EMOTIONAL HARMONIES: THE REFLECTIVE AND INCLUSIVE POTENTIAL OF MUSIC BETWEEN ARTIFICIAL INTELLIGENCE AND APPRECIATIVE INQUIRY

ARMONIE EMOTIVE: IL POTENZIALE RIFLESSIVO E INCLUSIVO DELLA MUSICA TRA INTELLIGENZA ARTIFICIALE E APPRECIATIVE INQUIRY

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ABSTRACT
The paper presents the results of a survey conducted with 532 students from the University of Salerno's postgraduate courses for support activities concerning the topic of Artificial Intelligence (AI), interconnected with music, all set within the theoretical framework of Appreciative Inquiry. The aim was to gather opinions on the possible use of AI and music to promote positive reflective processes, foster the emergence of positive emotions, promoting instructional design that is for everyone and each.

Il lavoro mostra i risultati di un'indagine condotta con 532 studenti dei corsi di specializzazione per le attività di sostegno dell'Università di Salerno e riguardante il tema dell'Intelligenza Artificiale (IA), interconnessa con la musica, il tutto inserito nel quadro teorico dell'Appreciative Inquiry. L'obiettivo è stato quello di raccogliere opinioni sul possibile utilizzo dell'IA e della musica per promuovere processi riflessivi, favorendo altresì l'emergere di emozioni positive, favorendo una progettazione didattica che sia per tutti e per ciascuno.

KEYWORDS
Appreciative Inquiry, music, Artificial Intelligence, Emotions, inclusion
Appreciative Inquiry, musica, Intelligenza Artificiale, emozioni, inclusione

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1. Introduction[1]

Between the end of the Eighties and the beginning of the Nineties of the last century, with the affirmation of the construct of emotional intelligence, there was a significant change. Emotions have also taken on a central role in school teaching-learning processes. In addition, a correlation between the development of emotional intelligence and the socio-emotional well-being of students has been scientifically highlighted, with positive results also concerning learning processes (Brearley, 2001). In this sense, the opportunity to provide educational and emotional literacy courses at school was underlined, recognizing the fact that emotions, their *knowledge*, and *management*, are not innate gifts, but must be *educated*. In fact, education about emotions would be a tool to be able to manage them in the best possible way, in every situation, without being overwhelmed by them (Fedeli, 2006).

From these reflections, a particular interest has matured, both at a scientific and political level, in the emotional skills to be promoted at school. This would be explained by the fact that, as pointed out by Goleman, fostering these skills in students would be useful for both emotional well-being and educational success. Furthermore, some regulatory provisions relating to educational services for children (MIUR, 2018; 2021) have reaffirmed the centrality of emotional skills in educational programs from early childhood. In these documents, in line with what was underlined by the WHO (1993), emotional skills that are part of life *skills* would constitute a sum of skills necessary for the full development of the person. These skills, thanks to their being common ground for the various disciplines, would constitute the *humus* on which to build the foundations for the development of all students. Considering, consequently, the growing importance given to emotional intelligence and the skills connected to it, it seems unavoidable to think about the need for educators and teachers to be aware of the potential of the correct management of emotions and then, of the acquisition of emotional skills. Making students competent in this sense would make them ready to control the various situations of everyday life, thanks to a state of serene balance with themselves and with others. To this end, it would be appropriate for teachers themselves to possess

[1] The work is the result of scientific collaboration between the authors. However, the subdivision of the contribution is as follows: Alessio Di Paolo is author of paragraphs 3. "Artificial harmonies between AI, music and positive emotions", 4. "Methodology and results" with reference to all remaining paragraphs, 5. "Data discussion" and 6. "Conclusions"; Flavia Capodanno is author of paragraphs 1. "Introduction" 2. "The possible linking of Appreciative Inquiry and music"and 4.1 "Participants and times" and 4.2. "Tools and structure of the questionnaire"; Maurizio Sibilio is scientific coordinator of the work.

these skills, to be able to encourage their acquisition in their students, not according to a mere transmission activity, but thanks to a process of *co*-construction. Therefore, teachers responsible for the emotional education of their learners in schools should have a professional profile that combines disciplinary skills with socio-emotional ones. In fact, teachers themselves, to be able to guide and support students along the path of their educational development, must be able to manage emotions, thanks to a habit of knowing and interpreting them. Starting from the consideration that the identifying feature of today's society is *complexity* and *impermanence* (Ceruti & Morin, 1988) amplified by sudden changes and the speed of everyday life, promoting emotional well-being should be even more objective of the school education system. In this scenario, there is a further component of complexity: the advent of AI.

