



Co-funded by the
Erasmus+ Programme
of the European Union

FUTE

**Good practices,
Recommendations and
Sustainability of
The FUTE material**



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APPENDIX 1:

Document incorporating reports from:

- Hogeschool PXL (University of Applied Sciences and Arts), Hasselt, Belgium.
- University College Syddanmark, (UCSSYD) Esbjerg Denmark,
- University of Turku, (Rauma) Finland.
- Atelier Canopé 42, St-Étienne, France.
- Cardiff Metropolitan University, Wales, UK.

APPENDIX 2:

- Survey results summary



1. Introduction

This report details the findings and experiences from the information gathering and development process of the FUTE project.

The report has been compiled from five separate reports one from each of the five partner institutions involved in the FUTE project listed here:

- Hogeschool PXL (University of Applied Sciences and Arts), Hasselt, Belgium.
- University College Syddanmark, (UCSYD) Esbjerg Denmark,
- University of Turku, (Rauma) Finland.
- Atelier Canopé 42, St-Étienne, France.
- Cardiff Metropolitan University, Wales.

Each report follows a common structure that was agreed by all partners during a project meeting in Esbjerg, March 2020.

The report begins with a discussion on why and how the FUTE material is applicable in each respective country. It provides an insight in what were the promoting factors in the different countries and includes details of how the project was evaluated. It also highlights some success stories from the project. The latter half of the report concludes with a discussion of the limitations of FUTE and list relevant recommendations for implementing design methodology in the classroom across the five FUTE partner countries. Some of the comments and recommendations will be universally applicable across all partner countries, while others will be country specific strategies that aim to target limitations, challenges or issues that are specific to individual contexts and countries.



2. Top 10 recommendations

Based on the input from all partners, the pilot projects and the evaluation results from the FUTE project, a list of TOP 10 recommendations have been formulated as well as three basic rules for starting to work with design approaches in schools, and the FUTE material in particular.

Top 10 Recommendations

1. The FUTE material is a perfect tool to apply when dealing with 21st century skills and cross curricular learning, where knowledge and skills are combined
2. The FUTE material is especially relevant to teachers who have a personal wish and motivation to develop their way of teaching into a more problem based teaching
3. Print the cards in A5 format and laminate then, which is easier to work with so that they can be used as “playing cards” and so that you can write on them with a white board pen
4. It is important to deal with the traditional reluctance to change
5. It works best if it becomes a strategic decision within the school, that design thinking is a recognized approach to educational innovation and school development
6. Policy development should be user centered and the FUTE material can be used as a tool to involve actively in the policy development process
7. Provide sufficient room in national strategies for competence development
8. The best way to use the FUTE material is through teachers taking the role as facilitators. It is not developed as a direct teaching tool that pupils use directly, at least not in smaller classes. Secondary level students might be able to use the FUTE cards by themselves.
9. The best way to use the material and experience success is by using the FUTE material in multidisciplinary, open ended learning projects.
10. Give time and resources to learn and experiment

Three basic rules

Teachers wishing to start experimenting with design thinking and especially the FUTE material would do well in recognizing the three basic rules of getting started with design thinking:

1. Start slowly, with only a few FUTE method cards; make sure that the pupils are familiar with the methods, before they start working;
2. Start working with challenges/problems, that are easy to work with and leave the more complex challenges to a later phase, when the pupils are familiar with the methods and the approach; and
3. insist on being critical; a good design solution is not just a good idea, but something tangible that can be shown – explained and eventually be used.

3. Why and how was the FUTE material applicable in the partner countries

The FUTE project has developed a structured design thinking approach to apply in school environments, a set of practical method cards to apply the design method, as well as a set of training materials to introduce teachers to the application of design thinking and design methods in the school environment. The FUTE material can be used in collaboration with colleagues and pupils in different situations within the school environment, such as

- a) the planning and development of learning and teaching processes,
- b) the creation of collaborative processes to discuss complex dilemmas in the school in general,
- c) reaching consensus between different groups in order to find concrete solutions to concrete challenges within the school environment or
- d) animating or facilitating concrete teaching processes with the pupils.

Within the FUTE project, the partners were engaged to work actively with the FUTE material within 2 local schools from each participating country, in a planned testing phase. Teachers were engaged to receive training based on the FUTE training material, followed by a practical application of the FUTE approach and the FUTE method cards, within specific teaching situations, dilemmas or challenges within the school.

The input to this report focusing on promoting factors, limitations and recommendations on how to bring the results from the FUTE project further beyond the project period and the project partners, stems from this testing phase.

It showed out to be a challenge for the project partners to find 2 local test schools, but despite the challenge, all partners managed to find two ways to run a test phase with the FUTE material. Except for the partners from Wales, that only managed to present the cards for teachers and receive feedback. A concrete testing of the cards never took place in Wales. All FUTE partners, except from the two partners making up the management and development team, represent teacher training institutions, which of course facilitated the process to get into contact with local schools and other educational establishments.

Based on their role as teacher training institutions, all partners report about a general trend and an overall demand in our society today, that the teaching and learning process in schools, becomes more problem and project oriented, as well as more research-oriented, where pupils are more actively involved, and besides learning about a concrete subject, also learn about creativity, collaboration, critical thinking and problem solving. FUTE seems to be the “missing link” for teachers and policy makers to enhance their meeting and dialogue methods and pupil focused attainment goals and outcome objectives. This is for example



the case for Belgium, where the Flemish government, where the Flemish government start to impose these kinds of objectives. Despite that this is a general trend, we have experienced that the use of design thinking methods and approaches in schools, are still in its infancy, which still makes it a challenge to convince teachers to use time on learning how to use these methods actively and try to apply them in their daily work.

Still, the partners have used this general trend to get into a dialogue with schools and teachers. They have used their professional and personal relations to get into contact with teachers who were motivated and wanted to try to change their way of working and create variation in the way they teach, focusing on ways to make the class room more “pupil centred”, more experimental and more project oriented. The FUTE partners have worked as facilitators and trainers, and have collaborated with these motivated teachers to apply the FUTE material in multidisciplinary and open ended learning projects, which is the optimal situation to test the FUTE material. The testing of the FUTE material is therefore highly qualitative and not quantitative, nor exhaustive. We have used the testing phase in the project to gather some valuable experiences and good examples on how to apply the FUTE material, and what seems to be the main promoting factors and barriers.

An obvious promoting factor for the use of the FUTE material in Denmark is the fact, that the 9th grade pupils (15 – 16 years of age) have to make af compulsory project assignment. Throughout the project teachers have pointed out the potential of the FUTE material in qualifying the pupils’ work on this compulsory project assignment

Probably the best structure, which has made it possible to work with the FUTE material is from France, where the FUTE partner is part of a national network called “CANOPE”. This network has as objective to provide new knowledge and competence development to teachers. The FUTE partner is CANOPE 42, who represents the St. Etienne area from Lyon, and who is specifically focusing on the use of design as an approach, but also on how physical design can have an influence on learning. This network, and CANOPE 42’s special design related position in the network, has made it possible for them to run processes with schools, as a part of a bigger project and priority on national, regional and local level.

All other FUTE partners, have also used their position as teacher training institutions to test the FUTE material together with colleagues and students, and have used the FUTE material in their own teaching situations in specific subjects such as religion, history and crafts, and have also provided general training to teacher students in the understanding and use of design thinking methods and approaches.

4. What seems to be the promoting factors that have made the application of the FUTE material possible?

There is striking commonality in the five partner responses to this question, covering two key points, namely *21st Century Skills* and *cross-curricular learning*.

The term *21st Century skills* has been widely adopted internationally by business leaders, governmental agencies, academics and most importantly in the context of FUTE, educators. Broadly speaking, it refers to the skills and attributes that have been identified as being essential for success in the 21st century, characterised by a rapidly evolving digital society. Skills such as problem solving, team-working, analytical and critical thinking skills are increasingly seen as more important than the traditional academic skills which are primarily content-based, and which are often measured by memory recall in formal examinations. Literature on the topic of 21st century skills is plentiful and provides compelling arguments to educationalists that cannot easily be ignored. However, the question of how educators can best facilitate the development of these skills and through which pedagogical platform has been largely overlooked.

A working paper entitled *The Futures of Learning 3: What kind of pedagogies for the 21st Century?* prepared for UNESCO in 2015 concisely defines the problem:

“Experts recognize that the ‘transmission’ or lecture model is highly ineffective for teaching twenty-first century competencies and skills, yet widespread use of this model continues. In spite of worldwide agreement that learners need skills such as critical thinking and the ability to communicate effectively, innovate, and solve problems through negotiation and collaboration, pedagogy has seldom adapted to address these challenges. Rethinking pedagogy for the twenty-first century is as crucial as identifying the new competencies that today’s learners need to develop. “

Cynthia Luna Scott, THE FUTURES of LEARNING 3: What kind of pedagogies for the 21st century?
UNESCO Education Research and Foresight, Paris. [ERF Working Papers Series, No. 15].

In this context, FUTE is relevant to the education system of all partner countries because its methods promote creativity and problem solving. Furthermore, FUTE does not rely on the ‘transmission’ or ‘lecture’ model referred to above. The FUTE approach, the FUTE method cards and the FUTE training material expressly address the issue of how to deliver lessons in critical thinking and problem solving in an educational setting through the promotion of collaborative working and negotiation.

Four of the five partner countries specifically refer to the national promotion of *21st century skills* in their response as one of the main promoting factors for the application of FUTE in their country.

In Belgium, the National Standards adapted by the Flemish Government have allowed for the re-writing of attainment goals which gives pupils the opportunity to work on their overall skills, in a move away from traditional subject based learning, and a single focus on course outcomes.

In Finland, the national core curriculum highlights the need for *21st century skills* and identifies the need for collaborative working, creativity and an entrepreneurial attitude in the working world. It emphasises the role education has to play in this evolving workplace to produce individuals with the skills that will be required to successfully fill these future roles.

France refers to *21st century skills* as promoted by UNESCO – as the benchmark for education. Initiative, adaptability, critical thinking, creativity, collaboration and problem solving are the key competences that the French partner has highlighted as areas that the French education system has identified for development.

In Wales, a review of the curriculum and assessment arrangements in 2015 has resulted in the development of a new curriculum that focuses on equipping young people to thrive in the face of tomorrow's unknown challenges. There is acknowledgement in Wales that there is a need for an education system that will prepare young people for jobs that have not yet been created by providing young people with the skills to cover the challenges that we do not yet know about.

