better integrate non-formal and formal learning (REFORM/SC2021/066)

A report prepared by ICF, Praxis, Tallinn University and Civitta Estonia[1]

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[1] The authors of this report are as follows: Mattias Wihlborg, Andreea Price and Ilona Murphy (ICF); and Manuel Souto-Otero (Cardiff University).

ICF

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Contents

1 Introduction

The integration of non-formal and formal learning is one of the key actions of Estonia 2035 – a long-term development strategy and action plan. The strategy plans to integrate knowledge and skills acquired outside formal education into formal education and, in cooperation with local authorities, to diversify learning environments and develop opportunities for youth work and hobby education. The Estonia 2035 strategy and action plan also envisages the creation of regional education centres to provide new forms of learning and opportunities to link general, vocational and higher education and non-formal learning, including youth work, and to facilitate transitions.

Further to Estonia 2035, the Education Strategy 2021-2035 also stresses the need to create a comprehensive solution for the inclusion of non-formal and informal learning in formal learning, so that the learning acquired in different learning environments can be taken into account to a greater extent than before.

Linked to the above, the aim of the project "Supporting young people to succeed-Building capacities to better integrate non-formal and formal learning", which started in autumn 2021, is to develop solutions for better integrating non-formal and formal learning in Estonian general and vocational education, taking into account the local context and the needs of stakeholders, as well as international practice. In line with the objectives of the project, the focus is primarily on young people aged 7-19 and on basic and secondary education (including vocational education and training (VET).

This report summarises the results of Deliverable 2 of the project, which aims to study and analyse relevant European and international good practices with regard to current and recent policies, projects and strategies to integrate formal and non-formal learning in compulsory and upper secondary education. The report is based on initial desk research and scoping interviews to better understand what is being done and to what effect. This also formed the basis for the selection of five good practice examples that we have explored in more detail through documentary reviews and interviews with relevant stakeholders. Lessons from these examples have then been drawn out, in terms of the content of the initiatives and the process of implementing them, to support discussions in the Estonian context.

2 Methodology description

2.1 Definition of good practice

Examples of good practice are regularly used in most policy fields as a way of sharing knowledge and experience to support and improve policy making across Europe and beyond[2].

However, the term ‘good practice’, and related terms such as ‘promising practice’ and ‘best practice’, has many different meanings in different contexts so it is important to define how it will be applied in this report. Generally, we prefer to use the terms ‘good practice’ and ‘promising practice’ (as opposed to ‘best practice’), as

[2] See, for example, the database on inspiring practices from Public Employment Services, promising practices on the implementation of the Youth Guarantee, the database of labour market practices and the compendium of inspiring practices on inclusive and citizenship education.

it is debatable whether there is a single 'best' approach. Moreover, policy approaches are constantly evolving and being updated.

'Practices' are understood to mean any actions or approaches that contribute to the integration of non-formal and formal learning. For example, they can include structural reforms, specific projects, policy measures, bespoke services or forms of cooperation.

We would expect a 'good practice' to have been proven effective and sustainable, as demonstrated by evaluation evidence and/or monitoring and assessment methods, and to show potential for replication (in full or in part). However, 'promising practices' that are not fully evidenced or evaluated could also be considered as they may inform and support reforms in relation to the integration of non-formal and formal learning in Estonia.

Identified practices were assessed against a set of criteria to determine their appropriateness for this project. The criteria were grouped into exclusion, core and qualifier criteria[3] (Table 2.1).

The exclusion criteria assessed the adequacy of the practice and if they are not fulfilled the practice was excluded from our selection. The core criteria entailed the assessment of the effectiveness and efficiency of the practice. Finally, the qualifier criteria were used to assess whether the practice contained elements that are relevant for its potential transfer to an Estonian setting. The qualifier criteria of the practice assessed the quality of the intervention in terms of its implementation and transferability, as well as whether the practice contained elements that were relevant for its transfer to the Estonian setting. Practices were still considered if not all core and/or qualifier criteria are fully met.

Table 2.1 Criteria used for identifying good/promising practices

Criteria		Description
Exclusion	**Relevance**	The practice supports the integration between non-formal and formal learning and reflects the policy objectives of the Estonian Ministry of Education and Research.
	Scope/timeliness	The practice has clear and specific objectives; reasonable coverage (in terms of participation and geography) and has been in place for at least a year and was implemented within the last 10 years.
Core	**Effectiveness and efficiency**	The practice (or elements of the practice) has been positively evaluated (showing good results) using performance data/monitoring/evaluation. This criterion may not be fully met for promising practices.
Qualifier	**Transferability**	The practice provides clearly identified and well documented insights into success factors and lessons learned, as well as challenges which could be transferred or taken into account in the Estonian context.
	Sustainability	The practice has the ability to be maintained in the long-term.

[3] This builds on the European Commission, Directorate-General for Health and Food Safety's (DG SANTE) criteria to select best practices (in health promotion and disease prevention and management). https://ec.europa.eu/health/sites/default/files/major_chronic_diseases/docs/sgpp_bestpracticescriteria_en.pdf

Criteria		Description
	Collaboration and cooperation	The practice has supported collaboration and cooperation between different stakeholders and created ownership among the target population and stakeholders.

2.2 Initial desk research and scoping interviews

The initial desk research and scoping interviews were carried out to identify relevant literature and examples worth exploring in more depth. The literature reviewed included:

- academic literature and databases;
- grey literature (e.g. from international organisations, national governments); and
- databases of European funded projects on the integration of non-formal and informal learning.

The literature review made use of Boolean searches, such as ["non-formal learning/education" AND "formal learning/education" AND "integration"], ["non-formal learning/education" AND "formal learning/education" AND "validation"] and ["non-formal learning/education" AND "formal learning/education" AND "bridging"]. The results from the initial literature search were then used to identify and review additional literature ("snowballing").

Overall, 80+ research papers/reports and strategic/policy documents published between 2001 and 2021 were reviewed, including as part of the case studies (see section 6 for a full list). The review prioritised literature that included up to date information, so material that was more than 10 years old was only included if still relevant.

The purpose of the initial desk research and scoping interviews was primarily to identify good practice examples (e.g. "what is being done?" and "to what effect?") and not to produce a comprehensive review and analysis of the topic overall.

The scoping interviews were used to complement the literature review and identify additional initiatives and examples that link formal and non-formal education. Scoping interviews were undertaken with the European Commission (Directorate General for Education, Youth, Sport and Culture (DG EAC), who is responsible for EU policy on education, youth, sport and culture, and Directorate-General for Employment, Social Affairs and Inclusion (DG EMPL), who is responsible for EU policy on employment, social affairs, skills, labour mobility and the related EU funding programmes, the European Centre for the Development of Vocational Training (Cedefop), the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the European Youth Forum, a platform and advocacy group of youth organisations in Europe. Other organisations were also approached, including the European Schoolnet, a network of 33 European Ministries of Education based in Brussels, but they did not feel that they would be able to contribute to the topic concerned.

The results of the literature review and the scoping interviews are presented in section 3 and the examples explored in more detail are presented in section 4.

3 Results of the initial desk research and scoping interviews

3.1 Common definitions and characteristics of formal and non-formal learning

There are no universally adopted definitions of formal and non-formal learning; and the terms tend to be used differently in different contexts/countries (Souto-Otero, 2021).

EU institutions, such as Cedefop, and international organisations, such as UNESCO and the Organisation for Economic Co-operation and Development (OECD), have contributed to the debate around the concepts and definitions of these terms. For example, Cedefop (2014) describes formal and non-formal learning as follows:

"[Formal learning] occurs in an organised and structured environment (such as in an education or training institution or on the job) and is explicitly designated as learning (in terms of objectives, time or resources). Formal learning is intentional from the learner's point of view. It typically leads to certification.

[Non-formal learning] is embedded in planned activities not explicitly designated as learning (in terms of objectives, learning time or learning support), but which contain an important learning element. Non-formal learning is intentional from the learner's point of view. It typically does not lead to certification.

Whilst not included in the scope of this project, it is also useful to define informal learning, even if only to highlight how it differs from formal and non-formal learning. Cedefop (2014) describes informal learning as follows:

[Informal learning results] from daily activities related to work, family or leisure. It is not organised or structured in terms of objectives, time or learning support. Informal learning is in most cases unintentional from the learner's perspective".

For the OECD (2008), three characteristics are emphasised when defining these terms:

- whether the learning is organised;
- whether the learning involves objectives; and
- whether it is intentional.

On this basis, Werquin (2008:44) describes the different forms of learning as follows:

"[F]ormal learning has learning objectives and is intentional whereas informal learning results from daily life and takes place everywhere, all the time, often without people even realising it. It results from experience, does not have learning objectives and is not intentional…non-formal learning is [in most countries] rather organised and therefore intentional even if the activity leading to non-formal learning may not be designed or designated as learning activity as such. Non-formal learning may have learning objectives but they are very broad unlike those in formal learning where learning objectives are spelled out and where the process to reach these objectives is formalised".

Similar to the Cedefop and OECD definitions, UNESCO's International Standard Classification of Education (ISCED) also highlights intentionality and organisation (i.e. the learning is 'planned') as important characteristics. However, it also places a

strong emphasis on institutionalisation. For example, it describes formal education, and the qualifications gained from it, as being recognised by relevant national authorities. It also highlights student-teacher relationships and/or interactions as a characteristic of formal (or institutionalised) education (UNESCO, 2012). Non-formal education, on the other hand, is defined as "an addition, alternative and/or complement to formal education within the process of lifelong learning of individuals" and leading to qualifications that "are not recognised as formal or equivalent to formal qualifications by the relevant national or sub-national education authorities or to no qualifications at all" (UNESCO, 2012). As such, linking non-formal education activities with formal education in a way that leads to the recognition in the form of a formal qualification (or part of a formal qualification) would, under this definition, lead to those activities being considered as part of formal education.

In the Estonian context, the Estonian Lifelong Learning Strategy 2020 (2014:24-25) defines the terms as follows:

"Formal learning mostly takes place in a school environment and is organised on the basis of curricula. Formal education has specific objectives and is conducted by teachers who are specially prepared and qualified. Learning objectives are mostly set externally, and the learning process is monitored and evaluated. Formal learning is mandatory until a certain level or age."

"Non-formal learning is understood as learning that takes place outside of a school and is undertaken with a certain objective to develop oneself. Non-formal education can take place in very different environments (for example, in hobby education or supplementary education, but also in nature), where learning and teaching may not be the only objectives. Non-formal learning has an objective in the same way as formal education, but it is voluntary. It can be carried out by professional trainers or, for example, volunteers or peers."

"Informal learning is, from the learner's perspective, learning without a specific objective. It takes place in everyday situations (for example, in families, at work, etc.) and therefore the results of informal learning are not directly visible for the learner."

Using the above definitions, it is possible to determine a few main characteristics that distinguish formal and non-formal learning (see Table 3.1).

Table 3.1 Main characteristics of formal and non-formal learning

	Formal learning	Non-formal learning
Learning setting	■ School environment	■ Outside of school
Participation	■ Compulsory (up to a certain age)	■ Voluntary
Objectives	■ Specific (based on curriculum)	■ Often broad and diverse (they can also be specific, but there is substantial scope to define objectives without reference to the school curriculum)
Organisation of learning	■ Provided by qualified teachers	■ Provided by qualified teachers, trainers, volunteers and/or peers
Recognition of learning	■ Monitored and assessed against the standards set in the curriculum	■ Typically not assessed

3.2 Relationship between non-formal and formal learning

Whilst the above definitions are helpful in terms of understanding what we generally mean when we talk about the different forms of learning, it is rarely as clear cut in real life. Indeed, the boundaries between formal and non-formal learning are not always clear and are becoming less obvious over time. Souto-Otero (2021:367) argues that the *"different forms of learning could be seen as occurring on a continuum ranging from various degrees of formality to informality"*.

For example, site visits or learning environments outside of the school are generally considered to belong to the non-formal (or informal) sector, but sometimes the activity in them is clearly connected to the formal curriculum applied in the school and participation for students is compulsory. They can be guided by qualified teachers, who may or may not work for the school where the young person studies. Equally, optional courses in school typically belong to the formal sector, but due to the fact that they are not compulsory and not always structured by a given curriculum they may have a non-formal character (Garner et al., 2014). Massive Open Online Courses (MOOCs) are another example of the blurring of the traditional boundaries between formal and non-formal learning, whereby the same activity may be more formal for some participants than for others – for example, some participants may receive a credential from a recognised educational institution following assessment whereas other participants may opt out of the assessment. It is also possible to enter the online university environment without clear learning objectives or sustained contact with teaching staff, and there may be relatively little direct learner support.

Birdwell et al. (2015) elaborates further on the blurring of boundaries between non-formal and formal learning and maps a range of activities based on the 'context' of the activity (i.e. where the learning takes place) and the activity itself (sport, creative activity or youth social action). This is illustrated in Table 3.2 below.

Table 3.2 Types of learning setting and forms of learning activity

	School setting	Out-of-school setting	Private setting
Formalised activities	■ school instruction ■ vocational training at school ■ remedial school work	■ on-the-job vocational training ■ voluntary service ■ music lessons ■ sports training	
Partially formalised activities	■ school project work ■ school group work ■ school trips	■ participation in a youth organisation ■ youth centre project work ■ youth parliament ■ participation in organised out-of-school activities	■ homework help from parents ■ cultural activity: museum visits; attending theatre and concerts
Non-formalised activities	■ peer contacts and friendships in school ■ playing at school ■ informal contact between students and teachers	■ peer contacts and friendships in youth clubs and associations	■ conversations with parents and relatives ■ hobbies ■ playing games (physical and online)

	School setting	Out-of-school setting	Private setting
Legend:	*Formal education*	*Non-formal education*	*Informal education*

Source: Adapted from Birdwell et al. (2015), originally from Ministère de la Famille et de l'Intégration, 2013

As shown above there is a wide range of non-formal education activities with varying degrees of formality and that are delivered in both school and out-of-school contexts. As such, it is difficult to fully separate non-formal (and informal) learning from formal learning. So whilst formal and non-formal learning have traditionally been seen as independent or alternative types of learning (Siurala, 2012), the landscape of education has become "more blurred, convergent and connected" in recent years (Kiilakoski, 2015:34).

Whilst not directly covered in the definitions discussed, there are often different pedagogical approaches in formal and non-formal learning. Non-formal learning can be considered to have a complementarity role to formal education by providing different opportunities to learn more (and to learn differently) - for example, by using different pedagogical methods/practices to those more commonly used in formal education, thereby fostering the development of knowledge, skills and competences in different ways.

The converging relationship between non-formal and formal learning has also manifested itself through the growing informalisation of formal education (e.g. work-based learning, place-based education, adventure education and gamification) and formalisation of non-formal learning (e.g. through recognition and validation of learning) (Souto-Otero, 2021; Kiilakoski, 2015).

The strengthened connection between formal and non-formal learning has also given rise to the notion of 'seamless learning', which emphasises the bridging of different learning efforts across a variety of learning settings such as formal and non-formal learning, individual and social learning, and learning in physical and digital realms (Looi et al., 2016). Sharples et al. (2014) uses the concept of seamless learning to describe when a person experiences a continuity of learning across a combination of locations, times, technologies and social settings.

Digital and technological advancements have played an important role in facilitating seamless learning and/or learning outside formal education (Wong and Looi, 2022). Through the Internet, and particularly the widespread use of smart mobile devices, young people are able to easily obtain knowledge, which effectively reduces the formal study time (Kinshuk et al., 2016). Information and communication technologies (including the adoption of cloud computing, learning analytics, big data, MOOCs and artificial intelligence) are also providing new teaching and learning practices and environments (e.g. smart learning environments), which have many of the characteristics of both formal and non-formal learning and therefore further blurs the distinction between formal and non-formal learning, as noted above (Witthaus et al., 2016; Gros, 2016; Souto-Otero, 2021). Social media platforms have also been argued to lead to the reconceptualisation of the boundaries between formal and non-formal learning (Greenhow and Lewin, 2016). They can provide contexts that empower learners to direct their learning within the context of network communities that provide access to a wide range of resources to support learning, which can go beyond what formal learning dictates. Artificial Intelligence (AI) tools and 'expert tutor systems' are used by a large number of schools and parents as core or supplementary activities to increase learning. Whilst they can be used in school (for example, expert tutor systems like 'Mathletics' and 'Spellodrome' are widely used by

schools in the UK and can be aligned to the curriculum), that is not always the case – thus, the same application with the same learning content may be more or less formal depending on its use in a school context and whether it is aligned to the curriculum or not. Whilst this phenomenon is not new (Shakespeare readings could take place at school or outside and could be part of the school curriculum in one country but not another), technology is enabling the use of such global learning platforms in unprecedented ways.

The converging and complementary relationship between non-formal and formal learning presented above highlights the importance of getting a better understanding what types of integration measures have been implemented in practice and how such measures can create synergies and reinforce the positive effects of each form of learning.

3.3 Types of integration of non-formal and formal learning

The level of cooperation and integration between formal and non-formal learning continues to be limited and unsystematic in many EU Member States. However, our literature review demonstrates that there are a number of initiatives and promising examples that could serve as an inspiration for stakeholders in Estonia.

Integration of, and cooperation between, non-formal and formal learning can take on a variety of forms and has the potential to impact on several aspects of educational reforms, including the curriculum, pedagogical approaches and the educational system (Garner et al., 2014). Building on our analysis of the literature, we have identified five main types of integration of non-formal and formal learning:

- School curriculum delivered in a non-formal learning setting outside the school by a formal or non-formal education provider;
- Hobby and leisure activities: provision on the school premises by a formal or non-formal education provider or integration into the curriculum;
- Validation and recognition of knowledge, skills and competences acquired in non-formal education/learning within schools;
- Methodological/pedagogical support and curriculum co-design; and
- Collaboration in professional development (e.g. pre-service and in-service training)

Each of the five main types of integration are discussed further below. It should be noted that there are some overlaps between these five types of cooperation. Some initiatives and measures presented later on in this report may relate to more than one type of integration but are discussed in relation to the one that it relates to the most.

3.3.1 School curriculum delivered in a non-formal learning setting outside the school by a formal or non-formal education provider

As learners' development is no longer limited to the classroom environment, and with non-formal learning playing an increasingly important part in fostering the development of knowledge, skills and competences, it is increasingly recognised that effective partnership work is needed to ensure that learners have access to different learning opportunities outside of the school (European Commission, 2018).

Such out-of-school activities may include lessons in non-traditional learning environments (e.g. outdoors), as well as fieldtrips/study visits to museums, botanical

gardens, zoos, science centres, interactive exhibitions, companies and/or civil society/community organisations. Digital and technological developments also allow students to engage in virtual learning experiences and settings.

European examples of this type of integration include the establishment of non-formal laboratory learning environments (e.g. the LUMA centres in Finland - see section 4.3 for further details - and Schülerlabor in Germany). In fact, many of the identified examples that make use of this type of integration tend to be implemented in the context of science education, but it can also be considered to offer opportunities to integrate multidisciplinary topics, such as STE(A)M, sustainability education and entrepreneurial education.

Whilst this type of integration may be encouraged in national curricula and/or school curricula, the curricula do not tend to specify how much time should be dedicated to this type of activity and what format this type of integration should take.

For example, the Finnish national core curriculum for basic education (2014:27-28) states that *"[schools] should systematically use different working methods and learning environments and strive to regularly take the teaching out of the classroom. Opportunities should be created for project-based work and holistic learning, as well as for collaboration both within the school and with actors outside the school. The collaboration and communication between adults in the school and with the surrounding community strengthens the students' ability to communicate and collaborate. When students work together, they get to know themselves and their personality and to work constructively with many different kinds of people. Information and communication technology should be used to promote communication and multisensory work through various channels."*

This type of integration of formal and non-formal learning has many potential benefits. Affeldt et al. (2016) lists a number of potential benefits based on previous research: for example, it can increase student motivation, support cognitive achievement, improve students' attitudes, offer more meaningful learning, provide meaningful social experiences and offer enjoyable learning experiences. Some of these positive effects also appear to persist over time in certain cases.

Non-formal learning environments when used in this way can also be a good door opener for innovative pedagogies, learning materials and inquiry-based learning (Garner et al., 2015) and can, when effectively linked with formal education, influence the curriculum and pedagogy in the formal education system (Garner et al., 2014). Another argument in favour of this type of integration is the development of meta-skills (including teamwork, communication, conflict resolution and problem-solving abilities) (Kiilakoski, 2015).

