Techville's Chronicles: A Music Pedagogy Project to Foster Children's AI Literacy Through Co-Creativity and Multimedia Storytelling

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Abstract: The rapid integration of Artificial Intelligence (AI) in our daily lives has raised an always increasing attention for the need of developing AI literacy. In the realm of STEM (Science, Technology, Engineering, Mathematics), successful initiatives aiming to develop children's AI literacy can be found in the literature. However, despite STEAM-based methods offer a great potential for music education too, the integration of the (A)rts in STEM education is mostly biased—the arts are used as a tool to support STEM subjects but not the other way around. With this background, the question how AI literacy might be promoted in the music classroom through audiovisual co-creativity and digital storytelling is explored in a music-pedagogy workshop with nine children (7 male, 2 female) aged 10 to 12. This work is a proof of concept that illustrates how generative tools might be used to support child-AI co-creative interactions and by this acquiring not only digital skills and knowledge but musical ones, too; thus, fostering an integrative development of artistic and technical competences.

1 INTRODUCTION

"So-called digital natives, born already immersed in a digital broth culture, have now internalized the digital "gesture", but not the rules and the awareness of the logic inherent in the technologies they use" (Striano, 2019, p. 84). The words by Francesco Striano invite to reflect about an eventual mismatch between the myriad of opportunities offered by using Artificial Intelligence (AI) in education (Zhang and Aslan, 2021) and students' readiness to fully profit from them. An important requirement to successfully interact with technology is Digital literacy, a set of competences including not only the ability to use but also to understand and critically assess the implications of using it. Digital literacy makes the difference between passive consumers and sovereign individuals whose sense of agency proactively shapes the digital landscape.

AI literacy can be considered within the concept of Digital literacy, which is one of the eight key lifelong learning competences amongst those recommended by the Council of the European Union as essential *"for personal fulfilment, a healthy and sustainable lifestyle, employability, active citizenship and social inclusion"* (European Commission, 2019, p. 4). In its last update, the the *DigComp* framework (Ferrari and Punie, 2013), includes an Annex about *Citizens interacting with AI systems* (Vuorikari et al., 2022, p. 77). Therefore, introducing AI technology in the classroom from early age seems to be a necessary step not only to enhance learning but also to develop an authentic knowledge about AI (Su and Yang, 2022, p. 4) and therefore promoting Digital and AI literacy.

With this background, a workshop to promote AI literacy within the music classroom, is presented. A total of 9 children, aged 10 to 12, participated in the activity, whose goal was to co-creatively (i. e., by interacting with generative AI) compose the music and create the illustrations for a multimedia Fairy-Tale defining AI and narrating its ethical implications. An English version of the Fairy-Tale is freely available.[1]

The article proceeds as follows. In Section 2, previous works are outlined. Section 3 presents the methodology. Sections 4 and 5 describe and discuss the results. Finally, Section 6 concludes the article.

2 STATE OF THE ART

Recent research highlights the benefits of a successful integration of computational thinking within the music curriculum (Bell and Bell, 2018) as well as the great potential of using STEAM-based tools for

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music education (Özer and Demirbatir, 2023). Concerning the development of children's AI knowledge, very promising initiatives such as the PopBots toolkit (Williams et al., 2019) exist. Still, such initiatives, although integrating music-related activities, are typically implemented within informatics-related courses. This relates to the fact that the integration of the Arts in STEAM is *"often misunderstood as referring to the use of the arts only to enhance teaching and learning* [i.e., arts are used as] *a vehicle for learning STEM—not the other way around"* (Liao, 2016, p. 45).

STEAM education should be, however understood as an integration between 'The Arts' and 'The Science' (Jesionkowska et al., 2020). The idea behind this formulation is that solving nowadays problems requires innovative solutions for which both technical skills and creative thinking are essential. Such solutions will only emerge from connections amongst different knowledge domains (Jesionkowska et al., 2020). From this perspective, educational initiatives within STEAM often involve the integration between children's literature, art, and technology in order to foster children's creativity and technological thinking, e. g., through digital story writing (Ng et al., 2022).