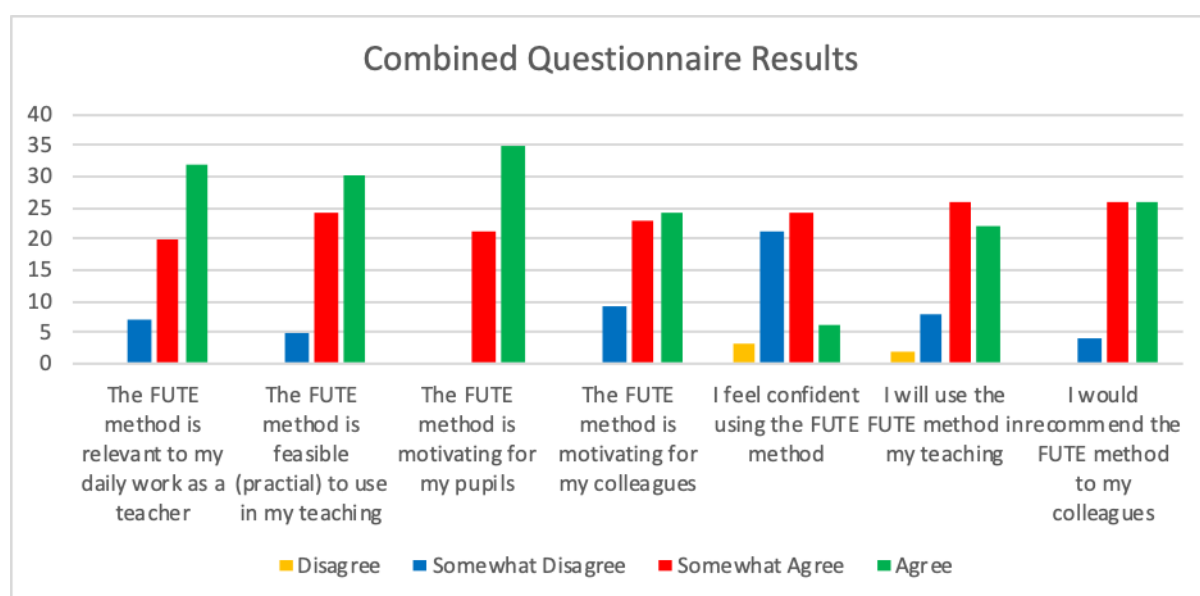
The second common area across the five partner countries is that of *cross-curricular learning*. Perhaps best summarised as the connections between knowledge and skills, cross-curricular learning makes explicit, for example, how research skills used in history may also be applicable in science. This sits firmly within the construct of *21st century skills* because it is said to result from the limitations of the transmission / "lecture" model of teaching. Dedicated class teachers delivering lessons of a pre-determined topic to a specific learning objective. Schools are often organised by subject departments – a structure so rigid that it can hinder cross-curricular or multidisciplinary learning.

The Belgium report refers to the benefits that FUTE can bring in promoting *transversal activities*, and the problems of single focus on course outcomes objectives. Denmark refers to applying of the FUTE tool to *interdisciplinary* assignments. Finland to *multidisciplinary collaboration*. France to *project focussed work* and Wales to *cross-curricular learning*. The FUTE material promotes this multi-disciplinary, open-ended project approach to learning by

actively involving pupils in their own learning and allowing learners to explore real world phenomena.

5. Success criteria for the use of the FUTE material

It was agreed that a way to evaluate the success of the FUTE model would be by securing the anonymous views of the teachers who had been asked to review it. Online electronic questionnaires were created in each partner language in order to build a picture of the perceptions of the FUTE model by those teachers who would be expected to adopt it. Not all countries were able to complete or return the questionnaires, but the key results received have been summarised and combined below:



Combined results from Belgium (54-59 responses), Denmark (1 response), France (4 responses), Wales (5 responses).

The chart above provides a snapshot illustration of the views of teachers in some of the partner countries in response to a series of questions relating to the FUTE model. The majority of respondents ‘agreed’ or ‘somewhat agreed’ that the FUTE method was relevant and practical to use in a classroom context and motivating for both pupils and staff to use. A majority of respondents ‘agreed’ or ‘somewhat agreed’ that they felt confident using FUTE and that they would recommend it to colleagues, a small minority reported that they did not feel confident to use the FUTE model, and a similar number consequently reported that they would not use the method in their teaching.

The questionnaire feedback, although overwhelmingly positive should be treated with some caution. Firstly, the sample size for countries other than Belgium is small. Also, it should be considered that the teachers who were motivated to respond to the questionnaire were those with a prior interest in design thinking in an educational context. This is perhaps the

case in Wales, which returned response rate in the region of 10%. Nonetheless, the results do show clear support for FUTE from those professionals that would be expected to use it.

6. Good practice stories from the partner countries

Each partner country has provided FUTE success stories, some of which illustrate the unique characteristics of their respective education systems. The detailed good practice stories are described in the individual country reports, whereas this European part of the report, summarises in which areas the FUTE material has shown to be useful and have added value.

Teacher training Programmes

In Denmark, France, Finland and Belgium, the FUTE material has been used to develop a new course within the teacher student programmes and teacher competence development programmes, focusing on how to apply design thinking methods and approaches in schools.

The course uses the training material that has been developed in the FUTE project, and gives an introduction to the specific use of the FUTE approach, and the FUTE method cards. The students and teachers get an understanding of how to create a design challenge and how the FUTE cards can be used to involve colleagues or pupils in a collaborative dialogue and process to elaborate the challenge and discover possible solutions.

You can read more about this in the specific country reports.

School Challenges

In France, Finland and Belgium, the FUTE material has been used to create development and collaborative processes around concrete challenges that were facing the schools. The specific challenges that were dealt with in the FUTE testing phase were design challenges like these;

- How might we create motivation for students to continue coming to high school?
- How might we create innovation in the school?
- How might we improve the sustainability of our school?
- How might we create more interesting and active school breaks?

As shown above, the FUTE approach and the FUTE method cards can be used to create collaborative processes and dialogues within many different subjects and themes.

Common for all processes is that the school has applied the FUTE process, going from setting up the rules for the process, analysing the challenge from different angles, being creative and thinking about new ideas, finding out together what is possible and then decide which way to go.

In the national reports, you can read more about the concrete process – e.g. which FUTE cards were used and how – and also which concrete ideas the process led to in close collaboration and dialogue with teachers and pupils.

Development of new curricula and teaching

In Finland the FUTE material was used to redevelop a concrete course for master students, and the concrete design challenge, which was put forward was this;

- How might we improve the craft, design and technology learning in secondary school?

In a collaborative process between teachers and students, the traditional course was taken up to consideration and in a design process using 11 of the FUTE method cards, new ways of providing the teaching within craft, design and technology were elaborated.

In basic education, learning is still strongly individual-centred: Pupils work a lot on their own, doing assignments, exercises and exams. The world outside the school is however demanding skills for teamwork and collaboration. The FUTE method is based on co-operation and collaboration so it offers great tools in the school world to practise these skills.

Pupil and student teamwork are often demanding for the teacher, because of the unequal share of responsibility and the uncertainty about the progress of the process. Our test school's teachers find that FUTE methods increased pupil participation in learning and encouraged every pupil to participate and take responsibility in teamwork. The progress of the learning project also feels safer for the teacher, because you know that in every stage, there are several different ways to continue the teamwork; options to choose a suitable method for every teams or situation.

The entire process is described in the Finnish country report.

In concrete teaching situations

In Denmark the FUTE material has been used in concrete teaching situations in history classes, in order for the pupils to reflect and work together in groups.

The FUTE method cards were used to elaborate on a societal challenge in the present society (immigration), seen in a historical perspective (Danes' immigration to America in the end of the 19th century). The students compared the two situations and found similarities and differences, and on this background made a historical presentation about the societal reasons, now and back then, that pushes people to immigrate. The students used between 5 and 10 FUTE method cards, which helped them to structure their group work in relation to

the analysis, describing the situations and the personal stories for the immigrants, and the concrete presentation in front of their teachers and fellow students.

In another History class the FUTE cards were used to make the pupils reflect on, how to treat poor and homeless people. The session included two parts. First the “the poor peoples’ home” (*Fattiggården*) from the end of 19th century was studied, using pictures and card 18 “Tell a story”. In the second part the pupils used “prototyping’ (card no. 40) to design their own versions of updated version of the home for poor and homeless peoples. The two activities (story-telling and prototyping) allowed the pupils to become active and to reflect on the differences and similarities between now and then.

These processes are described in more details in the Danish country report.

7. What seems to be the barriers for the application of the FUTE materials?

We have encountered a lot of positive feedback both from the partners who use the FUTE material within their organisations, as well as from schools and other organisations that have worked with the cards in the project’s testing phase. Still, we can see that there are both structural and cultural barriers in order to work with the FUTE material in the way that it is imagined, in order to have the maximum effect. In the following, we will give an introduction to the main barriers that we have encountered.

Time

One of the mayor arguments to develop and implement the FUTE project, was to develop a process and a method, which could save teachers time in relation to the development and planning of teaching. Still, in all participating countries, have we met the issue about limited time among teachers and in the teacher profession as such, as a barrier to work with material and approaches like FUTE.

We acknowledge this, as a real and concrete barrier, but of course this barrier should be seen against the readiness and willingness to create and innovate in schools. Because the questions is if it is the FUTE material that demands a lot of time, or it is the innovation process as such, which demands additional time. Finding and developing new ways of providing teaching and, change the way that a teacher normally works, always takes time, so the question is, if it takes less time to innovate and change behavior when using the FUTE material.

Another issue about time is related to the time that teachers need to invest in learning about design approaches and methods and how to use e.g. tools like the FUTE approach and

the FUTE method cards in their daily work. This is of course a very concrete challenge and barrier for upscaling of design approaches within schools and the application of the FUTE material in particular.

Whilst partners acknowledged that FUTE can ultimately reduce planning time, it does require a level of up-front time investment to which teachers are perhaps reluctant to commit and / or school management is not ready to provide. Teachers are not used to work with design thinking, and it requires training and hands on experiences to do so, and this takes time!

A barrier in relation to time was also when teachers had to travel to training sessions. In Belgium, teachers were invited broadly within the Region of Flanders, but it was a constraint when teachers had to use a lot of time in transportation.

In relation to this specific issue, the CORONA crisis actually forced the FUTE partnership to think in new ways of providing training, and in some partner countries, the FUTE training material was used to develop online training and training videos, which can make it easier for teachers to access the training and participate when it is possible for them.

Paradigm shift

As described in section 2, the European Society is standing on the edge of a paradigm shift, where the 21st century skills will take their intake in most policy decisions within teaching and education, as well as in attainment goals and lecture plans.

Schools and teachers will need to a) focus on more project, problem- and phenomena based learning, b) support the development of transversal skills in their teaching, such as problem-solving, critical thinking, co-operation and creativity, and c) propose more multidisciplinary assignments for the pupils. Design approaches in general, and the FUTE material in particular, has shown to be a very useful means to support these needs.

