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Guidelines for competency-based assessment

The following document presents a report and recommendations of the competency-based assessment that was developed as part of the Change the Story project. It is based on the development, testing and evaluation of a rubric as an assessment tool and subsequent suggestions for future use. It includes examples illustrating how assessment of the Change the Story competencies were implemented. The document starts with an overview, outlining the context and describing the data that were collected, followed by the key findings. The key findings are organised by questions that were sent to all partners in the project.

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1. Overview of context and data from the five participating countries

Pupil ages/grades: primary schools (9 to 11-year-olds), secondary schools (lower level: 12-14-year-olds + upper level: 15-17-year-olds)

Project assessment in the country contexts: 12 (out of 15) schools completed the piloting phase, 10 of these schools used the assessment tool designed by the University of Graz for assessment or an adapted version thereof

Assessment cultures in the schools/regions/countries: teachers decide individually what they assess (e.g., participation in class, tests, homework) and which tools they use according to the national curricula

School subjects in which the project was delivered (at times interdisciplinary)
- science subjects (biology, elective subject "sustainability", geography, general science, mathematics)
- social science subjects (including history, religious education, Civic Education)
- home language (German, English, Italian)
- Technology education and computer science

2. Evaluation of Change the story assessment

2.1. Was pupil's learning of the Change the Story competencies assessed?

Pupil learning was assessed by all participating pilot schools in the five countries. Due to the different national curricula as well as the variety of subjects taught, schools applied different assessment tools and methods. All pilot school teachers were introduced to the IO5 self-assessment rubric developed by the University of Graz. Each partner provided a translation or adaptation (e.g., simplified language for younger Hungarian pupils) of the tool for the individual schools and invited the participating teachers to provide feedback. Based on teacher feedback, the rubric was further refined and trialled by more than 20 teachers in the classroom at the end of the piloting process.

In order to gain more detailed insight into pupils' learning, all partners closely collaborated with the participating teachers and to share in-class observations regarding pupil learning. Where possible (Turkey, Italy, UK), partners also conducted pupil evaluation sessions, which included questions about pupils' learning as well as the assessment rubric.

2.2. How was pupil learning assessed and for what purpose? (internal, external, teacher benefit, pupil benefit, etc.)

In all pilot schools, the purpose of the assessment was decided by individual teachers. Since the project was implemented in different countries, school levels and subjects, multiple ways of assessing pupil learning were discussed and used. While some teachers focused on in-class observations of pupils, others preferred questionnaires, written self-assessment statements or competency rubrics. Not all pilot schools were familiar with rubrics as assessment tools prior to this project.

The IO5 assessment tool developed by the University of Graz provided an example of a competency-based assessment rubric, which allowed pupils to self-assess their learning progress according to the Change the Story learning goals. This formative assessment tool and its adaptations were intended to allow learners to self-reflect (internal/pupil benefit) but also to provide teachers as well as the Change the Story team with feedback on the learning progress from the pupil perspective (external benefit). Since teachers had access to these documents, they had the opportunity to discuss the completed rubrics with their pupils and use them to diagnose their pupils' needs.

Some schools also applied other rubrics, such as the rubric developed by Özcan et al. (2016)[1]. Other assessment approaches included interviews with pupils, written pupil comments on Padlet or paper, as well as short success criteria statements for younger pupils to tick off after each lesson. In some schools, these competency statements had been adapted from the IO5 document with an additional column for teachers to validate pupil learning. One school also created a knowledge organiser, including a list of key vocabulary, in order to make the intended learning visible to pupils. Another school created a list of 'key skills' for each main part of the project and added competency statements for the three banded categories 'bronze', 'silver' and 'gold' to measure pupils' progress.

2.3. Which assessment tools were used?

During the piloting process, the following assessment methods and tools were used:

- Teacher observation of pupil participation in class (e.g., assessing process of group work)
- Assessment of final knowledge products (e.g., presentations of pupils' stories)
- Pupil self-assessment rubric (provided by the University of Graz)
- Özcan et al.'s (2016) assessment rubric
- Interviews with pupils about their learning experience
- Interviews with teachers about their observations and thoughts on the influence of this project on the pupils' experiences in this project
- Collection of short written statements on pupils' learning experience on Padlet.com
- Questionnaires
- Individual or group analysis of the learning outputs
- In-class activities, e.g., statement cards (list of learning goals) which pupils placed into one out of 3 categories (learned a lot/learned something/did not learn much)

2.4. If the Change the Story rubric was used:

2.4.1. How was it used and was it adapted in any way?

The Change the Story rubric was translated, introduced to teachers and trialled during piloting in all partner countries. While some schools used the same version as provided by the University of Graz, others made adaptations and/or applied other assessment methods (see above) to better fit their educational context. These adaptations included: simplifications of language for younger pupils, breaking down the learning goals into 'knowledge organisers', or creating new banded learning

[1] Özcan, S., Kukul, V., & Karataş, S. E. R. Ç. İ. N. (2016, May). Dijital hikayeler için dereceli değerlendirme ölçeği. In *10th International Computer and Instructional Technologies Symposium. Rize*.

outcomes statements which more loosely drew on competencies statements in the rubric (e.g. 'I understand that we need to act to change the future').

When using the self-assessment rubric with pupils, teachers either provided printed versions or online versions where pupils could reflect individually or they projected the rubric on the wall. In this case, they guided pupils through questions and noted their answers to each statement. In some schools, pupils also assessed their learning in the groups they were working with on their stories (group reflection).

2.4.2. Was the rubric a reliable assessment tool?

Self-assessment tools like the rubric are primarily reliable to the person completing them. Once completed, the majority of teachers did not specifically check the pupils' answers against their own observations, since this is not a usual practice in most partner countries. In one of the UK schools, however, the teacher sometimes offered their own assessment against statements which pupils then also rated themselves against. The teacher and pupil assessments appear to tally, but this could be for a number of reasons and may not necessarily denote accuracy.

In another UK pilot school, the teacher used pupils' self-evaluations as a basis for learning feedback. This is useful, especially in term of seeing the assessments as part of a formative learning process, but only suggests accuracy in that the teacher did not use feedback to disagree with pupils about how they had assessed themselves and indeed often validated pupil self-assessments with a reward stamp.

Hence, the results may not be reliable; however, the rubric activity fostered self-reflection practice among pupils. Formative assessment supported also teacher professional learning since teachers reported interesting insights from the pupil feedback which may influence in the future in what way Change the Story activities can and will be implemented.

2.4.3. Are the rubric results valid?

Validity refers to the degree to which evidence supports that interpretations are correct and appropriate (American Educational Research Association, American Psychological Association & National Council on Measurement in Education, 1999). The process of accumulating evidence that supports the appropriateness of the inferences that are made of student responses for specified assessment uses is then referred to as validation and dependent on the purpose of the assessment. This means in the Change the Story project that teachers first introduced the rubrics and their purpose to the pupils and detailed how to use this self-assessment tool. This process allowed that the results generated achieve validity.

The rubrics were adapted in the different contexts and we present here the different assessment results. For the results from Austria, Turkey, UK, Italy and Hungary see tables 1-5, respectively.

In the UK, the project-worker-led 'what we have learnt' task (table 3 below) suggests that pupils in all three UK pilot schools consistently 'learned a lot' about why climate change and environmental action matter and about personal and collective action in response to the climate crisis.