This type of research can be broadly included within the realm of Computational Creativity, which centres around three main areas (Tatar and Pasquier, 2019): (i) *Artificial creative systems*, typically investigated within Computer Science; (ii) *Computational systems for supporting creativity*, typically explored by artists; (iii) *Computational models of (human) creativity*, often research within psychology which aims to better understand human creativity by employing computational models. In this work, we will refer to the second type of application, i. e., computational systems, used within an educational setting, to foster children's creativity while acquiring AI literacy competences. This will be possible through digital storytelling, which besides promoting creative attitudes through digital possibilities has shown to be an optimal way to encourage children discussions about the impact of AI in our society (Ng et al., 2022).

Depending on the level of involvement played by the AI, the interaction between the user and a computational system supporting creativity could be conceptualised as co-creativity. As indicated by Kantosalo et al., co-creative systems *"represent a middle ground between autonomous creative systems, which are intended as the sole shepherds of their own creativity, and creativity support systems, which instead facilitate the creativity of their users"* (Kantosalo et al., 2020, p. 57). Still, since disentangling to which extent a user's creativity has been influenced or activated in any way by a system might not be totally possible, a clear distinction between co-creative and creativity support systems would be difficult in some scenarios.

Figure 1: Four children and one instructor interacting with AI tools during the workshop [rights of all photos granted].

Beyond this conceptual fuzziness, AI systems aiming to enhance musicians' creativity have been presented. Still, the overwhelming amount of generated content and the limited interaction possibilities are often drawbacks preventing a fruitful use of generative AI in co-creative processes (Louie et al., 2020).

3 METHODOLOGY

3.1 Context and Outline

A workshop aiming to collaboratively develop a digital Fairy-Tale discussing positive and negative implications of AI for the society was conceived. The participants were expected to generate music and images illustrating the plot (text), which was already given.

In Figure 1, children generating music (right) and images (left) under the supervision of an instructor are shown. The digital layout of the Fairy-Tale was organised as shown in Table 1. The children would create content for chapters 1 to 4, while the Introduction and Chapter 5 were already provided as an example.

The workshop was carried out in the context of a 'Kinder-Uni', an initiative which tries to engage children in scientific and cultural topics. The workshop was designed within the 'Music Pedagogy Project', a mandatory course of the Music Education curriculum whose goal is to design innovative didactic ideas and test them within a small group of children. Given the human (2 instructors) and temporal (150 minutes) resources constraints, the workshop was designed for a maximum of 12 children (aged 10 to 12). Out of the 12 registered ones, 9 participated, eventually.

The workshop was divided into six phases (i-vi) developed in two different areas of LEONARDO Zentrum (a research and innovation centre): the Coworking space (suited for presentations and discussions); and the Laboratory (equipped with the hard-

Table 1: Layout of the Fairy-Tale. The discussed content, as well as the evoked emotions (in brackets), are indicated.

Section	Content
Introduction	Describes the characters and context of the plot
Chapter 1	AI to support learning (excitement)
Chapter 2	The risk of privacy violation (anxiety)
Chapter 3	The risk of bias and stereotypes (disappointment)
Chapter 4	AI to understand general trends (anger, calm)
Chapter 5	Importance of ethical regulations