The main limitation of this type of integration is that non-formal learning opportunities may not be available to all students. Non-formal learning environments tend to be more readily available in urban areas with higher education institutions, science centres and cultural/arts amenities. Funding availability (and the cost of arranging visits to out-of-school sites) may also be a limitation for some schools. Schools may also need help with networking and how to establish this type of partnerships. School staff also need training and support to build up capacity and understanding/interest in this type of learning (and how it may support the achievement of national and school curricular learning objectives). Other potential barriers that may limit this form of integration are a lack of school vision and overarching strategy when it comes to this type of integration and regulatory constraints (or lack of promotion) in curricula and education policies that may prevent schools from choosing the activities they want to implement (Lipnickiene et al., 2018).

Important requirements for success when integrating non-formal and formal learning in this way include the integration of the out-of-school school learning into the curriculum. Teachers are therefore crucial to the success of non-formal learning experiences (Eshach, 2007; Griffin, 2004). Non-formal learning experiences shall meet the expectations of the students and teachers; and the objectives of the visits must be made explicitly clear (Garner et al., 2015).

3.3.2 Hobby and leisure activities: provision on the school premises by a formal or non-formal education provider or integration into the curriculum

A common form of collaboration between the formal and non-formal sector, which may be regulated and funded by the government, is the concept of open all-day schools, or whole day schools. Such partnerships are based on the combination of formal education in the morning provided by school teachers, and hobby and leisure activities in the afternoon, provided by school staff or external organisations (including non-formal learning providers). The afternoon activities vary between schools but may include school-based hobby education and other forms of school-based youth work.

These partnerships are typically school-led and can take a variety of forms. For example, it may be small partnerships between one school and one organisation focusing on a particular type of activity. It can also involve wider partnerships that provide a diverse range of activities and services.

Examples of all-day schools can be found in a number of EU Member States, including Germany, Finland, Greece and the Netherlands. One such example are the Dutch ‘brede schools’ or community schools, where schools are at the centre of a network providing services to the community, including after school care, libraries and sports facilities (see section 4.4 for further details). A similar approach is applied by some schools in Spain through establishing learning communities. Notably, in some countries (for example, Czechia and Slovakia), leisure education is integrated into the Education Act together with the rest of formal education (European Commission, 2014). In Germany, and from 2025 onwards, all parents with children who attend primary school will be legally entitled to childcare that lasts until the end of the working day. Finland has also seen a trend of rapidly increasing school-based youth work (Kiilakoski, 2021).

This type of integration between hobby/leisure activities and schools has a range of potential advantages for young people’s development and learning, but it cannot be a universal model. For example, if the hobby and leisure activities are focusing on young people that have a negative experience of school education, they can benefit from their differentiation from schools and offer an environment that does not remind them of a school (European Commission, 2014). In some European countries previously extra-curricular activities have been incorporated in the curriculum, as described in the example on chess provided below.

Box 1 Curriculum integration of previously extra-curricular activities: the case of chess

Armenia made chess learning compulsory in schools in 2011[4]. The Declaration of the European Parliament of 15 March 2012 on the introduction of the programme 'Chess in School' in the educational systems of the European Union[5] identified a range of benefits for academic performance and formal schooling associated with chess, including in the areas of concentration, resilience, creativity, decision-making and analytical competence. Other benefits associated with chess learning refer to critical skills, maths or coding learning.

Building on this declaration chess learning has also been incorporated into the school curriculum in some areas of Spain, following a 'proposición no de ley' (non-binding proposition) approved by the Spanish Parliament in 2015 to promote the adoption of legal frameworks for the implementation of the 'Chess in Schools' initiative to make chess a school subject. Spain is a highly decentralised country in terms of education, where much decision-making regarding education lies with its regions (Autonomous Communities or CCAA), and chess currently co-exists as a curriculum subject and as a hobby/leisure activity in the country. Thus, and although a national law did not follow the 2015 proposition, several CCAAs have adopted initiatives to more strongly integrate chess learning in schools. For example, the CCAA of Madrid adopted in 2015/16[6] the possibility to take the subject 'Chess Workshop' in the compulsory stage of secondary school, as one of the 'Materias de libre configuración autonómica'[7] with an associated teaching load of 2 hours per week. Other subjects in this category in Madrid included 'Classic Culture', 'Catching up in Maths' or 'Music Workshop'. Take-up by CCAAs is relatively widespread: similar offers are available in other CCAAs such as Galicia. Other CCAAs such as Navarra or Murcia – which offers it alongside other subjects such as debate, robotics or statistics - have begun their offer of chess as a subject. Regulation of the subject, including teaching methodologies and standards, is highly detailed[8] and various CCAAs have included chess in their teacher preparation programmes.

In other countries, chess continues to be primarily a hobby/leisure activity, but it can be highly organised, like in the case of the UK where non-formal learning providers such as 'Chess in Schools and Communities' (CSC), founded in 2009, are active in the provision of chess lessons in schools following their own curriculum, run chess clubs and can provide chess tutors to schools, provide teaching materials and training to school staff to deliver chess teaching, and provide chess equipment.

The incorporation of (previously) hobby/leisure activities into the curriculum is also present in Maryland (USA) where the integration has been made compulsory, and the delivery of the activity can be within non-formal education providers. Since 1992 Maryland service learning is a compulsory requirement for graduation from secondary school – the only US state to have adopted such requirement, although a larger number of other states have allowed individual districts to include this requirement for graduation. Students can enlist in school sponsored clubs and organisations or identify new organisations and submit the relevant documentation for approval of their experience before the service learning begins.

Like formal education, hobby and leisure activities aim to support young people's personal development, even though the methods and specific aims are different

[4] https://www.theguardian.com/world/2011/nov/15/armenia-chess-compulsory-schools

[5] https://www.europarl.europa.eu/doceo/document/TA-7-2012-0097_EN.html

[6] See Comunidad de Madrid (2015). Decreto 48/2015, de 14 de mayo, del Consejo de Gobierno, por el que se establece para la Comunidad de Madrid el currículo de la Educación Secundaria Obligatoria. Boletín Oficial de la Comundad de Madrid, núm 118, de 20 de mayo de 2015, 10-309.

[7] These subjects complement core general subjects –such as mathematics and languages- and core specific subjects –such as physical education-, and can be divided into those that education centres are obliged to offer and others that centres can opt to offer.

[8] See https://www.carm.es/web/pagina?IDCONTENIDO=69612&IDTIPO=100&RASTRO=c77$m4507,3993

(European Commission, 2014). Notably, in this regard, findings from previous research shows that hobby and leisure activities can contribute to social and emotional skills, which are becoming more important in an increasingly fast-changing and diverse world (OECD, 2018). In some countries, the development of such skills has been formalised under the concept of character education or similar, as in the UK, where both curricular and hobby/leisure activities are expected to contribute to the development of 'character education'. While this is not a specific school subject, schools are expected to deliver 'character education' which provides students with the skills they need 'for resilience, empathy and employability', including motivation towards long-term goals, learning of positive moral attributes, learning of social confidence and communication skills, and appreciation of the importance of long-term commitments. Character education is meant to contribute to increasing attendance, engagement and attainment and mental health of young people (Gutman and Schoon 2013; DfE, 2019). The UK Department for Education (DfE) has published a non-statutory framework for character education for school leaders and teachers (DfE, 2019[9]), which identifies non-formal education extra-curricular activities (or co-curriculum) as key. This includes cultural, creative, physical, service-oriented non-formal education activities, as reflected in the list of organisations that support the development of character education, the benchmarks and case studies provided by the DfE.

Beyond general personal development and the development of social and emotional skills, hobby and leisure activities also have the potential to contribute to formal education in different ways. For example, there is some evidence that participation in hobby and leisure activities is positively correlated with achievement in formal education (European Commission, 2014).

Box 2 Hobby/leisure activities and academic performance

In the case of chess, discussed earlier, several studies have looked at the benefits of chess, even when delivered as a hobby or leisure activity for school performance. The evidence tends to point towards the existence of a transfer of benefits, although of a moderate magnitude, from chess instruction to academic and cognitive skills, as noted by recent meta-analyses (Sala and Gobet, 2016). The Chess in Primary Schools project in the UK[10] adopted a whole school approach to chess teaching in primary schools, over 30 hours. Classes were delivered during the school day and were expected to replace subjects such as music or physical education. The initiative was evaluated using a randomised control trial (RCT) (N >4,000 pupils) on the effects of maths achievement in Year 5 (9-10 years) one year after the intervention ended (Jerrim et al., 2016). The evaluation found both children and teachers to be very positive regarding the effects on pupils' skills and behaviour, but found no effect on maths, science or reading achievement in the long-term (1 year). Other RCTs (Boruch and Romano, 2011), conducted in Italy, have, however, reported substantial effects on attainment in primary school. Gumede and Rosholm (2015) also reported positive effects in Denmark.

It should be noted that the influence of other student characteristics on achievement, namely students' socio-economic background, remains important (see, for example, Broh, 2002). Participation in non-formal learning activities may however reduce the influence of socio-economic background on educational attainment (Covay and Carbonaro, 2010). Some chess activities run by CSC in the UK are directed specifically towards children with Special Education Needs (SEN), for whom chess

[9] Department for Education (November 2019) Character Education – Framework Guidance https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/904333/Character_Education_Framework_Guidance.pdf

[10] https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects/chess-in-primary-schools

has been shown to be beneficial in terms of concentration and behavioural improvements.

Another area where the potential contribution of hobby and leisure activities to formal education is relatively strong concerns strategies and measures to prevent and address early school leaving (European Commission, 2014). A study for the European Parliament reviewed a range of effective measures to address early school leaving and found that the role of counsellors (other than teachers) and also peer-influence are important in both preventive and curative measures (Nevala et al., 2011). For example in Germany, there is specific funding for youth work carried out in schools (school social work). Through this funding schools can employ youth workers who provide counselling, through socio-pedagogical support to young people, but they can also be involved in working with teachers and parents and act as mediators. Some types of preventive measures in this field focus on providing additional learning support to young people who are falling behind. This can be provided by schools, but also by youth work organisations (as is the case in Belgium (Wallonia) and France) (European Commission, 2014).

3.3.3 Validation and recognition of knowledge, skills and competences acquired in non-formal education/learning within schools

Recognising and validating the outcomes of non-formal learning has been a matter of debate and development for many years (Kiilokoski, 2021). Already in 2001, the Commission Communication on Making a European Area of Lifelong Learning a Reality (COM(2001) 678 final) called for the formal sector to adapt entry, progression and recognition requirements to take account of non-formal and informal learning. It also encouraged measures to value and reward learning, especially non-formal and informal learning in all sectors, thereby recognising its intrinsic worth.

Rewarding learning can also encourage those who are most alienated to return to learning, including early school leavers. For example, Smets (2018) highlights the pivotal role of validation of non-formal learning in tackling the problems associated with early school leaving.

Validation of non-formal (or informal) learning is a key element in national lifelong learning strategies developed by Member States (Council Recommendation of 20 December 2012 on the Validation of Non-Formal and Informal Learning). A lot of progress has been made in Member States in this area, as shown in the updates provided through the European inventory on validation of non-formal and informal learning (Cedefop, 2020; Cedefop, 2017). However, a number of challenges remain in this area, including setting up the right incentives for institutions to offer validation, improving access and take-up, ensuring better cooperation between key stakeholders across the education and training area, the labour market and third sector to create ‘bridges’ and ensure outcomes of validation that take place in one sector/area can be used in another, and professionalisation and training of staff undertaking validation (Cedefop, 2020). Through validation and recognition the official status of learning that has taken place outside formal institutions rises, and its value to society increases (Killakoski, 2021).

Kiilakoski (2015) argues that given that much learning takes place outside of school, including learning around technology, cooperation between formal and non-formal learning should be better supported. The current educational landscape and ecosystems cannot be understood only by looking at the classrooms, so developing modes of recognition of prior learning that take place outside of schools is

necessary to make the entire scope of knowledge and experience held by an individual visible in the educational system. This requires understanding of how the formal system works but also how learning takes place outside formal institutions and how to make it visible.

Existing practices tend to cover mostly the validation of non-formal learning at the higher education level or in adult education. Explicit validation initiatives related to compulsory school learning are relatively scarce. Some say that the ultimate outcome of coordination between formal and non-formal education would be that higher education institutions recognise competences acquired through non-formal learning and consider them while admitting students (Lipnickiene et al., 2018). There are a range of these initiatives, in the form of assessments that lead to the achievement of full credentials (e.g. secondary education certificates) or give access to higher levels of education (e.g. assessments that provide adults who have not completed secondary education a route to access higher education) - such initiatives are available in a wide range of European countries, including Austria, Germany, Portugal, France and Spain. However, these initiatives tend to be targeted at adults.

Whilst not particularly widespread, there are examples of validation arrangements beyond these types of initiatives, whereby competences are formally recognised for children and young people who are still engaged in compulsory education. The extent to which non-formal learning is taking into account in terms of admissions for children and young people depends on the admissions criteria used by educational institutions - for example whether personal statements and additional evidence are required in addition to grades for higher education.

Box 3 Validation for entry into education

The Lifelong Learning Portfolio (Romania). The Romanian law on national education outlines a set of regulations on using the lifelong learning portfolio for all students in pre-university education. The lifelong learning portfolio contains evidence of learning outcomes acquired in formal, non-formal and informal contexts by individuals. This evidence aims to facilitate the educational progression and upskilling of all students and create better prospects for entering the labour market. Since 2011, some schools have taken into account the lifelong learning portfolio of students as an additional evaluation tool in order to make admission decisions when the school has more enrolment applications than available places.

In Norway, students that have completed one-year courses from **Norwegian folk high schools** (Folkehøgskolene), which are considered part of the third sector, could earn 'competition points' when applying for admission to higher education in recognition of the learning they have undertaken. The certificates from folk high schools are not graded but give details of the subject studied and the content covered.

Source: European Inventory of Validation, 2018. Romanian and Norwegian country reports

Validation can also take the form of documentation of the non-formal learning undertaken, to enable its later use in educational settings or the labour market, or for personal development.

Box 4 Validation of the co-curriculum

Treetops Specialist School and College is a UK special school for 300 pupils aged 3 to 19 years with moderate learning difficulties, which decided to focus on resilience and character education as a priority for their pupils. The school has introduced a pupil activity passport, based on the 'My Activity Passport' from the DfE, but with more detail. The passport is split into Key Stages. Within each Key Stage the activities are split into five sections: 1) Sport, leisure and outdoor learning; 2) Creativity and performing; 3) Skills for life; 4) Community; and 5) World of work. The inclusion of skills for life was partly due to feedback from parents/carers and ex-pupils of the school who said that this is an area they feel that the pupils need to develop, as it is vitally important for their future prospects. The project has been developed with staff input, settling on six key activities for each area for each Key Stage and included in the passport. Dates and photographic evidence of the activities pupils have undertaken are added to the electronic passport, which can be printed for pupils to keep at the end of each Key Stage. In addition to 'My Activity Passport', the school uses resources from 'The Key' and the 'Every Child Should' campaign article by Anita Kerwin-Nye to develop their passport.

Source: DfE 2019, p.22.

This also includes some nation-wide initiatives to record formal and non-formal learning experiences, instead of having a separate recognition tool for non-formal learning. One such example is the Secondary School Leaving Certificate and Profile (SSC&P) in Malta, which was introduced in 2012-2013 (Maltese Government Directorate for Quality and Standards in Education).

Box 5 Validation in a common record of formal and non-formal education

The Maltese Secondary School Leaving Certificate and Profile (SSC&P) was introduced during the scholastic year 2012-2013 and recognises all forms of learning accomplishments and experiences (formal and non-formal) during the five years of secondary education. It is issued at the end of Year 11 to show completion of compulsory schooling.

The certification can be issued at different levels of the Maltese Qualifications Framework (Level 1, 2 or 3) according to a pre-specified grading structure. Non-formal and informal learning may increase the overall accredited level of the SSC&P and is weighted at 35%.

Only activities offered by registered non-formal education providers can be included within the non-formal part of the SSC&P.

Since 2020, the Directorate for Quality and Standards in Education (DQSE) has been responsible for the SSC&P. The DQSE is body responsible for establishing the regulatory framework and implementing the associated processes relating to non-formal programmes in compulsory schooling. The DQSE currently has regulatory frameworks related to: non-formal activities; and accredited non-formal programmes (since 2018). DQSE also issues registration to institutions wishing to offer non-formal activities that can be included in SSC&P.

In 2021, a working group was established to review the SSC&P and propose updates. One of the changes proposed by the working group is that the SSC&P will become a qualification and not an award – Secondary School Leaving Qualification & Profile (SSQ&P). Moreover, the definition of non-formal learning will be updated to reflect international discourse and the reference to informal learning will be removed. The updated SSQ&P may also introduce a requirement of accredited non formal activities (weighted at 15%) and the possibility of validation of prior learning with regards to non-formal activities (although the process and procedures governing the validation of prior non-formal learning have yet to be established).

Source: European Inventory 2018, Malta country report; https://education.gov.mt/en/dqse/Pages/SSC-and-P.aspx; and presentation at the online peer exchange (3-4 May 2022)

Validation may additionally take the form of recognition within established formal education subjects. Souto-Otero (2021) notes that much validation takes place within schools, but in a covert manner, as learning that children acquire in non-formal ways (for example through reading, visiting museums or discussing with their families) gets assessed in the formal education systems and feeds into students' grades. This contribution is made explicit in the State of Georgia in the USA, in relation to language learning, where students can obtain exemptions based on their mother tongue.

Box 6 Validation based on life experiences

In Georgia, USA, there is the opportunity for exemption from the high school graduation requirements for two units of foreign language for students whose native language is not English.

One of the most encompassing initiatives for validation within formal education is the Learn Everywhere initiative recently established in New Hampshire (USA).

Box 7 Alternative programmes for granting credits leading to graduation or individualised learning programmes: the Learn Everywhere initiative

The Learn Everywhere initiative was initiated in New Hampshire in 2020, following a 2018 invitation received by the State Board of Education to adopt rules for its implementation, issued by the New Hampshire Legislature. This initiative creates a process whereby any public or private organisations can apply to offer high school credits to students, thus allowing learners to obtain credits for learning that takes place outside the school environment. The philosophy behind the initiative is to find out what learning goes on in non-formal settings to then make it count in formal education. The idea builds on experiences around 'extended learning opportunities' (ELOs), which allow for the acquisition of knowledge and skills through instruction or outside classroom settings (for example, through independent study, private instruction, internships, service learning and online courses) in the USA; ELOs validate that learning[11].

What the Learn Everywhere initiative does is to extend the State Board of Education credentialising functions beyond teachers and schools, its traditional remits, to also credentialise courses or programmes to offer part of the educational offer for graduation – after the applicant has provided documentation on aspects such as the course credit that will be offered, how it will work, how students will be assessed and graded, and has been inspected in a monitoring visit by the New Hampshire Department of Education.

As of May 2022, 15 programmes, covering a range of subjects and over 110 different credit granting courses, have been approved by the State Board of Education.

Learn Everywhere example (from Learn Everywhere, 2021):

"Let's consider a student who loves performing arts and participates in a local Boys and Girls Club ("BGC") performing arts programme. Let's also assume that the BGC has enrolled its theatre arts programme as an approved Learn Everywhere programme.

This student now has the option to participate in the BGC theatre arts programme for high school credit. While they are participating in the BGC performing arts programme, they can also participate in their public school performing arts programme, if they want (e.g. nothing is lost). However, if they find that practices at the BGC programme, which are three nights a week until 9pm, do not give them enough time to do homework, they could elect to take a study hall in their public school (all schools have study halls in all time blocks) to do their

[11] See https://www.education.nh.gov/partners/education-outside-classroom/extended-learning-opportunities for further details.

homework so they do not have to do it at night after play practice at the BGC. This student may also decide to take an elective course during that period.

In addition to creating more educational options for the student, it can reduce the level of stress experienced by the student and family, stress representing an increasing problem in our current culture."

Credits are awarded on skills mastery rather than session time. The programme does not affect school funding, which continue to operate under the same funding formula. Those delivering the programmes do not need to be certified teachers – although teachers can also set up their new learning programmes outside of their working hours.

Source: KQ Education Group, 2021[12], Learn Everywhere 2021[13] and New Hampshire Department of Education 2021[14].

Inasmuch as non-formal education is recognised, possibly even credited, the danger exists that non-formal learning loses its most valuable properties, which lie precisely in its informal and voluntary character, allowing for spontaneity and participation – see also the SySTEM2020 case study presented in section 4.5.

3.3.4 Methodological/pedagogical support and curriculum co-design

Non-formal learning activities, including alternative classroom pedagogies such as group work, project-based learning and co-designed lessons (as well as out-of-classroom experiences as discussed above) are receiving renewed attention because research shows that they can assist with academic and character development, and social and emotional skills (Birdwell et al., 2015).