But the problem right now, which has been a concrete barrier for FUTE, is that design thinking in schools still is in its infancy, and structural support is still needed from governmental side to allow for teachers to use time and resources in order to adapt to this new situation.

In some partner countries, such as Belgium (Flanders) the 21st century skills have started to influence the attainment goals and outcome objectives for the educational sector, hence the FUTE material could be a very useful tool for teachers to adapt their teaching to reach these new goals. The challenge though is that these kind of attainment goals and outcome objectives often are very top down oriented, which is not very motivating for the teachers,

and adapting to a new way of teaching, just becomes another obligation instead of being an opportunity for teachers to develop and learn.

The paradigm shift has to be an accepted reality in the educational sector, both on policy, management and teacher level, and it is important that solutions and goals are set and developed in a collaborative process in order to meet full acceptance on all levels. We can warmly recommend the FUTE material to carry through this collaborative process..... 😊

Educational innovation

Partners also report about the teacher mind set towards educational innovation as a barrier to work with the FUTE material.

Being reluctant towards changing habits and behavior in the way people work, is something which is common in all sectors and on all levels in the organizational hierarchy, it is not something which is specific for teachers, but seen on a general level, this reluctance towards change is the most important limiting factor for innovation to happen in all sectors and professional jobs.

It was in cases where the partners collaborated with teachers, that had a personal wish to create variation in the way they teach, that the testing of the FUTE material had the most success. E.g. when teachers wanted to make the classroom more pupils-centered, the teaching more experimental and / or more project- and phenomena oriented.

Teachers tend to focus on their subjects. Teachers in Denmark, Finland and Wales work to subject-orientated lesson plans, often with a pre-defined learning objective, when planning their teaching and they may find it difficult to imagine how design thinking could be integrated into subjects such as mathematics or religion. While it is not difficult to incorporate a single FUTE card into a planned subject lesson, using a suite of FUTE cards in a free-form lesson is at odds with the teaching guidelines in several of the partner countries. Also, elements of the FUTE tool promote learning outside the conventional classroom environment. Cards such as *Being a Photographer*, or *The Anthropologist* promote work outside the classroom leaving some teachers with a sense of loss of control, which of course also is a new aspect of providing teaching related to the 21st century skills, that teacher training has to deal with.

8. Recommendations for the upscaling and further use of the FUTE material



The experiences that we have gained during the implementation of the FUTE project are many fold, and we have chosen to divide the recommendations into the following three categories;

- a) Recommendations related to the use of the FUTE material as a tool to create design approaches in schools
- b) Recommendations related to the introduction of design thinking in schools on a policy level
- c) Recommendations related to the upscaling of the FUTE material

In the following, we will elaborate on the three different recommendation categories.

Recommendations related to the use of the FUTE material as a tool to create design approaches in schools

As is expressed by several of the FUTE partners; “the FUTE tool offers a handy set of interesting, active methods that can be lined up, mixed and used as teachers want”. The FUTE material can be downloaded from the FUTE website; www.fute-project.eu and based on concrete experiences from the test schools, the following hands-on issues are recommended for the use of the cards;

- Print the cards in A5 format, which is easier to work with
- Laminate the cards so that they can be used as “playing cards” and so that you can write on them with a white board pen
- Read through all cards so that you get familiar with them all and are better prepared to choose among the cards
- Start slowly with a few cards, start with a simple design challenge, insist on being critical – a good design solution is not just a good idea, but something tangible that can be shown

It is important to highlight that the main target group for the FUTE material is teachers and not pupils. The primary objective with the cards is to assist teachers to plan and develop new ways of teaching and / or create a collaborative dialogue about concrete challenges. The cards have not been directly developed as a design thinking teaching to be used towards children. Indirectly it is of course a teaching tool, but only through the teacher, who can be inspired by the methods, and after that chose how to apply the method in the classroom and together with the pupils.

For older pupils in lower and upper secondary school, the cards may be useful as a direct teaching tool in their original form, as this age group should be capable of thinking more abstract, capable of planning a process and chose among the cards.

Design thinking is not yet very common in the field of education. The benefits of it are however well known and teachers want to increase child- and student-centeredness,

functionality, collaboration and creativity in their teaching. The FUTE method is a great way to do that, as it is developed in collaboration with design thinking professionals and teacher educators. The FUTE method is an easy way to start harnessing design thinking in any group and at any school level.

School managements favouring the design approach would have to face the fact, that many teachers see themselves as subject teachers, and have a strong sense of commitment to the aims and content of their subjects. They could decide to run an internal design thinking process in order to decide how to work with design methods in school. The crucial questions (design challenges) could be;

- how can 'we' (= teachers) work project based without losing the aims and content of our subject?
- And how can we use a design-based approach to realize the aims of our subject? That a more project and designed based way of teaching is not in conflict with the teacher's subject and not something extra that is taking away time and energy from what they are supposed to achieve in their subject, is a fundamental recognition.

The optimal situation would be if it became a strategic decision within the individual school, that design thinking is a recognised teaching method

Teachers wishing to start experimenting with design thinking would do well in recognizing the three basic rules of getting started with design thinking: 1) Start slowly, with only a few method cards; make sure that the pupils are familiar with the methods, before they start working; 2) start working with challenges/problems, that are easy to work with and leave the more complex challenges to a later phase, when the pupils are familiar with the methods and the approach; and 3) insist on being critical, that a good design solution is not just a good idea, but something tangible that can be shown – explained and eventually be used.

Recommendations related to the introduction of design thinking in schools on a policy level

The implementation of 21st century skills in educational policies and strategies, is a perfect opportunity to promote design thinking and methods as an active teaching tool and method. Multidisciplinary collaboration, creativity and entrepreneurial attitude are needed in today's working life. The 21st century skills strategy, is a reaction towards this need, and education must take these issues into account in the aims and content of teaching. Design thinking and the FUTE material addresses these goals and provides concrete, easy-to-implement and fun tools for dealing with these contents.

Design thinking and FUTE material is a versatile method in anywhere you need collaboration and creativity. In educational context, it offers variability and versatility for alongside the

familiar teaching methods. Especially in multidisciplinary and open-ended learning projects, which our new curriculum is highlighting, FUTE method gives structure and practical ways of working, but policy development is needed in order to make sure that this new way of working is acknowledged, meaning that time and resources are provided to schools and teachers to learn and implement design thinking as an innovation and working method.

Policy development should be user centered, making sure that the teachers buy-in to the idea of using more design thinking in the schools. As we have seen with the example from our Belgian partners, where design thinking approaches have been influencing the policy development, putting more emphasis on pupil-centered attainment goals and outcome objectives, it is important that teachers are involved in the process in order to create engagement within the educational sector. It was a highly promoting factor for the implementation of the FUTE project, that the Flemish government has adapted the education policy, but at the same time it was a barrier, because teachers were not motivated to work in new ways, as they felt that these new goals and objectives had been imposed to them from the government. Working in a more bottom up oriented way and with a strong participative approach, educational policies will motivate and support educational innovation on local level in a much better way. The FUTE material can be used to create this bottom-up and participative approach.

Provide room in national strategies for competence development. Policy makers would have to address the issue of a subject-based curriculum versus a more project-oriented curriculum. We have seen that there is already in the Danish curriculum several elements favouring project-based education, but a political ambition aiming at promoting innovation and entrepreneurship through design thinking, would require a thorough re-thinking of whether the school should basically be based on and organized around subjects or interdisciplinary projects.

Another good example that we want to highlight as a recommendation on policy level, is the national network CANOPE from France. This national network exists in all regions of France and has as objective to provide competence development towards schools and teachers. Having a network like this, ensures that the newest knowledge within school management, teaching methods and other relevant issues for schools, are made available for the educational sector, and it is an easy channel to disseminate within the entire country.

Recommendations related to the upscaling of the FUTE material

FUTE is not only primarily a teaching tool, but also, and maybe more directly, a planning, innovation and creation tool, and this is probably how it should be presented in the first place. It is a tool to create dialogue and participation in a structured way, without losing

too much control, which can help school managers and teachers to create educational innovation and solve challenges in a co-creative way.

It has to be highlighted very clearly “what is it in for me as a teacher” when promoting the FUTE material, if we shall succeed with the upscaling beyond the FUTE project period and partnership. Based on our experiences, that e.g. shows barriers in relation to time and training, it will make sense to focus on the following factors in relation to the benefits of the FUTE material

What’s in it for schools and teachers to work with the FUTE material

Are you tired of teaching unmotivated pupils and students?

Would you like to try teaching in a new way, but do not know how to start changing?

The FUTE method could be the solution.....

All kinds of innovation and change take time – this is a fact! If you want to innovate your teaching – for example by creating variation or engage the pupils more, the FUTE material can help you to keep you on the track, obtain success with your effort and save time in your innovation process

Using design thinking in your teaching will help you as a teacher to work with the 21st century skills. The FUTE material can help you to create teaching and engage your pupils in a way where you have the role as facilitator and guide your pupils through a process where they learn. Using the cards will help you to keep the process on track and limit the feeling of “losing control” when you change a bit your role from being a traditional teacher to becoming a facilitator of learning.

If you are a school manager, you can use the FUTE material to facilitate processes, where you want to engage your staff in order to find solutions on dilemmas or challenges where everybody has an interest and a say.

A few other elements will be important for the future upscaling opportunities of FUTE, one of them again being related to time, and especially time related to training and the comprehension of the design thinking in general and the FUTE approach in particular. A recommendation is therefore to make an online course, that explains how the FUTE

approach and the method cards works and can be used in practice. Online courses are available from the www.fute-project.eu website.

A lot of work has been put in making the FUTE website a comprehensive and didactic learning platform and toolbox. All material is easily accessible. The material can be downloaded or used online. There are good practice examples from teachers who have already worked with the FUTE material, and ready to use training material is accessible as well. All material has been translated into the five project languages, which makes the material useful for a great number of people around Europe. It is important to disseminate and promote the existence of the website within a broad European audience.

It will be important to make a clear link between the 21st century skills. As pointed out by all partners the implementation of the 21st century skills is an optimal opportunity to promote design thinking and methods within the education sector.

9. Sustainability - country specific strategies (listed alphabetically) to ensure the FUTE material continues beyond the project phase.

Belgium:

Hogeschool PXL – Education will be using the tool in their program for 3rd year students in teacher training. The students will obtain the necessary insights and skills to use the tool in their lessons and project, also to apply the tool in their own lessons. Next year sessions will be organised for students to work on projects for secondary school. These projects will be FUTE-based for planning, research and possible output.

The FUTE-tool will also be integrated in a postgraduate program on ‘culture in schools’ as one of the possible teaching methods in order to activate pupils in a creative way and organize projects on culture.