In Austria, the item with the highest overall average value (2,26) was "understanding changemakers" (2). The majority of the pupils felt that they "have learned about how people in the past have succeeded in making a change." They also think that they "have also understood the importance of every single person when it comes to making a change." Moreover, many pupils have rated this item with the highest score, i.e. 3 points, which suggests that they "have learned to think in a critical way to show how change in people's practices is possible." Further, they are aware that they also have the ability to become a changemaker themselves. The item "sharing examples for action" (6) has the second highest average value (2,24) and is the aspect in which the pupils of all three school levels rate themselves best and feel an enormous increase in learning. The pupils in the lower and upper grades thus feel able to tell other people what they should and can do about the climate crisis. Likewise, in the area of "creating a digital story" (4), the overall pupil evaluation is also fairly high (average value = 2,14). Thus, in the area of using and applying various digital tools, the pupils have improved their knowledge and skills and are able to create a climate story that takes into account the impact of the climate crisis on various organisms of the planet.

In Turkey, all pupils in three schools rated themselves with high scores. There were very few pupils who rated themselves below 2. Pupils thought that (1) "This digital story shows and tells others an example what can be done against the climate crisis" In the digital stories from Turkey, pupils created their stories from various aspects of climate crisis (e.g., biodiversity, agriculture, weather, drought, deforestration) and their stories involved solutions and hope for climate crisis. In the interviews with teachers, they explained that they heard and read about climate change however often lacked knowledge on what to do about it. Through the Change the Story project, pupils' awareness for solutions increased. All three teachers were surprised about the creativity of the stories. Teachers also thought that the digital stories of pupils can be used as a learning material and they were thinking to use them in their future science courses. Furthermore, they shared the stories with their colleagues as educational materials. Interviews with pupils also supported the observations of their teachers. Almost all pupils felt that their knowledge and awareness of climate change had increased in this project, and that they were happy about their stories and their motivation to take action against the climate crisis. In Turkey, the item with the highest mean value (2,91) was the 2nd item*: "This is a really good digital story about the climate crisis, where different digital tools were used to make the story more powerful for other pupils"*.

Turkish pupils also rated high the 3rd item highly *"A topic area of climate crisis was chosen to create a compelling digital story that is compliant with historical and scientific truth. The story is simple and tangible and not too didactic or dry. It involved researching the past, the present and the future of this topic."* The item on *pupils' responsibility for taking action* scored also high (2,79). It can be concluded that pupils were eager to take responsibility and to inspire other pupils for taking action.

In contrast to these high scores, the **Austrian** results show that the pupils of all three school levels have rated their learning progress below average in the area *"engaging with the community" (8)* (average value=1,59). This item was also rated lower than others in **Turkey** (average value=2,67). Although pupils have exchanged information with each other, they rarely talked to people outside the school, such as parents, grandparents or friends, or to people inside the school, such as teachers, about their stories in development. The reason for this could be that the climate debate is often a very hotly debated topic that also involves a lot of personal opinion. With such topics, especially in the school context, it is important that there is a certain basis of trust so that learners seek out conversations with teachers without fear of being judged in the process. Of course, this also applies to conversations with people outside the school. In addition, the COVID-19 pandemic in Austria was in full swing at the time of the project; consequently, external discussions were often not possible.

Item	Average Value
1 Investigating the climate crisis	1,86
2 Understanding changemakers	2,26
3 Working with others	1,75
4 Creating a digital story	2,14
5 Choosing a relevant topic for the story	1,84
6 Sharing examples of action	2,24
7 Sharing personal ideas for making changes	1,81
8 How to engage with the community	1,59
9 Taking responsibility	1,77

Table 1: Austrian average self-assessment score for each item (1-9)

Item	Average value
1. What we can do against the climate crisis	2,88
2. Creating a digital story	2,91
3. The topic chosen for the story	2,82
4. Sharing of ideas for making changes	2,55
5. How to engage with the community	2,67
6. Taking responsibility	2,79

Table 2: Turkish results attained from Change the Story rubric

The UK used a different approach, with the rubric/evaluation criteria generated by pupils prior to the evaluation visit, pupils shared statements about what they had learned from the project. During the visit, pupils allocated the statements to the different categories (see Table 3 below – data from Pilot School 3).

	Green I have learned a lot about this	Amber I have learned something about this	Red I have not learned very much about this
The work that charities do for the environment	3	1	
The possible solutions to climate change	3		2
How websites can tell us things	2	1	3
To listen to and understand what is being said	2		1
How to make a really good PowerPoint presentation	5	1	1
How to make great animations	3	1	1
The causes of climate change	7		2
Why climate change matters	7	1	
The effects of climate change	4	2	1
How to make a good poster	2	1	
Things that we can do about climate change	7	1	
Things that I can do about climate change	4	1	

Table 3: self-assessment results from UK pupils

In Italy, Change the Story was reported to have helped pupils to become more independent with regards to gaining knowledge about the climate and climate change, working with others to complete a collective task as well as recognizing signs of climate change in their surroundings (see table 4 below). Additionally, most pupils reported to have learned about what they can do to tackle the climate crisis and that they are able to use digital tools to find trustworthy information on climate change. Almost all pupils considered that they are "on the way" (40%) or "independent" (55%) when it comes to sharing ideas to inspire others with their stories about climate change and more than 80% stated that they have made progress in digital as well as non-digital content creation.

Results from the assessment.
The following are the results of the data that teachers provided. The data have been elaborated by the Italian team.

In the following chart it is possible to examine results from the pupils self-assessment.

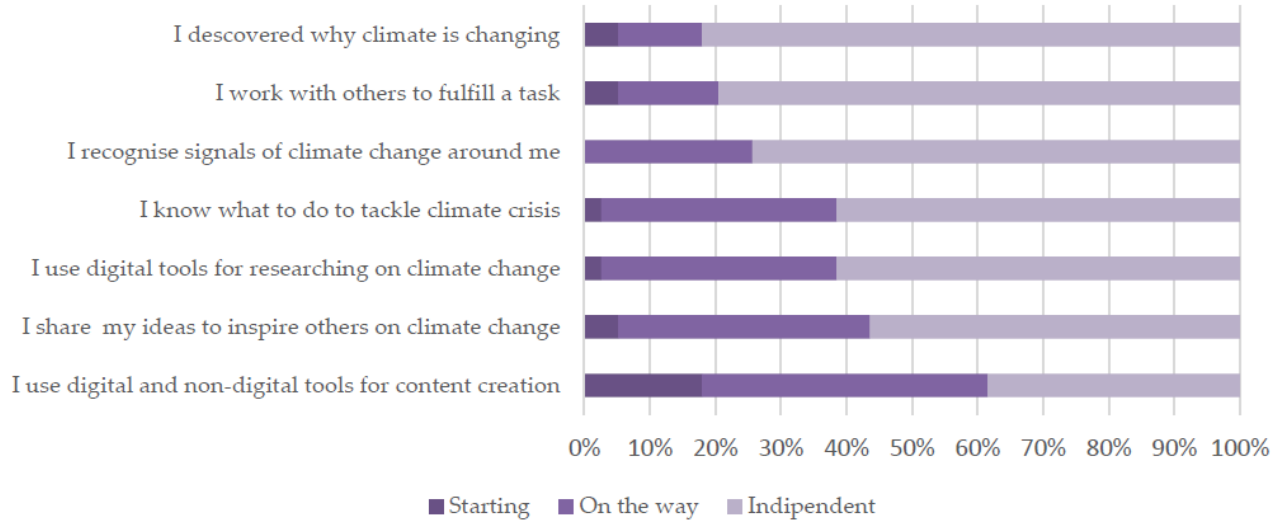


Table 4: self-assessment results from Italian pupils

In Hungary, most pupils stated that they made good or very good progress at learning about what can be done about the climate crisis as well as at creating a digital story (see table 5 below). Most pupils stated that they have made good progress at choosing a suitable topic related to the climate crisis as well as at sharing ideas for making changes. Many pupils felt that they are beginners when it comes to taking responsibility; however, most of the pupils believe that they have progressed at actively engaging with their community.