ware and software needed for the hands-on experiment). The six phases can be summarised as follows:
(i) Welcome Message (Co-working space, 5 min): a brief explanation of formalities including presentations and the general outline of the workshop.
(ii) Overview of AI (Co-working space, 25 min): examples of AI applications are described and discussed through children-friendly materials. Subsequently, the Introduction of the Fairy-Tale is used as an example to illustrate the goals of the workshop, i. e., learning about AI opportunities and challenges as well as using AI to generate suitable music and images.
(iii) Co-creative Experimentation with AI (Laboratory, 60 min): the kids, divided in two groups (A and B) and supervised by each instructor respectively, work on different chapters of the Fairy-Tale in parallel: Group A (chapters $1-2$); Group B (chapters $3-4$). After discussing the meaning and emotional content of a given chapter with the instructor, the children work on the generation of songs and images for that chapter for 30 minutes. To enable satisfactory interactions with the tools, each group is subsequently split in two sub-groups in a way that a maximum of 3 children interact together at one PC. For instance: A.1 focusing on the images; A.2 focusing on the music. This process is repeated for the other assigned chapter (which evokes a contrasting emotion, cf. Table 1). This time, the children who previously experimented with music would work on the images and vice versa. The children generate as many images and songs as they want in the available time; Then, the group jointly decide on the best option.
Break (10 min): one of the instructors inserted the musical tracks generated by the children into the digital Layout (i. e., Canva) and downloaded the project in video format. Note that the images where directly generated/inserted by the children in Canva.
(iv) Exchange and Final Discussion (Co-Working space, 30 min): after projecting each chapter of the Fairy-Tale, the children engaged in a short discussion concerning content and usability experience.
(v) Evaluation (Co-Working space, 10 min): the children are invited to individually reflect on their experience and to fill out a questionnaire used to assessed the acquisition of the learning goals (cf. Section 3.2).
(vi) Conclusion (Co-Working space, 10 min): finally, after the core part of the workshop has concluded, the parents are invited to come into the Co-Working space and the resulting video is watched together.

3.2 Lifelong Learning Competences

The workshop is framed around three lifelong learning competences (LLC) defined by the European Commission: Digital and technology-based competences (LLC4); Active citizenship (LLC6); and Cultural awareness and expression (LLC8). The core objectives within each LLC are formulated in line with the UNESCO guidelines (Miao et al., 2023). Concerning LLC4, the workshop aims to promote the ability to interact with (procedural skills) but also to understand (conceptual skills) the basics of AI technologies. Concerning LLC6, the workshop aims to instil the importance of AI ethics and the need for humans to become aware of the opportunities and risks associated with AI. Finally, concerning LLC8, the workshop aims to promote *creative reflection*, a form of metacognition which emerges from interactions in novel situations and is shown by the ability to imagine and describe new creative solutions (Cook, 1998, p. 46). Creative reflections would be shown by children's ability to imagine how the emotions of a given chapter could be evoked through musical means (a process facilitated by the interaction with AI).

For each competence, several learning outcomes, articulated in knowledge, skills, and attitudes, were formulated as follows. Concerning LLC4, children can define AI, successfully interact with the generative tools, and demonstrate interest in technology. Concerning LLC6, children can describe risks associated with AI, critically evaluate social unfairness, and demonstrate cooperative and respectful attitudes towards others. Concerning LLC8, children can describe connections between musical parameters and emotional meanings, can appropriately adapt the musical output to fit the narrative of the chapter, and are open to experience new co-creative interactions.

The knowledge, skills, and attitudes to be acquired can be broadly articulated in four general **Learning Goals**: LG1, to gain a first understanding and experience with AI; LG2, to reflect about the ethical implications of AI; LG3, to experiment in evoking different emotions through music; and LG4, to collaboratively explore generative AI to expand the own creativity.

3.3 Teaching Methods

Previous research highlights the importance of promoting students' content creation through collaborative work on multiple technologies to develop digi-

tal competences (Lakkala et al., 2011). Thus, collaboratively creating digital stories, which has shown to brings great benefits in the classroom (Robin, 2008), seems to be suitable to develop 21st Century Skills, too. To reach the described learning goals, a student-centred teaching method implemented within a project-based learning setting, was employed. The digital storytelling approach *Stories that inform or instruct* (Robin, 2008), i. e., digital stories partially developed by the instructors and presented to the children in order to convey specific information and promote the acquisition of concrete skills, was used.

In particular, the acquisition of conceptual knowledge, e. g., defining AI, describing its ethical implications, and reflecting on relationships between emotions and musical parameters, as well as critical thinking skills were promoted through guided discussions, also known as *modern Socratic method* (Le, 2019). Structured dialogues were lead through the Turn-Taking-Reading strategy, used to collaboratively read the story plot whose scenes where alternated with questions posed by the instructor.

Subsequently, each sub-group was assigned a task, generating either the missing music or the images. The hands-on skills and attitudes were promoted through active learning, i. e., the children were expected to learn by doing (exploring the tools by themselves) while the instructor assumed a facilitator role.