Through increased professional cooperation, the use and importance of non-formal learning may grow (Kiilakoski, 2021). Partnerships between formal and non-formal education providers and other stakeholders may therefore emerge out of the need and desire to develop and test new methodological tools, including work-based learning, adventure education and gamification (Kiilakoski, 2021). Such methodological/pedagogical tools may be directed at building the capacity of schools and teachers to better address the needs of individual learners and to tackle early school leaving.

The methodological/pedagogical tools used in the non-formal sector may also be more appropriate to tackle questions that lie outside traditional school subjects. Many important matters today - such as media education, environmental education, peace education or entrepreneurial learning — require a holistic approach. The traditional subjects of the school curriculum are not capable of meeting the requirements of these fields of education. But developing new ways of promoting learning can be created by cooperation (Kiilakoski, 2015).

Support for the development of methodological tools has been and continues to be supported through Erasmus+ / Horizon 2020 projects initiated by different stakeholders and implemented through partnerships involving both the formal and non-formal sector. Projects such as SySTEM2020, reviewed in the case studies, aimed to provide design principles for the preparation of science learning that could be used by non-formal providers but could also inspire formal education teachers.

[12] https://kqeducationgroup.com/how-new-hampshire-high-schoolers-can-earn-credits-essentially-anywhere-opinion/

[13] https://www.learneverywherenh.org/

[14] https://www.education.nh.gov/partners/education-outside-classroom/extended-learning-opportunities

In terms of the potential benefits of this type of integration, Dumitru Tabacaru (2018) concludes, based on a survey of 67 Romanian primary school teachers, that non-formal education methodologies (such as team-building activities, role play and trust games) could improve learning experiences and engage learners in a more efficient way, whilst also having a positive impact on students' achievements (according to the teachers). On this basis, Dumitru Tabacaru (2018) proposed a holistic approach to education units and encouraged teachers to be open to non-formal learning methodologies, in order to be able to fully exploit the potential of each learner and to support the formal learning process.

In relation to early school leaving, Smets (2018) argues that adjustments are needed to ensure that the educational curricula reflect individual students' needs in order to tackle early school leaving. Personalised forms of teaching and learning and different assessment styles are also promoted by the European Commission. This may involve connecting with alternative learning pathways, such as non-formal learning, or validating non-formal learning (European Commission, 2015).

The literature also refers to a number of constraints that limit the introduction and implementation of learning methodologies and pedagogical tools in formal education that may be more commonly used in non-formal education. Apart from the constraints in terms of time, resources and strictly set curricula which can act as barriers to the linkages of non-formal learning in formal education (Valkova Tarasova et al., 2020), the literature also alludes to a lack of systematic cooperation between formal and non-formal learning providers, which can create a resistance to engage with other forms of learning and strengthen existing stereotypes around other forms of learning or learning settings (Kravale-Pauliņa and Kokina, 2010; Garner et al., 2014). In the context of the Latvian project "Inspire: School Education by Non-formal Learning", and based on a survey of teachers and interviews with out-of-school education experts, Kravale-Pauliņa and Kokina (2010) report that school teachers tend to identify more problems with the integration of formal and non-formal learning than representatives of out-of-school organisations. Related to this, Valkova Tarasova et al. (2020) also note that teachers often focus strongly on content and knowledge rather than on delivery, and educators in non-formal education often create many activities that do have as their main objective to deliver a set of predefined learning objectives and content. As such, they argue that there is a need to focus on competences and benefits to the learner when considering the integration of non-formal and formal learning. This may require better conceptualisation of how non-formal learning can be used as an additional tool for achieving national curricular learning objectives, and continued exchanges between teachers and non-formal learning providers.

Some decision makers and educators within the formal education system may also see non-formal education as the 'poor cousin' of formal education (UNESCO, 2006:88). School accountability mechanisms that tend to define school success too narrowly may also discourage experimentation and the willingness of schools and teachers to implement new methodologies and pedagogical tools (Lipnickiene et al., 2018).

3.3.5 Collaboration in professional development (e.g. in-service training)

The importance of professional development for teachers – taking advantage of partnerships with community actors, using non-formal learning methods, dealing with diversity in the classroom – is emphasised in the literature and EU documents (Downes, 2011:327-328; European Commission, 2010).

However, there is a lack of training for educational professionals (initial teacher education and continuous professional development for teachers and educators) on how to engage with non-formal education providers and to facilitate integration between non-formal and formal learning (Kravale-Pauliņa and Kokina, 2010; Garner et al., 2014). Some exceptions include the work of the Swedish National Agency for Education and non-formal education providers, such as the Tom Tits Experiment. Another example, as noted above, is Spain where teaching of previously considered hobby and leisure activities such as chess has been incorporated in teacher training programmes, and where there is evidence of intensive collaboration with non-formal learning providers and practitioners themselves in the preparation of pedagogical materials[15]. A further example is provided among the case studies – the InFormal project (see section 4.6). The main focus of this project was the integration of non-formal learning approaches in formal and non-formal education through a set of training activities that involved educators and practitioners from both the formal (e.g. teachers) and the non-formal sphere (e.g. free time educators of extracurricular activities and youth workers). An important outcome of the project was the development of a manual to support the integration of non-formal and formal learning (Chardymova et al., 2019 - InFormal: A manual of integration of Non-Formal Education Approach to The Formal Education System).

With regard to pre-service training, teacher training programmes in higher education institutions can also sometimes include subjects that focus on equipping future teachers with abilities to apply non-formal education methods and raising awareness on topics like inclusion, multiculturalism, and diversity. However, it is up to each study programme to decide whether these subjects are mandatory or elective; therefore, the status of the subject varies (Lipnickiene et al., 2018).

Besides teacher training and professional development, Holliday and Lederman (2014) suggest that practices and professional development of staff working in non-formal learning environments is an issue that needs more intense research and research-based development. It is important for the non-formal education sector in general which may be characterised by staff on short-term contracts and with high staff turnover, to build a strategic approach to learning and shared methodologies of teaching, wherever possible (Dawnes, 2011).

4 Good practice examples

4.1 Selection of good practice examples

Based on the initial desk research and scoping interviews, a number of good practice examples were identified (see Annex 1 – whilst not fully covered as case studies, some of these examples have been mentioned in the above sections). Through consultation with the Ministry of Education and Research, it was agreed that the following examples would be explored in more depth:

- The Transition Year in Ireland
- LUMA Centre Finland
- Community Schools / Integrated Child Centres in the Netherlands
- SySTEM2020 – Connecting science learning outside the classroom (Horizon 2020 project)

[15] See https://www.ajedrezeducativo.org/uned-tudela-cuna-del-modelo-los-7-colores-del-ajedrez-educativo/

- InFormal - Integration of non-formal education approach to the formal education system for youth empowerment at the local level (long-term Erasmus+ projects)

A notable difference between these examples is that the latter two are EU-funded projects implemented in multiple EU Member States, whilst the other three are national initiatives and measures that have been implemented over several years.

For each case study, we have reviewed relevant information and documentation relating to the practice and conducted a number of interviews with relevant stakeholders.

The length and level of detail presented in the case studies partly reflect the length in which they have been implemented, the varying complexity of the practices as well as the information and documentation that exist in relation to each example.

Table 4.1 presents an overview of the five case study examples and how they relate to the types of integration presented in section 3 above.

Table 4.1 Overview of the five case study examples

Types of integration	Transition Year (IE)	LUMA Centre Finland	Community Schools / Integrated Child Centres (NL)	SySTEM 2020 (Horizon 2020)	InFormal (Erasmus+)
School curriculum delivered in a non-formal learning setting outside the school by a formal or non-formal education provider	✓	✓		✓	
Hobby and leisure activities: provision on the school premises by a formal or non-formal education provider or integration into the curriculum	✓		✓		
Validation and recognition of knowledge, skills and competences acquired in non-formal education/learning within schools					
Methodological/pedagogical support and curriculum co-design	✓	✓		✓	✓
Collaboration in professional development (e.g. pre-service and in-service training)		✓			✓
Educational stage					
Pre-school		✓	✓		
Primary school		✓	✓	✓	✓
Secondary school	✓	✓	✓	✓	✓

4.2 Case study 1 – The Transition Year in Ireland

4.2.1 Introduction

Since 2016 there has been a wide-ranging review of senior cycle education in Ireland[16]. The final report of the review is expected in the first quarter of 2022. Given that the Transition Year (TY) programme is a component of senior cycle education (corresponding to Grade 10 of the senior cycle), it is not clear at present if any policy changes will be made to TY in the future.

Indications emerging from the interim report of the review (NCCA, 2019) and the ESRI report on student, teacher, and parent perspectives on senior cycle education (ESRI, 2019) is that TY is seen by stakeholders as a valuable feature of the current education system, especially from the dual perspectives of personal development (e.g. increased maturity) and wellbeing. However, challenges associated with TY are also reported. These include difficulties in planning, continuity, progression and fragmentation in learning, lower motivation amongst students – linked to a lack of formal assessment. Concerns about inequalities in exposure or access to TY participation have also been raised. Most but not all schools in Ireland offer TY. At the discretion of the school, participation in TY can be offered on a compulsory or optional basis. This means that some young people who might have an interest in (aspects of) the extra year are not able to access it. As a result, there have been suggestions that aspects of TY (such as work experience and a more sustained focus on holistic development of the student) may become more prominent at other grade levels in any forthcoming reforms. It is therefore not clear if the TY programme will exist in its current format or if elements of it will be structured across the junior and or senior cycle of education.

Significantly, the review of senior cycle education has highlighted the need to strengthen the link between teaching, learning and assessment between the junior and senior cycle of education. It has also emphasised the importance of career guidance as a support for wellbeing and to help students explore suitable pathways, and the need for more flexible and diverse pathways for learners (Smyth, 2019). These policy areas are closely interlinked with TY, meaning the future of TY will also be dependent/influenced by wider reforms across the broader education sector. Changes to the junior cycle in recent years could also change the relationship between TY as a link/gap between the junior cycle and the senior cycle and has been considered as part of the current review.

This case study draws on the extensive research undertaken by Dr. Aidan Clerkin from the Educational Research Centre of Dublin City University, Ireland. It also draws on wider research (referenced below) and has been informed by interviewees who have taken part in this case study research.

[16] See NCCA (2019) for the rationale for the review

Box 8 Irish Transition Year

- TY was first introduced in 1974 and became more widely available (mainstreamed) since 1994.
- TY is a national programme and is offered by most but not all schools in Ireland.
- Centralised funding is provided to participating schools.
- The TY programme provides an example of a grade level integrated within the mainstream secondary education system that provides opportunities for participation in formal, non-formal and informal learning.
- https://ncca.ie/en/senior-cycle/programmes-and-key-skills/transition-year/

4.2.2 Background and rationale/purpose of the initiative/measure

In Ireland, post-primary education consists of a three-year junior cycle (Grades 7-9) and a three-year senior cycle (Grades 10-12). In addition to classroom-based assessment, students complete state examinations at the end of their three-year junior cycle (Grades 7-9) and receive a Junior Cycle Profile of Achievement[17]. Grade 10 corresponds to the transitional year provided by most, but not all Irish schools. At the discretion of the school, TY can be offered on an optional or compulsory basis. In schools where TY is offered on an optional basis, students who wish to take part in the programme must actively enrol in TY or make the choice to skip it to continue to the final two years of the secondary cycle (Grades 11-12) where students take one of three programmes, each leading to a State Examination: the traditional Leaving Certificate, the Leaving Certificate Vocational Programme (LCVP) or the Leaving Certificate Applied (LCA). This means that all students who complete post-primary education in Ireland experience at least five years of education, while students who take part in TY enrol for an additional year.

The TY programme was introduced in 1974 and was intended as an opportunity for students to "*'stand and stare' discover the kind of person he [sic] is, the kind of society he will be living in and, in due course, contributing to, its shortcomings and its good points".* This followed concerns of the *"growing pressures on students for high grades and competitive success, educational systems are becoming, increasingly, academic treadmills"* (Burke 1974; cited in Jeffers, 2007).

Following the initial limited take up by schools (only three out of nearly 800 possible schools offering TY by September 1975), a major increase in participation rates from 1994, when the programme was 'mainstreamed', were attributed to the publication of official government guidelines (DES, 1993), an additional grant given to schools for each student participating in TY, and dedicated team of teachers seconded from schools to offer peer support to those implementing the programme.

The official guidelines published by the then Department of Education and Science set out three main goals of TY:

1. Education for maturity, with the emphasis on personal development, including social awareness and increased social competence;
2. The promotion of general, technical and academic skills with an emphasis on interdisciplinary and self-directed learning;
3. Education through experience of adult and working life as a basis for personal development and maturity.

[17] The Junior Cycle was introduced on a phased basis from 09/2014 to 09/2021. From 2022 the Junior Certificate has been phased out. See NCCA (2018) for further information on issues raised by the review of the Junior Certificate that was introduced in 1989.

Currently, TY is offered in 89% of Irish schools (NCCA, 2019). According to Clerkin (2018a), 'the sustained growth of TY in Ireland, devoting a full academic year to developing non-cognitive outcomes, demonstrates an unusually strong commitment by a national education system to the explicit promotion of youth development' (see also Clerkin (2012); Smyth et al., (2004)).

State funded allocations to TY have been reduced over the years. As the Irish economy entered severe recession in 2008, in 2009 the Government' abolished the €100 per capita grant for TY students – thus removing key financial support for schools offering the programme. The grant was subsequently re-introduced for the 2010/11 school year at the lower rate of €95 per student and remains at the same rate today under the 0052/2020 Capitalisation Grant Rates (DoE, 2020). Due to reduced funding, principals and school coordinators reported to be under increasing pressure to deliver more with less, forcing schools to approach parents for financial donations to run the TY effectively[18].

Aimed at those in the 15–16 age group, the TY programme has a strong focus on personal and social development and on education for active citizenship. As emphasised by Clerkin et al., (2022), 'both in conception and in operationalisation, TY seeks to promote wellbeing and personal development within a holistic and society-oriented framework'.

The idea underpinning TY at a policy level is that students should be offered a period of time in which they can devote their attention to developing their broader interests and enhancing personal and social maturity in the absence of high-stakes academic pressures. As reported in the literature, through social engagement, whether as a team member in school-based projects, as a participant in adult work environments through work experience placements, or as an active citizen through community service activities, students are expected to emerge from TY as a more rounded, confident, competent, and socially participatory individuals (see Clerkin et al., 2022; Jeffers, 2007, 2011; Smyth et al., 2004).

4.2.3 Institutional setting, target group and focus

As noted above, TY is offered in 89% of schools and is taken up by approximately 65% of the eligible cohort of students (NCCA, 2019). Smaller (more rural) schools and those with a higher proportion of socio-economic disadvantaged students are less likely to offer TY (Jeffers, 2002; Clerkin, 2013; ESRI, 2018) – 'reflecting concerns on the part of school personnel about the potential effect of an extra year in school on student retention' (ESRI (2019:2) citing Clerkin, 2013; Smyth et al., 2004).

The 1993 guidelines invite schools to devise a broad holistic educational experience with the mission to 'promote the personal, social, educational and vocational development of pupils and to prepare them for their role as autonomous, participative, and responsible members of society' (DES, 1993). In line with the 1993 guidelines, individual schools are therefore given considerable freedom to design their own TY curriculum. There are no formal public examinations associated with TY. The guidelines explicitly state that curriculum content is a matter for selection and adaptation by the individual school, having regard to these guidelines, the requirements of pupils and the views of parents.

The guidelines also place a particular emphasis on teachers using a wide range of active teaching/learning methodologies in TY, tailoring TY to the interest of their

[18] https://www.independent.ie/regionals/herald/news/transition-year-to-be-dropped-in-cutbacks-27907730.html.

students. According to Jeffers (2011), 'this ambitious innovation seeks to bring about a refocusing on students' social competence and social awareness, a fresh emphasis on self-directed learning and intrinsic motivation, the use of more active teaching and learning methodologies by teachers, greater collegiality in schools, including collaboration with parents and community interests, and, overall, a more holistic view of schooling generally'. As discussed in more detail below, this approach has been challenging for some teachers.

As TY takes place immediately after the junior cycle, most TY students are aged 15–16 years. It is reported that students who choose to partake in TY tend to be younger than their classmates who skipped the year, have higher educational aspirations and highly educated parents (Clerkin, 2018a). Research findings show that those less likely to participate in TY are those who come from socioeconomically disadvantaged backgrounds due to resource constraints or lack of student interest (Clerkin, 2013; Jeffers, 2002; Smyth et al., 2004). The financial costs attached to participating in TY activities continues to be reported as a significant barrier for some families (ESRI, 2018), raising concerns about equality.

Disparities in TY uptake by students' home language background, educational and vocational aspirations, and their prior levels of engagement in school are widely reported and is a key issue of concern in the current review of the senior cycle review of education currently underway (Clerkin, 2018a). There are also reports that students at risk of early school leaving are steered away from participating in TY (Jeffers, 2007; Smyth et al., 2004 cited in Clerkin 2018a).

4.2.4 Implementation

4.2.4.1 Type of integration

TY's status – essentially as a 'quasi-gap year' point to its function as a bridge between lower and upper secondary education (Clerkin, 2020). It offers students space dedicated to focusing on interpersonal development alongside personal development and self-directed learning. Engaging with the local community is integral to the nature of the TY and has reported to provide some of the most memorable aspects of the year for participants (Clerkin, 2019).

The type of integration between non-formal and formal learning offered by the TY programme is not a direct match to the main types of integration identified in the wider literature.

As noted above the curriculum content of TY is a matter for selection and adaptation by the individual school. Transition units (TUs) have been produced by the National Council for Curriculum and Assessment (NCCA)[19] as 'curriculum components' and are available to schools to include as part of their TY programme, alongside shorter modules and other learning experiences. Transition units are not intended to be 'exam' courses but are assessed as part of the teaching and learning in the unit[20]. In this respect the TY curriculum is customised, with opportunities for learners to engage in non-formal and informal learning activities beyond conventional classrooms. This includes work experience placements, community service activities, field trips and the use of visiting speakers. Use of appropriate modes of

[19] The NCCA is a statutory body of the Department of Education.

[20] https://ncca.ie/en/senior-cycle/programmes-and-key-skills/transition-year/

assessment[21] are encouraged to complement the variety of different components and approaches used in TY.

On the flipside, although schools have significant autonomy to customise the TY programme, there have been reports of TY becoming 'colonised' through pressure to cover exam material over three years instead of two. While the 1993 guidelines are clear that TY is not intended to form the first year of a three-year senior examination preparation, Clerkin (2020) reported that there is anecdotal evidence of schools operating ‘a three-year [course]’, particularly in some subjects, highlighting the constant risk that more instrumentalist concerns may infringe on the intended use of TY as a space for personal and social development. At the same time, there is an expectation that TY should nonetheless lay ‘a solid foundation for Leaving Certificate studies’.

4.2.4.2 Results and outcomes

Overall, the research evidence is clear that TY is generally positively regarded by students, as well as by teachers and parents (see Clerkin 2013, 2019 and ESRI, 2018a). The positive outcomes of TY in recent year have also been reported by ESRI, 2019; ISSU, 2014; Jeffers, 2007; Smyth et al., 2004.

Some of the most reported positive outcomes of participation are as follows:

- Feeling more socially skilled, having developed positive relationships with peers and adults (teachers and employers), including a greater perception of respect for teachers.
- More positive attitudes towards learning outcomes.
- Greater affective sense of belonging at school.
- Stronger cognitive engagement in learning.
- Enhanced feeling of maturity, achieving a sense of adulthood.
- Boys who took part in TY reported significant growth in self-reliance, self-management, practical and organisational skills learned through the range of experiences in TY (Clerkin, 2019).
- Becoming more self-aware, confident, better informed about the world beyond school, making appropriate and well-informed education and labour market choices.
- Achieving significantly higher scores than non-participants in examinations at the end of post-primary school (Millar and Kelly, 1999; Smyth et al., 2004).
- Appreciation of opportunities for learning beyond conventional classrooms: work experience placements, community service activities, field trips and the use of visiting speakers are especially popular.
- Students who take part in TY have been found to spend more time on homework over the two years following the programme than non-participants.
- TY participants are perceived as being better-prepared, after their ‘year out’, for the rigours of the high-stakes senior examination cycle (Clerkin, 2018b; ISSU, 2014; Jeffers, 2007; Smyth et al., 2004).

[21] See https://pdst.ie/node/284 for further details on TY assessment

More detailed insights into student, teacher and parent perspectives of TY can be found in ESRI (2019) and Clerkin (2019).