Self-assessment tool – Árpád Fejedelem Általános Iskola (all together 75 students took part in the CtS project)

	Kezdő Beginner	Jó előrehaladás Good progress	Igazán jó munka! Done really well
Mit tehetünk a klímaválság ellen? What we can do against the climate crisis?	11	35	29
A digitális történet megalkotása. Creating a digital story	10	34	31
A téma, amelyet a történetemhez választottam. The topic chosen for the story	10	44	21
Változást elérő ötleteim megosztása. Sharing of ideas for making changes	16	38	21
Hogyan foglalkoztam a közösséggel? How to engage with the community	19	33	23
Vállalom a felelősséget! I take responsibility	35	21	19

Table 5: student self-assessment results from one of the Hungarian pilot schools

In another Hungarian pilot school, a total of 100 pupils worked in small groups. Their teacher chose to assess the work of groups instead of each student one by one, with 23 groups in total.

Most groups believed that they made considerable progress with regards to finding out what they can do against the climate crisis. In addition, most pupil groups considered that they made good progress at creating a digital story as well as at taking responsibility in terms of dealing with the climate crisis.

2.4.4. Would the project teachers use the rubric again?

All project partners asked their pilot teachers to provide feedback on the assessment rubric and the majority of teachers who worked with the rubric during the piloting process stated that they would use the CtS rubric again in the future since it was useful as well as easy to use.

Teachers particularly liked the three levels (from beginner to expert) in the rubric and thought that this made it very useful for the lower as well as for the upper level of secondary school. One of the Hungarian teachers found the statements too difficult for her pupils and decided to simplify the language and suggested that this should be done in the future or that assistance should be provided by a teacher by guiding pupils verbally as they are answering the questions.

In the UK, most teachers found the rubric useful in framing the learning intent for the project and in providing outcomes statements for pupils. Some UK schools further adapted the rubric for use by pupils at whole-project level, in making learning intentions visible at each main stage of the project (past, present and future) and for using it as a self-assessment at the micro level (assessment of individual activity or lesson).

In Italy, teachers were also asked to use the CtS rubrics. The teachers responded that some of the competences that the CtS project focuses on are already assessed with other tools. According to the Italian teachers, the differences between these assessment tools were the particular indicators, but they found that these indicators are quite universal and also suitable for other projects. This was

seen as an important element for a possible "extra project" and they felt if rubrics are too specific and detailed there is a danger that they are not applied at all.

2.4.5. How can the assessment tool be improved?

According to one of the teachers of the lower level, pupils thought that the rubric involved too much text to read. An Austrian teacher also noted that while the younger pupils found it easy to understand, but the pupils also thought that there were too many questions.

For primary schools, the rubric should be simplified in order to assure that all pupils are able to understand the statements. The piloting of the assessment tools by Italian teachers involved the use of drawings (instead of writing) which was found quite effective. Some of the teachers also noted that they can imagine adapting the rubric for future science projects.

To conclude, the tool appeared to work best when adapted by teachers to meet the needs of their pupils and to accommodate the existing practices in their schools.

2.5. Thinking about the whole learning, what were we able to assess?

Cooperative competences
With regard to assessment, the Austrian teachers focused on observing how pupils managed to collaborate within their groups. They agreed amongst each other that *Change the Story* helped pupils develop their skills of working within a team, which was particularly difficult during COVID-19 lock downs and the frequent absence of pupils.

Many Turkish pupils on the other hand preferred working alone because the schools were closed and continued online during the pandemic. Only few pupils worked in groups. These groups were relatives or neighbours whose families visited each other during lock down periods. Due to a limited number of pupils working in groups, AICU could not assess cooperative competencies.

In Hungary, pupils worked mainly in small groups (2-4 pupils). Some pupils made posters or Power Point slides by themselves and at the same time they worked also in one of the small groups. In their feedback, they stated that they had enjoyed the project mainly because they could work in groups with their friends.

In Italy, teachers assessed how well pupils communicated and worked with others. They observed progress during pre- and post-assessment in the following 6 areas: use of information, critical thinking, working with others, creativity and being innovative, communication, taking responsibility. According to the teachers' evaluation, all 6 areas improved after piloting.

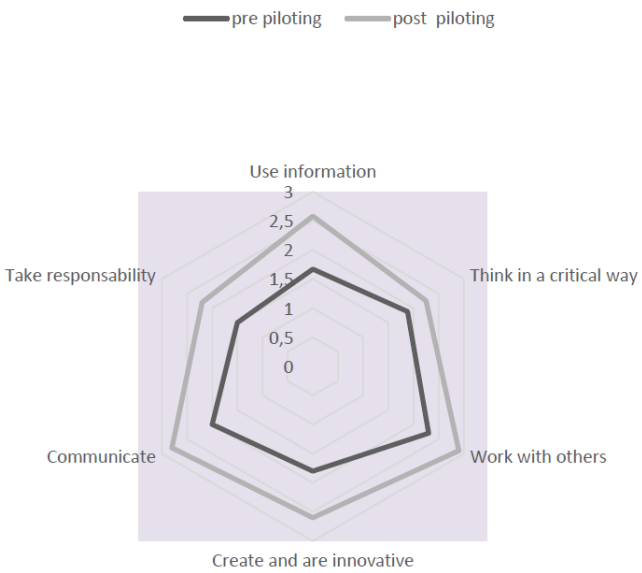


Table 6: Italian teachers' assessment of student competences

Problem solving

The Austrian teachers of pilot school 1, BG/BRG Kirchengasse mentioned that all pupils within the same group received the same grade for working on their CtS product, and that this helped pupils learn how to handle difficult situations as a group, for example how to handle equal group contributions. One teacher mentioned that managing group dynamics meant that the pupils had to find solutions themselves, such as if need be, split into smaller groups.

Similarly, teachers from the Italian pilot schools observed some pupil progress with regard to thinking in a critical way.

Teachers from Hungary stated that it was difficult to observe the process of the actual story making because of the lock down and the large number of pupils taking part in the project. This is why the pupils had to solve problems themselves while creating their stories. Apart from their teachers, pupils were also helped by their parents, siblings or neighbours.

Project work/independent work

According to the Austrian teachers of pilot school 1, BG/BRG Kirchengasse, the pupils also improved their skills in working independently towards their final product with the teacher as a coach. By working this way, the pupils also had the chance to get to know and try out a new, different ways of learning.

In Italy, pupils developed their creative and innovative competences and learned how to use information independently.

In Hungary, pupils were asked to write about how their skills were developed during the project. This included: taking notes, presenting ideas, teamwork, express themselves, translating between Hungarian and English, finding useful information on the internet, writing texts or improved communication skills („*I talk to others more easily on this topic*.")
Regarding their digital competences, they made progress in writing screenplays, making videos, handling cameras, editing, creating Power Point slides or making animations.

Digital competences

Most Austrian pupils were asked to handle the computer programs themselves while working on the stories. They received an digital options catalogue by the University of Graz team and teachers focused individually on different tools and applications from those suggestions and their own tools based on availability. The digital stories that were produced were sent to the teachers, who then provided some feedback.

In Turkey, the AICU team provided a handbook to teachers and pupils, which showed digital tools used for digital stories. They also showed teachers how to use some digital tools (e.g., Canva, pixton and video editing programs). While pupils were working on digital tools, a technology expert from AICU team held online meetings with pupils to answer their questions. In these meeting this expert provided feedback related to digital content which pupils created during the project. In the interviews, pupils told that these meetings helped them very much in improving their digital stories.

The Hungarian stories were very diverse (57 stories in total). Some pupils used video making tools, some of them made a Power Point presentation, poster or wrote a story. Some pupils used Adobe Animate programs to create animation. Their videos/stories are with or without subtitles, with or without sound (songs or pupils speaking). The Hungarian team offered the booklet made by the Austrian team to help the teachers choose the software which best fits them.