3.4 Generative Tools and Resources

A variety of resources (hardware and software) were used. Hardware: 1 projector and 1 laptop (used by one instructor); 4 desktops computers (one per sub-group, i. e., A.1, A.2, B.1, B.2, cf. Subsection 3.1). Software: ChatGPT, RunwayML, and Tha3 (used only by the instructors during the preparation of the Fairy-Tale layout); Canva and AIVA (used also by the children during the Workshop). All the AI tools were accessed through a free account. For security reasons, the Leechblock browser-blocker was installed to make the children only able to interact with Canva and the desktop version of AIVA.

ChatGPT[2] is a chatbot developed by OpenAI designed to enable natural human-machine written conversations. ChatGPT was used by the instructors during the workshop preparation to generate the Fairy-Tale plot. Through iterative exchanges, the content, language style, and text length were defined. In the final plot, it is hardly discernible what was proposed by ChatGPT and what by the instructors—both influenced each other during the co-creative interaction. No interaction with ChatGPT during the workshop was considered as the tool is not expected to be used by children and due to the informative purpose of the story, its content had to be designed beforehand.

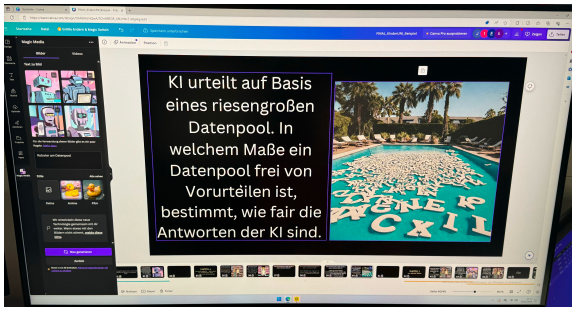

Figure 2: PC-screen during the interaction with Canva aiming to generate an image that represents the given text[4].

RunwayML[3] is a platform to create and transform visual art with the support of generative AI. It includes text-to-image technology, i. e., models able to generate images from a textual description. RunwayML was used by the instructors during the workshop preparation to modify the background of some images containing the main characters (generated with Canva, see below). Although the background replacement functionality was also experimentally implemented in Canva, its performance was considered still sub-optimal to be used in the workshop.

Manual Poser Tool from Tha3 - Talking Head Anime 3 (Khungurn, 2022) is an application that enables to modify anime facial expressions from a given image in order to portrait different emotions. It was used by the instructors to modify the facial expressions of the characters over the story. This was needed to keep them recognisable across the Fairy-Tale since, due to the non deterministic output of the text-to-image generation model in Canva, every time a new text prompt was written, the protagonists would be differently generated. Given the difficulty and time needed to use this tool effectively, the children were not expected to interact with it but only with Canva.

Canva[5] is an online graphic design tool that enables to intuitively create audiovisual content and was used for the Fairy-Tale layout including text, images, and music (cf. Figure 2). Canva also integrates a text-to-image generator, which was used by the children to create the images. The example images, including the source for the main characters (before creating further variations with RunwayML and Tha3) were also created by the instructors in Canva with the *Anime style*.

[2]https://chat.openai.com

[3]https://runwayml.com

[4]In English, translated as: *AI makes judgements based on a huge pool of data. The extent to which a data pool is free of bias determines how fair the AI's answers are.*

[5]https://www.canva.com

Figure 3: PC-screenshot during the interaction with AIVA aiming to generate a track evoking the chapter's emotion.

AIVA[6] is an AI music generation assistant that enables the user to control a variety of elements such as genre, instrumentation, or chord progression. The step-by-step option, which leads the user through several decision-making steps, was used in the desktop version of the tool (cf. Figure 3). At each step, the children were encouraged to try out different options, reflect on the chapter's emotional content, and then make the musical decisions accordingly. The co-creative interaction with AIVA implied the following steps: (i) choosing a musical genre to be taken as reference; (ii) automatically create a chord progression from a text prompt; (iii) changing the instruments and altering specific layers (by removing, re-generating or manually modifying them) as considered adequate; (iv) automatically generate and save the final track.