The University of Antwerp – School of Education: has implemented the FUTE material in the educational Master’s programme. Students will be invited and challenged to apply the FUTE-method in their lesson plans.

All successful projects and their outcome will be posted in full on the FUTE-website when complete

Denmark:

UC Syddanmark has developed a module on design processes in primary school teaching. A key element in the module is the FUTE method and the FUTE method cards. The module equals 10 ECTS points.

Teacher training - the FUTE-method cards will be included in courses in order to develop better teaching in different kind of subjects together with the teachers. At UCSyd teacher training college collaboration projects with schools is an integrated part of all the teacher training modules. In these projects student teachers typically take over the teaching for couple of days. In these collaboration projects the FUTE material can be used both as a tool for generating ideas about how to plan a collaboration project, and as tools that the pupils can work with.

At the national level. On the national level our sustainability strategy is focused on getting the FUTE project (and its output) published on national platforms. Two such platforms have so far been contacted. They are The EMU (Denmark's national learning platform), and the periodical *Folkeskolen*. Also, a research article about the potentials of design methods (in particular the FUTE method) in history teaching will be published at the website www.historielab.dk which is a national knowledge centre for history and cultural heritage and teaching. The article will be on the website's journal RADAR.

Finland:

The FUTE material and the design thinking will be used in several teacher education courses and projects. As the newly qualified teachers graduate, the FUTE model will be widely promoted across Finnish schools.

Teachers will use the FUTE material at different school levels during the planning and implementation of the core curriculum. Through the teachers that participate in the training workshops, the idea of FUTE will/may widely reach the school practices in Finland.

Design thinking is an emerging trend that is spreading into the field of education. The FUTE material supports the aims of the national core curriculum. As a teaching material it is freely available online and it will only attract more and more users as word of its benefits spreads.

France:

The French team proposes that facilitators or mediators will be trained in the FUTE's method, so that they can accompany the teachers in their first steps.

To go even further, we believe that the FUTE tool is really relevant when it is used by mediators, who put themselves at the service of teachers' projects, and help them to carry out their projects thanks to these tools. They thus relieve teachers of a time-consuming aspect in the creation of complex projects, while bringing an outside point of view and a fresh look at the process. The teacher will then be in a position to keep some traditional teaching methodologies while enjoying the benefits of design thinking that the FUTE model can provide.

Wales:

The FUTE method, toolkit and training programme has been promoted among schools in Wales. A targeted email with instructions on how to use FUTE and with links to the freely downloadable tool and support manual, has been issued to around 50 schools. An online training presentation has also been developed for schools who approach us for additional guidance.

On a national (Welsh) level Design thinking in education is in its infancy but is very much under the spotlight in terms of its contribution to the development of 21st century skills in schools. The FUTE tool facilitates the delivery of design thinking in educational settings and supports the core aims of the new curriculum for Wales. It is free and easily accessible. As word spreads among the teaching profession about the benefits the FUTE method can provide, it will continue to attract an increasing number of new users.

10. Conclusion

The FUTE material has received an overall positive feedback from the partners who have used it, as well as the teachers from the test schools and teacher students, who have worked with the material.

Still there are some barriers related to the material, which have been gathered along the testing phase, especially related to time consumption and readiness in the educational system to take up design thinking, as an approach in teaching and collaboration.

In a way the FUTE project is a little bit ahead of its time. Design thinking is an upcoming approach and is a perfect answer on how to work with the 21st century skills, making sure that these are taught in an inspiring and engaging way to pupils within European schools.

The FUTE material has great potential to become a reference on how to qualify European teachers on how to respond to the paradigm shift in teaching and learning, going from “subject teaching” to “problem oriented and cross curricular teaching”. But relevant policy development has to follow, ensuring that teachers are provided the time and the resources to learn and practice. Our evaluation shows, that the FUTE material is a hands-on, easy to use tool, which can help schools and teachers to meet the challenges in the paradigm shift



APPENDIX 1

IO4 – Recommendations and sustainability

Combined document – all partners:

1. PXL Belgium	21-26
2. UCSyd Denmark.....	27-31
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Co-funded by the
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FUTE



Erasmus+

IO4 PXL Hasselt, Belgium

1. Why and how is the FUTE material applicable in your country? What issues does it address?

Since 2018 the outcome objectives (national standards) have been adapted by the Flemish government (Belgium). Schools are obliged to focus much more on transferring specific content to other courses. The attainment goals have been rewritten in order to give pupils the opportunity to work on their overall skills, specifically their research skills. The FUTE material can be applied to train these skills, either in projects, specific transversal activities / 21st century skills; objectives that need to be obtained over the course of several years, etc. By using the FUTE material schools can address typical educational problems such as a single focus on course outcome/objectives. Also, collaboration between teachers can be advanced and promoted because of the necessity on one side, and the new focus on research skills on the other side. FUTE is the missing link for teachers and policy makers to enhance their meeting methods (getting the job done faster and more efficient) and pupil-focused attainment goals and outcome objectives imposed by the Flemish government. Also, in teacher education the FUTE-tool fits perfectly to the current needs as pre-service teacher struggle to incorporate innovative teaching methods that address transversal skills. The FUTE-method is useful indeed, because the cards are so concrete and specific that it allows for an easy adoption/adaptation.

2. What were the promoting factors in your country and in the schools for the application of the FUTE material?

As written above: the FUTE material is a fast and efficient way to help schools make the right adaptations to their methods and vision on education. Teacher teams are very diverse, this implies that different skill sets, experience and focus on educational outcomes make change much more difficult. By using the FUTE-tool, combined with specific training for teachers and policy makers, schools can set realistic goals and plan their change-activities in an achievable time set. During our multiplier events, we encountered primary school teachers, secondary school teachers and lecturers at colleges and universities. All of them had the same focus: how can we apply the tool in order to change our methods and integrate research-based teaching in our schools. The changing demands from our government in terms of a greater focus on transversal skills, has been an excellent driver for adoption of the FUTE-tool. On a micro-scale, teachers are often out of inspiration: what active teaching method should I apply (again)? The FUTE-tools offers a handy set of nearly 50 interesting, active methods that can be lined up and mixed up as teachers want.



3. What criteria have you used to evaluate its success? Please structure your answer under the headings THEME, the PROCESS CRITERIA and the OUTPUT CRITERIA

Q1 - The training was adequate to use the FUTE-method in my classroom.

- 1 Disagree 2.04% 1
- 2 Somewhat disagree 10.20% 5
- 3 Somewhat agree 46.94% 23
- 4 Agree 40.82% 20 49

Q2 - The FUTE-method is relevant to my daily work as a teacher.

- 1 Disagree 0.00% 0
- 2 Somewhat disagree 10.20% 5
- 3 Somewhat agree 30.61% 15
- 4 Agree 59.18% 29 49

Q3 - The FUTE-method is feasible (practical) to use in my teaching.

- 1 Disagree 0.00% 0
- 2 Somewhat disagree 8.16% 4
- 3 Somewhat agree 36.73% 18
- 4 Agree 55.10% 27 49

Q4 - The FUTE-method is motivating for my pupils.

- 1 Disagree 0.00% 0
- 2 Somewhat disagree 2.17% 1
- 3 Somewhat agree 28.26% 13
- 4 Agree 69.57% 32 46

Q5 - The FUTE-method is motivating for my colleagues.

- 1 Disagree 0.00% 0
- 2 Somewhat disagree 15.22% 7
- 3 Somewhat agree 39.13% 18
- 4 Agree 45.65% 21 46

Q6 - I feel confident in using the FUTE-method.

- 1 Disagree 6.12% 3
- 2 Somewhat disagree 36.73% 18
- 3 Somewhat agree 44.90% 22
- 4 Agree 12.24% 6 49





Q7 - The FUTE-method encourages me to work differently. - Click to write Column 1

- 1 Disagree 1.00 1.00 1.00 0.00 0.00 2
- 2 Somewhat disagree 1.00 1.00 1.00 0.00 0.00 9
- 3 Somewhat agree 1.00 1.00 1.00 0.00 0.00 24
- 4 Agree 1.00 1.00 1.00 0.00 0.00 20 5
- Not applicable 1.00 1.00 1.00 0.00 0.00 4

Q8 - I will use the FUTE-model in my future teaching.

- 1 Disagree 4.17% 2
- 2 Somewhat disagree 12.50% 6
- 3 Somewhat agree 39.58% 19
- 4 Agree 43.75% 21 48

Q9 - I would recommend the FUTE-method to my colleagues.

- 1 Disagree 0.00% 0
- 2 Somewhat disagree 6.12% 3
- 3 Somewhat agree 40.82% 20
- 4 Agree 53.06% 26 49

Q10 - The training material helped me to create qualitative design challenges.

- 1 Disagree 2.33% 1
- 2 Somewhat disagree 4.65% 2
- 3 Somewhat agree 41.86% 18
- 4 Agree 51.16% 22 43

THEME: Our colleagues' interest in the FUTE project

PROCESS CRITERIA: Creation of two training sessions, one face-to-face, the other one online

OUTPUT CRITERIA: The number of training courses realised.

4. Please give some evidences in the form of good practice stories. Include testimonials.

Several secondary schools and colleges have made a first step into using the tool, either applied in starter groups or applied in teacher teams. All of them found the tool very inspiring and easy to use. Because of the lockdown, imposed by the Belgian government, most schools did not have the opportunity to spread their results, nor to disseminate their plans for larger groups or teams. University of Antwerp – school of education: Lecturer Els Tanghe has implemented the FUTE material in the educational Master program of the University of Antwerp. Their focus will be on the reinforcement of the research skills both



for their students themselves as to be applied in teacher training by their students. Students will be invited and challenged to apply the FUTE-method in their lesson plans. Plans were made by the lecturers, however due to the Corona crisis, we have not been able to follow up on the approval of their plans nor the integration. GO! Atheneum Tervuren: Several teachers have applied the tool in their research labs in the first year of secondary school. The outcome was very positive: enhanced independence and reflecting skills measured in over 50% of the pupils. This school will apply the tool in their program for the next 3 years. GO! Atheneum Halle: The principal and policy makers of this secondary school were very interested in using the tool in their school. They attended our multiplier event in January and applied for another training session in April. Because of the Corona crisis, this training did not take place, but was rescheduled to September 2020. Results and outcome of this training will be reported by October 2020. PXL-Education In the teacher education department of PXL University of Applied Sciences and Arts, a workshop on sustainable schools was organized. The participants (pre-service students) needed to follow the steps of the FUTE-tool that were provided by the teacher. By the end of the 2-hour workshop each subgroup of 4 participants developed a 'MUZE' and 'PITCHed' their innovative ideas on how to improve the sustainability of the PXL-campus. The focus was mainly on the ecological part of sustainability. The Flemish Educational Support group (pedagogische begeleidingsdienst) has confirmed that the tool is aligned with the imposed adaptations to the educational outcomes and future aims of Flemish education in the future. Therefore, they will advise schools to use the tool in their transformation, either in policy or specific classroom activities.