Climate Change Learning

In Turkey, the rubrics, interviews with pupils and teachers made it possible to assess pupils' learning about climate change and digital storytelling. Due to Covid-19 restrictions pupils attended courses and meetings online. And they have created their stories by one self or two persons. Teachers told that majority of pupils, who produced digital story attended science courses regularly. These pupils also attended the meetings we arranged. Teachers observed that economically disadvantaged pupils who did not have computer or tablet could not participate many online courses and fell behind their peers.

Pro-environmental behaviours

For the Austrian teachers, it was difficult to assess whether pupils will actually take action in the future. They agreed that this question was too hard for pupils to answer. However, they believed that *Change the Story* could *probably* contribute to pupils participating in events such as Fridays for Future. Further, it could also make them become more involved in other environmental projects.

Similarly, Turkish teachers stated that was too difficult to make a judgement of pupil's future pro-environmental behaviour and that this was also due to the pandemic. According to the teachers, pupils improved their knowledge and awareness on how to decrease their carbon footprint. In the interviews, pupils stated that they started to be careful about their behaviour and felt they learned about how to help the climate. Some of them mentioned that they had addressed climate change issues with their parents (e.g., on topics such as electricity and plastic use).

In Italy, the assessment by teachers also showed that pupils appear to take more responsibility in their pro-environmental behaviours.

In Hungary, pupils were asked what they will do differently in the future. A few pupils affirmed wanting to lead environmentally friendly lives from now. Many pupils wrote that they had changed their behaviour as a direct result of the CtS project. For example: use of bicycles or public transportation and less car rides, conscious shopping, reduction of waste, energy and water use, reduction of food waste, recycling of litter or less use of plastic.

Assessment in UK primary schools
UK teachers assessed the following competences, adapted from those outlined in the rubric, but represented in age-appropriate language:

- Investigating change
- Understanding changemakers
- Making change happen
- Working with others
- Inspiring others using digital stories

These were sometimes broken into smaller knowledge/skills outcomes by teachers. Some teachers also added subject-specific objectives (e.g. for children's written English). The project-worker-led 'what we have learnt' task focused on competencies/outcomes that had been identified by the children themselves towards the end of the project.

2.6. How are climate change competences normally assessed?

In **Austria** climate change competences are normally assessed within different subjects, such as Geography or Physics. According to the national curriculum for secondary schools (AHS), teaching about climate change includes the following aspects in the lower level (year 5-8)[2]:

- Teaching about global and local climate phenomena in **Physics**
- Teaching about Nature and Technology in the subject **Geography**

In the upper level of AHS secondary schools (year 9-12), teaching about climate change is even more omnipresent, as the national curriculum embeds it in various subjects, such as Biology, Geography, Physics or Ethics. Climate change competencies focus on the following aspects:

- Teaching about **sustainability** in the subject **Biology**
- Analyzing **geo-ecosystems** of the earth in **Geography**
- Learning about humans and society in **Physics**
- Teaching about environmental issues in **Ethics**

In **Turkey**, climate change competencies are assessed within science course in middle school (5-8)[3]: "Pupils learn about how climates are formed and weather events occurred. They learn about climate science and the reasons and impacts of global climate change."

Climate change competencies are not normally assessed in primary schools in the **UK**. CtS, however, offered teachers and pupils an appropriate approach to assess climate change competencies relevant to their teaching and learning. In this way, CtS offered teachers and pupils new and additional opportunities to assess learning.

[2] Source: RIS - Lehrpläne – allgemeinbildende höhere Schulen - Bundesrecht konsolidiert, Fassung vom 15.12.2021 (bka.gv.at)

[3] http://mufredat.meb.gov.tr/Dosyalar/201812312311937-FEN%20B%C4%B0L%C4%B0MLER%C4%B0%20%C3%96%C4%9ERET%C4%B0M%20PROGRAMI2018.pdf

In **Italy**, climate change competences and digital competences are normally assessed within the citizenship curriculum which is compulsory for the Italian schools and covers the 3 nucleus of Citizenship (Constitution, national and international rights, legality and solidarity), sustainable development and the 17 SDGs, digital citizenship (the competences of using virtual communication tools in a consciously and responsibly way).

In **Hungary**, the new National Curricula (NAT-2020) focuses on climate change. Sustainability is an important issue among the main competency areas. The question of whether to include an additional subject dedicated to climate change was discussed, but finally it was decided to integrate the topic into the following subjects:

- Ethics (level 5-6): personal responsibility, action about handing the natural and social problems, use of natural resources, environmental pollution
- Ethics (level 7-8): interest of communities, interaction human and his environment, the future of humankind
- Science (level 5-6): the role of soil, water and air in the life of humans, air pollution, consequences of pollution and habitat destruction, water pollution, renewable and non-renewable energy resources, the effect of energy production on the environment
- Chemistry (level 7-8): global climate change, smog, damage of ozone layer, main sources of pollution, reduction of environmental pollution, how to mitigate the pollution
- Physics (level 7-8): global problems, polluting technologies and their effects on the environment, climate change, greenhouse effect, ecological footprint, environmental awareness
- Biology (level 7-8): nature and protection of the environment, sustainability, the effect of human activities on natural environment, climate change and its effects,
- Geography (level 7-8): development of environmental awareness, sustainable development of living environment, natural and environmental danger in Hungary, global problems (deforestation. mainly in tropical regions, desertification, floods, global warming)
- Science and design (level 5-6): environmentally friendly materials,
- Science and design (level 7): ecological footprint, reduction of the use of energy and water, conscious consumer behavior, personal acts, sustainability, effect of pollution on quality of life

2.7. How are digital competences normally assessed?

In **Austria**, digital competences are assessed as part of the Computer Science grade, which is a mandatory subject in Austrian secondary schools. Assessment usually relies on different areas of pupil performance, such as participation, homework assignments, oral exercises, or written tests. Teaching digital competences is also part of the mandatory subject ("Verbindliche Übung") Digital Basic Education ("Digitale Grundbildung") at lower level secondary schools. Pupils do not receive a grade in this subject. According to the national curriculum, this subject comprises digital competence, media competence, and political competence.

In addition, media literacy is another key competence. The curriculum states that media literacy "encompasses the aspects of production, representation, media language and media use. Teaching media literacy includes the ability to use media, to understand and critically evaluate the various aspects of media and media content, and to communicate in diverse contexts." Central aspects of media literacy are critical and creative thinking. The curriculum also links digital competencies to political competencies, as they "promote democracy and the active participation of citizens. (Source: RIS - Lehrpläne – allgemeinbildende höhere Schulen - Bundesrecht konsolidiert, Fassung vom 15.12.2021 (bka.gv.at))

In the **UK**, digital competencies are assessed in the subject Computing for middle school pupils. The main subject association for Computing, CAS, offers a broad range of possible approaches to formative and summative assessment, including a proposed assessment framework based on competency statements. (Computing in the National Curriculum – a guide for primary teachers, 2013, CAS, pages 22-25).

In **Turkey**, digital competencies are assessed in an information technologies and software course in middle school (1-6)[4]. Assessment of this course involves following items:
- Understanding of technological concepts, systems and processes
- Problem solving and computational thinking skills
- Evaluate the reasoning process
- Collaborative working skills

According to the Italian National Curriculum, climate change competences and digital competences are also assessed within different curricular subjects as they are transdisciplinary and soft/life skills. Since the civic competences - which include digital citizenship, environmental citizenship and responsible and participatory citizenship in the civil and social life - are in the curriculum and mandatory from primary to secondary schools, digital competences are assessed with formative and summative means.