For evaluation, an observation protocol to be filled out by the instructors and a questionnaire for the children were designed. The observation protocol is made up of eight questions: Q1-Q3 related to the LGs; Q4-Q8 assessing the appropriateness of the set-up (i. e., teaching methods, content, and resources). The children questionnaire is divided into five parts: Section 1 (assessing the appropriateness of the set-up); Section 2 (assessing LG1 and LG2); Section 3 (assessing LG3); Section 4 (assessing LG4); and Section 5 (an empty box inviting the children to freely share their thoughts, something typical of elementary school inquiries and which the children usually use to creatively express themselves). The question *Do you want to experiment further with AI?*, although interpreted according to LG1, is intentionally included at the end of Section 4. The reason of this is to encourage the children in providing more informed answers which would derive from their reflection on the questions stated over the previous Sections. Common practices, such as formulating the questions in unambiguous and straightforward language, were followed (Bell, 2007). Due to the preliminary nature of the pilot study as well as constrained resources in terms of duration and number of participants, comparative designs assessing pre- vs post-intervention were explicitly avoided in favour of qualitative evaluation and a descriptive interpretation of rating scales. An English translation of both instruments is freely accessible.[1]

[6]https://www.aiva.ai

4 RESULTS

4.1 Instructors' Perspective

Concerning LG1, the first impression was that some children were already particularly knowledgeable and interested in AI. The ones more active in the introductory discussion were able to name AI tools they were familiar with and were eager to know which tools they were going to use. Their initial idea about AI was something related to programming and some kind of human-generated autonomous entity.

Concerning LG2, children were in principle aware of some potential risks related to AI, but could not clearly identify them at the beginning. After the practical experience, in the discussion (phase iv), they could at least repeat the specific risks illustrated in the Fairy-Tale. Some children could generalise such risks by giving examples from their own experiences, e. g., the fact that generally male like dinosaurs does not mean that all male must like dinosaurs; thus, an AI that suggests the latter, would be unfair.

Concerning LG3, the importance of the music for the audiovisual Fairy-Tale was clear for the children, who could describe in simple terms how music would convey specific emotions. Indeed, one of the children requested the instructor to combine two generated tracks in a way the second one would perfectly fit the last scene of chapter 4, whose generated image evoked a more modern/active atmosphere (cf. minute 6:18 in the video). Nevertheless, beyond reflecting on general atmosphere/mood, the relationship between emotional concepts and musical ones could not be addressed in detail due to the limited amount of time.

Concerning LG4, the children were generally very interested in the topic and keen to use the computer. Some where easily satisfied by the AI-generated output, while others where much more critical and tried to modify their actions in order to improve the results. In the latter case, co-creative interactions were initiated. In some cases, children very engaged and perfectionists on one task were easily satisfied on the other, which highlights the importance of considering children's interest (beyond tools' appropriateness) to enable successful co-creative processes.

In terms of methodological choices, the content showed to be suitable for the target group. Despite an

initial disinterest concerning Fairy-Tales in general, probably due to the children's age (they felt too old for Fary-Tales), children's attitude was very positive when interacting with the actual story, whose topic was timely enough not being perceived as child-like content. Indeed, the children were actively engaged during the whole workshop, i. e., not only in the active learning part (phase iii), but also in the others.

In terms of technological difficulty, despite an initial uncertainty about AIVA, both tools showed to be appropriate for the target group. The children were able to naturally interact with them and explore beyond what was expected. Some of the children autonomously interacted with AIVA's midi track until they obtained the expected outcome. However, the time necessary to load new instruments and the low volume of the chord progression pre-view, led to some frustration. Concerning the images, some children showed slight disappointment as they seemed to know more sophisticated software. Still, the fact that they were unable to generate the main characters of the Fairy-Tale due to the non-deterministic nature of the image generator brought up discussions about the difference between rule-based and stochastic processes. The children explored this by running several times the text-to-image generator on a given prompt.