This new type of intelligence in the educational field would seem to be interpreted in a bivalent way: on the one hand, it would appear to cause concern as it is considered different from humans, therefore far from the sphere of emotions; on the other hand, the conscious use of it could be an amplified possibility to enrich one's didactic-educational planning. Starting from these reflections, this paper would present the first results of an exploratory mixed-methods investigation aimed at tracing teachers' perceptions of the generative capacity of Artificial Intelligence in a musical key to encourage reflection on emotionally positive experiences and promoting inclusive didactic action. The intention of this investigation, which combines the language of music, a methodological approach aimed at declining questions and reading the answers in a positive perspective, known as Appreciative Inquiry, and artificial intelligence, derives from the following considerations. *In primis,* the musical language is a harbinger of positive stimuli and a catalyst of emotions, capable of capturing all the nuances of human experience (Peery et al., 2012), through narration. *In secundis*, Appreciative Inquiry (IA) is a methodological approach based on the narrative sharing of personal stories in a positive way (Cooperider & Srivastva, 1987; Cooperrider et al., 2008). Therefore, the possible *contamination*, enriched by the component of Artificial Intelligence, between Appreciative inquiry and musical language, in the name of narration, could encourage reflection on innovative paths in the training of teachers to know and manage emotions for an inclusive educational design.

2. The possible linking of Appreciative Inquiry and music

Appreciative inquiry is a methodological approach born in the organizational field, which has also spread to the educational field. The main feature of this framework is to trace the positive in all the experiences lived and then, starting from them, project oneself into the future. To this end, the adoption of this approach in setting up research paths and training trajectories, both with students and teachers, seems potentially useful to promote the teaching and learning process in a positive perspective. The theoretical framework of the Appreciative inquiry is based on the following assumptions:

- the *constructionist* principle emphasizes the systemic interconnection between subjects and contexts, highlighting the sharing of values, attitudes, and future intentions through narrative processes;
- the principle of *simultaneity* highlights the temporal correspondence between the intention to change and the change itself;
- the *poetic* principle recalls, like Jerome Bruner, the importance of narrative production, especially the telling of positive stories. This aspect, in focusing on strengths, underlines the importance of highlighting the positive to promote perspectives of action aimed at well-being.
- the *anticipatory* principle suggests that future educational and change design hypotheses can already be glimpsed at the moment of imagining the future;
- the *positive* principle indicates that the perspective on strengths would lend a sense of purpose and meaning to the imagined design;
- the principle of *unity* (or integration) emphasizes the systemic and interdependent nature of all the members of a group, such as a class with its teacher;
- the principle of *representation* refers to our ability to *be the change we want to see*.

The plan of principles, just outlined, is linked to other scientific assumptions. The first is the Placebo Effect, which consists of the result of the influence that the mind would have on the subject's bodily state. According to the theorists of the Appreciative Inquiry, reflecting and acting in a positive perspective, promoting positive emotions, would foster a serene and collaborative human relationship, such as producing improving and generative influences; The other theoretical reference is the Pygmalion effect, also known as in the famous self-fulfilling

prediction. According to this principle, sometimes, the teacher's personal beliefs could alter an objective analysis of the student's achievements.

This would trigger a process whereby we often act on the image of ourselves that we perceive from others, especially within the community of reference. If the image is negative, the performance is negative, on the other hand, the more positive the image, the more positive the response will be.

In this sense, the interpretative perspective of the Appreciative Inquiry, focused on the positive, would promote teachers, duly trained, to design and implement a didactic oriented to decode the potential implicit in the stories and personal experiences of the students. In this perspective, teaching would be declined in occasions and opportunities, through *narration* and *communicative exchange*, to express one's own experience in terms of emotions. In this sense, some studies on learned *helplessness* and Seligman's The contribution of Positive Psychology are also decisive for the Appreciative model. In fact, based on these suggestions even educational interventions based on positive thoughts and the student's strengths, rather than on difficulties or lack of resources, would Favor better effectiveness in results, thanks to a classroom climate aimed at the socio-emotional well-being of everyone.

Considering the above, therefore, adopting the positive perspective of the Appreciative Inquiry would imply orienting teacher training on the acquisition of skills such as recognizing and managing positive emotions, and broadening one's gaze on potential. The centrality recognized in the theoretical framework of the Appreciative Inquiry is coherently combined with the consideration that sound, in all its forms, narration, dialogue, and communication, constitutes a key to accessing a positive reading of one's emotional plane. In this sense, it would be useful, to promote emotional skills, for teachers to first take a positive view in the context of their training, through a work of constant reflection and propensity for change. To this end, the use of music combined with the theoretical level of the Appreciative Inquiry could be potentially strategic. Music, thanks to its transformative potential, would also Favor the tracing of positive emotions, favouring the creation of an emotionally engaging environment in which participants feel pushed and inspired to imagine and build the desired future.

From what has been said, therefore, it could be said that music could become a tool in teacher training and then in teaching, to create an empathetic and inclusive environment in which people feel inspired to share their emotions, the experience connected to these emotions. In addition, music declined according to some

principles of the Appreciative Inquiry and could become a vector for reflecting on the emotions felt and, on the events, related to these emotions, focusing mainly on positive moments.