In Hungary, in the lower level of primary school teachers can use digital tools such as tablets during their lessons. More advanced digital competences are a focus in computer science lessons, which start at level 5 and finish at level 11 (secondary school).
This includes to learn how to:

- using digital tools (PC, laptop, tablet),
- using software like wordproccessor, Power Point or software for drawing (in secondary school it supplemented with spreadsheet and database management)
- acquire knowledge with digital technologies (presentation, project work)
- solve problems
- communicate online

They also learn about programming using robots or other platforms.
In secondary school pupils can use their digital tools in almost all subjects.

On each level, pupils have to solve tasks which are assessed in grades (1-5). Sometimes they work in small teams on projects. In other subjects, they can use their digital skills and knowledge when creating presentations.

2.8. Summary and recommendations

All in all we can summarise and recommend that assessment forms an integral part of teaching and learning and is most useful to teachers and pupils if it can proactively support the learning journeys of pupils and assist teachers in refining their pedagogy. Providing self reflection tools to pupils as a form of assessment gives them formative resources that shed light on strengths rather than focusing on deficits, this is likely to strengthen pupil's confidence in developing their competencies.
This is particiluraly important if we want pupils to learn something for their future lives.

[4] http://mufredat.meb.gov.tr/ProgramDetay.aspx?PID=374

- We recommend the Change the Story rubric for continued use, but as we learned it would be best to use the **rubric with** some **flexibility** so that teachers can adapt the rubric to suit their needs and the needs of their pupils.

- It is important that the different levels in a rubric show **"can-do" level statements** and indicate pathways on how to get better if need be. Can-do statements help to make learning transparent and tangible for pupils and their teachers. They reinforce learning goals.

- **Younger pupils** may benefit from having fewer questions in a rubric with **simple language**.

- To **stengthen the reliability** of the rubric (where this is needed) it could be paired with a **teacher evaluation**.

- All assessment forms including the **rubric need a follow up dialogue** where teacher and pupils discuss what can be taken away from the activity for future learning.

An observation we made, and that did not appear as clearly in the feedback of the asessment tool, is that it will support teaching if it is included in the planning of teaching activities.

The Appendix shows the original rubric as well as adaptations and additional evaluation tools that were used by the different teachers.

3. Appendix: Examples of assessment tools used during piloting

3.1 The original Change the Story assessment rubric including the explanatory note for pupils (Austria)

IO5 – the Change the Story Assessment Tool

Dear pupil,

We are happy that you participated in our Change the Story project and created a digital story about the climate crisis. Now we want to find out what you learned from this project. Please read through the grid and think about which statement best applies to you for each category. Then color or check off the appropriate circle. Please indicate your age and school level at the end.

Thank you for your help!

The Change the Story project team

	Starting	**Good progress**	**Done really well**
1. Investigating the climate crisis	I can find information on topics such as the climate crisis on the internet. ○	I can find information about the climate crisis using the internet and textbooks. I make sure to compare different sources. ○	I can find and compare information about the climate crisis in books, newspapers and on various reliable websites. I can make use of new knowledge by sharing it in my digital story. ○
2. Understanding changemakers	I have learned about influential people who have succeeded in making a change. ○	I have learned about how people in the past have succeeded in making a change. I have also understood the importance of every single person when it comes to making a change. ○	By finding out how other people have made a change in the past, I have learned think in a critical way to show how change in people's practices is possible. I am aware that I am also able to become a changemaker. ○

3. Working with others	I can work with my classmates in order to complete tasks such as creating a digital story.	I can work with others, such as my classmates, friends, teachers or family members to develop a digital story about the climate crisis that takes into account different perspectives.	I can work with other people from different age groups and cultural contexts to share my ideas, get valuable feedback and learn about their perspective on the climate crisis.
4. Creating a digital story	I can use digital tools to create a story that provides information about climate change.	I can use different digital tools to create a story about how the climate crisis affects the planet, living organisms and people, including myself.	I can use various digital tools to create a powerful story about how the climate crisis affects the planet, living organisms and people, including myself. I have fact-checked my sources and included personal accounts of people in my local community.
5. The topic chosen for the story	~~There is~~ I have chosen a topic area relevant to the climate crisis, but the story does not show much background research into the history or the science of this topic.	A topic area has been chosen that is relevant to the climate crisis as a basis for a digital story. It is based on historical and scientific evidence. It involved researching the past, the present and the future of this topic.	A topic area of climate crisis was chosen to create a compelling digital story that is compliant with historical and scientific truth. The story is simple and tangible and not too didactic or dry. It involved researching the past, the present and the future of this topic.
6. Sharing examples of action	This digital story does not yet show clearly what could be done against the climate crisis.	In this digital story people are told what to do against the climate crisis but there are no examples.	This digital story shows and tells others an example what can be done against the climate crisis.
7. Sharing personal ideas for making changes	A little bit of research has been done on the topic, a digital story	Having done a bit of research on the topic, a digital story has been	Having done a bit of research on the topic, a digital story has been

	has been created and uploaded to share with others.	created and uploaded. The story considers that communicating with others requires a balance of perspectives before sharing own stands on the matter.	created and uploaded. The story considers that communicating with others requires a balance of perspectives before sharing own stands on the matter. The story wants to excite other pupils' fantasy and interest.
8. How to engage with the community	The primary audience are other pupils from the own class. The story has been shared with the class to motivate the audience and show them what has been done.	The primary audience are pupils from my country and other countries. The story aims to motivate this audience with emotions and interests and talked and listened to their feedback.	This story has been produced after talking and listening to parents, grand-parents, friends and teachers. The primary audience are pupils from my country and other countries. The story is considering the age group it aims at. The audience is motivated by sharing emotions and interests to encourage their participation in the global movement against climate crisis.
9. I take responsibility	I have done a fair bit of research and hope this will inspire other pupils.	I have done a fair bit of research to understand my area of interest. I exchanged inspiring ideas with other pupils. I stand up and fight against our climate crisis to change the future.	I have done a fair bit of research to understand my area of interest. I am an active participant, I took responsibility and I exchanged inspiring ideas with other pupils from other countries. With my story I stand up and fight against our climate crisis to change the future.