Another consideration to be made is that while Canva was available in the native language of the children, i. e., German, AIVA was only available in English. This was hypothesised to limit children's interaction, which was the case for some of them, although not for all: thus, highlighting the need of tools in languages beyond English.

Finally, the planned time was slightly short, as some children intentionally decided not to make the break in order to refine the generated music/images. In addition, since the final discussion (phase iv) was longer than expected, the time dedicated to the evaluation (phase v) had to be reduced. Due to this, some children were not able to finish the questionnaire and requested to do it after watching the video with the parents (phase vi). In terms of group dynamics, the sub-group interaction was optimal with two children as this allowed an easier communication and decision-making while working in groups of three left one child to some extent apart.

4.2 Children's Perspective

Concerning LG1, the answers to the questionnaire show that most of the children were able to provide a plausible definition of AI, indicating that it is a technology created by humans which has the ability to learn. Some of them did not provide an actual definition but rather said for what it might be used, which suggests that addressing the topic more formally would be needed. All of them indicated they have heard about AI before the workshop, have understood the tasks to be performed, and highlighted their motivation to work again with AI in the future. To the question *What did you find bad in the workshop?* all answered 'nothing' except for one who indicated that there could have been more variety in the activities. This however, contrasts with the general opinion that the time was too short (6 children would have liked more time, 3 considered that the time was sufficient).

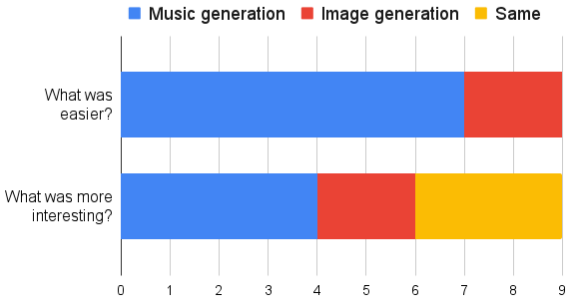

Figure 4: Multiple-choice responses related to LG3.

Concerning LG2, all children were able to provide precise examples of the chances and risks. Concerning examples of how AI can support humans, they generally (6 of them) considered as most important that AI can support learning and acquiring knowledge, while one of them mentioned as benefit something not discussed in the workshop, i. e., the possibility of using AI to perform tasks dangerous for humans, such as space travel. Finally, one child indicated that AI would not imply any risk if we take appropriate precautions while the others considered that using AI might be associated to some risks. They were able to repeat those discussed within the Fairy-Tale, and even formulate new ones, e. g., military use.

Concerning LG3, all the children agreed on the importance of music for the Fairy-Tale, but only 5 indicated explicitly that it was needed to create the appropriate atmosphere/emotional situation. The music was perceived as easier to generate w. r. t. the images (cf. 7 vs 2 in Figure 4, above). This is probably due to the more abstract options the children imagined for the music compared to the images. Indeed, concerning the images, the children explicitly referred to the difficulty of exactly generating what they had in mind. Thus, in terms of children's level of satisfaction with the AI output, a relationship between their interest and perceived simplicity could be drawn: generating the music was clearly perceived as simpler and was also slightly seen as more interesting (cf. Figure 4, below). Indeed, two children (one of them mostly enjoying the image task) explicitly expressed that the most inter-

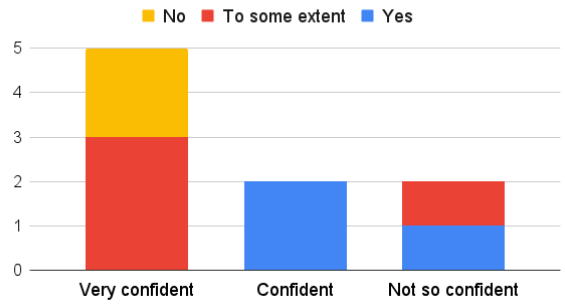

Figure 5: Self-perceived confidence improvement (related to LG4). X-axis: Children's confidence with tools similar to those used in the workshop; Y-axis: Number of answers.

esting task was the one implying less effort (simpler).