5. Limitations – what were the barriers to the application of the FUTE materials in your country?

The Flemish school system offers a lot of flexibility for teachers and lecturers to attend training sessions. In order to broaden our target group, we promoted the multiplier events all over Flanders. One of the limitations we experienced was distance to the multiplier event location. Several interested teachers needed to travel too far for their schools to actually profit from dismissing teachers from their daily job. Another limitation we encountered is teacher-mind set towards educational innovation. The tool is promoted as a method of design thinking in which most Flemish teachers are not experienced enough. Also, the connection to the new attainment goals imposed by the Flemish government was demotivating for several interested teachers. This is mostly caused by top-down changes in policy, that need to be implemented as soon as possible, but have not been assumed necessary nor achievable in a short period of time by the majority of Flemish teachers. Principals and policy makers indicate this area as the most difficult one to overcome in order to change policies in their schools. Time and training are not country-specific limitations,

however most implied upon by participants and users during our multiplier events and trainings. In order to use the tool in an efficient way, teachers need to be trained and given time to obtain the skills needed to implement the tool in their working life. Design thinking is not yet embedded in Flemish teaching strategies, and therefore it takes a lot of time to adapt teachers' mindset and develop design thinking skills.

6. Recommendations

Participants at our multiplier events made several recommendations:

- Language adaptations: the translated version of the tool contains words and expressions that are not up to the level of the pupils that will be using the tool. Therefore, the teachers find it necessary to assist their pupils while reading the different cards, in order for the pupils to fully understand the instructions.
- The size of the cards: A-4-format cards are not easy nor comfortable to use in groups, not easy to transport or keep in a desk or backpack. o We adapted the size to A-5, which is smaller and easier to carry and use. We also laminated the cards so pupils can write on them, take notes, erase marker, etc. Most secondary schools were pleased with the general look and “feel” of the cards in this size.
- Digital version in PDF is not easy to work with. It takes a long while to go over all the cards, to scroll to the card you need, etc. A printed version is the preference, but very costly for schools with limited financial resources.

Tool users have made recommendations concerning:

- More user examples in the teacher manual:
 - The given examples are the ideal outcome of using the tool
 - The given examples are not aligned with the reality of schools
 - The given examples need to be on different levels:
 - Primary school
 - Secondary school
 - Higher education: lecturers and students in teacher training o Instructions or tips on how to select the cards, make fitting combinations according to research and imposed questions in different target groups, etc. would have been a nice addition to the manual.
 - Teachers ask a lot of questions on this matter during trainings.



7. Sustainability

Hogeschool PXL – Education will be using the tool in their program for 3rd year students in teacher training. The students will obtain the necessary insights and skills to use the tool in their lessons and project, also to apply the tool in their own lessons. Next year we will organize 2 weeks, at different times during the year, for students to work on projects for secondary schools and organisations. These projects will be FUTE-based for planning, research and possible output. All useful and successful projects and their outcome will be posted in full on the FUTE-website when finished. The FUTE-tool will also be integrated in a postgraduate program on ‘culture in schools’ as one of the possible teaching methods in order to activate pupils in a creative way and organize projects on culture. University of Antwerp – school of education: Lecturer Els Tanghe has implemented the FUTE material in the educational Master program of the University of Antwerp. Their next year focus will be on the reinforcement of the research skills both for their students themselves as to be applied in teacher training by their students. Students will be invited and challenged to apply the FUTE-method in their lesson plans.

IO4 UCSyd Denmark

1. Why and how is the FUTE material applicable in your country?

The FUTE-material can be applied in several ways. In relation to the curriculum there are two points of special interest: 9th grade pupils have to make a compulsory project assignment. The project is an interdisciplinary assignment, which should give the pupils insight into the project working form and train them to work with a problem that they themselves formulate. There are three cross-cutting themes in the primary school: language development, IT and media, and innovation and entrepreneurship. The idea of the theme of innovation and entrepreneurship is to inspire experimentation, finding new solutions, and supporting the pupils' curiosity and ability to think in creative solutions. The FUTE material can qualify both of these elements of the curriculum of the Danish Folk School, as well as other projects (projects weeks, and so on). The FUTE material can also be used in the subjects, as a way of creating variation in the way that the teaching is organized and done.

2. What where the promoting factors in your country and in the schools for the application of the FUTE material?

What where the promoting factors in your country and in the schools for the application of the FUTE material? There are two main promoting factors – one institutional, the other didactical. The institutional factors are anchored in the compulsory project and innovation elements in the curriculum. Throughout the FUTE project, teachers quickly pointed out, that the FUTE-material could be used to qualify these curricular elements. The didactical factors are anchored in the wishes and intentions of many teachers to create variation in the they teach, focusing on ways to make the classroom more child-centred, more experimental, and more project-orientated.

3. What criteria have you used to evaluate its success

THEME: Promoting the FUTE material in schools.

PROCESS: Feedback from participants. Holding workshops introducing the FUTE-material.

OUTPUT: Having including teachers from at least two schools. (So far teachers from five schools have participated).

THEME: Promoting the FUTE material among colleagues

PROCESS: Feedback from participants. Introducing the FUTE material in the Play Lab.

OUTPUT: Feedback from participants. Having 10 colleagues joining the program.

THEME: Implementing the FUTE material the curriculum of teacher training

PROCESS: Feedback from participants.

Developing a 10 ECTS module.

OUTPUT: Feedback from participants. Having students participate. (Two batches have so far participated).

4. Please give some evidence of success in the form of good practice stories. Include testimonials if available.

Case 1: A group of students of history used the design approach, when teaching history in a class of 7th grade pupils. The theme – the good life and the emigration to America – was chosen by the teacher and the teacher students. In the first session there was a common discussion (“Brainstorm”) about the good life, and a discussion (“Brainstorm”) about, what could make people today want to emigrate. The idea of these two brainstorm was to introduce the concepts of push and pull factors. In the following session the pupils had to create fictitious figures from the end of the 19th century. Age, gender, family background, trade, skills, educational background were described (“Personal narrative” and “Personas”). These fictitious figures were described and drawn – with special attention on their clothes, their head gear, and the stuff they were bringing along. Special attention was put on making the outfit and gear of the characters as historical as possible. This required quite some research, looking at old photos and drawings (“Desk top research”). In the following sessions the fictitious figures were used to investigate three historical and general questions: why did Danes emigrate to America at end of the 19th century? Why do people emigrate today? How were the Danish emigrants received in their new country? How are emigrants received in their new countries today? How did the Danish emigrants manage in the Amerika? How do emigrants manage today? In one session the pupils used “Pecha Kucha” to tell about, why their character had decided to emigrate; in another session – focusing on how emigrants were received – the pupils made a roll play. The fictitious figures, played by the pupils, had to go through an immigration interview. Some were allowed to enter the country, some were sent back, and others ended up in jail. In their evaluation the teacher students write: 'It was our experience that the pupils found it exciting and fun to work in this way. The approach opened up to questions being asked. The pupils reflected on differences and similarities between then and now, between the pupils themselves, their fictional characters and the historical ones. The pupils also expressed that it was a more motivating way to learn history than to sit down and read a book and answer questions. Our most important experience is

that the FUTE methods can be used quite easily to work innovatively and creatively, which hopefully can help create more motivation for the subject and help the pupils realize both the differences and the similarities between then and now.’ [Condensed from evaluation report]. Case 2: In the Danish news media there are often discussions on how to treat poor and homeless people in our community. In this example, these issues are examined and discussed together with students based on the subject history. The course took place together with fifth grade pupils. It lasted two hours. The course ended with the pupils making suggestions on how we can (or should) arrange a home for the poor and homeless. The example is a good example on how the FUTE method can bring history into relation with the present and at the same time create a history lesson that involves the student's daily life. The lessons included other activities and content, but the central focal point was 3 FUTE method cards and FUTE design thinking. The method card 18 “Tell a story” was used both in analysing pictures from the 19th century and in telling stories about the context of the pictures, in order to gain an understanding of what conditions the poor lived in during the 19th century. In the middle of the lessons, card 40 “Prototyping” was used. Here the students had to make a floor plan of a house for poor, homeless people, as they thought it should look like today. At the end of the hour, a card (“Relay”) was used, in which the students developed a common floor plan with the corresponding layout of the house. The final floor plans were shared with parents. In the course of the process it was discussed whether the facilities were realistic, what a good life is and who is responsible for paying for the proposed interior design and construction of the poor house.

5. Limitations - what were the barriers to the application of the FUTE materials in your country?

Limitations; what were the barriers for the application of the FUTE materials in your country In Denmark, the subjects are central to teaching and project-orientated teaching without subjects is thus not a central part of a typical school day. Teachers tend to focus on their subjects, when planning their teaching, and they may therefore find it difficult to imagine how problem-based teaching and design thinking could be an integrated part of subjects such as mathematics or religion. Time for planning is limited for teachers. A normal work week for a teacher is 27 lessons. At the same time, there are so many offers of new teaching materials and courses, that it can be difficult for teachers to find the time to familiarize themselves with the FUTE-method and material. Teachers are not used to working with design thinking, which requires training and hands on experience. At the same time, there are different perceptions of what good teaching is, and some teachers are not prepared to change their teaching style in relation to the transformation of teaching that design thinking requires. Part of the FUTE material leads to increased complexity. Especially in relation to the design process, where the

pupils have to work independently with their own projects, and in many cases also outside the classroom, as several of the methods requires that pupils will have to visited places outside the school. This may require extra time for planning. It may also on the part of the teachers involves a sense of loss of control, when pupils have to leave the classroom for “Being a photographer”, or an “Anthropologist”, and so on. In addition, there are many method cards to deal with.

Q6 - Recommendations:

Recommendations - drawn out of experiences / evidence. Working with design thinking in schools requires awareness of both the logic of design thinking and the structural settings of the school, and an increased use of the design approach would probably require changes on at least three levels: Policy makers would have to address the issue of a subject-based curriculum versus a more project-oriented curriculum. There are already in the Danish curriculum several elements favouring project-based education, but a political ambition aiming at promoting innovation and entrepreneurship through design thinking, would require a thorough re-thinking of whether the school should basically be based on and organized around subjects or inter-disciplinary projects. School managements favouring the design approach would have to face the fact, that many teachers see themselves as subject teachers, and have a strong sense of commitment to the aims and content of their subjects. The crucial questions are, how can ‘we’ (= teachers) work project based without losing the aims and content of our subject? And how can we use a design-based approach to realize the aims of our subject? That a more project and designed based way of teaching is not in conflict with their subject and not something extra that is taking away time and energy from what they are supposed to achieve in their subject, is a fundamental recognition. Teachers wishing to start experimenting with design thinking would do well in recognizing the three basic rules of getting started with design thinking: 1) Start slowly, with only a few method cards; make sure that the pupils are familiar whit the methods, before they start working; 2) start working with challenges/problems, that are easy to work with and leave the more complex challenges to a later phase, when the pupils are familiar with the methods and the approach; and 3) insist on being critical, that a good design solution is not just a good idea, but something tangible that can be shown – explained and eventually be used.