How old are you? _____

What school year are you in? _____

3.2 Using the online platform Padlet to collect pupils' comments (Turkey)

3.3 Additional assessment tools in Italian primary schools

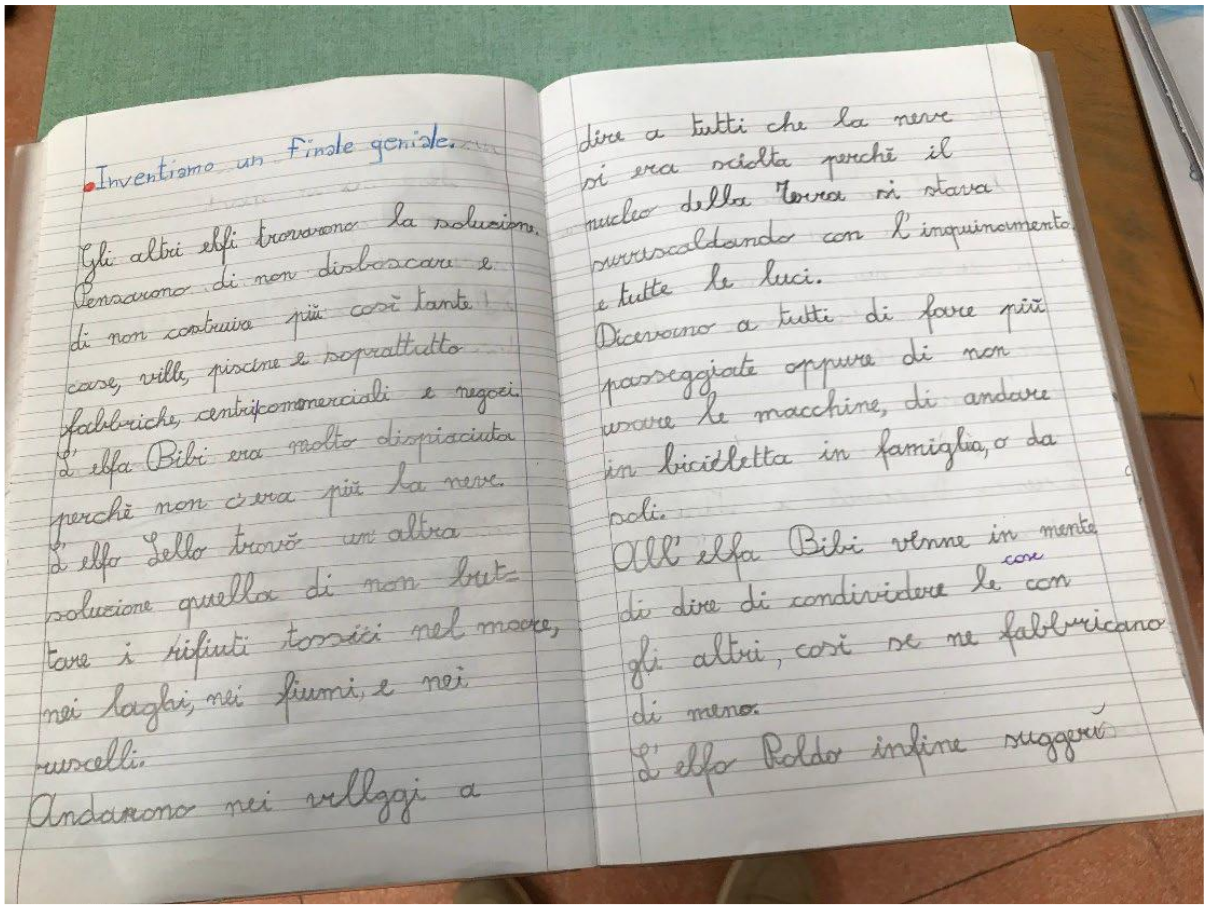
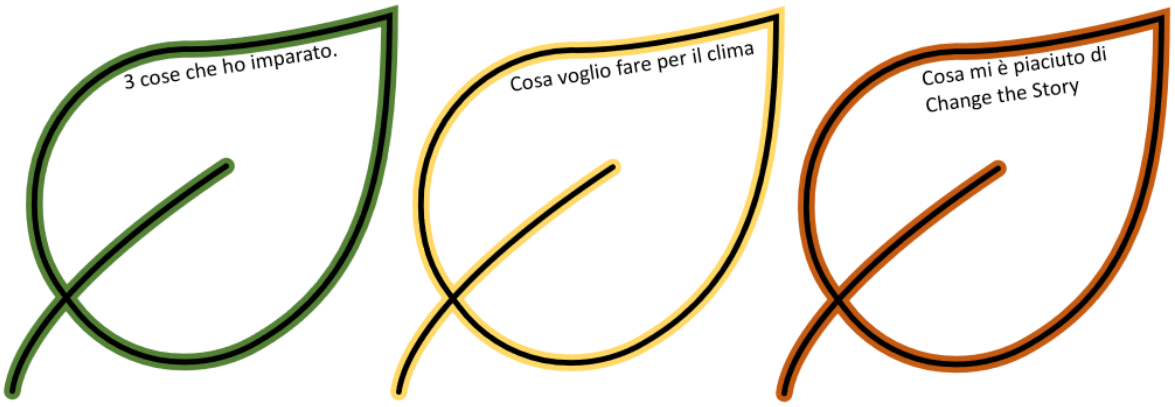


Fig 1: Example of diary

Fig 2: T*he hand of thoughts for Change the Story*



3 key things I have learnt from Change the Story.

What I am planning to do for climate crisis

What I have enjoyed of Change the Story

Fig 3: The leaves to collect pupils' self assessment

Competenza	Descrittore della competenza nell'ambito del progetto Change the Story	Esempi di indicatori nell'ambito del progetto Change the Story
Saper utilizzare le informazioni	*Gli studenti ricercano, organizzano e utilizzano informazioni digitali e non ditali sul cambiamento climatico per comprendere come agire su questa sfida.*	Ricercano informazioni da fonti digitali o non digitali
		Valutano l'autenticità, l'affidabilità e la validità delle informazioni da utilizzare
		Utilizzano e condividono le informazioni in modo efficace ed etico
		...
Pensare in modo critico	*Gli studenti assumono una posizione personale sulle questioni analizzate all'interno del problema della crisi climatica basandosi sui dati e sulle informazioni che hanno ricercato, analizzato e valutato, distinguendo la realtà dei fatti dalle proprie impressioni.*	Discutono e analizzare le evidenze sui cambiamenti climatici
		Aumentano la loro comprensione sui cambiamenti climatici
		Applicano un approccio scientifico per analizzare, valutare, intraprendere azioni per la crisi climatica
		...
Lavorare e collaborare insieme	*Gli studenti partecipano e collaborano con i compagni nelle attività, nell'elaborazione dei contenuti e per comunicare le proprie idee sulla crisi climatica.*	Condividono le responsabilità
		Valorizzano il contributo degli altri
		Dimostrano sensibilità verso le diverse situazioni (persone e contesti)
		...
Elaborare contenuti personali	*Gli studenti utilizzano contenuti e informazioni in nuovi modi per spiegare e comunicare le cause, gli effetti e le soluzioni sulla crisi climatica*	Elaborano contenuti adatti alla comunicazione, ad esempio, attraverso lo storytelling digitale
		Creano contenuti sui cambiamenti climatici per sostenere la vita di tutti gli organismi sulla Terra.
Argomentare con contenuti personali	*Gli studenti espongono, scambiano idee e si confrontano in modo efficace sulla crisi climatica considerando le cause, gli impatti, le soluzioni possibili e i punti di vista degli altri.*	Elaborano idee e il proprio punto di vista per il futuro climatico
		Si confrontano con gli altri sul futuro climatico
		...
Sviluppare consapevolezza e responsabilità del proprio agire	*Gli studenti sanno riconoscere e accettare le scelte proprie e degli altri e hanno consapevolezza delle conseguenze che comportamenti e decisioni personali e collettive possono avere per sé e per gli altri nell'ambito della crisi climatica.*	Scelgono e portando avanti azioni che contribuiscano allo sviluppo di una comunità sostenibile.
		Valutano l'impatto delle decisioni o delle azioni tenendo in considerazione la dignità e il benessere degli organismi viventi o delle comunità
		...