In terms of quality assurance arrangements, the TY programme is subject to internal school self-evaluation (post-primary)[22] complemented by the external evaluation of schools (post primary)[23]. The external evaluation of the TY programme is inspected as part of 'Whole School Evaluation' and 'Programme Evaluations'. In addition to oral feedback provided to the school community on completion of an inspection, an inspection report is produced and made available on the Department for Education website[24]. Further information on the evaluation of TY and resources available to teachers can be accessed from the Professional Development Services for Teachers website[25].

Although there is a rich body of empirical research on TY, Clerkin et al., (2022) argues that more evidence on student outcomes in TY is needed – suggesting that information from other sources, such as evaluation of students' development by teachers would provide a complementary perspective. Specifically, Clerkin (2020) proposes that more information on the development of metacognitive and self-regulating behaviours during TY would be useful. In addition, Clerkin (ibid) emphasises that TY students' hobby/leisure activities and paid work outside school are relevant factors worth considering for their contribution to students' personal development.

4.2.5 Overall assessment

4.2.5.1 Organisational and beneficiaries' gains/benefits from integration/coordination of non-formal and formal learning

The positive experience of teachers and learners involved in TY can be considered to contribute to the organisational gains from TY. For example, it is reported that teachers appreciate the opportunity to work with their students in a more holistic fashion in TY (Jeffers, 2007; Smyth et al., 2004) and view it as a 'de facto opportunity for professional development, citing the freedom (or requirement) to be creative in developing modules and teaching materials, a wider variety of teaching methods, and connecting with their students in a more positive and constructive manner' (Jeffers, 2007, 2015; Smyth et al., 2004 cited in Clerkin et al., 2022).

One of the key outcomes of participation in TY from the learner perspective is that the space for personal development and maturation has contributed to the development of stronger and more respectful learner-teacher/adult and peer-to-peer relationships. Moreover, as previously mentioned, those who participate in TY are reported to engage more positively in homework and achieve significantly higher scores than non-participants in examinations at the end of post-primary school.

4.2.5.2 Success factors and lessons learned

Professional development of teachers and support: The success of TY requires a committed and enthusiastic group of teachers to implement the programme,

[22] http://schoolself-evaluation.ie/

[23] https://www.gov.ie/en/publication/b9e7d3-inspection-reports/#inspections-in-primary-and-post-primary-schools

[24] https://www.gov.ie/en/publication/b9e7d3-inspection-reports/#inspections-in-primary-and-post-primary-schools

[25] https://pdst.ie/TY/evaluation

experienced in the use of a wide range of teaching/learning and assessment methodologies. The very nature of TY programme enables teachers to increase their professional autonomy by allowing and encouraging use of innovative teaching and learning methodologies - though it has been reported that some teachers find this level of autonomy challenging – both in terms of their professional identity and innovation. Teachers who are not 'imaginatively engaged' admit to finding teaching a TY class especially challenging, often mentioning the absence of an examination focus as a key issue (Jeffers, 2015).

Engaging learners: Experiential and active learning methodologies that characterise TY provide a welcome alternative to the high-stakes examination pressure, with opportunities to develop new skills. Collaborative learning environments associated with TY have been seen to enable learners to work within a team and gain confidence and competence as leaders and contributors. As a result, students report emerging from TY with greater maturity and a greater appreciation for the wider social context in which they participate (Clerkin 2019a; Jeffers, 2007; Lim et al., 2017). Ensuring the TY curriculum content is up to date and the overall approach remains true to its intention of providing space and opportunities for learners to explore their interests and skills is essential. Linked to the previous point on professional development of teachers, teachers must therefore be supported in their efforts to remain current in their domain and pedagogical expertise and to be equipped with the capabilities to respond to the changing needs of learners, the school, community, and society.

Whole-school approach and collaborative partnerships: Continued support from leadership within the context of a 'whole school approach' to promote teamwork and collaborative practices within the school community, parents, and other stakeholders, together with a focus on whole-school programme planning are also key to success of TY.

4.2.5.3 Transferability of the practice

The TY programme in Ireland has been compared to the Free Year Programme (FYP) launched in South Korea in 2013 (partly informed by TY). This section presents aspects of TY and to the extent possible, from the FYP programme (see box below for a summary). The insights listed here were highlighted by Clerkin et al., (2022) as being useful to programme developers and educators in other countries.

Box 9 Free Year Programme (South Korea)

The FYP was first piloted among Grade 7 students (age 12-13) in 42 middle schools in 2013. By 2018, almost half of Korea's 3,713 middle schools were implementing FYP. Like TY, FYP does not have mid-term or end-of-term examinations; each school has the freedom to devise its own assessment system, though results cannot be used for high school entrance.

The overarching goals of FYP are to provide opportunities for students to explore their 'dreams and talents' and to develop '21st century competencies including creativity, character building, social skills, and self-directed learning' (MOE, 2013). Career exploration and a general focus on students' interests and strengths are features of the 10 hours per week devoted to elective courses. A wide range of teaching/learning methodologies, debates, experiments and project based-learning are encouraged.

Source: Clerkin et al., (2022)

Focus on wellbeing: Evident in both Ireland and Korea, is the growing concerns for student wellbeing and stress in a high-stakes academic environment. A key feature

is the provision of time and space that is explicitly made available for students to explore their interests and capabilities in the absence of high-stakes examination pressure, with guidance and support from teachers. In Estonia, the upper secondary school years (VET or general) are perceived as a time when students stop or decrease their engagement in hobby education and organised non-formal education, replacing it with individual recreational and sports activities or paid employment. Thus, having the possibility to engage in meaningful non-formal learning activities at this age could be extremely useful for mental health and wellbeing. As such, it may be worthwhile to consider the potential merits that this type of programme would have in Estonia and explore if these merits could be achieved through alternative ways of implementation (i.e. not institutionalising a dedicated year in the school programme (and extending compulsory schooling).

Keeping true to the aims of the programme: A constant reinvigoration of commitment to the intended goals of TY is needed from school leadership to guard against creep in the types of activities or methods that are given priority during (what is intended as) a dedicated developmental programme. In this respect guidance for programme implementation must be clear. In the case of the TY in Ireland, one interviewee commented that the 1993 official guidelines themselves are ambiguous – particularly on the relationship between TY and the junior cycle.

Collaborative partnerships: Building partnerships between schools, external agencies, government, employers, parents and local communities has been highlighted as a key success factor and condition for transferability, according to one of the interviewees. As emphasised in the case of the FYP in South Korea, partnerships have enabled the development of a learning ecosystem to support successful implementation of FYP (Choi, 2014, 2019). In Ireland, in the context of whole-school approach – this includes meaningful consultation with parents. From a student perspective, opportunities to participate in sustained engagement with adults with the wider community beyond school, through work experience, community involvement have been reported to positively impact their experience and maturation. Opportunities for collaborative and creative work with classmates where students learn as a team has also contributed to a positive experience for both students and teachers.

Equity: In both the case of the TY and FYP in Korea, the question of equitable provision has been raised. Both programmes offer schools the autonomy to tailor the programme to the needs of the learners and school/local circumstances, however as reported by Clerkin et al (2022), this also runs the risk of reinforcing social and economic disparities. A further point on equity emphasised in previous research and reinforced as part of the ongoing review of second cycle education in Ireland, is how to ensure that learners who do not participate in TY can benefit from positive elements the programme has to offer.

Other issues worth considering in terms of lessons learnt, is the need for more regular monitoring and evaluation of TY and understanding of the psychological processes by which TY operates. On the former, Clerkin (2022) proposes the introduction of a formal evaluation structure and to enforce an annual self-evaluation of TY as recommended in the 1993 guidelines. On the later, Clerkin identified constructs associated with TY participation relating to student engagement, self-determination, psychosocial maturity and life satisfaction as a conceptual framework to understand the psychological process, participation in TY and intended outcomes (Clerkin, 2018b). For Estonia, setting out a theoretical framework / conceptual rationale in developing a programme of this nature is critical.

4.2.5.4 Challenges for the integration/coordination of non-formal and formal learning

The research evidence reveals that endorsements of TY are not universal, with views towards TY ranging from highly positive to dismissive (Jeffers and Smyth et al., 2004 cited in Clerkin et al., 2022). Empirical research carried out by Clerkin (2019) found that a substantial minority of participants express negative views of the year, describing it as a waste of time or as being boring – and thus experienced as a 'doss year'. When experienced as a 'doss year', this is mostly attributed to learners feeling they have little to do, that TY is not taken seriously by their teachers, or when the TY classes are too close to the format and content of formal classes at junior or senior grades. Other challenges include, losing good study habits due to a lack of examination pressure and finding it hard to settle back into 'regular' classes in Grade 11, perceived loss of academic momentum by learners, teachers, and parents, diverting time away from traditional academic activities with less easily measurable outcomes, the desire to finish school a year earlier or to avoid 'wasting' a year that does not involve preparing for examinations have also been reported (see Clerkin 2019, Jeffers, 2007; Smyth et al., 2004). The financial cost of participating in TY arising from the expense of additional out-of-school activities has also been highlighted as a significant challenge for families.

Another key challenge relates to the issue of TY being compulsory or optional. As previous noted, in most Irish schools, TY is provided on an optional basis. There are however different arguments for and against compulsory or optional participation. The rationale for compulsory participation is that no learner misses out on the benefits TY has to offer. However, research has shown that students in schools where participation is compulsory tend to report more negative views of their time in TY (Clerkin, 2019a; Smyth et al., 2004), suggesting that 'this decision is not without trade-offs' (Clerkin et al., 2022). Where participation in TY is optional, the research findings also show that some students who are opting to skip TY could be interested in certain aspects of the year such as vocational exploration (see Clerkin, in press), or would stand to benefit from some of the developmental opportunities (e.g. collaborating with peers on long-term group projects, public speaking, designing a product and running a mini-company as an entrepreneur), but decline them because of prior negative experiences in school, a reluctance to risk further disengagement, or the desire to finish school and get out into the world as quickly as possible. As noted by one interviewee, *"learners who opt to skip TY and leave school as quickly as possible are those that are typically most in need of TY in the longer term – the issue of learner agency comes into question - should a 15–16-year-old be allowed to make a choice between structured and not-structured and options that could potentially offer positive life-changing experiences?"*

Challenges around the professionalism and professional support required for teachers have also been raised. This relates to the need for teachers to have an awareness of the need for change, support in developing and using new teaching methodologies, and in terms of capacity and avoiding overloading teachers with additional responsibilities without adequate support.

4.3 Case study 2 – LUMA Centre Finland

4.3.1 Introduction

Similar to Estonia, Finland is internationally recognised for its high-performing education system, with high scores and low variation in performance results in the Programme for International Student Assessment (PISA) (Lavonen, 2020).

The success of Finnish education can in part be explained by Finnish education policy and its implementation, which favours a collaborative approach to reform and strategy (Lavonen, 2020). These efforts include developing programme processes in which policymakers, administrators from the Ministry of Education[26], municipalities[27], universities, teachers, and teacher educators design strategies and development programmes (Simola, 2005). Moreover, the decentralised and autonomous role of professional teachers and teacher educators to implement curriculum and assessment practices is another reason for Finnish success in education (Välijärvi et al., 2002). Professional teachers play an important role in the Finnish decentralised educational system. They are responsible for participating in local curriculum design, designing learning environments and courses, and, moreover, assessing both their own teaching and their students' learning outcomes. Professional primary and secondary teachers are educated at traditional universities in a 5-year master's program, which has been the case in Finland for more than 45 years. All teachers working in Finnish schools must have completed this 5-year programme (Lavonen, 2020:66).

The Finnish education system also acknowledges the importance of synergies between formal and non-formal education by promoting learning outside classrooms and school buildings in the national and school curricula. Indeed, the renewed national core curricula for basic education (2014) and general upper secondary schools (2019) highlight interactive learning environments and learning that happens outside of school as a resource of the learning process (Aksela et al., 2020).

The national core curriculum for general upper secondary school also stipulates that part of the studies should be organised in collaboration with one or more universities and that schools *"should recognise learning [including non-formal learning] that has been acquired elsewhere and that corresponds to the goals and content of the curriculum"*. Similarly, the national core curriculum for basic education (2014) states that prior learning *"should be taken into account when the teaching is planned and content is chosen"*.

Box 10 LUMA Centre Finland

- Network was established in 2013, but individual LUMA centres have existed since 2003
- Network involves 11 partner universities (Aalto University Foundation, Lappeenranta–Lahti University of Technology LUT, Tampere University Foundation, University of Eastern Finland, University of Helsinki, University of Jyväskylä, University of Lapland, University of Oulu, University of Turku, University of Vaasa, Åbo Akademi University), effectively providing national coverage.
- It is funded by the Finnish Ministry of Education and Culture, as well as universities' core funding and annual membership fees that partner universities pay for common operations.
- https://www.luma.fi/en/

4.3.2 Background and rationale/purpose of the initiative/measure

In Finland, the connection between formal and non-formal learning is particularly strong in the field of science, mathematics and technology, where there is a long history of collaboration between formal and non-formal learning. Already in the mid-

[26] The Ministry of Education and Culture is responsible for the overall planning, steering and, supervising pre-primary education and care, as well as for drafting the necessary legislation. https://okm.fi/en/frontpage

[27] Providers of education (cities and municipalities) are responsible for preparing a local curriculum and organising primary and secondary education.

1990s, the Finnish National Agency for Education[28] established the LUMA programme (1996-2002)[29]. The LUMA programme consisted of ten major projects:

4. Formation of a network for communication, development and dissemination of ideas between municipalities, schools and educational establishments.
5. Assessment, research and researcher training related to the LUMA programme.
6. Increased weight of mathematics and the natural sciences.
7. Quality assessments as a natural part of the learning process.
8. Equality-promoting projects.
9. Special supportive measures. For instance, measures and resources were directed at the most gifted pupils, as well as those faring the least well.
10. Teacher training reform projects.
11. Projects for lifelong learning - from pre-school to adult education.
12. The role of municipalities, business and industry, and research institutes.
13. Cooperation between universities, polytechnics, upper secondary schools, and vocational institutions.

An international evaluation report on the LUMA programme (Allen, Black and Wallin, 2002) identified many successes. The report showed that cooperation between teachers increased, and connections with partners outside schools became stronger. Experimental learning increased, and many schools introduced classes or streams that specialise in mathematics and science. Teachers eagerly participated in the in-service training, and many completed degrees, improved their subject knowledge and widened their pedagogical skills. The public appreciation of the value of mathematics and science also increased, and the teachers simultaneously placed a higher value on their profession. However, the implementation of the whole process was judged diffuse and uncoordinated, and there were no guarantees built into the process to ensure that new ideas would spread outside the networks established by the National Board of Education (Lavonen et al., 2004:37).

On the back of the LUMA programme, and to address some of the limitations of the LUMA programme, the University of Helsinki created the first LUMA centre in 2003. The new LUMA centre brought together the Ministry of Education and Culture, the National Agency for Education, industry partners and the University of Helsinki, who were all represented on the Board. A second LUMA Centre followed shortly thereafter (University of Oulo) and subsequently grew into a national network (LUMA Centre Finland) consisting of 13 centres at 11 universities.

Between 2003 and 2013 the LUMA centres were operating without specific funding from the Ministry of Education and Culture; they were funded directly through universities' core funding and supplemented by funding from foundations. However, from 2013 it was established as a network and subsequently assigned a national task by the Ministry of Education and Culture. The funding attached to the national task amounts to about EUR 1 million per year and is provided for 4 years, with the most recent funding period covering 2021-2024. The funding is primarily provided to strengthen and standardise the operations of the LUMA Centre Finland network

[28] The Finnish National Agency for Education is responsible for preparing the national core curriculum, supporting its implementation, developing school education and financing in-service training programmes for teachers. https://www.oph.fi/en

[29] The acronym LUMA comes from Finnish language terms: Luonnontieteet [Natural Sciences] and Matematiikka [Mathematics].

nationally and regionally, but there is a fairly high degree of flexibility in terms of how the funding is used.

Other sources of funding for the Network include universities' core funding, annual membership fees that the network of universities pays for common operations and complementary funding from companies, trusts and various programmes and projects (including Erasmus+). Overall, the LUMA Centre Finland has received over EUR 20 million in funding since its establishment.

The main objectives and areas of development for implementation through the national task during 2017-2020 and 2021-2024 are as follows:

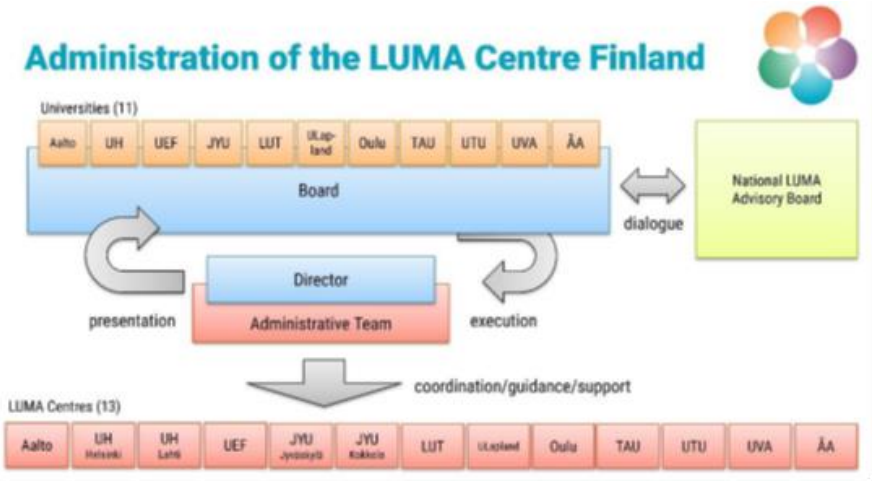
2017-2020	2021-2024
■ Supporting phenomenon-based and project-based learning of learning communities, with the help of StarT operations. ■ Strengthening international collaboration. ■ Persevering support for children and youth's science education and student recruitment. ■ Creating a continuum for teacher education of LUMA subjects and supporting this. ■ Promoting collaboration between the education sector and industry e.g. with science lab operations. ■ Increasing the visibility of operations and developing communication. ■ Implementation of intrinsic and extrinsic evaluation of operations. ■ Strengthening research of operations and research-based development.	■ Strengthening and broadening the national LUMA network for development communities. ■ Increasing recognition and effectiveness of LUMA centres. ■ Strengthening universities' mutual collaboration by developing teacher education of LUMA subjects, the forum for research and development of teaching. ■ Increasing children, youth and families' virtual and free-time LUMA operations. ■ Strengthening international, academic collaboration for research, development as well as basic and further education.

4.3.3 Institutional setting, target group and focus

The Network currently consists of 13 centres at 11 universities (Aalto University Foundation, Lappeenranta–Lahti University of Technology LUT, Tampere University Foundation, University of Eastern Finland, University of Helsinki, University of Jyväskylä, University of Lapland, University of Oulu, University of Turku, University of Vaasa and Åbo Akademi University)[30].

The LUMA Centre Finland network is directed by a Board. The Board decides how the funding is divided to the various centres and the different activities. The Board changes every 4 years and the Chair is always from another university than University of Helsinki (who, since 2013, is coordinating the network via a Director and an administrative team). This governance structure ensures that there is some separation between the Board and the day-to-day management and coordination of the Network.

[30] There are only two other universities in Finland (University of the Arts Helsinki and Hanken School of Economics) and given their focus it is not surprising that they are not part of the Network.



Source: Aksela et al. (2020)

LUMA Centre Finland network is also supported by an Advisory Board, consisting of approximately 50 organisations (including industry organisations). The Advisory Board meets 2-3 times per year.

The LUMA Centre Finland network's activities are guided by a collaboratively formulated strategy for 2014–2025. The starting point for the strategy was the importance of high-quality competences in mathematics, science, and technology (LUMA fields) to Finland as well as the network.

The main aim of the Network and the constituent LUMA centres is to:

- engage children and young people from age 3 to 19 years in maths, science and technology; and
- support teachers and future teachers at all levels in their lifelong professional development.