Q7 - Sustainability:

Sustainability - country specific strategies to ensure the FUTE material continues beyond the project phase. For your organization: At our university college we have developed a module on design processes in primary school teaching. A key element in the module is the FUTE



method and the FUTE method cards. The module equals 10 ECTS points, and it so far been done two times. The FUTE method cards have also been a source of inspiration in the development of Playful Learning. Playful Learning is a development project where a more playful approach is developed for teaching in teacher education. The method cards in the FUTE project have been a key inspiration, especially for the development of similar method cards for Playful Learning. For schools in your country: In-service training: In connection with further training of teachers, the FUTE-method cards will be included in courses in order to develop better teaching in different kind of subjects together with the teachers. Practice collaboration project especially with schools in the local region: At our teacher training college collaboration projects with schools is an integrated part of all the teacher training modules. In these projects our teacher students typically take over the teaching for couple of days or so. In these collaboration projects the FUTE material can be used both as a tool for generating ideas about how to plan a collaboration project, and as tools that the pupils can work with. At the national level. On the national level our sustainability strategy is focused on getting the FUTE project (and its output) published on national platforms. Two such platforms have so far been contacted. They are The EMU (Denmark's national learning platform), and the periodical *Folkeskolen*. Also, a research article about the potentials of design methods (in particular the FUTE method) in history teaching will be published at the website HistorieLab.dk, which is a national knowledge centre for history and cultural heritage and teaching. The article will be on the website's journal RADAR.

IO4 University of Turku, Finland

1. Why and how is the FUTE material applicable in your country? What issues does it address?

The new Finnish national core curriculum for basic education emphasize the 21st century skills and phenomena-based learning. Multidisciplinary collaboration, creativity and entrepreneurial attitude are needed in today's working life. Education must take these issues into account in the aims and content of teaching. Design thinking and FUTE material addresses these goals and provides concrete, easy-to-implement and fun tools for dealing with these contents.

Design thinking and co-operation methods are needed in many different fields of life. For example, preventing the silo effect during the decision-making processes: In the policy making processes there are noticed sometimes the silo effect, where the decisions are made segregated on the different levels. That was seen especially during the covid-19 time, when there were some serious gaps between the authorities. Also, at the local level, where the cultural institutions work widely together, but there might be a lack of collaboration with the policy makers or the third and private sector. In the education policy: E.g. the planning and building new school buildings there are segregated decision making where the future users are not always heard during the process. In these kinds of various situations design thinking and FUTE method can be used to increase collaborating and creativity between different levels, parties and litigants.

2. How did you promote the use of FUTE materials in your country?

In educational context, we see a need and potential to use design-thinking methods. The FUTE material promotes the current core curriculum's aims of the 21st century skills (E.g. problem-solving, critical thinking, co-operating), phenomena-based teaching and learning which integrates the subjects and implementing of the social constructions with the design thinking and problem-based teaching and learning.

Today's teachers at all school levels are trying to create interesting multidisciplinary and open-ended learning projects, where the role of pupils is emphasised, and pupils are actively involved in learning. In these learning projects, subject based teaching is to be transferred into exploring real world phenomena, integrating the expertise of different disciplines, designing and inventing, testing and constructing various objects and products. This kind of new educational thinking benefits design thinking methods and FUTE material.

3. What criteria have you used to evaluate its success?

Theme	Process criteria	Output criteria
Teachers involvement	Arouse teachers' interest for the method and help them to see the potential of using it in their work.	Teacher training workshops for 15 teachers (in 3 schools). Coaching the teachers to implement the method. Getting feedback from the teachers about the method.



Student teachers' involvement	Introduce and test the method with the student teachers, give them ideas how to use the method in their future work.	Using FUTE method with student teachers (40) in their teacher training practice and in a study module "Innovative pedagogical process in craft, design and technology education" 4 ECTS
Teacher educators' involvement	Arouse teacher educators' interest for the method and help them to see the potential of using it in their work.	Introducing the method and ideas how to use it as teacher education method, for colleagues (10) in our department.
Museum employees' involvement	Arouse other parties' interest for the method and help them to see the potential of using it in their work.	Introducing the method for a Head of museum, from the perspective of Museum pedagogy. E.g. in planning management tasks within the cultural institutions

4. Please give some evidence of success in the form of good practice stories.

The FUTE method was tested in Finland several ways: in two primary schools, in one secondary school, in teacher education and in one museum. The best experiences and success stories came from multidisciplinary, open-ended learning projects. In one of the test schools, three teachers planned a combined project with their classes. The aim of the project was to create new break activities for the whole school's pupils. Teachers started with their own classes, giving younger pupils (6-7 years old) more structured instructions and older pupils (9-10 years and 11-12 years old) more freedom to choose the methods in different parts of the project (research – analyze – ideate – create). They started researching different ideas by doing desktop research (card 20), interweaving pupils (card 23) and making experiments (card 24). They analyze the data using day cycle (card 28) and creating activities for different personas (card 29). They continued by mixing the classes for brainstorming (card 36) and after that narrowing down the wild ideas by using creative constraints (card 35). During the process, they used collaboration methods such as team rules (card 1) and expectations (card 3), framing methods such as to do list (card 9) and show and tell (card 10) and pitching (card 17) as a communication method.

The outcome of the project was a super break week for the whole school, which included numerous new different break activities, such as dancing break, silence break, track and field break, art break, book break, break with new fried, whole class game break, etc. The teachers and pupils were pleased about the project. Planning of it needed time and collaboration between the teachers and first they felt unsure to give so much freedom for the pupils. Getting to know the method cards was laborious but after that, they felt it was easy to use them. The other teachers in the school showed interest to the FUTE method after the project and they are going to use the method next on planning a fieldtrip with their pupils.





Other success story example comes from teacher education, in a study module called “Innovative pedagogical process in craft, design and technology education” 4 ECTS. The design problem in the course, for 20 master student teachers in craft teacher education, was “How to improve the craft, design and technology learning in secondary school?”. Students were divided into pairs and they started by using the collaboration methods such as knowledge and expertise map (card 2) and expectations (card 3). Next, they chose their research methods to explore the atmosphere in secondary schools, in teaching and learning the subject craft, design and technology. Some of the pairs did a desktop research (card 20) about the social media discussion of the new curricula, some pairs went to the schools to interview the teachers and pupils (card 23). Next the students analyzed the data they collected by choosing the methods suited best for their project (clustering 25, visualizing data 26, biography 27, analytical diagrams 30). After that, the students started to ideate a new way to teach craft, design and technology in secondary schools, using methods such as what if (card 31), in the future (card 33) and multi perspectives (card 34). In this stage, every pair made a pedagogical road map (card 13) for a successful craft process. The outcomes of the roadmaps were excellent, and they were placed in the university hallways to inspire other students.

The last part of the process was a task to a) plan a motivating learning project of craft, design and technology education in secondary school and b) implement the project you planned, as you were a 15 years old secondary school pupil. The output of the student teachers were great: We had a innovating and inspiring exhibition of secondary school pupils’ new craft courses and craft products such as repaired recycled furniture, self-made greenhouses, and accessories made of new materials such as leather paper, boyfriend cushions, and seats molded of building concrete. The joy of learning was real for all of the participants and the student teachers liked the varicosity of the FUTE method.

5. Limitations; what were the barriers for the application of the FUTE materials in your country

Teachers are very busy at their work. Among teaching, they have so many other things to take care, that they have a little time to explore new methods. Even though the FUTE method promises to decrease the time spend in planning, it still needs time to get to know the method and learn the contents of the method cards, before using it. This is a bit of an obstacle to the application of the FUTE materials.

Almost all of the method cards are already somehow familiar to the teachers. This can create an effect of “What`s new in this?” or “Bin there, done that!”. It takes concrete and convincing arguments to rice the interest of the teachers to try out the whole process, to see how the method works best together (research – analyze – ideate – create + process)). Using single cards is easy and they fit effortless into any subject orientated teaching. Planning a whole process based on the design thinking method is more demanding, but hopefully also as rewarding, so after one time you want to do it again.





6. Recommendations

Design thinking and FUTE material is a versatile method in anywhere you need collaboration and creativity. In educational context, it offers variability and versatility for alongside the familiar teaching methods. Especially in multidisciplinary and open-ended learning projects, which our new curriculum is highlighting, FUTE method gives structure and practical ways of working.

Design thinking is not yet very common in the field of education. The benefits of it are however well known and teachers want to increase child- and student-centeredness, functionality, collaboration and creativity in their teaching. The FUTE method is a great way to do that, as it is developed in collaboration with design thinking professionals and teacher educators. The FUTE method is an easy way to start harnessing design thinking in any group and at any school level.

In basic education, learning is still strongly individual-centred: Pupils and works a lot on their own, doing assignments, exercises and exams. The world outside of school walls is however demanding skills for teamwork and collaboration. The FUTE method in based on co-operation and collaboration so it offers great tools in the school world to practise these skills.

Pupil and student teamwork are often demanding for the teacher, because of the unequal share of responsibility and the uncertainty about the progress of the process. Our test school's teachers find that FUTE methods increased pupil participation in learning and encouraged every pupil to participate and take responsibility in teamwork. The progress of the learning project also feels safer for the teacher, because you know that in every stage, there are several different ways to continue the teamwork; options to choose a suitable method for every teams or situation. In our opinion, these are great recommendations for the FUTE method.

7. Sustainability

For your organization: The FUTE material and the design thinking will be used at the teacher education in several courses and projects. Via the graduating new teachers, the idea of FUTE will widely spread in the school practices in Finland.

For schools in your country: The teachers will use the FUTE material at different school levels during the curriculum planning and implementing the core curriculum. Via the teachers that participate the training workshops, the idea of FUTE will/may widely reach the school practices in Finland.

On national level: Design thinking is arousing trend and it is spreading also in educational field. The FUTE material supports the aims of the national core curriculum, it is free and easily accessible teaching material online and it will attract more users through good experiences and recommendations.