Table 1: *the competences are: use information, use critical thinking, work together and collaborate, elaborate personal contents, communicate, develop awareness and take responsibility*

	Prima della sperimentazione di Change the story			*Dopo la sperimentazione di Change the story*		
	Livello iniziale	*Livello intermedio*	*Livello indipendente*	*Livello iniziale*	*Livello intermedio*	*Livello indipendente*
Saper utilizzare le informazioni						
Pensare in modo critico						
Lavorare e collaborare insieme						
Elaborare contenuti personali						
Argomentare con contenuti personali						
Sviluppare consapevolezza e responsabilità del proprio agire						

Table 2: *the rubrics used to quantify levels presents in the class before and after piloting.*
(assessed by teachers)

Change The story - Scuola Primaria San Filippo Neri - Istituto Comprensivo Don Rinaldo Beretta – Giussano

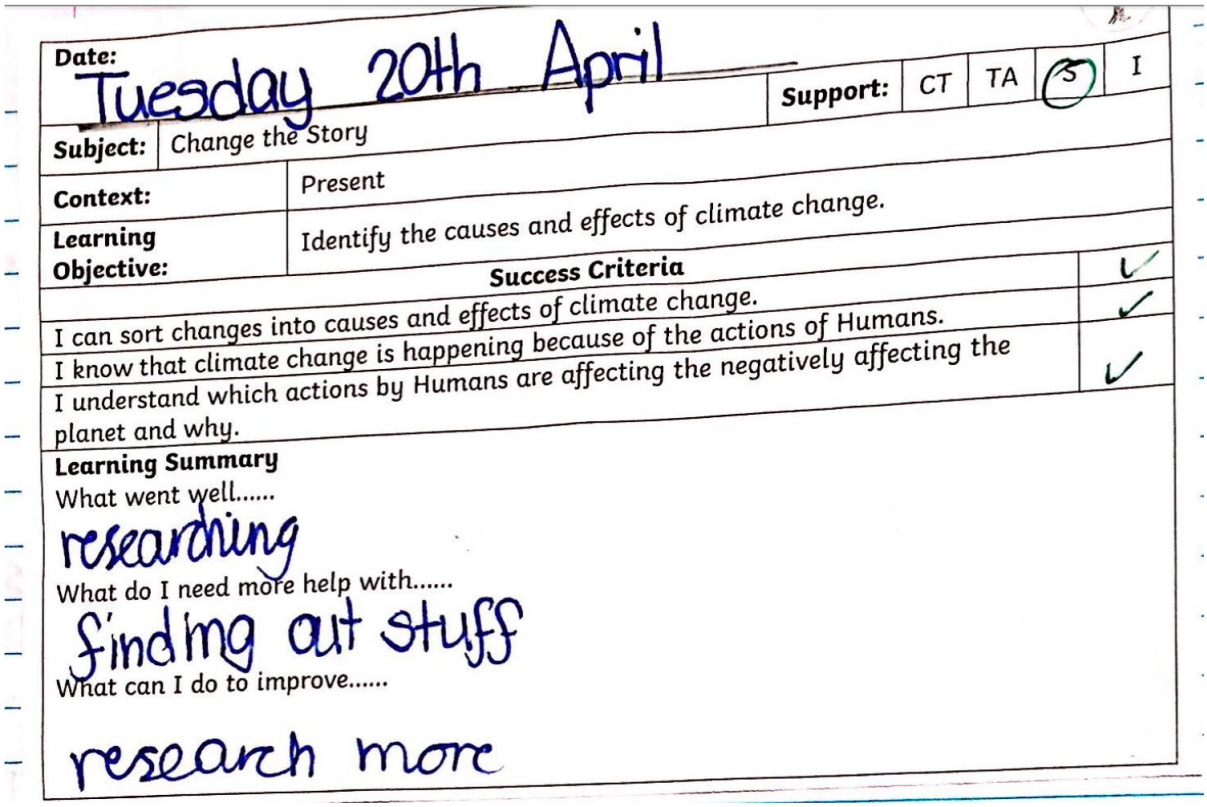
Nome:

RICCARDO	Mi sento ancora in alto mare	Mi serve ancora un po' di aiuto	Sono in grado di farcela in autonomia
Uso gli strumenti digitali per fare ricerche sul cambiamento climatico.			X
Uso gli strumenti digitali per creare contenuti come video, presentazioni, storie.		X	
Comunico e condivido le mie idee per inspirare gli altri a cambiare.			X
Riconosco i segnali del cambiamento climatico intorno a me.			X
Ho scoperto perché il clima sta cambiando.			X
So come bisogna agire per affrontare la crisi climatica.			X
Lavoro con gli altri per portare avanti un lavoro, come in Change the Story			X
Secondo te è necessario che anche i bambini e i ragazzi si occupino di cambiamento climatico? Perché?	SÌ, PERCHÈ ANCHE I BAMBINI, CHE SONO PICCOLI, POSSONO PORTARE GRANDI CAMBIAMENTI E ANCHE DI PIÙ.		
Consiglieresti di provare a fare dei progetti come Change the story ai tuoi amici?	SÌ, PERCHÈ LAVORARE È BELLO E FARE DEI PROGETTI È FANTASTICO: SI DISCUTE PER PROVARE A CAMBIARE IL MODO IN CUI VIVIAMO.		
Quali cambiamenti consiglieresti se dovessi rifare un progetto come Change the story?	CONSIGLIEREI DI CAMBIARE		

Table 3: rubrics used for pupils for auto assessment:

3.4 Additional assessment tools in UK primary schools

In pilot school 2 (Years 4/5, age 9-10), the learning objective for each lesson was broken down into three success criteria statements. Children ticked these statements once they had been met and used them to summarise their learning needs at that stage against three headings: what went well; what do I need more help with? and what can I do to improve? (Fig 1).



Date: Tuesday 20th April			**Support:**	CT	TA	S / I
Subject:	Change the Story					
Context:	Present					
Learning Objective:	Identify the causes and effects of climate change.					
Success Criteria						✓
I can sort changes into causes and effects of climate change.						✓
I know that climate change is happening because of the actions of Humans.						
I understand which actions by Humans are affecting the negatively affecting the planet and why.						✓

Learning Summary

What went well.....

researching

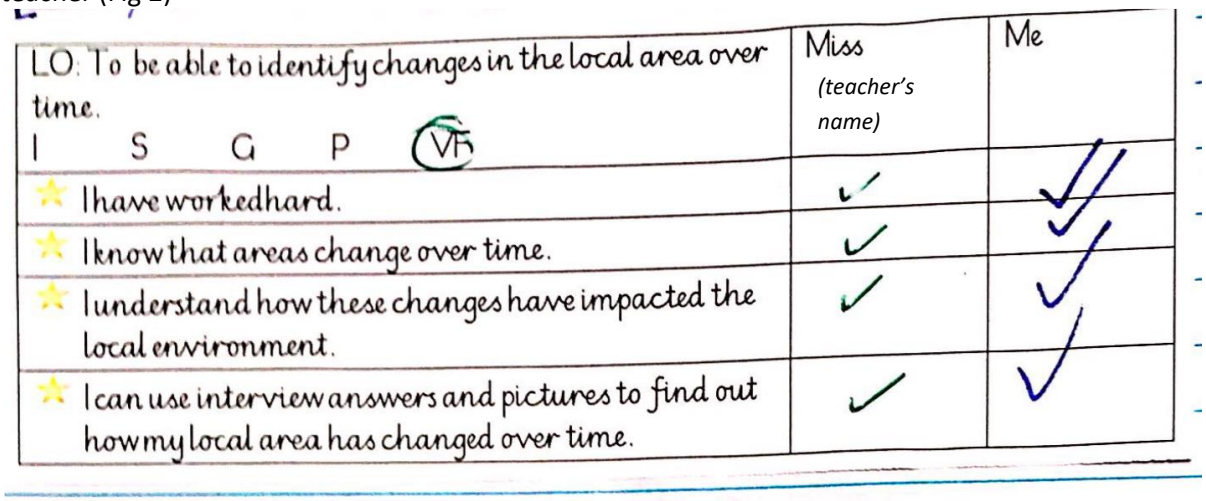
What do I need more help with.....

finding out stuff

What can I do to improve.....