Finally, since successful co-creative interactions might depend on the self-perceived agency, to evaluate LG4, the children were requested to indicate their general level of confidence with tools like those used in the workshop (*very confident*, *confident*, *not so confident*)[7] as well as their self-perceived improvement due to the workshop (*no*, *to some extent*, *yes*). The relationship between these two questions is shown in Figure 5. The children feeling *very confident* with computers (5 out of 9) showed a lower self-perceived improvement: 2 of them indicated *no*, i. e., they did not feel more confident after the workshop, 3 indicated the workshop helped *to some extent*. On the contrary, those feeling *not so confident* showed a positive trend: one indicated a clear improvement (*yes*), the other *to some extent*. The remaining two children, both considering themselves *confident*, perceived a clear improvement in their own skills after the workshop. Although no relationship between perceived improvement and own creativity development can be drawn, perceived learning can be seen as a sign of positive attitude towards the co-creative experience.

Finally, 3 of the children indicated as particularly good the possibility to do work themselves. This was the case for 2 children identifying themselves as *very confident* as well as for 1 *not so confident*, and suggest a relationship between active learning and children's enjoyment/motivation. However, the child who self-identified as *not so confident* attributed the limited self-perceived improvement to the fact that during the workshop there was not so much explained. This shows that even if, as expected, active learning is appreciated by the children, providing sufficient explanations is needed to guarantee meaningful learning that goes beyond simple interaction, especially for children with a weaker technical background.

[7]Note that an additional option indicating *absolutely not confident* was given but none of the children chose it.

5 DISCUSSION

Children's positive reaction to the music task contradicts to some extent previous works showing users' overwhelming feelings as a reaction to their limited involvement w. r. t. the amount of generated musical content (Louie et al., 2020). A reason for this difference might be the age of the participants: although Louie et al. (2020) do not indicate it, by the description it seems they are at least young adults. Thus, older participants, who had the time to acquire a musical background, would naturally have more expectations and therefore would be disappointed by an AI generating too much content which does not mirror their specific expectations. This was indeed the case for the children concerning the images, who were disappointed by the non-deterministic output, something also pointed out by (Louie et al., 2020).

Previous works have shown that children would change the own attitude towards AI when discovering that it can speak their native language (Druga et al., 2019). The workshop's outcomes show that while the language did not play a role in the co-creative process for some children, interacting in a foreign language limited the experience of others. Even for those whose interaction quality seemed to be independent of the language, this is only applicable to the investigated scenario. Just because some children's English skills were sufficient to explore the interface does not mean that they would have shown the same attitude if the interaction had been carried out orally, as in (Druga et al., 2019). Furthermore, during the interaction with AIVA, the children were only expected to understand the name of some dialogues in English while they could still insert text prompts in German: this was explicitly requested by the children.

6 CONCLUSIONS

The presented pilot study suggests that the integration of AI-child co-creativity within a digital storytelling framework might be a promising method to promote several lifelong learning competences. In particular, music generative tools such as AIVA, with functionalities that encourage users' interaction, are an interesting option to support children's creativity while implicitly promoting AI-literacy. In addition, the presented framework might offer educational advantages with respect to traditional storytelling, since besides its inherent flexibility towards any instructional content, it also integrates a powerful active learning component, i. e., AI-supported co-creativity.

Despite the positive feedback from the children,

limited discussion about the music-emotion connections was observed. This was in part due to time constraints but also due to the fact that the topic was not formally addressed in the introduction (which was focused on AI). Due to the complexity of the topic (to some extent underestimated), exploring musical emotions through co-creative interactions with generative AI should be addressed on a specific workshop.

Finally, it goes without saying that due to the small evaluated sample, these outcomes cannot be generalised beyond the investigated group. Similarly, dedicating several sessions to the topic would be naturally beneficial. The presented project should be taken rather as a proof of concept illustrating how AI-child co-creativity can be used to promote AI-literacy, even in a compact format. This might eventually trigger replication studies in other contexts as well as promote the engagement of schools in the longitudinal implementation of such projects, something needed for an empirical evaluation. Despite its limitations, the qualitative and methodological discussions resulting from this experiment aim above all to rise the attention on a important (under-researched) topic and by this, eventually inspiring future related works.

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