IO4 Atelier Canopé 42, France

1. Why and how is the FUTE material applicable in your country? What issues does it address?

In an era of digital culture, questions of education are at the heart of the reflections of many countries which question their current system in an attempt to accompany it with New demands linked to cultural, societal ethical and economic developments in societies; The 21st century skills promoted by UNESCO are increasingly becoming benchmarks in the fields of education. These skills which wish to develop the educational system concern both the personality of the stakeholders and more technical skills. This notion such as curiosity, initiative, adaptability, but also the development of critical thinking, creativity, collaboration or the ability to solve complex problems.

In order to learn these skills, several solutions are envisaged, such as playful learning. Undeniably, all the collaborative methods developed in the FUTE project are absolutely central and relevant tools for effectively working these skills of the 21st century, and it is this how we the French team of the FUTE project offers them today.

There is currently no political appropriation of the FUTE project to speak of. But the Canopé network is national, with branches in each department. The FUTE project is currently undergoing training throughout France with colleagues from the Canopé network, who will be FUTE referents in each region for teachers.

As soon as the website is fully operational, a wider communication with the entire educational community will be made by the Canopé Network, which is a French national education operator, and as such has a role of proximity with political decision-makers.

Online training on FUTE cards is also being finalised and will be tested for the first time in July 2020.

2. What were the promoting factors in your country and in the schools for the application of the FUTE material?

The workshop Canopé 42 is part of a national network.

Canopé is the network for pedagogical creation and support. It is a public structure related to the French Ministry of Education, Higher Education and Research, which designs, produces and distributes multi-format and transmedia educational resources to meet the needs of the educational community: teachers, school librarians, managerial staff, students, parents, associations and educational and political local authorities....

The "Atelier Canopé 42" is one of the hundred workshops dedicated to education, that are constitutive of the Canopé Network, and are dispatched all over France. Based in Saint-Etienne, near Lyon, the team yet has an atypical focus: for several years, the Atelier 42 proposes a multitude of resources and activities, which connect the fields of both Education and Design.

It was for us easier to promote the FUTE material all over France, throughout our colleagues and network.

3. What criteria have you used to evaluate its success? – See below:

4. Please give some evidence of success in the form of good practice stories.

Example 1: Jean Monnet project: FUTE coaches to accompany a project in school

Where was the FUTE material applied?

The Canopé network propose to help schools to define and settle projects.

- The School: High school Jean-Monnet
- THE Pupils: 2nd (six form student). It is difficult class with a quite low school level and relational and pedagogical difficulties.
- THE Group: 35 pupils and around 10 teachers + 2 Canopé coaches.

How did the school (or other) use the material?

A first session was organized with the teachers to identify et clearly define the goal of the project. > The material was used to collaborate and define together the problem and stakes:

How to create motivation to come to high school?

A second session was organized with the teachers and pupils to understand what could create a lack of motivation. > the material was used to identify together the underlying problems and the concrete facts that we can work on, and a vote leded us to two central questions:

- **How can we reorganise learning to improve it? (around methods and the classroom space)**
- **How can we redesign the layout of the corridors to make them pleasant and welcoming? (about the uses and layout of the school's corridors)**

A third session was organized with a workshop to image concrete solutions and test prototypes in the school. > the material was used to conceive and animate a workshop with the pupils and teachers to imagine and create concrete solutions.

At the beginning of the project, the teachers and pupils where trained to the FUTE tool. Through all the steps the Canopé coaches used the FUTE tools to organize the workshop and accompanied pupils and teachers in their use.

What were the results?

We ended up with several ideas and a vote was organized to choose the most relevant ones, which are going to be settled in the school. This project also had a social impact by improving the working atmosphere and the quality of relationships between pupils and school.

Improve learning: New layouts to allow different types of activities, new colours, new choice of equipment to facilitate project-focused works and new teaching methods.

Improve the corridors: New layout and colours, the creation of signage to improve the perception of this space, the use of anamorphosis to change the space perception (which is too long and narrow). The set-up of new equipment to allow people to sit down (benches),

the creation of new rules to clarify what is allowed or not in order to define the way this space is used.

Social impact:

- The pupils are more at ease, confident and tolerant.
- The relationship between the pupils has improved.
- Their posture has changed: they have a better relationship with their teachers.
- The atmosphere is better to learn and teach.
- It was also a real benefit for oral presentations.
- The fact of working in a project-focused way, changes from the usual lessons and was really motivating for pupils, they discovered complex problem-solving methods, it was also the occasion to see that school knowledge are useful in real life!
- Bring new ways of working together: between school/teachers/pupils: The pupils are/will be associated to some decisions and reflection inside the school.

Have these results been sustained or mainstreamed in the school?

Concrete solutions have been taken.

The ground-floor will be a space of experimentation to test some new layouts. (inside and outside the classroom). The final projects should have been settled during the end of the year (April to July) but the sanitary crisis delayed the installation. This action will be done in collaboration between the pupils/teachers/school direction and the technical staff: we would say that the most important fact is that it created a new dynamic where they work together and collaborate.

**Example 2: *Les rencontres de l'innovation* (The innovation meetings):
FUTE coaches to experience with school staff**

Where was the FUTE material applied?

It is a national event which takes place each year, it questions innovation in schools, each *departement* can choose and organize this event with their own themes and methods. This year, Canopé 42 decided to conceive this event in a collaborative way: instead of imposing thematics, we worked with school's staff to identify relevant problems, choose three thematics specific to three schools and invited other participants to join the groups of reflexions.

How did the school (or other) use the material?

We used the FUTE methods to make the participants explore thematics through collaborative methods. Educational staffs (teachers, educators, directors) worked together to solve local and concrete project's problematics.

Three groups worked each on one thematic:

- The primary school direction: a new organisation
- Well-being at school

- Relationships with parents and school's partners

After meeting with the three schools proposing thematic, the FUTE coaches conceived a workshop using FUTE methods. During the workshop the participants discovered problem solving/collaborative methods and experienced them by applying them to their concrete problems.

What were the results?

The participants ended up with some concrete ideas:

- New types of organization to help the school directors: shared management strategies.
- Create a better relationship with parents by including them in the schools to share their personal skills.
- Include pupils and the educational community in the creation of an event to improve well-being in school.
- It also created an exchange and collaboration between different educational staff.

Have these results been sustained or mainstreamed in the school?

Concrete solutions have been taken.

The workshop ended with a group presentation and a vote for one of the three project which will be developed with Canopé. It was also an inspiring way to think this event.

6. Limitations; what were the barriers for the application of the FUTE materials in your country

It remains difficult for teachers to acquire the tools of FUTE independently, because it takes time to discover them and to experiment them in concrete projects. It is only by testing them that the appropriation really takes place, and that the interest of these methods appears in their full potential.

7. Recommendations - drawn out of experiences / evidence.

Following the different projects that we have carried out thanks to FUTE, and the training that we have been able to offer, it seems preferable to the French team that facilitators or mediators will be trained first on the FUTE's method, so that they can accompany the teachers in their first steps.

To go even further, we believe that the FUTE tool is really relevant when it is used by mediators, who put themselves at the service of teachers' projects, and help them to carry out their projects thanks to these tools. They thus relieve teachers of a time-consuming aspect in the creation of complex projects, while bringing an outside point of view and a fresh look at the process. The teacher will then keep some methodologies that suit him more particularly, but he will have understood an approach and a state of mind that is still not very common in the French education system today.



So, let's promote mediation as an effective way to set up participatory projects in the school, in order to develop 21st century skills, thanks to the FUTE methods that have been designed, this is their originality, for the teaching world.

Sustainability - country specific strategies to ensure the FUTE material continues beyond the project phase.

For your organization: The Canopé 42 workshop is recognized at local and national level as a specialist in design issues in the field of education, in particular on collaborative methods. We are now very regularly contacted to support teams in the field in projects using collaborative methods. We use FUTE in the team, with colleagues, and with school establishments.

We train the teachers of our department who request it using FUTE methods. This is a first approach that can be done alone, or in addition to a concrete project implemented with teachers in a school.

For schools in your country: A national communication is planned for the start of the 2020 academic year, with referents trained in the Canopé workshops throughout France.

On national level: Continuation of face-to-face training (4 training courses in France in September 2020).

Finalization of a hybrid online training course, which will be offered when the shifts are not possible.

IO 4 Wales

1. Why and how is the FUTE material applicable in your country? What issues does it address?

In 2015, an Independent review of the Welsh curriculum and assessment arrangements in Wales was undertaken. The review culminated in a report which proposed a new curriculum for Wales based on the views of head teachers, teachers, children, young people, parents and carers. The new curriculum for Wales focuses on equipping young people in Wales for their future lives and producing well-rounded individuals who can thrive in the face of tomorrow's unknown challenges. Along with the report came the acknowledgement that schools in Wales today are having to prepare young people for jobs that have not yet been created, and challenges that we do not yet know about.

The new curriculum looks to develop young people's critical thinking, creativity and problem-solving ability as well as traditional areas of numeracy and literacy. It recognises the need to preserve the foundations of traditional education while building on the needs of the present and future by adopting a more cross-curricular approach.

Other relevant Welsh Government strategies include: Wales' economic development strategy, which recognises the key role education has to play in a system that 'gives people the knowledge, skills and confidence they need by the time they reach the statutory school leaving-age, and provides high-quality education and training for employment'. Globally, these skills are often referred to as 21st century skills. Essentially, failure to harness these skills will influence:

"whether an entire generation of kids will fail to make the grade in the global economy because they can't think their way through abstract problems, work in teams, distinguish good information from bad, or speak a language other than [their own] ..."

How to Build a Student for the 21st Century, TIME Magazine, December 18, 2006

In this context, FUTE is relevant to Wales because its methods promote creativity and problem solving. Its method, toolkit and training manual address the issue of how to deliver lessons in critical thinking and problem-solving skills in an educational setting.

2. How did you promote the use of FUTE materials in the schools in your country?

The promotion of FUTE materials in Wales began with its introduction to three educational establishments.



The first was a Federation school comprising two primary schools. Federation schools are managed by one executive Headteacher but run by individual Heads of School with a shared governing body. This structure is considered beneficial for sharing best practice.

The first primary school has 145* pupils on role including one full-time nursery class. It is classed as a *Pioneer School* which means it works closely with Welsh Government, the Consortia and Schools across Wales to design, try out and reflect on the new curriculum for Wales and roll it out across Wales.

The second primary school has 128* pupils, including 21* pupils in the nursery class. Just over 44%* of pupils are eligible for free school meals. The school has identified around 40%* of pupils as having additional learning needs, including a very few with a statement of special educational needs. These percentages are considerably above the Welsh average.

The third school was an English-medium comprehensive school for pupils aged 11-18. The school had 1,271* pupils on roll at time of research of which 216* were in the sixth form. Around 12%* of pupils are eligible for free school meals. This is a measure which is used to denote levels of socio-economic disadvantage. This figure is below the Welsh national average. The percentage of pupils with special educational needs is around 18%*. This is also lower than the national figure of 25.1%*.