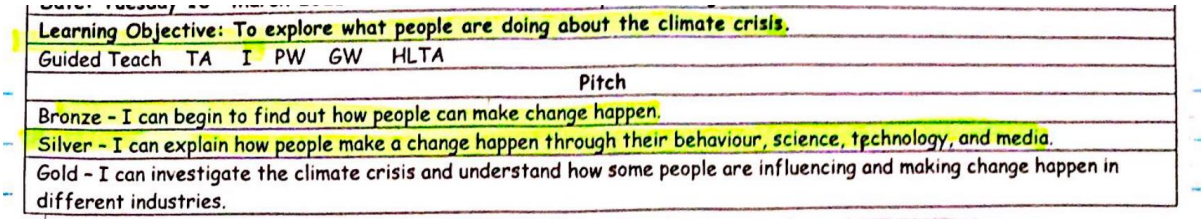
research more

An alternative framework was used by the teacher to indicate whether success criteria had been met. An additional column allowed pupils to compare their own self-assessment with that of the teacher (Fig 2)



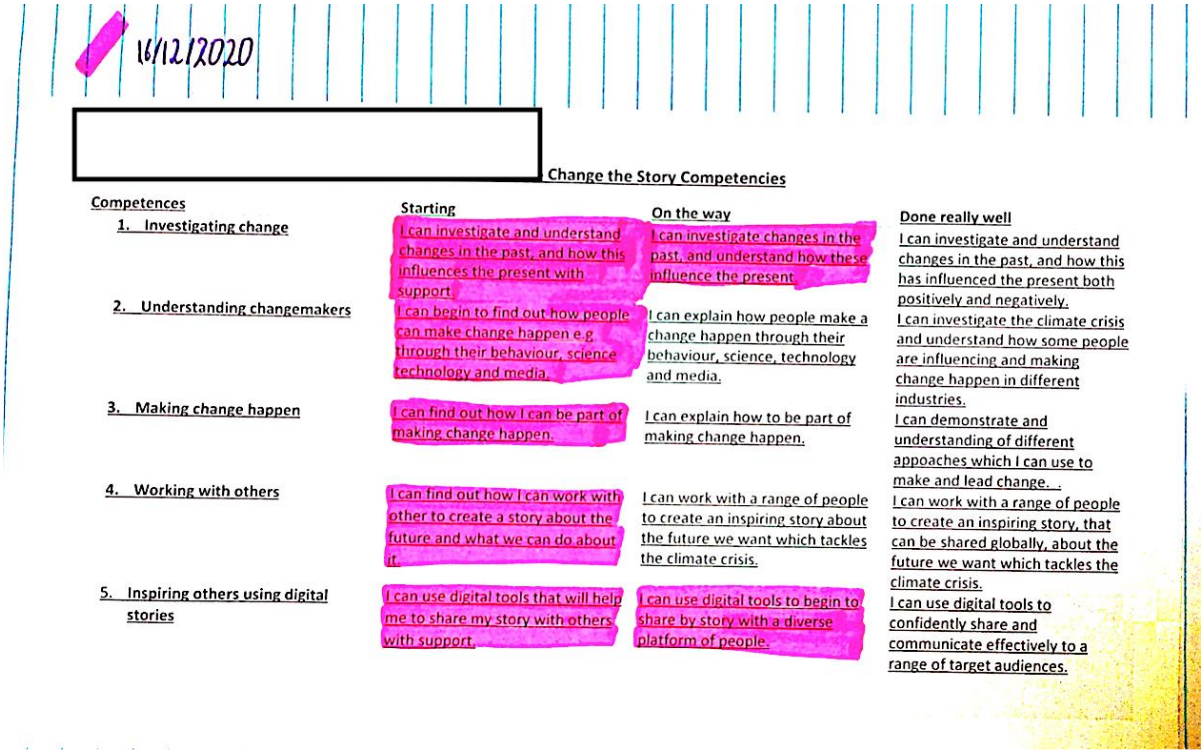
LO: To be able to identify changes in the local area over time. I S G P (VF)	Miss *(teacher's name)*	Me
☆ I have worked hard.	✓	✓
☆ I know that areas change over time.	✓	✓
☆ I understand how these changes have impacted the local environment.	✓	✓
☆ I can use interview answers and pictures to find out how my local area has changed over time.	✓	✓

On completion of a relevant task, pupils self-evaluated their 'key skill' against the related outcomes statements, at the appropriate pitch (Fig 3).



Learning Objective: To explore what people are doing about the climate crisis.
Guided Teach TA I PW GW HLTA
Pitch
Bronze - I can begin to find out how people can make change happen.
Silver - I can explain how people make a change happen through their behaviour, science, technology, and media.
Gold - I can investigate the climate crisis and understand how some people are influencing and making change happen in different industries.

The 'key skills' statements on both the knowledge organizer and these activity-specific tools were based on competency statements that the school had adapted from the IO5 assessment tool which had been provided by the project. By highlighting their own progress against the competencies for the project as a whole, pupils (and therefore their teacher) were thus able to evaluate their progress in learning (Fig 4).



16/12/2020

Change the Story Competencies

Competences	Starting	On the way	Done really well
1. Investigating change	I can investigate and understand changes in the past, and how this influences the present with support.	I can investigate changes in the past, and understand how these influence the present.	I can investigate and understand changes in the past, and how this has influenced the present both positively and negatively. I can investigate the climate crisis and understand how some people are influencing and making change happen in different industries.
2. Understanding changemakers	I can begin to find out how people can make change happen e.g through their behaviour, science technology and media.	I can explain how people make a change happen through their behaviour, science, technology and media.	
3. Making change happen	I can find out how I can be part of making change happen.	I can explain how to be part of making change happen.	I can demonstrate and understanding of different appoaches which I can use to make and lead change. .
4. Working with others	I can find out how I can work with other to create a story about the future and what we can do about it.	I can work with a range of people to create an inspiring story about the future we want which tackles the climate crisis.	I can work with a range of people to create an inspiring story, that can be shared globally, about the future we want which tackles the climate crisis.
5. Inspiring others using digital stories	I can use digital tools that will help me to share my story with others with support.	I can use digital tools to begin to share by story with a diverse platform of people.	I can use digital tools to confidently share and communicate effectively to a range of target audiences.

Fig 4, above, shows how the rubric was used in pilot school 4.
Table 2, below, shows their adapted rubric, which also formed a basis for 'knowledge organizers' which made learning intent visible for the pupils and for activity-specific self-evaluation (Fig 3).
Other schools created their own banded learning outcomes statements which more loosely drew on competencies statements in the rubric (e.g. 'I understand that we need to act to change the future').

Competences	Starting	On the way	Done really well
1. Investigating change	I can investigate and understand changes in the past, and how this influences the present with support.	I can investigate changes in the past, and understand how these influence the present.	I can investigate and understand changes in the past, and how this has influenced the present both positively and negatively.
2. Understanding changemakers	I can begin to find out how people can make change happen e.g through their behaviour, science technology and media.	I can explain how people make a change happen through their behaviour, science, technology and media.	I can investigate the climate crisis and understand how some people are influencing and making change happen in different industries.
3. Making change happen	I can find out how I can be part of making change happen.	I can explain how to be part of making change happen.	I can demonstrate and understanding of different approaches which I can use to make and lead change. .
4. Working with others	I can find out how I can work with other to create a story about the future and what we can do about it.	I can work with a range of people to create an inspiring story about the future we want which tackles the climate crisis.	I can work with a range of people to create an inspiring story, that can be shared globally, about the future we want which tackles the climate crisis.
5. Inspiring others using digital stories	I can use digital tools that will help me to share my story with others with support..	I can use digital tools to begin to share by story with a diverse platform of people.	I can use digital tools to confidently share and communicate effectively to a range of target audiences.

Table 2

This publication was prepared in the frame of the Change the Story project by Kathrine Otrel-Cass and Julia Elisabeth Mayr from the University of Graz with the contributions of all the other partners of the project.

This English language version has been adapted by Wild Awake.

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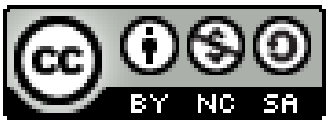

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