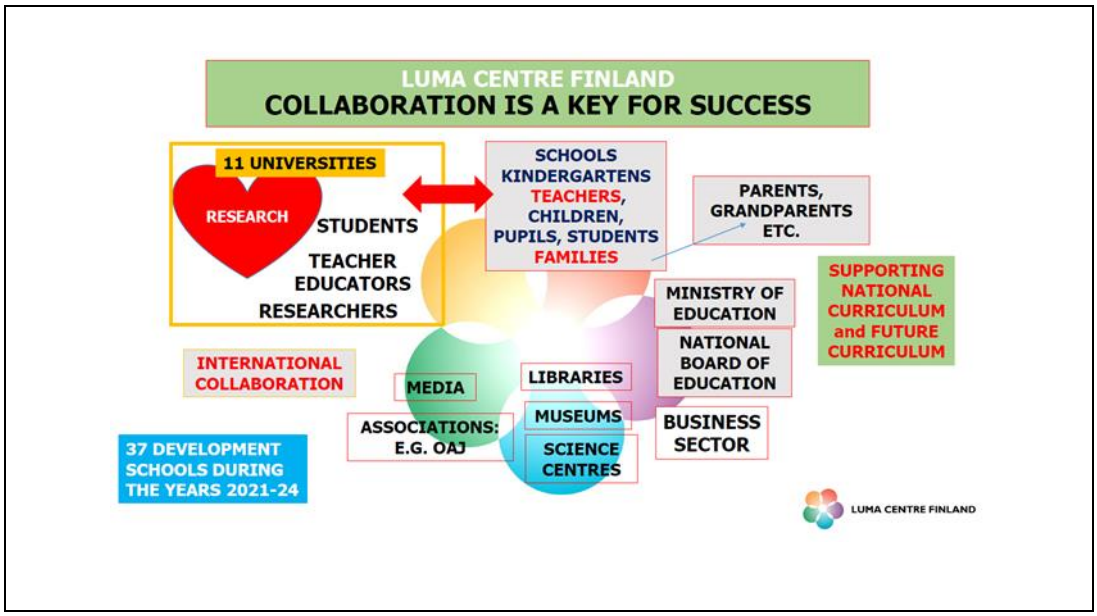
More specifically, the objectives of the Network and its constituent LUMA Centres are to:

- inspire and encourage girls and boys aged 3–19 to study and get involved in mathematics, science, IT and technology and to apply for further education in STEM fields all across Finland;
- promote awareness among the parents of children and youth about the significance of studying STEM subjects and the professional opportunities they provide;
- support education research and the lifelong learning and education of future and current STEM subject teachers;
- increase the visibility of STEM subjects in society via events and the media; and
- support the research-based development of STEM subject teaching.

The activities of the LUMA centres target basic education and upper secondary school students, as well as pre-primary school children. Through the research activities and the teacher education/professional development activities it also targets higher education (e.g. researchers, educators and pre-service teachers) and adult education (e.g. in-service teachers).

It focuses both on formal (e.g. future teachers at school and teachers at university) and non-formal education (e.g. LUMA labs at universities, science camps, science clubs and birthday parties) and most importantly provides a link between the two.

The work towards its aims and objectives is based on annual action plans in cooperation with different stakeholders. Planning of practical tasks and activities is carried out in collaboration with the 13 centres and other stakeholders through a co-design approach, but each centre operate its own model and has its own priority areas based on their respective areas of expertise.



Source: Aksela et al. (2020)

There are about 100 people working in LUMA centres nationally.

4.3.4 Implementation

4.3.4.1 Type of integration

LUMA Centre Finland and its constituent LUMA centres support the integration of non-formal and formal learning in many different ways. Firstly, the LUMA centres organise a range of non-formal activities for children and youth, including science and technology labs, clubs, camps, theme days and courses (in both physical and virtual environments). Many of these activities are organised in collaboration with schools and are often directly linked to the school curricula. These collaborations may take the form of study visits to the university by upper secondary school students. For example, in autumn 2019, students from Keminmaan lukio (an upper secondary school) visited the university botanical garden. During the visit parts of the facility that are normally only used by researchers were opened up to the students. These visits facilitate meetings between school children and researchers and generally receive very good feedback from students:

"I like plants, so it was interesting to go around the greenhouses. A great trip!"

"The tropical greenhouse and research on bumble bees were interesting."

"The trip was nice, and we learned lots of new things." (Aksela et al., 2020:16)

Another form of collaboration between schools and LUMA centres that integrate formal and non-formal science education and that is connected to the school

curricula is science labs. Science lab visits allows students to learn in different learning environments, through hands-on activities or novel inquiry-based activities. The science labs also promote teachers' and pre-service teachers' lifelong learning. The visits are planned with teachers, so that they support the aims of the core curriculum. In many centres, the science labs are also an important part of teacher education and its research. Pre-service teachers (together with researchers and other university staff) often act as instructors in the science labs. The science labs, may also help guide future career decisions by allowing students to familiarise themselves with authentic research, research environments and researchers. Annually, over 10,000 students visit the LUMA centres.

Box 11 ChemistryLab Gadolin

Science education in chemistry researches and promotes formal, non-formal and informal science education. ChemistryLab Gadolin (established in 2008) is Finland's oldest science lab and research is carried out in Gadolin through three, thematic priority areas. These include everyday chemistry, modern technology as well as sustainable chemistry and development. Research at ChemistryLab Gadolin can be divided into three main categories:

1. Research on ChemistryLab Gadolin as a non-formal learning environment.
2. Research on phenomena and working methods of chemistry teaching from the viewpoint of various theories and contexts. Working methods include for instance, inquiry-based work, molecular modelling, and project-based learning, and phenomena for example, attitudes toward chemistry, its appeal, learning motivation and the relevance of working methods in chemistry education.
3. Developing learning material that supports inquiry-based work in a research-based way through the methods of design-based research.

Around 4,000 children and youth as well as teachers visit the lab annually.

LUMA Centre Finland also offers a wide range of educational activities for both per-service and in-service teachers (e.g. workshops, online courses, development days, online material banks). Teacher education and training provision at the universities is closely integrated into the activities of the LUMA centres and through the collaborations with schools is also supports the integration of these activities into the daily lives of teachers. The main professional development programmes in the LUMA Centre Finland network include the LUMA FINLAND development programme (2014-2019), the LUMA2020 development programme (2019-2020) and LUMATIKKA (2018-2022).

The LUMA FINLAND development programme, which was funded by the Ministry of Education and Culture, was developed as there was concern regarding Finnish youth's competences in math, science and technology and their interest towards these subjects. The aim of the LUMA FINLAND development programme was to inspire and motivate children aged 6-16 years towards studying LUMA subjects and to support their teachers in the implementation of the new core curriculum for basic education in 2016. New solutions (such as integrative teaching, project-based learning, hands-on activities, research-based learning and utilising digital and other learning environments) were developed together with collaborating schools. Around 6,700 teachers participated in the training courses, reaching teachers in nearly 80% of Finnish municipalities.

The latest programmes of the LUMA Centre Finland network, LUMATIKKA and LUMA2020 development programme, are based on the work of the LUMA FINLAND development programme. The programmes support collaborative and participatory

training and networking of educators all around Finland to introduce novel solutions as a part of teaching in kindergartens and schools (see boxes below).

Box 12 LUMA2020 development programme (2019-2020)

The LUMA2020 development programme, funded by the Ministry of Education and Culture, was a national development programme for STEM-education. The main objective of the programme was to inspire and motivate children and young people to engage in mathematics, science and technology. To achieve that goal, the programme produced new solutions and pedagogical models, based on the latest research and co-design, to support implementation of the national core curriculum. Courses were aimed at pre-service and in-service teachers from early childhood education to upper secondary school (general and vocational). The programme also supported collaboration between schools, universities and industry and set up 160 learning communities (organised around four themes Sustainable Development (e.g. climate change and circular economy); Mathematics around us (e.g. art, economics and statistics); Technology around us (e.g. mobile device, artificial intelligence, robotics); and My LUMA - optional theme related to STEAM subjects).

All materials produced in the programme was shared on the programme's website and can be accessed for a charge. The materials also included three MOOCs for lifelong learning that were open throughout 2021.

A total of 81 experts from 11 universities participated in the programme. The experts supported approximately 450 in-service teachers from early childhood education, basic education and upper secondary education in a total of 381 programme-related events. The events included, for example, study visits to universities, schools and kindergartens, in-service training and meetings, and online meetings.

Box 13 LUMATIKKA (2018-2022)

LUMATIKKA is a further education programme implemented between 2018-2022 and funded by the Finnish National Agency for Education and coordinated by LUMA Centre Finland. The programme is aimed at teachers who work with math in early childhood education, pre-schools, primary education, and secondary education. The programme is carried out both in Finnish and Swedish together with seven universities.

In the programme, an online training programme encompassing 15 ECTS credit points for teachers at all school levels was developed in order to offer novel research-based information (made by specialists of education) and to support participants with developing their teaching. There was a need to further develop learner-centred, hands-on, and concrete contents for creating and increasing Finnish children's enthusiasm in math through open and free-of-charge online courses. In the development phase, contact instruction was offered alongside online studies. The courses included in the training were liked and popular. Participants came mainly from Finland, but there were also some participants from other European countries.

4.3.4.2 Results and outcomes

An external evaluation of the implementation of the national task of the LUMA Centre Finland network (2017-2020) was conducted by Tiina Mäkelä (Finnish Institute for Educational Research, University of Jyväskylä) and published in 2021. The evaluation shows that the network exceeded many of its targets including those relating participation by children and young people in non-formal learning opportunities.

There is not much data or research on the long-term effects (on career success and skills development) of participation in non-formal learning activities but positive short-term effects among learners on motivation and attitudes are evident. For

example, there is evidence that participation in LUMA centre activities has influenced young people's higher education study choices (Mäkelä, 2021).

In addition to supporting learners, the LUMA Centre Finland network is also developing skilled teachers. This is potentially the aspect of the network activities that will have the most long-lasting results: *"The impact of each individual teacher lasts roughly a century; first during their own activity and then, later on, through their former pupils and students. It's very important for teachers to have the most recent knowledge of the fields of science and how to provide instruction on them."*

In addition to the evaluation, an e-book on LUMA Centre Finland was published in 2020. The book explains the collaborative and long-term LUMA culture, where universities and their collaborative partners interact with different school levels, families, and other partners in society, and how the LUMA operations are interlinked as a part of teacher education and lifelong learning.

The implementation of the national task by the LUMA Centre Finland network is also internally evaluated through a process of self-evaluation and peer review (each centre is peer reviewed by two other LUMA centres that can reflect on the achievements based on their own experiences).

4.3.5 Overall assessment

4.3.5.1 Organisational and beneficiaries' gains/benefits from integration/coordination of non-formal and formal learning

Both students and teachers report gains/benefits from the activities organised by the LUMA centres. For students the gains/benefits include getting access to the research facilities and equipment at universities (including botanical gardens and science labs), having inspiring encounters with researchers, conducting hands-on activities/inquiry-based experiments and getting a taste of university life. Some of the gains/benefits are captured in the feedback from learners below:

"We had the opportunity to visit University of Oulu's botanical garden. It is an open and a diverse garden, with lots to see. There is a collection of living plants, which has been compiled especially for teaching and research in biology…In the tour of the greenhouses, we got to know plants from different climate zones…The guided tour was great, and we were given extensive information about different plants, for example we got to know a lot of new information on carnivorous plants."

"After the greenhouse tour, we were shown a laboratory for plant tissue culture. In the laboratory, we were told about the collaboration between the University of Oulu and other universities as well as about the benefits of plant tissue culture. In the preparation facilities of the zoological museum, we learned about stuffing animals …[We also] had the opportunity to learn about research concerning bumble bees. We got to see, how bumble bees have been taught to do different kinds of things and how bumble bees learn."

"In BioPop lab, we first attended a lecture by a researcher on neurobiology. Then we carried out inquiry on hospital-acquired infections, where our task was to find out, with methods of genetical engineering, what kind of a bacteria was in our sample. Afterwards, university students told us about studying biology"

"*The study visit at BioPop supported our course on biology well. The best thing was to carry out hands-on inquiry. I learned how machinery in pictures of the course book actually function. It was also interesting to observe, how many different steps are included in conducting actual research*".

"*During the study visit, we got lots of information concerning working at the university and studying there…Hearing an introduction to studies and students' backgrounds helped me understand that a study place, that has been chosen after upper secondary school, does not have to be a person's last study place. I have thought about studying biosciences after upper secondary school and during the visit this thought was strengthened*."

"*This was my first visit to the university… Before the study visit, I had thought of studying natural sciences, so the visit was useful, as I got to see what it really is like*."

Non-formal learning activities organised by the LUMA centres, and targeted at school children, are often co-designed with school teachers. Teachers report that this is hugely beneficial for their professional development, allowing them to teach or observe school subjects being taught in a different way. For example, a laboratory course 'DNA fingerprints and forensic chemistry' was developed and carried out collaboratively between an upper secondary school and the University of Helsinki, covering content of upper secondary level chemistry and biology. The students were taught by a university lecturer and they had the opportunity to carry out crime investigation in university facilities (including taking samples and analysing the samples).

"Students' interest towards the course was massive, because the course gave them an opportunity to carry out laboratory work that wouldn't have been possible to implement in the teaching facilities of the upper secondary school"

Teachers are also supported through in-service training, including LUMATIKKA and the LUMA2020 development programme (and its predecessor programme LUMA FINLAND). Courses provided through the LUMA centres offer relevant training on current topics (e.g. programming). They also provide support and help in adapting new things into the daily life at school.

Teachers involved in the LUMA FINLAND programme reported that the new teaching methods and learning environments were technically and pedagogically useful. According to the final evaluation, the programme was successful in promoting teachers to support their students' meaningful learning, and to help their students get interested in studying LUMA subjects. Teachers, who participated in trainings, highlighted the concreteness of the training, the discussions, the low-threshold materials and the multi-directional collaboration as successful aspects. Several teaching methods of the programme were also used in the teacher education delivered at the universities.

Similar findings were reported from the evaluation of the LUMA2020 programme. Participating teachers were very satisfied with the programme based on the evaluation and reported that it has provided tools to support multidisciplinary project-based learning, as well as co-design and learning community approaches. The programme inspired teachers to try new methods and increased collaboration between teachers as well as with students. Teachers felt that the programme developed the skills of learning and teaching, and increased the interest of both, teachers and students, in the thematic areas of the programme. More than two-thirds of teachers responded that they would participate in a similar programme in the future.

The collaboration between LUMA centres and teacher education also bring a range of gains/benefits. For example, pre-service teachers have the opportunity to work as instructors in the LUMA science labs. This collaboration provides career experience in the field while completing their studies and helps to refine personal pedagogical

skills. The combination of teacher education and university research also makes it possible to develop research-based learning material.

"This work has given me lots of confidence managing student groups and instructing inquiry-based experiments. Before working as an instructor, instructing inquiry-based work was my weakness, now it's my strength"

"Now in teacher training, I have noticed how the work has given me a readiness for carrying out teaching and inquiry. Teachers and student colleagues have come to ask for advice concerning inquiry-based experiments"

It also leads to links with schools which may help their employment prospects following graduation.

"We have often been asked, if we can substitute, and when we are going to graduate"

The positive experiences of teachers, learners, researchers and universities involved in the activities of the LUMA Centre Finland network (as outlined above) can be considered to also contribute indirectly to organisational gains/benefits for the schools and universities involved (and the schools that employ newly qualified teachers). More directly, it can also be noted that the LUMA centre activities have led to the University of Helsinki establishing Finland's first professorship of science education.

4.3.5.2 Success factors and lessons learned

Providing new and interesting learning environments outside school: Through LUMA Centre Finland learners are offered opportunities for learning about science in new and interesting learning environments. Research shows that learning environments outside of formal school education support learning by offering a possibility for the learner to use diverse inquiry-based working methods, while at the same time deepening knowhow that has been learned earlier. For example, integrating math with art, or laboratory-based teaching and learning of nanosciences offer possibilities to deepen school collaboration and developing training for teachers' lifelong learning. It is important to offer children and young people with various alternatives for learning alongside formal education. This also offers teachers the opportunity for changing approaches and teaching methods. The lab environment is typical for science and it is a fruitful environment for practicing skills that interdisciplinarity requires. This environment helps in searching and combining information from different school subjects and applies know-how and skills in an authentic research environment (Aksela et al., 2020).

Pedagogical development: Beyond the provision of new and interesting non-formal learning environments outside school, the LUMA Centre Finland also provide opportunities for new content to be developed and made accessible to teachers and learners. LUMA centre activities are strongly associated with class teacher and subject teacher education, and this is how the different activities offer meaningful opportunities for the development of teaching and learning. New pedagogical approaches are tested and developed, so that they can be implemented into formal education more easily.

Combining non-formal learning activities, teacher education and research: Providing non-formal learning activities that integrates research activities and teacher education creates synergies that would not be fully realised if they were not combined in this way.

Supporting the implementation of the national and school curricula: Whilst not directly driven by policy it aligns well with current policy priorities – developing a National Strategy for Mathematics, Science and Technology (LUMA) 2030 and a national roadmap for research, development and innovation – and recent changes to the national core curriculum which encourages learning environments outside of school. The fact that the LUMA centre activities are directly linked to the school curricula is an important success factor. It ensures that the learning is meaningful and that learners can see a direct benefit to their education. This is particularly important given that validation and recognition of non-formal learning is not fully developed and systematically utilised in basic education and upper secondary school. It also strengthens the potential of integrating the teaching methods used in formal education settings. Science labs and study visits provides a good complement to schools by offering better access to advanced equipment and facilities. It is also useful model for supporting transversal skills, implementing study units covering multiple subjects and facilitating cooperation with higher education institutions which are all part of the 2019 reform of the national core curriculum for general upper secondary schools.

Network ensures better national cooperation and collaboration: The Network involves almost all universities in Finland which ensures that the activities are provided more or less nationwide. LUMA centres operate slightly differently depending on the priority areas, but the organisation through a network ensures better cooperation and collaboration. The Network has developed a strong governance structure and a collaborative culture based on a co-design approach (learning communities, municipalities actors, companies, organisations, etc.). The Network listens to the needs of municipalities and schools and involves teachers as co-designers of the activities. It also collaborates with industry and creates new materials and ways of working.

Creating new interest in science, technology, engineering and maths: Interest in science, technology, engineering and maths is decreasing in Finland (as in many other countries). LUMA centres have at least helped to ensure that the situation is not getting worse.

4.3.5.3 Transferability of the practice

LUMA Centre Finland highlights the potential contribution of non-formal learning activities in the reform of curricula and pedagogy in science education. However, as not all children and young people can participate in these activities directly it is important to share, and if possible, implement the lessons learned from the LUMA centres.

In Estonia, study visits and science lab visits are commonly available, but they tend to be organised by the schools and are often the responsibility of the teacher. However, as these activities are not universal, there is unequal access across and within schools. In this sense, the LUMA centre experience shows that organising as a network supports sharing of good practices and supports a more coherent offer. Similarly, joining up activities and exchanging staff and material supports learning.

The attention placed on teacher/facilitator education and research in the LUMA centres is also a positive aspect that could be considered systematically in Estonia.

Whilst LUMA Centre Finland has largely focused on STEM education to date, its application is being extended to cover cross-cutting or multidisciplinary subjects, including sustainability education. There is also more cross-fertilisation in several other faculties of the university. If attempting to systematise in Estonia (via

guidelines, funding or quality assessment), it would be important to emphasise the wider concept of STEAM (science, technology, engineering, arts and mathematics).

LUMA Centre Finland has already shown its potential transferability to other contexts by supporting Chinese colleagues to set up a similar structure in China. LUMA China Centre was established in Beijing Normal University (BNU) and follows the model of the LUMA Centre Finland network in its operations. The aim of a cooperation agreement between the universities is to tighten research and development collaboration and researcher exchange concerning science and technology education.

4.3.5.4 Challenges for the integration/coordination of non-formal and formal learning

Establishing a network: A network like LUMA Centre Finland is not created overnight and patience is therefore needed if establishing something similar somewhere else. It should also be pointed out that the individual LUMA centres operated without funding from the Ministry of Education and Culture for 10 years, before organising as a national network. Funding from the Ministry of Education and Culture has assisted in strengthening the cooperation and collaboration between universities, but the individual universities involved have to fund many of the LUMA centre activities through other funding. The Finnish experience shows that it can take time to build relationships between universities and to develop a certain level of trust. Cooperation between universities can be difficult sometimes as there is a degree of competition between them. It also takes time to get scientist/researchers involved in the LUMA centre activities. A potential sustainability challenge will be to get the universities to fully fund the Network and its activities.

Participation in and provision of in-service training: Participation in in-service training is a challenge not only in the LUMA Centre Finland network but also more broadly. Participation may be hampered by the busy everyday life of teachers as well as the travel needed by some to attend face-to-face training. This can to a certain extent be addressed by developing and providing flexible training activities (e.g. on-the-job learning and/or modular online training). Another challenge relates to the type of training activities that are accepted as part of compulsory planning and training days for teachers (veso-days) and competition for the provision of in-service training with other providers. Challenges also arose in the organisation of formal in-service training at those LUMA centres that are not part of a university providing teacher training.

Ensuring equal access: Whilst the LUMA Centre Finland can be considered a national network, there are restrictions in terms of its geographical coverage (based on the location of the universities) and the number of students and teachers it can involve. The LUMA centre activities are not a universal opportunity and schools have to apply to be involved in the activities. As such, it is up to each school (and teacher) to decide whether they want to be part of the activities. Moreover, only those teachers that are able to visit a non-formal learning environment will have direct access to the learning environment and learn while experiencing the non-formal setting with the students. Virtual or mobile activities could be a way of overcoming this in the future.