The management at this comprehensive school actively provides many valuable opportunities for teachers to improve their skills, including participation in research which benefits both their own practice and that of other colleagues.

*Figures correct at time of research

The schools were approached by Cardiff Metropolitan University because they were schools that were known to have an active interest in research and in developing best practice in the context of the new curriculum for Wales.

Other promotion methods include the publication of an article (1) on FUTE on the Cardiff School of Education page of the Cardiff Metropolitan University website. A promotional article (2) has also been published in the national press at www.wales247.co.uk There has also been an electronic publicity mailing to approximately 50 schools across Wales (3) informing teachers about the FUTE project and inviting them to provide feedback. Also included were teacher educators and Welsh education policy makers.

In addition, Cardiff partner staff established a FUTE twitter account [@FUTEteaching](https://twitter.com/FUTEteaching). This was created as a platform to quickly and easily circulate the latest news from the FUTE project partners.

3. What criteria have you used to evaluate its success?

Theme	Process Criteria	Output Criteria
School involvement	To attract expressions of interest via email from Headteachers and School Senior Leaders.	Three establishments enrolled and workshops held in each of three schools.
Wider teacher involvement	Email to approx. 50 education practitioners and stakeholders to promote feedback and to invite feedback.	Five teachers provided feedback. (Please see below).
Wider education community involvement	Same promotional email to wider education community.	Did not attract any feedback.

Results of the online questionnaire circulated to education practitioners

The FUTE-method is relevant to my daily work as a teacher.

- 1 Disagree 0
- 2 Somewhat disagree 0
- 3 Somewhat agree 2
- 4 Agree 3

The FUTE-method is feasible (practical) to use in my teaching.

- 1 Disagree 0
- 2 Somewhat disagree 0
- 3 Somewhat agree 2
- 4 Agree 3

The FUTE-method is motivating for my pupils.

- 1 Disagree
- 2 Somewhat disagree
- 3 Somewhat agree 3
- 4 Agree 2

The FUTE-method is motivating for my colleagues.

- 1 Disagree 0
- 2 Somewhat disagree 0
- 3 Somewhat agree 3
- 4 Agree 2

I feel confident in using the FUTE-method.

- 1 Disagree 0
- 2 Somewhat disagree 0
- 3 Somewhat agree 1
- 4 Agree 4

The FUTE-method encourages me to work differently.

- 1 Disagree 0
- 2 Somewhat disagree 1
- 3 Somewhat agree 1
- 4 Agree 3

I will use the FUTE-model in my future teaching.

- 1 Disagree
- 2 Somewhat disagree
- 3 Somewhat agree 4
- 4 Agree 1

I would recommend the FUTE-method to my colleagues.

- 1 Disagree 0
- 2 Somewhat disagree 1
- 3 Somewhat agree 1
- 4 Agree 3

4. Please give some evidence of success in the form of good practice stories. Include testimonials if available.

Where was the FUTE material applied?

The FUTE material was applied in three educational establishments - one secondary school and one Federation school consisting of two primary establishments.

How did the school (or other) use the material?

Teachers in the schools used the materials in a presentation and workshop setting.

What were the results?

The teachers from the primary schools were generally more receptive to the FUTE method cards, with teachers working with children from 4-11 more able to provide applied examples.

All examples relate to individual cards that are used as part of a wider lesson. This is due to the requirements that teachers in Wales work to a lesson plan based around a learning objectives and clearly defined success criteria. As a result, most applied examples were provided from the FUTE *PROCESS* category with cards like the 'To Do' List, 'Success Criteria Grid' and 'Storytelling' receiving particular attention.

E.g., the Success Criteria Grid was deemed a positive tool for self-evaluation purposes. Pupils designing sandwiches in groups could use the grid to record their peers' feedback and then self-evaluate.

However, there was also some negative feedback from teachers. While card 09 the '*To Do List*' promotes an activity that teachers agreed was useful, one teacher stated the card did not really help the teacher with such a simple activity and that the card contained too much information for young children to manage.

Teachers in the Secondary school also provided most examples in the *PROCESS* method category of the FUTE model with the Knowledge & Expertise Map, Expectations, Fact and Inspiration and Road Map cards receiving particular attention. Again, teachers in Secondary are required to work to a lesson plan based around a learning objectives and clearly defined success criteria so this is likely to be why they focussed largely on the *PROCESS* method cards, although *IDEATION* (Brainstorm) and *CREATION* (Prototyping) methods also featured.

Eg: a mathematics teacher explained that he used the brainstorming method with a group of Year 7 pupils to consider the financial aspects of planning a holiday. Brainstorming allowed pupils to consider the cost of flights, accommodation, transfers, car hire, car parking, spending money etc.

5. Limitations - barriers to the application of the FUTE materials in your country?

Ethics

At Cardiff Metropolitan University School of Education & Social Policy, the highest principles of ethics and integrity underpin all research activity. This means ensuring that research involving human participants carried out by staff and students conforms to the highest ethical standards as well as safeguarding the general principles laid down in the Cardiff Metropolitan University Ethics Framework.

Before field research on the FUTE project could begin, a process of obtaining ethical approval had to be sought. This involved risk assessing the research activity in order to protect to the researcher and other human participants. An application for ethical approval was made to Cardiff Metropolitan University's ethics committee which met to consider and assess the research proposal.

Whilst not a true limitation, the process of obtaining ethical approval for the FUTE project was a detailed and lengthy process, and one which inevitably delayed the start of field research. However, the process is crucial to ensure the highest ethical standards not only, so all concerned parties are adequately protected but also to ensure the validity of any data obtained.

Time

Teachers in Wales are very time poor. They are faced with many demands on a daily basis and are required to evidence many aspects of their daily work. Even though FUTE promises to reduce time spent planning lessons, it does require considerable time to become accomplished in the FUTE method, time that teachers in Wales feel they do not have to spare.

Policy

Teachers in Wales are required to provide very detailed lessons plans that are structured toward the achievement of a specific learning objective. Teachers are also required to evidence that this has been done. In this respect, it could be said that the FUTE method with its free-form approach to lesson planning is at odds with these rules. There is little doubt that some teachers were uncomfortable with the lack of structure provided by the FUTE method and feared that a lesson using FUTE might result in little evidence of achievement in terms of stated learning objectives and results.

Déja vu?

Many of the teachers in the schools visited were already familiar with many of the FUTE methods even though they had not previously encountered FUTE. Methods such as 'Brainstorm' 'To do List', 'Prototyping' 'Desktop Research', 'Role Play' and 'Show and Tell' are already frequently used in the Welsh classroom. As a result, some teachers felt that it was unnecessary having cards to explain these methods.

Target Audience

It was suggested that the target audience for the cards was unclear. While primary school teachers were more receptive to the cards, they felt the cards were 'too wordy' for young children and one secondary school teacher stated that the cards were 'visually unappealing' for secondary aged pupils.

6. Recommendations:

As outlined at the beginning of this report, the new curriculum for Wales means there is a drive within the Welsh education sector to promote collaborative working and creativity. There is an appetite to introduce design thinking into the education sector to address the issues that children in school now will face when they apply for jobs in the future. Welsh education policy makers are keen to ensure that children in Wales leave school with the skills they will require in order to face unknown challenges. However, the application of design methods in education methods is still in its infancy. There is a combination of enthusiasm, reluctance, optimism, and scepticism from teachers who welcome some aspects of it and fear others.



Teachers feel pressure to deliver good exam results. They know that this is an important key performance measure so they need to feel confident that any new method of teaching will support them in achieving these good results. They need to feel confident, if they are to embrace a new method in their classroom, that the time they invest to learn and apply the method will be time well spent.

A considerable amount of time is required to feel accomplished in the FUTE method. Training sessions to support teachers in the application of FUTE, while useful, is perhaps insufficient in order to convince teachers to adopt the method in their classroom. In a world with no constraints, it would be helpful to train a team of *FUTE experts* who could visit schools and help facilitate delivery of FUTE in the classroom. This would remove some of the workload from teachers while they were learning the process.

7. Sustainability:

For your organisation:

As the FUTE method is specifically designed for use in schools, it is unlikely that it will be used within Cardiff Metropolitan University other than, within the scope of teacher education programmes.

For schools in your country

The FUTE method, toolkit and training programme has been widely promoted among schools in Wales. A targeted email with instructions on how to use FUTE and with links to the freely downloadable tool and support manual, has been issued to around 50 schools. An online training presentation has also been developed for schools who approach us for additional guidance.

On a national level

Design thinking in education is in its infancy but is very much under the spotlight in terms of its contribution to the development of 21st century skills in schools. The FUTE tool facilitates the delivery of design thinking in educational settings and supports the core aims of the new curriculum for Wales. It is free and easily accessible. As word spreads among the teaching profession about the benefits the FUTE method can provide, it will continue to attract an increasing number of new users.



APPENDIX 2 – Survey Results Summary by Country

Belgium	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Total
The FUTE method is relevant to my daily work as a teacher	0	5	15	29	49
The FUTE method is feasible (practical) to use in my teaching	0	4	18	27	49
The FUTE method is motivating for my pupils	0	1	13	32	46
The FUTE method is motivating for my colleagues	0	7	18	21	46
I feel confident using the FUTE method	3	18	22	6	49
I will use the FUTE method in my teaching	2	6	19	21	48
I would recommend the FUTE method to my colleagues	0	3	20	26	49

Denmark	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Total
The FUTE method is relevant to my daily work as a teacher			1		1
The FUTE method is feasible (practical) to use in my teaching			1		1
The FUTE method is motivating for my pupils			1		1
The FUTE method is motivating for my colleagues			1		1
I feel confident using the FUTE method			1		1
I will use the FUTE method in my teaching			1		1
I would recommend the FUTE method to my colleagues			1		1

France	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Total
The FUTE method is relevant to my daily work as a teacher		2	2		4
The FUTE method is feasible (practical) to use in my teaching		1	3		4
The FUTE method is motivating for my pupils			4		4
The FUTE method is motivating for my colleagues		1	3		4
I feel confident using the FUTE method	1	3			4
I will use the FUTE method in my teaching		2	2		4
I would recommend the FUTE method to my colleagues			4		4

Wales	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Total
The FUTE method is relevant to my daily work as a teacher			2	3	5
The FUTE method is feasible (practical) to use in my teaching			2	3	5
The FUTE method is motivating for my pupils			3	2	5
The FUTE method is motivating for my colleagues		1	1	3	5
I feel confident using the FUTE method			1	4	5
I will use the FUTE method in my teaching		1	1	3	5
I would recommend the FUTE method to my colleagues			4	1	5

End.