The current Director of the LUMA Centre Finland network has been instrumental in establishing and developing the network over the past 20 years and there is a worry that her eventual retirement will have a negative impact on the future of the network. However, as the governance structure and collaboration between network partners is has been strengthened over the years it should be possible to successfully maintain the network and its activities.

4.4 Case study 3 - Community Schools/Integrated Child Centres in the Netherlands

4.4.1 Introduction

Community Schools (Brede Schools) emerged in the Netherlands in the 1990s, initially in primary schools. The initial objectives of Community Schools were to combat educational deprivation by offering hobby and leisure activities for educationally disadvantaged children and to provide care facilities after school for children of working parents. Since then, the Community School concept has spread all over the country and further developed to include secondary schools as well.

The integration of formal and non-formal education and learning has traditionally been more advanced in primary than secondary schools. In secondary education, there has been a dominance of formal education. The main objectives of the non-formal curriculum have been to provide attractive leisure activities and to provide compensatory courses and support for under-achievers who were often students with migrant background. The character of a Community School in both primary and secondary sectors was determined by the formal school organisation. There was no full integration of formal and non-formal education resulting in one non-disruptive learning trajectory.[31]

A national system for validation of non-formal (and informal) learning in the Netherlands commenced in 1998 with the aim to take stock of existing knowledge and skills. In 2013, a proposal was prepared for a validation of prior learning (VPL, or *EVC - Erkenning van Verworven Competenties* - in Dutch) system that aimed at solving the shortcomings in VPL concerning the quality, the quantity and effectiveness on the labour market and in education. This proposal resulted in a dual VPL system (effective since 2016) which consists of two pathways, one linked to the education system and the other to the labour market. Through the education pathway, learning outcomes and competences of an individual are validated against national qualification standards. The goal for the learner is to validate their formally or non-formally acquired competences in order to obtain a formal qualification.[32]

In the practice of the Community Schools, 'non-formal' is not restricted to educational activities. There is a strong focus on students-at-risk and how to integrate them – the non-formal part of the Community Schools is related to social and youth care, crime prevention and other professional help.

[31] Ibid

[32] European inventory on validation of non-formal and informal learning 2018 update. Country report: the Netherlands. Available at: https://cumulus.cedefop.europa.eu/files/vetelib/2019/european_inventory_validation_2018_Netherlands.pdf

Box 14 Community Schools/Integrated Child Centres (*Brede Scholen/ Integrale Kindcentra*) in the Netherlands

- The initiative started in 1990s, initially in primary schools in disadvantaged areas and areas with large migrant populations. It has grown and became mainstream, including also secondary schools and addressing a wider target group.
- It supports cooperation between schools, non-formal learning providers and other community services.
- There is no blueprint for a Community School. The services provided are determined by the needs of the community. The government does not dictate the model.
- There is no dedicated funding. As the policy is related to local, rather than national policy, the activities and buildings of Community Schools are funded through the municipality, school boards and other bodies such as social work, child day-care, and sport and art organisations

4.4.2 Background and rationale/purpose of the initiative/measure

Youth policy has been a key issue on the political agenda in the Netherlands. In recent years huge policy reforms have been put in place to better streamline services for youth[33] and to adapt them to local needs. This led to the decentralisation from national and provincial to local policy, putting all administrative and financial responsibilities towards the local level.

The Netherlands has a long tradition in child and youth social services with a high standard of professional practice. However, during the last 20 years a number of challenges have hindered the effectiveness of the system. The main obstacles identified by policy evaluators include: increased use of specialist care and limited use of preventative services; fragmentation of services for youth; lack of transparency; lack of efficient cooperation between relevant stakeholders, imbalanced prioritising between normal development and development of risk (specialised services received more funding compared with general and preventative services) and increased costs. [34]

A new *Child and Youth Act* was introduced in 2015, making all 393 Dutch municipalities responsible for the welfare, support and care for all citizens, including children, young people and families in need of support and assistance, leading to a transformation of policies and services towards integrated approaches. Prior to 2015, the general and preventative services were the responsibility of the local municipalities, and the youth care system fell under the remit of the 12 provinces. The *Child and Youth Act* made all preventative and care provisions for children, youth and family a local responsibility. Smaller municipalities have merged to engage better in their new tasks. In 2019 the number of Dutch municipalities has decreased to 355.

Local youth policy includes education, leisure, health care, as well as specific preventive activities, such as access to care and support and care coordination at a local level (with special focus on parenting support). The Community Schools are one of the main instruments of the local youth policy and designed to offer the best possible education and care for children and young people.[35]

[33] In the Netherlands, the term *youth* is applied to children and young people up to 24 years old.

[34] Reform of the Dutch system for child and youth care. 4 years later. (2019). Available at: https://www.nji.nl/sites/default/files/2021-06/Reform-of-the-Dutch-system-for-child-and-youth-care.pdf

[35] Factsheet on Community Schools in the Netherlands. Available at: http://www.eunec.eu/sites/www.eunec.eu/files/attachment/files/development_of_community_schools_in_the_netherlands.pdf

In the Netherlands all schools are fully subsidised by the government. Community Schools do not receive extra funding. As the policy is related to local, rather than national policy, the activities and buildings of Community Schools are funded through the municipality, school boards and other bodies such as social work, child day-care, and sport and art organisations.

4.4.3 Institutional setting, target group and focus

In 2007, there were about 1,000 primary and 350 secondary Community Schools in the Netherlands[36]. At the moment there are an estimated 45,000 Community Schools across the country, which bring together a broad network of partners to support children and young people, as well as their families and communities. The concept entails a large number of community-based activities and services which are mostly based on the participation of the children and parents.

Initially it was the role of the government to stimulate the concept of Community Schools. The National Office Community Schools (in Dutch: *Landelijk Steunpunt Brede Scholen*) was founded in 2009, with the help of the Ministry of Education, Culture and Science, in order to support schools and local authorities in developing the community school. The aim was to provide professional support to develop community schools in primary and secondary education by uniting schools, opening up good practices and by spreading and sharing knowledge. The project was initially funded to run for a period of 3 years, and because of its success it was extended for an additional 3 years, up until 2015. It is now the responsibility of the schools and communities themselves to stimulate the growth of the concept of Community Schools.

The role of the government now is to provide resources for support, research and communication. The government does not dictate the exact formula of a Community School. The local partners decide how the school is organised and what services are offered. This allows Community Schools to be tailored to the needs of the surrounding communities.

There is a wide range of activities for children, parents, neighbours and other specific target groups that determines the contents and organisation of a Community School. Community Schools team up with as many partners as possible to develop activities. Each school chooses its own organisational structure, for instance: complete day-programmes or periodical after-school activities for children and young people; combinations of educational activities within and outside the school; various and diverse activities for parents and the community; partners in different locations or most in one building; and different ways to organise staff, management and board functions.

A multitude of professionals and volunteers must actively contribute to develop a coherent network of facilities at local level. These include: teachers, parents, school social workers and school doctors, community centre workers, library staff, workers at creative or sports clubs, nannies, day-care, youth workers and volunteers, workers from parenting support agencies and toy exchange services, police, neighbourhood community workers, playground committees, general practitioners and other care workers, caretakers and wardens, doctors and nurses at infant welfare centres.

[36] The Integration of Formal and Non-formal Education: The Dutch “brede school”, Manuela du Bois-Reymond (2009). Available At: https://www.researchgate.net/publication/43019130_The_Integration_of_Formal_and_Non-formal_Education_The_Dutch_brede_school

When they commenced in the 1990s Community Schools were located in traditionally disadvantaged areas, particularly those with high rates of migrants. The Community Schools aimed to enhance the changes of these groups and to help families better integrate into society. Nowadays, Community Schools are located all over the country, providing valuable services for children, young people and their parents also in small villages. The focus has shifted from underprivileged children to the development of talents. The Community School concept now focuses on different types of target groups, such as: all the young people from a specific school, city, neighbourhood, or district; specific age groups; specific target groups e.g. based on ethnic, gender or socio-economic background; parents and community/neighbourhood; and specific high-risk areas.[37]

In recent years there has been a strong focus on integrating pre-school childcare services (for children up to 4 years old) into the Community Schools, formulating a new educational concept, known as Integrated Child Centres (ICC) or *Integrale Kindcentra* in Dutch. An important advantage of an ICC is that it provides a good start of formal learning. For this reason, schools often seek closer cooperation with childcare facilities for young children.

There are various reasons for starting or developing an ICC. Sometimes the starting point is a primary school or Community School, which has already collaborated with a pre-school facility and has integrated youth care as the last step. Other ICCs have just started, in a new neighbourhood. The objective is to create a continuous line for 0-12 years old, possibly even 0-18 years old in the future.[38]

4.4.4 Implementation

4.4.4.1 Type of integration

The Community School/ Integrated Child Centre concept focuses on developing children and young people's skills so that they can seize the right mix of development opportunities in their own social environment (at school, at home, and in their free time). There are various tools and activities to achieve this, but they all relate to the key-principle of cohesion. There are four key areas of action: (i) promoting social competence; (ii) promoting participation through day-care and recreational facilities; (iii) contributing to high-quality living conditions (at school, at home, and in the neighbourhood); and (iv) promoting care and service on a broad scale (care services, parenting support, preschool facilities).[39]

Although methods and details differ from location to location, Community Schools are generally governed by a set of common principles:

- The school aims to develop children and parents' social skills as well as offer cognitive education.
- Although the school offers a daily context which encourages social commitment and responsibility, it cannot succeed without the educational input of others (pedagogical professionals, volunteers, parents etc.)

[37] Ibid

[38] Integrale kindcentra over wat hen kenmerkt (NL). Available at: https://kohnstamminstituut.nl/rapport/integrale-kindcentra-over-wat-hen-kenmerkt/

[39] Factsheet on Community Schools in the Netherlands. Available at: http://www.eunec.eu/sites/www.eunec.eu/files/attachment/files/development_of_community_schools_in_the_netherlands.pdf

- Collaboration between schools and other institutes and facilities should benefit the children, young people and their parents as well as the organisations involved
- The geographical location of the service providers and facilities is an important decisive factor in terms of accessibility. Furthermore, joint efforts between the different services should be promoted (for example by moving into one building)
- In a Community School it is relatively easy to combine various opening hours and staff working hours in order to meet the needs of the attending children and parents as much as possible
- Integrating services in a traditional school setting or its immediate vicinity seems only natural, since children attend school every day.
- Parents are encouraged and motivated to have regular and close contact with the school, which will not only increase parent participation but also promote community school activities.[40]

The curriculum of Integrated Child Centres (ICC) is organised differently than in many regular primary schools. This mainly has to do with working on other than 'traditional' educational goals. The new learning objectives, as well as the 'traditional' ones can be achieved by organising the lesson content, for example in themes or projects, by offering children freedom of choice, and by developing special contents and own teaching materials. Many ICCs work with a combination of regular learning pathways or subjects and themes or projects. Often all grades and age groups, throughout the ICC, are working on the same theme or core concept for a certain period of time. Children from all age groups can work on this at their own level. Social themes are also chosen that respond to current events and that can increase the social involvement of children.[41]

4.4.4.2 Results and outcomes

The Community Schools/Integrated Child Centres concept is an item on the agenda both in education and in childcare, for welfare organisations and local authorities.

According to a study conducted in 2019 into the collaboration between primary schools and childcare and the development of ICCs, almost all primary schools collaborate with childcare. Research show that:[42]

- Collaboration with childcare is standard for almost all primary schools. Nearly half of the schools (48%) work one-on-one with one childcare organisation. The other schools (52%) work together with two or more childcare organisations. Collaboration is also the norm among administrators. The majority of school boards (80%) and childcare directors (86%) indicate that there is cooperation at administrative level.
- In practice, cooperation can take various forms. The most common features of collaboration between primary schools and childcare organisations are: smooth transitions from pre-school to early childhood and from school to childcare; realising continuous development lines for children aged 0-12 years; making use

[40] Ibid

[41] Integrale kindcentra over wat hen kenmerkt (NL). Available at: https://kohnstamminstituut.nl/rapport/integrale-kindcentra-over-wat-hen-kenmerkt/

[42] Primary schools, childcare and child centres: the state of the country 2019. Available at: https://onderwijsdatabank.nl/106475/samenwerking-in-beeld-2/

of each other's expertise; structural contact between professionals in the workplace; regular consultations at management and board level.

- Cooperation has been getting stronger compared with 2016. Where cooperation was previously often still in the build-up or start-up phase, it is now more often in the consolidation phase. Furthermore, vision and goals are more often aligned or formulated jointly. Employees speak to each other more often and more often combine the available knowledge and expertise.
- The collaboration ensures: better development of children, children enjoy going to school more, children who need care are helped more quickly, parents can more easily combine work and care and it provides more clarity for parents about who they can turn to.

4.4.5 Overall assessment

4.4.5.1 Organisational and beneficiaries' gains/benefits from integration/coordination of non-formal and formal learning

Community Schools/Integrated Child Centres facilitate synergies between education and various important childrens' and parents' services, such as parenting support, child day care and health centres. Community Schools are based on the principle that by combining services in a network or in a shared building, they become more accessible. Furthermore, the concept allows various services to join forces and adjust their services to match and complement each other as well as meet the needs of the children and parents.

One of the biggest accomplishments of the Community Schools movement is the well-established cooperation of primary schools with childcare facilities. This cooperation can take on various forms, from physical integration in one building with regular interaction between childcare and primary school personnel and involved parents.[43]

Apart from the results mentioned in the previous sections, other benefits of Community Schools include: [44]

- putting the children in the spotlight;
- challenging each individual child to develop their talents;
- offering extra opportunities for disadvantaged children, tailored to their needs;
- contributing to the safety in the area around the school and taking care that the level of services is maintained in smaller towns and villages;
- creating a more balanced day programme geared for the modern working society;
- contributing to emancipation and labour participation;
- contributing to a society where cultures and religions are living together and where common values and standards apply;
- contributing to social commitment at school and in the surrounding area;

[43] The Integration of Formal and Non-formal Education: The Dutch "brede school", Manuela du Bois-Reymond (2009). Available At: https://www.researchgate.net/publication/43019130_The_Integration_of_Formal_and_Non-formal_Education_The_Dutch_brede_school

[44] http://www.eunec.eu/sites/www.eunec.eu/files/attachment/files/a4_brede_scholen_high-res_eng.pdf

- providing space both for children and professionals to perform as entrepreneurs for instance by using their creativity and coming up with the right answers.
- taking care that teachers can concentrate on primary tasks and that the school can focus on its main responsibilities.

4.4.5.2 Success factors and lessons learned

One of the main success factors that allowed the growth of the Community School concept is related to the high level of flexibility in the design and operation of a Community School. The Dutch national government does not dictate the exact formula for a Community School. The school models are tailored to meet children's and parental needs. Data on the needs of the community is collected via several methods, such as surveys, observations during classrooms and other school activities, or conversations with parents. For instance, in the Community School context it is easier to adjust the institution's opening hours and personnel's working hours to the needs of the children and the parents.

Furthermore, providing a variety of services within and/or in the immediate vicinity of the traditional school, has proven benefits for the parents, since children can attend school every day. Parents have an opportunity to find childcare services, formal school learning and after school activities in the same place. This also fosters a culture of trust in the school's staff.

Integrated Child Centres provide a continuing line of learning for children aged 0-12. As mentioned in previous sections, this leads to better development of children, children enjoy going to school more, children who need care are helped more quickly, parents can more easily combine work and care and it provides more clarity for parents about who they can turn to.

4.4.5.3 Transferability of the practice

The Community School concept in the Netherlands serves as an example of successful example of a holistic approach to supporting the wellbeing of young people with the help of the community.

Inspired by the Dutch example and other similar practices, the Flemish government in Belgium started developing the concept of Community Schools. It evolved from a policy initiative to develop instruments to improve equity in education. In 2005, the then-Minister of Education in Flanders, defined the Community Schools or *Brede Scholen* as "a local collaboration between different sectors, whereby one or more schools work together to create a broad learning and living environment in an effort to maximise development opportunities for all children and youngsters." The first step towards implementing this model in Flanders, was to define the concept and then initiate several pilot projects (17 pilot projects between 2006 and 2009). [45]

Moreover, according to interviews undertaken for this case study, a project funded by the Erasmus+ is about to start, with the aim of supporting the development of the Community School concept in other countries, such as Greece and France.

Providing 'whole day activities', as in the Dutch Community School concept, is more in line with modern working lives, as currently some parents (especially of younger kids) have to ensure smooth moves between clubs and school. However, it is not

[45] http://www.bredeschool.org/sites/default/files/D_CELE_bredeschoolsarticle_14Jan.pdf

known to what extent this could further support the equality in participation in non-formal learning.

4.4.5.4 Challenges for the integration/coordination of non-formal and formal learning

Primary schools and childcare organisations experience a number of challenges. The main barriers to the successful development of Community Schools/Integrated Child services include: obstructive legislation and regulations; the separate worlds of education and childcare; finances are too limited and difficult to combine; facilities/infrastructure is not suitable for collaboration. [46]

According to the interview undertaken for this case study, one of the most prominent barriers is the fact that childcare services are provided by private organisations and schools belong to the public sector, meaning they are governed by different legislations. For instance, if a school hires a childcare provider, they need to pay a higher salary, to cover the income tax that apply for private organisations.

Another barrier is the regulation around the number of students allowed in a classroom. During school hours up to 50 children can be seated in a classroom, but for afterschool activities the maximum number is 16. There are hopes that the regulation will change in the coming years.

Moving forward, the vast majority of schools and childcare organisations and their administrators want to focus on strengthening the relationship with the current partner(s). Those who have plans to expand cooperation with more parties think in the first place of cooperation with healthcare. They strive for a stronger connection with youth care and care providers. Furthermore, in the long term, almost half of the board members want to merge their own organisation into a new entity and work towards an integrated organisation for education and childcare, for example in the form of a child centre.[47]

4.5 Case study 4 – SySTEM2020 – Connecting science learning outside the classroom (Horizon 2020 project)

4.5.1 Introduction

Box 15 SySTEM 2020

- Coordinated by Science Gallery, Trinity College Dublin (Ireland)
- Implemented between 1 May 2018 and 30 June 2021
- European project involving Austria, Belgium, Denmark, Finland, Greece, Ireland, Israel, Italy, the Netherlands, Serbia, Slovenia as core partners.
- Funded through Horizon 2020.
- https://system2020.education/about/

4.5.2 Background and rationale/purpose of the initiative/measure

The SySTEM 2020 project aimed to map initiatives that promote science learning outside the classroom in 19 countries. Science education is central not only to follow a career in STEM, but also as a democratic right for citizens, in order to understand

[46] Primary schools, childcare and child centres: the state of the country 2019. Available at: https://onderwijsdatabank.nl/106475/samenwerking-in-beeld-2/

[47] Ibid

the world in which they live and to think scientifically in their daily life. However, the traditional curriculum leaves many young people disengaged from science education, in particular students from disadvantaged groups.

The project aimed to gather intelligence on where and how young people learn science-related skills. It also aimed to broaden the concept of science education to make it more appealing to young people and generate new tools to support educators in the design and implementation of flexible learning environments that are responsive to differences in learner characteristics, locations and subject of learning. These actions could then generate more opportunities for science learning, related to the science curriculum, outside of schools.

More specifically, the project had five objectives:

Table 4.2 SySTEM 2020 project objectives

Assess	■ Non-formal and informal science learning in Europe
Understand and ideate	■ Involve stakeholders in the definition of main challenges outside the classroom and co-design ideas to address them ■ Assess the quality of non-formal science provision
Design, develop and execute	■ New tools and practices for the implementation of non-formal learning programmes ■ Develop a technology platform that can be used as credentialisation tool
Reflect and evolve	■ Analyse the results of the roll-out of new practices ■ Evaluate the success of learning tools ■ Communicate effective practices to others
Engage and inform	■ Through research papers, conferences, workshops and reports

Source: Elaborated from CORDIS Platform. https://cordis.europa.eu/project/id/788317/reporting

The project was funded by Horizon 2020, with an EU contribution of EUR 3 million. The core project team involved 11 organisations from 11 countries, but the wider project team included third party organisations[48] from 18 countries[49]. This led to a multiplicity of different situations, regulations and national frameworks around the integration of formal and non-formal education. These national frameworks and practices can significantly affect the outcomes of the project, as illustrated below in the case study with regards to young people's access to higher education.

4.5.3 Institutional setting, target group and focus

Science Gallery, Trinity College Dublin, was in charge of the coordination of the partnership, which included a multidisciplinary partnership from different European countries, including full partners from Austria, Belgium, Denmark, Finland, Greece,

[48] Third parties can undertake some tasks for projects but do not sign the grant agreement with the European Commission.

[49] Austria, Belgium, Bulgaria, Finland, France, Germany, Greece, Ireland, Israel, Italy, Netherlands, Portugal, Serbia, Slovenia, Spain, Sweden, Switzerland, UK. For individual organisations see https://system2020.education/about-partners/

Ireland, Israel, Italy, Netherlands, Serbia and Slovenia. In addition, a range of organisations acting as third parties further enhanced the partnership. This created significant complexity as the project had to deal with differences in educational systems and views of education and the meaning of science.

Science communication organisations and educational institutions, in particular, were strongly represented in the partnership. The project target groups (including students and teachers) were also included in the project activities, including the production of principles for the design of science learning activities that happen outside the classroom (design principles[50] - around the themes of designing for everyone, for experience, for growth) such as museums, gardens or science centres.

The project targeted young people, in particular between the ages of 9 and 20, and their educators. It placed a particular focus on inclusion, and was concerned with young people from disadvantaged backgrounds - such as immigrants - and with reducing the gender gap in science learning.

The focus of the project was non-formal learning oriented, with elements of connection with formal learning – schools. Science centres, a key part of the partnership, have schools as one of their main targets; and their staff can have teaching qualifications and a strong knowledge of the school science curriculum. For example, the Tom Tits Experiment Science Museum, in Sweden, was part of the project partnership and reported to work intensively with schools and the Swedish National Agency for Education (Skolverket), as well as deliver teacher training activities, for example in the area of computing.

4.5.4 Implementation

4.5.4.1 Type of integration

The main types of integration of the project with formal education took the form of 1) teaching of the school curriculum in non-formal education settings; and 2) methodological exchanges. In relation to the first point the project did not aim to deliver full modules or subjects, but elements of them in non-formal learning settings, such as science museums. In relation to the second point, the central outcome was the production of the design principles for learning activities that happen outside the classroom - previously mentioned -, and Zines[51] (short for 'magazines' or 'fanzines', are small DIY booklets that can be used as a creative and personalised reflective evaluation tool, and combine text, paintings, drawings, collage, and more), which were also transferred to formal education settings in the context of STEAM (Science, technology, Engineering, Arts and Mathematics) teaching. Methodological exchanges involved formal education teachers and schools in workshops and discussions, although the extent to which this was done varied across countries.

As a science centre we always have schools as a target audience and stakeholder, so questions around integration are always on our mind. This was clear for example in the processes of co-creation for the design-principles that the project generated. We asked ourselves how we can, as a non-formal learning arena, provide materials and tools that can

[50] https://system2020.education/resources/design-principles-and-methods-toolkit-for-supporting-science-learning-outside-the-classroom/

[51] For the experience of the project with Zines see Brown et al. (2021)

enhance equality in access to science education for the benefit of young people in formal education and later on in their lives - Interviewee

The project also aimed to provide scope for learners to obtain recognition of credentials based on their participation in non-formal learning activities. This element of the project was thus associated with the recognition of non-formal learning.

4.5.4.2 Results and outcomes

The project was audited several times by the European Commission. The project also undertook an internal evaluation (Perry and Hurley, 2021).

The main results sought by the project referred to the understanding of ways to deliver science learning more effectively and inclusively in non-formal learning contexts and the professional training of educators in non-formal education contexts, and also in formal education, to deliver science learning activities that are more inclusive. Methodologies like Zines were found to elicit positive emotional responses to science learning and produce positive effects in terms of motivation and confidence one's own abilities, even when learners are faced with adversity and challenges, including for learners from disadvantaged backgrounds (Perry and Hurley, 2021). Students surveyed by the project also reported that science learning outside of school would help them to excel in school due to the connections between learning in both spaces, and to make connections between science learning and everyday life (Perry and Hurley, 2021) -thus enhancing competence development and application of knowledge, as opposed to development of knowledge.

As noted, in relation to professional training, the central outcome of the project was the production of design principles for science learning activities outside the classroom. These were illustrated with case studies. For example, the presentation of the principles refers to 'Travelling scientific micro-exhibitions', on topics such as climate change, undertaken by one of the project partners and consisting of ready-made exhibition kits that are shared with schools. Schools display these resources to increase scientific literacy and vocations and stimulate learners' active involvement by making science more accessible and engaging.

"The exhibition kits share the same structure: panels with scientific information, didactical materials and a guide with experiments and activities to make scientific concepts tangible. The students are in charge of explaining the content, guiding the visitors to the exhibition and leading the workshops. Before performing these tasks, the students are trained by their school teachers during classroom sessions. By taking an active role in the Microexhibitions, the students are expected to develop scientific communication skills, increase their self-confidence and gain autonomy in learning."

Source: Durall (2020:14)[52]*.*

Given that the exhibitions are open to everyone, they have also increased the engagement of schools with their community, including in remote villages. This was related to the design principles of 'Making it accessible', 'inspire and motivate' and 'building social learning environments'.

The design principles produced by SySTEM2020 have been used in related EU-funded projects, including Open School projects – referring to learning that is open

[52] https://system2020.education/wp-content/uploads/2020/12/8.-Design-Principles.pdf

in terms of location (within and outside schools), timing (inside and outside school hours), teaching roles (which can be taken up by various participants), instructional methods and modes of access[53]. It is also open in the sense of often dealing with contemporary and every-day life issues connected to students' communities in experiential ways. This is the case of the Make It Open project[54], where some of the partners from SySTEM2020 continue to collaborate, to widen the appeal of open education for schools.

Box 16 Make It Open project

This project aims to transform schools from traditional educational institutions to community partnerships (with close collaboration between schools, families, companies and other organisations) through the creation of different learning scenarios for teachers to try out open learning approaches, the identification of 10 open schooling hubs (mostly led by science centres, museums and other non-formal learning providers), the production of a 4-week MOOC on open schooling implementation to be produced in 2023 and an online platform to be available in 2022 to support teachers and educators in navigating the open schooling world – including the possibility to download bespoke lesson plans. The results of the project will be tested in 10 European countries and 150 schools during the 2022-23 school year. The project will also include an online competition for the most creative and innovative Open Schooling implementation.

SySTEM2020 activities also aimed to result in more learner focussed science education as well as credentialisation of their non-formal learning. With regards to credentialisation, recognition could take the form of OpenBadges and credentialisation provided by participant organisations. This presented various challenges to the project, for example when deciding whether this should be done at the European (project) level or at the national/ partner level. A central consideration from the project experience is that younger children may value such recognition tools in themselves, but that is not the case for young people who are in the later stages of secondary school. For this target group it was important that the certification could have currency in the education system (this is, that they were supported by recognitions systems[55]), otherwise their interest in the certification was low as they were unclear on how to use it. The value of such certifications in the education system, on the other hand, was dependent on the system for admission into higher education. In the case of Sweden, for example, the system is heavily based on grades, so that the project certification tools have limited value for progression within the education system, but the situation may be different in other countries where a wider set of criteria are considered in higher education applications. Recognition, in the sense of identification and documentation of knowledge, skills and competences and their assessment (considered three of the four phases of validation together with certification/ credentialisation), was also considered in the project, through the production of two tools: a set of self-reflection tools and self-assessment tools around creativity, collaboration, communication and critical thinking (the four Cs). A hardware device made from simple hobbyist electronics and replicable, Observation Mapper, was developed to facilitate self-assessment and documentation of learning experiences using metrics related to aspects such as engagement with the topic or time spent on certain activities. Learning portfolios ('zines') were also developed to that end.

[53] https://makeitopen.eu/wp-content/uploads/Edit-of-D1.1-Set-of-user-centered-delivery-templates-Make-it-Open.pdf

[54] https://makeitopen.eu/about/

[55] As also noted by Perry and Hurley (2021)

The project created a database of informal and non-formal science learning across Europe[56]. The database includes information on various aspects of such activities including the type of activity, level and skills developed, pedagogical approach, age groups, as well as whether awards/ certificates are associated with participation in the initiative but does not detail the type of award/ certificate and whether those are linked in some respects to formal education.

4.5.5 Overall assessment

4.5.5.1 Organisational and beneficiaries' gains/benefits from integration/coordination of non-formal and formal learning

The SySTEM2020 project aimed to benefit school students by broadening the concept of science education, expanding the spaces where science education takes place and providing students with recognition for their non-formal science learning, and to benefit educators by providing them with tools to aid them in the design of science learning activities.

The project evaluation notes a range of project impacts on learners, consortium organisations, organisations beyond the project, the wider science learning community and at broader social, political, technological and economic level. The project engaged over 4,000 learners in over 170 workshops, activities and programmes. The report notes that its activities led to an increase in access to and inclusion in science education – since many learners were not 'the typical audience' (Perry and Hurley 2021:46) of the institutions involved in the project previously, including underprivileged young people. The project reports that the activities made teaching more tailored to the needs and interests of learners –including those from underprivileged groups - and diversified the way in which beneficiaries learn science. The project also raised awareness, at the institutional level, regarding the importance of collaboration across institutions – including between the formal and non-formal learning sector - and the benefits this generates in terms of cross-fertilisation and mutual learning. It led to the adaptation of science teaching practices, principles and spaces in member organisations and beyond the partnership. Tools like the design principles and Zines, co-design and experiential approaches developed within the context of the project, the evaluation notes, have been widely used within the organisations involved in the project as well as other organisations, including in the formal education sector. Since the design principles are being used in science learning facilitators' and mentors' training in some partner countries, they are having a multiplier effect.

Sustainability in the continuation of activities is a challenge for project work, and SySTEM2020 sustainability mainly refers to the sustainability in terms of the use of its outcomes –and the benefits associated with this. The outcomes are available from the project website, and while the partnership has finished its SySTEM2020 activities some of the project outputs are being used in on-going projects on Open Schooling, such as Make It Open[57], where some of the SySTEM2020 partners are involved. The use of such project outputs is thus transferable to other contexts, including Estonia – see also section 4.5.5.3.

[56] https://zenodo.org/record/4946015

[57] https://makeitopen.eu/about/

4.5.5.2 Success factors and lessons learnt

The success of the project was, according to the interviews undertaken for this case study, related to the team delivering it and the high levels of experience and expertise that it included in this area and to solid management procedures that involved the members of a large partnership appropriately in the activities of the project.

One of the main challenges that the project has encountered in the integration of non-formal and formal learning is their different position with regards to standards and assessment, as well as the different ethos that may exist with regards to free learning. In order to deliver part of the curriculum, links with certain standards may need to be established as well as evaluation of performance in relation to those standards, and this can be problematic for the non-formal learning sector, as it can have implications with regards to the kinds of free learning that they aim to nurture and blur the differentiation and added value of non-formal education vis-à-vis formal education. As such, integration was kept relatively loose.

The interviews undertaken for this case study highlighted that the situation is different across European countries, as in some countries – like Sweden - teachers have a substantial degree of autonomy over their teaching, whereas in other countries there are stronger prescriptions regarding how school teachers ought to teach – which may prevent or make more difficult their interactions with non-formal learning environments.

Another challenge faced is the lack of recognition of the learning obtained through non-formal learning in formal learning contexts. This again is illustrated in the discussions around credentialisation.

4.5.5.3 Transferability of the practice

The project was delivered by a large partnership covering a wide spectrum of European countries. This facilitates the transferability of outputs across contexts, including the Estonian context. Some of the outputs generated by the project, such as the design principles that it generated, are meant to apply across a range of contexts, although the project also provides evidence of the limitations that transferability may face – with reference to the value of credentialisation actions for the older target groups for the project.

4.5.5.4 Challenges for the integration/coordination of non-formal and formal learning

As noted, one of the main challenges that the project encountered in this respect is their different position with regard to standards and assessment, as well as the different ethos that may exist to regards to free learning.

> *If you are going to provide a certificate you may feel that you need to use a specific standard, and test the children against those standards – so you are moving closer to formal education ways of working. This can make you lose the part of free choice learning that is inherent to non-formal education. So we need to find a balance as to whether as an organisation we want to do that, and how we can assure that we remain where we want to be within the education space.*

Low degrees of teaching autonomy and degrees of central prescription and regulation regarding curriculum and pedagogy can also make this integration more challenging. Associated to this is the lack of flexibility in the curriculum. A rigid testing orientation can also make it difficult to move towards more free learning approaches that can be related to non-formal education. Equally, the integration of

non-formal and formal learning may also face challenges in a system of substantial degree of teaching autonomy (which is a characteristic of the Estonian educational system) as it may be difficult to implement it as a universal practice.

There can also be challenges associated with the lack of teacher preparation to adopt less conventional and more open approaches to teaching and learning, and lack of time to engage with new ways of working, as well as difficulties and lack of sufficient expertise for the design or selection of relevant activities to adopt open education approaches. The Covid-19 experience has, however, showed how quickly new solutions for teaching can be adopted. As such, the issues of teacher preparedness or readiness for new approaches to teaching and learning may be more problematised because of a lack of resources and tools to carry out the activities.

Finally, another challenge is the lack of recognition of the learning obtained through non-formal learning in formal learning contexts, or in the communities that are required to support it (including students themselves, but also families and companies).

Sufficient school and teacher autonomy, the provision of practical guidelines, materials and models, as well as teacher training and support in the implementation of integrative approaches, can help to address some of the above challenges. In Estonia, schools and teachers already have a substantial degree of autonomy, but additional professional development and support would be important for both schoolteachers and for the learning facilitators in the non-formal education sector. This, however, raises questions about who designs, organises, pays for the training and the time it takes from teachers and learning facilitators. Schools and non-formal learning providers also need to be convinced and see the benefit of this additional investment in professional development.

4.6 Case study 5 - InFormal - integration of non-formal education approach to the formal education system for youth empowerment at the local level

4.6.1 Introduction

This case study relates to a long-term set of projects that have been implemented under the common brand of 'InFormal'[58]. The first project was implemented from 2015 and the latest (fourth) edition of the project is currently being delivered.

[58] The 'In' in the brand name stands for 'into' or 'integration' and does not refer to informal learning. The wordplay underlines the integration of non-formal approaches to the formal environment.

Box 17 InFormal - integration of non-formal education approach to the formal education system for youth empowerment at the local level

- First project was implemented from 2015 and the most recent (fourth) project is currently being implemented.
- EU-project with participants from several EU and Asian countries
- Funded through Erasmus+ Youth: Key Action 1 and 2

4.6.2 Background and rationale/purpose of the initiative/measure

The idea to bring together educators from both the formal and non-formal education and to design and implement joint training emerged during the period 2011-2015. During this period an EU-funded project ('Volunteer Messenger') provided training to leaders of short-term voluntary projects (usually 1-2 week long international projects) to be able to lead a short workshop about any topic of their interest for their participants. The training was considered successful and the idea emerged that teachers in formal education may also benefit from a similar training. Initially, it was difficult to secure funding for a long-term training course for both the formal and non-formal sectors, but in 2015 the Czech National Agency for International Education and Research (DZS) supported the idea.

The project is not suggesting that non-formal learning is better. Rather it supports the notion that synergies can be created by integrating non-formal and formal learning. It also seeks to address the lack of collaboration between the non-formal and formal education sector.

The InFormal projects have been funded by Erasmus+: Youth, under Key Action 1 (learning mobility of individuals) and Key Action 2 (cooperation among organisations and institutions) and has resulted in several spin-off projects as well (including InFormal Creativity and InFormal part II - ReVision).

4.6.3 Institutional setting, target group and focus

The first InFormal project was developed and delivered by three core partner organisations - KURO Hradec Kralove (Czech Republic), Academy of Innovation (Russian Federation) and TE IS Foundation (Hungary).

On average, around 20 participants started each of the long-term training courses (with a further 5 to 7 people involved as trainers and project staff). During the first project around half were youth workers and half teachers from formal education. This exact proportion from each sector has varied over the different projects but participants from both sectors have always been involved.

The participants to the training came from several European (and non-European) countries. In the first project, participants from 23 countries were involved to create a variable and culturally diverse group. However, this was subsequently reduced to 8 countries to make it more logistically manageable.

4.6.4 Implementation

4.6.4.1 Type of integration

The main focus of the projects is the integration of non-formal learning into formal education. It has involved a set of training courses delivered to educators and

practitioners from both the formal (e.g. teachers) and the non-formal sector (e.g. educators of hobby/leisure activities and youth workers).

The original concept of the long-term training course consisted of three stages. The first stage consisted of a basic training course where participants were introduced to non-formal learning approaches through theoretical and practical sessions. Participants were also tasked, in small groups, to develop workshops for their peers (which can represent any target group) based on a given topic. The small groups also had an opportunity to improve their workshops following general reflection and evaluation, as well as additional inputs from the trainers and facilitators. The stage was concluded with a final reflection and evaluation. The second stage of the long-term training course was a 'homework' task. Participants were tasked to apply what they learned during the first stage in their daily work life as educators. The third and last stage of the long-term training course focused on reflection of their 'homework' performance, but also on further developing their non-formal learning competencies. This was achieved through a new set of workshops, where participants worked with the topics they teach.

The original idea and concept for the long-term training course stayed broadly the same during the different sets of projects, but the structure and content of the training evolved over time based on the lessons learned from previous editions of the project and to respond to the needs of the new cohorts of participants. This also meant that no two courses were the same.

4.6.4.2 Results and outcomes

The long-term training course delivered through the InFormal projects developed into a valid training for educators and provided intense peer learning and professional trainer input, in order to merge the formal and non-formal education spheres (Valkova Tarasova et al, 2020).

An important outcome of the projects was the 2019 publication 'InFormal: A manual of integration of Non-Formal Education Approach to The Formal Education System (Chardymova et al., 2019). The manual provides an overview of definitions of formal and non-formal education and theoretical perspectives on how non-formal learning methodies can be adapted to the formal education system. It also includes a collection of practices based on the educational activities that participants developed during the projects, as well as some reflections to on the theories, thoughts and divergent ideas that appeared throughout the projects.

As noted above, the InFormal projects have also resulted in a number of spin-off projects that focused on specific topics such as creativity, communication and visual facilitation. These were also funded through Erasmus+.

Based on evaluation forms, most participants report life-changing experiences from the projects that have opened new ways of working and a better understanding of roles of both formal and non-formal learning (Chardymova et al., 2019). In addition, it has equipped participants to recognise situations where non-formal learning approaches may work, to select appropriate tools and use them for the benefit of the learners.

The projects sought to integrate non-formal learning approaches into teaching in the formal sector and more expert-based content in the delivery of non-formal education. Participants initially coming from formal background tried to integrate some of non-formal education principles into their daily work, while youth workers tried to deepen their perception of non-formal education and raise the quality of the educational activities they organise. Some of them made a special effort to reach

out to schools and work together with teachers, whilst others provided non-formal activities using new methodologies and approaches. In both cases the idea was to switch as much as possible the concept of the educational activity from "teaching" to "learning" (Chardymova et al., 2019).

Box 18 Practical example of how non-formal education approaches have been used in formal education

An English teacher from Romania implemented what she had learned from her participation in the InFormal project by providing workshops to students aged 15-19 as part of her English lessons. She used different non-formal methods to make her lessons less frontal and more participatory. As well as the development of the language competences, she also focused on soft skills (e.g. critical thinking, creativity, problem-solving, negotiation and entrepreneurial skills). The workshops were assessed by the leaners, an observer (another teacher from the school) and the teacher herself. Areas that received the highest score from the learners, observer and teacher were (reflections by the teacher and the observer is also provided):

- Learners show their interest and curiosity and pose questions without hesitation and techniques to keep them enhanced *("Students displayed more interest in the lessons as I chose topics of their interest and I used modern methods")*
- Learners enjoy participating and have an active role in the activity *("They enjoyed the part related to creativity (when each group had to create the same product out of the same resources) and really got involved in the activity, each member having the chance to express their opinion, to negotiate, to think critically and make fast decisions, under time pressure")*
- Learners are engaged mentally, emotionally and physically in the activity *("The activities chosen for the experiment kept the [learners] engaged form [sic] all points of view: mentally (tasks focusing on creativity), emotionally (during debriefing they were encouraged to express their feelings be it positive or negative; physically (while moving in their groups, while negotiating with the others)").*

The teacher also provided the following reflections in relation to the use of non-formal education approaches:

- It is a bit more challenging and it needs some practice until teachers get used to this type of teaching. However, for me, as a former participant in various Erasmus+ training courses and having the chance to experiment with these methods as part of the project, I cannot say it was difficult to prepare the sessions using non-formal education approaches. It is more about getting the students familiar with them, so as they cooperate and get involved.
- Using non formal methods while teaching in formal system is definitely more fun especially for the learners, because they need to be exposed to diversity in order to be engaged in activities. It was more fun for me as a teacher as well, as I can observe their reactions in a totally different context and I also get to know them better in this way.
- I have started being aware of the importance of the integration of non-formal education approaches ever since I heard about it and so I always feel satisfied when I use them during my lessons.

Source: Chardymova et al. (2019)

4.6.5 Overall assessment

4.6.5.1 Organisational and beneficiaries' gains/benefits from integration/coordination of non-formal and formal learning

According to Valkova Tarasova et al. (2020), participants of the long-term training courses have acquired new and improved competences that they can apply to their daily work life.

To date the impact has largely been on the individual and local level. There has not been much interaction with government level (national) in terms of supporting education reforms in the countries of the core partners.

The various editions of InFormal projects have involved a core set of partner organisations. This has resulted in a strong working relationship and trust between partners, which in turn has facilitated continuous learning and the development of spin-off projects. Developing communities of practice from different fields (e.g., teachers from formal education and non-formal education facilitators) within local communities and across communities would be a useful addition in Estonia, although it would be important to ensure that these communities of practice go beyond short-term projects.

4.6.5.2 Success factors and lessons learned

The combination of youth workers and teachers in the training courses have brought together views and experiences and allowed cross-sectoral exchanges to take place. Throughout the training courses, both groups found their way to each other beginning to understand that there is a place for both formal and non-formal learning in learning settings and that it is only a question about selecting a suitable tool for an appropriate situation and content. It is also a useful way to create mutual understanding of non-formal learning among both teachers and youth workers (Valkova Tarasova et al, 2020).

In terms of the structure and content of the training courses, it has been important to have lots of practical parts where the participants can apply the learning and effectively create the content for part of the training. This necessitated fairly intense training courses that last 7-8 working days, which in turn created a potent learning environment, accelerated learning and group dynamics (Valkova Tarasova et al, 2020). The fact that the training courses were delivered over multiple stage was critical as it allowed several stages of reflection, feedback and continuous improvement and learning. Online courses, support and consultations were used to maintain participant engagement and commitment in-between the different stages of the long-term training course. The type of training implemented through this project, involving planning and carrying out practical tasks and having it reflected and reviewed (through a peer mentoring approach), could be a useful recreate or reflect more strongly in existing training provision in Estonia.

Several projects with the same idea and concept have been implemented allowing the partner organisations to learn from past project implementation and update and improve the training content and structure, whilst staying to true to the original idea and concept.

4.6.5.3 Transferability of the practice

The InFormal projects serve as an example of how integration between non-formal and formal learning can be supported and may provide a useful starting point for other countries, including Estonia, that is trying to strengthen the integration of non-formal and formal learning. Training programmes such as the ones provided through InFormal are necessary in Estonia, especially as they bring together teachers and non-formal learning facilitators.

The success of the idea and concept is underlined by the many InFormal projects and spin-off projects that have been implemented, are being implemented or are planned.

There is growing interest in non-formal learning approaches among teachers in formal education, including among younger and newly qualified teachers, highlighting the relevance and need for this type of professional development. Similarly, there is a growing trend of formalisation of non-formal learning activities (although it is not clear whether this takes place out of necessity or out of preference). Joint training courses can assist in creating a mutual understanding and support continuous professional development through peer learning.

Whilst the InFormal projects have not yet materialised in systemic changes in continuous professional development and pre-service teacher training, the lessons learned from the projects provide a basis for further discussion. The projects encountered some challenges in terms of dropouts and requiring an extended period away from work in order to participate, but the overall idea and concept of the training can be considered relevant and promising.

The manual (or guidelines) published by this project would in principle be useful for Estonian stakeholders, but such guidelines may have a more wide-reaching impact if they become somewhat institutionalised through a government department or body. Similar guidelines could also be integrated in pre- and in-service teacher/non-formal education facilitator education.

4.6.5.4 Challenges for the integration/coordination of non-formal and formal learning

An important challenge relating to this project has been the retainment of participants through all stages of the long-term training courses. Dropout rates have ranged from 18.5% (first and third project) to 55% (second project), although it should be noted that this still represent fairly low numbers in absolute terms. The reasons for dropping out include personal as well as occupational reasons (e.g. not being able to dedicate the time needed for participation or changing employment). The transnational nature of the project may be another reason for the dropouts.

The intensity and length of the training courses also presented a challenge in terms of recruiting participants, particularly from the formal education sector. Formal education teachers were interested in participating but they would struggle to attend each stage of the long-term training courses which lasted around 6-8 working days.

An initial challenge when it comes to the integration of non-formal learning is that there are different understandings of the term and its practical application. This challenge is further exacerbated when different countries come together.

Apart from the initial resistance from teachers to adopt non-formal learning approaches (due to a lack of understanding and/or a fear of losing authority/power), there are also practical barriers that teachers see in relation to the adoption of non-formal learning approaches. Such barriers include strictly set curricula and time-limits on lessons.

5 Key findings and conclusions

Many different definitions exist for formal and non-formal learning (including those presented by EU and international organisations such as Cedefop, OECD and UNESCO), based on differences around the setting where the learning takes place, the nature of participation, the objectives of the learning activity, the organisation and recognition of the experience. However, the trend observed in this review is that the boundaries between the two forms of learning are becoming increasingly blurred. This is in part a result of a trend of convergence between formal and non-formal learning through the growing informalisation of formal education (e.g. work-

based learning, place-based education, adventure education and gamification) and formalisation of non-formal learning (e.g. through recognition and validation of learning). Digital and technological advancements have also played an important role in facilitating learning outside formal education, and its links with formal education. New digital teaching and learning practices and environments (e.g. MOOCs and social media platforms), can have hybrid characteristics in terms of their formality, including features from both formal and non-formal learning and therefore further point towards the need of reconceptualising the distinction between formal and non-formal learning.

Based on the available literature, we identified five main types of integration between non-formal learning and formal learning:

- School curriculum delivered in a non-formal learning setting outside the school by a formal or non-formal education provider;
- Hobby and leisure activities: provision on the school premises by a formal or non-formal education provider or integration into the curriculum;
- Validation and recognition of knowledge, skills and competences acquired in non-formal education/learning within schools;
- Methodological/pedagogical support and curriculum co-design; and
- Collaboration in professional development (e.g. pre-service and in-service training)

Integration measures may relate to one or more of these depending on their focus (i.e. these types of integration are not mutually exclusive). Our case studies covered a variety of these forms of integration.

While there is a trend towards greater integration and cross-fertilisation between formal and non-formal learning, whereby efforts to promote integration and create synergies between formal and non-formal education exist in different countries and contexts, these are often not yet systemic. The lack of system level examples and the fact that two of the in-depth examples presented in this report are EU-projects (Horizon 2020 and Erasmus+) also shows that this is still a relatively new and ambitious policy matter. In addition, the different types of integration and the varying nature of the examples presented in this report highlight that there is no simple recipe on how to integrate non-formal and formal learning. The practices and projects presented provide useful examples on what can be done, what effects it may have and how it can be implemented, and show that there are various ways in which the links between formal and non-formal education can be developed and worked on. However, integration is not necessarily straightforward: each example highlights a range of benefits, success factors and lessons learned but also a range of challenges and limitations.

Benefits and synergies that can be gained from the integration of formal and non-formal learning include:

- improving students' attitudes, motivation to learn/sense of meaningful learning, sense of belonging in educational activities and wellbeing;
- supporting cognitive and non-cognitive skills (for example teamwork, communication, conflict-resolution, socio-emotional skills) development and educational attainment (although the evidence on educational achievement is not univocal and can be contingent on the specific nature of non-formal education);

- offering meaningful learning and enjoyable learning experiences, including to students from disadvantaged backgrounds, with special education needs or at risk of early school leaving;
- providing meaningful social experiences and opportunities to develop stronger and more positive relations with teachers, peers and local communities;
- introducing new or innovative teaching/pedagogical approaches, learning materials and inquiry-based learning;
- addressing cross-cutting or horizontal subjects and issues; and
- providing opportunities to think about subject choices and career options.

Challenges and potential barriers to the integration of non-formal and formal learning include:

- the lack of universal coverage of non-formal learning activities (for example due to urban-rural divides that affect the availability of some types of non-formal learning providers) and in particular of non-formal learning activities that are integrated with formal learning – an approach to help make coverage more widespread is the concept of all-day schools, which combine the provision of both formal and non-formal learning, as reviewed in this report and which exist in various European countries;
- the lack of a strategic vision (nationally and locally) for integration by education stakeholders and reluctance from both the formal education sector (often related to lack of trust on the relevance or quality of non-formal learning provision) and the non-formal learning sector (often related to a fear to lose its identity and specific added value);
- the lack of inclusion in the school curricula (or too strictly set curricula limiting the possibilities for integration) and lack of recognition of the outcomes produced by non-formal education, which may be linked to the school curricula (including in all-day schools, where the delivery of non-formal education may not be explicitly linked to curricular objectives);
- the lack of well-designed incentives for schools (e.g. funding), teachers (e.g. career progression) and learners (e.g. through validation) to support integration;
- the lack of professional development and training to initiate and implement better integration[59]; and
- the risk of non-formal learning losing its defining and most valuable properties (e.g. its informal and voluntary character, allowing for spontaneity and participation).

The examples presented in this report highlight several lessons learned and success factors that can help policy makers in designing and implementing future reforms, and overcome obstacles and challenges:

Regulation: supportive autonomy and accountability frameworks

- Integration measures should be encouraged in national and regional policies and strategies, as well as in the national and school curricula. Allowing a degree of diversity and flexibility at the sub-national level can be a way to stimulate integration when not all stakeholders have bought into the idea and allows for

[59] Exceptions include the work of the Swedish National Agency for Education and non-formal education providers and the incorporation of content on previously extra-curricular activities in initial teacher training programmes in Spain.

the development of know-how in design and implementation that is lower risk than systemic measures. The report has highlighted examples whereby different approaches are permitted within the same country, for example in terms of the inclusion of previously extra-curricular activities into the school curriculum, nevertheless resulting in progressive integration[60]. In general, voluntary approaches continue to be more common than systemic compulsory integration[61]. An important consideration is the degree to which this may affect the status of those activities being integrated into formal education, as well as differences in availability between regions or even schools.

- Innovative practices and integration measures are also often driven by individual schools and/or non-formal learning providers, especially in education systems with a high level of decentralisation and school autonomy. It should, however, be stressed that while decentralisation and autonomy may have advantages in terms of supporting integration, it can also lead to greater inequity in provision and outcomes, and systems are required to manage this risk.
- In a context of high degree of autonomy (where providers can define for example their teaching methods, learning goals, and managing their funds) it is important that adequate accountability mechanisms are in place. These need to include strong quality assurance frameworks, including for non-formal education providers, that are conducive to trust between formal and non-formal education providers whilst at the same time ensuring that what these providers do is in line with education policy requirements. Quality assurance and accreditation arrangements can operate at various levels, such as the provider or the programme level[62].
- A way to stimulate integration through regulation is also its inclusion as a quality criterion for school inspections. As such, the remit of school inspectors could be expanded to also assess the developmental activities of students outside school and in the wider community.
- A more radical approach to autonomy is to enhance individual learner autonomy and choice in order for individuals to be able to co-design (part of) their own curriculum, including through the use of non-formal learning providers.

Curriculum and pedagogy: alignment and cross-fertilisation

- Integration can be facilitated by ensuring that non-formal education is closely related to or supports the implementation of the school curriculum. This not only makes it easier for non-formal education providers to connect with formal education providers and teachers but also provides opportunities for incorporating or intensifying the use of new pedagogies (often experiential, inquiry-based, collaborative and learner-directed) in formal education.
- Whilst integration may be encouraged in national curricula and/or school curricula, these do not tend to specify how much time should be dedicated to this type of activity and what format this type of integration should take, which provides flexibility but can also lead to a variety of experiences. The provision of central guidelines in these areas may be helpful to providers in this context.

[60] One such example reviewed in this report is the integration of chess into the curriculum in Spanish CCAAs.

[61] One such example reviewed in this report is service learning in the secondary school curriculum in Maryland, USA.

[62] See the example of the Maltese Secondary School Certificate and Profiling and the Learn Everywhere initiative in New Hampshire (USA).

Assessment and recognition: in need of mainstreaming

- The link to the school curriculum, understood in a broad sense, can be facilitated through co-design of education activities and through better validation of the outcomes of participation in non-formal learning. As shown in this report, there is currently a lack of systematic use of validation and assessment tools to measure how competences and skills gained through non-formal education activities contribute to children's overall skills, competences and learning, although there are some recent bold initiatives in this respect (see, for example, New Hampshire's Learn Everywhere initiative) as well as initiatives that provide validation based on life experiences, in some areas, such as language learning[63].
- Validation leads to more meaningful integration when it results in recognition. While validation can be seen as intrinsically valuable terms of generating self-recognition and third-party recognition (e.g. through badges) that can lead to positive outcomes (e.g. increased self-esteem), incentives for learners increase when validation can be stored in a portfolio[64] or 'wallet' for further use and when its results are recognised within the education system (for example in terms of admissions[65], achievement of credits or modules) or the labour market[66].

Professional development: building capacity through pre-service and continuing training

- The above tasks around the curriculum, the design and implementation of new pedagogical approaches and assessment and recognition methods require substantial technical expertise. As such, there is a need to ensure that there is adequate support, training and development opportunities in those areas for professionals - including teachers, trainers and leaders of educational institutions in the formal and non-formal learning sector. This could be done jointly allowing peer learning and sharing of ideas between the two sectors[67] - for example on how integration may support the achievement of national and school curricular learning objectives. Policy makers should also ensure that initial teacher training covers education pedagogies that are more frequently used in non-formal education, including learning outside the classroom and character education[68].

Networking and sharing of good practices: advancing knowledge and forging trust

- Better integration of non-formal and formal learning could be supported by having strong structures to support the dissemination of information about good practices (local, national and international) to encourage positive attitudes towards integration and inspire education providers (formal and non-formal) by showing how it can be done.
- Local and national networking between formal and non-formal education providers can assist in creating a more coherent offer and avoiding a fragmented offer of non-formal and formal learning integration. Nevertheless, it is still

[63] See the example of Georgia's (USA) exemption from high school graduation requirements for units of foreign language students for students whose first language is not English.

[64] See the Maltese Secondary School Certificate and Profile, as an example of this.

[65] See for example the 'Competition points' example in Norway, or use of personal statements in UK higher education institutions.

[66] As noted in the SySTEM2020 case study

[67] As illustrated through the InFormal projects

[68] See the focus of LUMA centres on the professional development of both teachers and future teachers

important that activities are tailored to the individual needs of the learners and the local capabilities of the providers.

Funding: the importance of level and type

- Integration is likely to require additional resources, including staff time, the creation of suitable platforms for collaboration - virtual and/ or physical - as well as resources for the implementation of new activities (including transport costs, costs to meet non-formal education providers costs). Funding is already stretched for both formal and non-formal education providers and the additional cost of collaboration may act as a significant barrier. As such, additional funding may assist in removing some of the barriers for establishing collaboration between schools and non-formal learning providers. Funding could be targeted at supporting and strengthening networking and partnerships themselves and/ or the actual activities provided through such collaborations/ partnerships.
- Some non-formal learning providers may also be reliant on short-term project funding, which may raise concerns about the continuity of activities once the project funding is over, which can act as a disincentive for collaboration for formal education providers – as they are uncertain as to how long collaboration with non-formal education providers that rely on project funding may last. Notwithstanding this, projects can be an effective tool to test new approaches and create new partnerships – sustainability and scaling up are thus central considerations when relying on project funding.

Monitoring and evaluation: enhancing the evidence-base

- Further monitoring and evaluation and impact assessment is needed to explore the key strengths and success factors of existing integration examples. This would help in terms of overcoming negative perceptions about the quality of non-formal learning activities, as well as their influence and effect on children's skills and learning success. Linked to this there is a need to introduce quality standards and quality control of non-formal education of schoolchildren.

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Annex 1 Identified good practice examples

The table below provides an overview of good practice examples that have not been covered as part of the case study analysis but were identified during the initial desk research and scoping interviews.

Good practice example	Description
Schülerlabor (DE)	■ Trend in Germany over the last 20 years to establish non-formal laboratory environments for primary and secondary school students at universities and research institutes (Schülerlabor, SL). ■ Around 300 across Germany but tend to have specific focus. ■ Offers out-of-school experiences and practical work to improve students' motivation to undertake further studies in science and engineering. ■ Visits (half day/full day) to the SL are mostly compulsory and in many cases the activities follow a prescribed structure and the learning is clearly connected to the school science curriculum. ■ Non-formal setting but formal content (at least partially).
Schola (Erasmus+)	■ Designing tools and methods for professionals - teachers at school and educators outside school - in order to support them to be able to identify and assess the skills and competences acquired and/or to be developed by youngsters through volunteering and therefore to support their work among young people facing difficulties at school or already early school leavers and so be able to combat efficiently early school leaving (ESL). ■ Bridge between formal and non-formal education in the school system. ■ Countries involved FR, SI, IT, PL and BE. ■ Selected in 2019 by EC as an example of best practice to tackle the issue of ESL in Europe.
Learning Outside the Classroom (UK)	■ Council of Learning Outside the Classroom (CLOtC) formally assumed responsibility and leadership for learning outside the classroom (LOtC) in 2008. ■ Champions learning outside the classroom by providing support on the ground, facilitating the sharing of best practice and promoting the benefits of LOtC in raising attainment and aspirations, reducing truancy and re-motivating those who are disengaged from their education. ■ It provides quality accreditation, continuous professional development and training.
KiVA anti-bullying programme (FI)	■ Research- and evidence-based antibullying programme developed by University of Turku, with funding from the Finnish Ministry of Education and Culture. ■ Addresses student well-being. ■ Involves KiVA curriculum, including student lessons and online games. Also includes parents' guide and teachers' manual. ■ Effectiveness of KiVa proven scientifically and through several studies - positive effects on school liking, academic motivation and achievement; student anxiety and depression and early school leaving have decreased. ■ Already implemented in Estonia (since 2013) – 100 schools and study places (21% of general education schools).
Validation systems	■ Portugal, Austria and France can be examined as examples of countries that have systems to provide validation to those who have already left school (e.g. early school leavers), which is another way to connect schools and non-formal education.

Good practice example	Description
	■ The case study could go into the details of how this is done (assessment types, standards used, jury, guidance provided to the learner, etc.).
Secondary School Certificate and Profile (Malta)	■ In the compulsory education sector in Malta, the validation of non-formal and informal education activities are governed by regulations set by the Directorate for Standards and Quality in Education and the NCFHE. ■ A Secondary School Certificate and Profile (SSC&P) was introduced in September 2010, which recognises all forms of learning during the five years of secondary education. ■ The types of programmes that are accepted on a school profile has broadened in recent years – now including for example nationally recognised ballet qualifications. ■ The SSC&P gives credit to formal education as well as to non-formal education received throughout the previous five years. ■ The certificate is pegged at either a level 1, 2 or 3 qualification on the national qualifications framework. It ensures that learners are given credit for all learning that takes place and is expected to ultimately support individuals to progress into further and higher education.
Character education (United Kingdom)	■ Character education is meant to lead to the social, moral, cultural and spiritual development of pupils. ■ There is guidance and good practices from the UK Department of Education on principles for collaboration with non-formal education providers in order to deliver character education in schools. A DfE Character Education Award has also been introduced.
Service learning (Maryland, USA)	■ In Maryland, USA, service learning is compulsory for graduation from secondary school since 1992 (75 hours). It is the only State with this policy, but 19 other states have allowed individual districts to include such a requirement for graduation. ■ Students can enlist in school sponsored clubs and organisations or identify a non-profit organisation and submit the relevant documentation before the service learning begins, and need to document their service.

A number of other examples were also identified but either have very limited information or do not meet the good practice criteria (relevance, scope/timeliness, and/or effectiveness and efficiency).

- Nefiks (Slovenia) – recording knowledge, experience and skills of young people. Relevant tool for the recognition of non-formal learning experiences.
- C-Stick (Belgium-Flanders) - digital tool to support recognition and identification of competences. No longer offered due to GDPR.
- Keys for Life – Developing Key Competences in Leisure-Time and Non-Formal Education" (Czechia) – supporting the recognition of youth workers.
- aufZAQ (Austria) - certification of basic and further education and training courses for people active in youth work and accompanying fields since 2003.
- Happy Schools project (Japan, Thailand and Laos) – launched by UNESCO to promote happiness, well-being and holistic development in schools.
- A Balancing Act (Norway) - developed a model and method to describe skills acquired in the workplace, so that they can be understood in the wider context of working life as well as in the formal education system.