According to the *constructionist* principle, for example, as well as in music studies, creation and change of perspective are connected to the act of constructing meaning. This could be done through dialogue and metaphors (Cooperrider & Srivastva, 1987), as well as in musical compositions and performances. In fact, when musicians compose and perform, they give shape to emotions, thoughts, and stories through the universal language of sound, (Saarikallio, 2019). In the same way, the *poetic* rule emphasizes the centrality in the Appreciative Inquiry of dialogue and the sharing of personal stories as preparatory elements to generate new perspectives of action (Gardner, trans. 2010), emphasizing the importance and centrality of linguistic and musical intelligence in emotional and immediate communication. Moreover, the *anticipatory* rule, which is based on the necessary practice of reflexivity in every moment of the narrative, could be linked to the potential offered by music in moments of *metacognitive reflection* (Schön, 1987).

According to what has been said, the combination of music and Appreciative Inquiry could become a potential decline in teacher's education projected to recognize the centrality of fostering emotional skills in schools from a positive and inclusive perspective. In fact, collective participation in the production or listening of music could strengthen interpersonal relationships, further fostering a sense of cohesion and inspiring emotional connections (Fernández-García & Fonseca-Mora, 2022) in the relationships between teachers and learners and between peers.

In summary, hypothesizing formative trajectories according to the principles *of Appreciative Inquiry* and music is justified by the common ground explained above. So, if on the one hand, this perspective appears coherent, on the other hand, it would be interesting to include in this attempt at a dualistic approach a third element, AI, as will be highlighted below.

3. Artificial harmonies between AI, music, and positive emotions

Intelligence can be understood as the ability to solve problems or to create products that are valued in one's culture or, in general, in society (Gardner & Hatch, 1990). Over time, it has undergone a series of varied interpretations, which have also led to a reinterpretation of the very concept of *intelligentia*, especially following the advent of AI, which has opened new interpretative scenarios,

connected to the emotional impact that the latter can have in relation to the birth of emotions or their enhancement (Khare et al., 2023). An attempt has been made to outline possible explanations about the concept of emotion linked to AI and how this *medium* can constitute valid emotional support, together with other mediators. Among these, a particular focus and special attention have been paid to music, through the effort to verify how it can be artificially produced to have the same emotional impact deriving from real composition (Dan et al., 2022).

This interest has led to a new interpretation of *sound*, linked to the social sphere, therefore deriving from an action that can be defined *as collegial* and *generative* and that induces the individual, through musical and communicative exercise, to move away from the solitary dimension of the *Ego*, becoming plurality in the other and with the other, *sociality* (Bushuyev et al., 2023). The fear interconnected with the use of AI systems to generate music to arouse emotions has been that of losing the *personal* nature, which allows the person to recognize himself as a being able to define his own thought, to narrate a personal experience that is his own and that could not be mediated by another system (Aleaddine & Tannoury, 2021). However, this aspect would not always seem to be shared, since it should not be forgotten that musical production, precisely because it is a creation of man, is the result of a direct intervention of the same in offering input and guiding the artificial in the definition of what are the characteristics that the piece played or sung can have, thus reflecting a real nature even in the virtuality of the generated (Lopez-Rincon et al., 2018).

Interest has also undergone an interpretative shift, bending interest also towards the educational and didactic field, especially inclusive, where the theme of artificial is of vital importance, as it would allow the structuring of *ad hoc* educational paths, organized based on the learner's learning style, on their own peculiarities (Porayska-Pomsta & Rajendran, 2019). In this regard, we speak *of learning style*, referring to a lasting characteristic in the learner that strongly affects his or her way of learning, knowing, studying, as well as living and relating to the other than oneself, responding effectively to the various *stimuli* deriving from the surrounding environment, especially in learning contexts (Mills, 2000). The purpose of the school, as highlighted in the National Guidelines for the Curriculum, is the attention given to the learner'*s ability to "mobilize his or her emotions*" (MIUR, 2012, p. 14), therefore to the possibility of handling a non-tangible sphere of the self through the support of physical tools, therefore perceptible by the senses, and that they can help in that process. Music, therefore, would present itself as suitable for achieving this goal, even more so when produced following canons that are close to the way

of expression of the new generations (Liu, 2018). Trap music, rap, however, oriented to convey certain contents or topics, can be designed and reproduced with the help of artificial and intensify the awareness and self-management of one's emotions (Avdeeff. 2019), therefore with a work more focused on positive rather than negative emotions, also strengthening communication and improving self-awareness, with one's positive traits and limits (Moreno, 2020). The artificial dimension of sound, as a product of human action, reflects the flexibility inherent in humans, a complex and adaptive system (Berthoz, 2011; Sibilio, 2023), continuously evolving and transforming by virtue of the same adaptation needs that in the school field are definable in terms of learning style, fertile ground useful for the development of creativity, able Vygotskian (2010) to shape the higher cognitive levels, thus returning a better understanding of what surrounds us through direct experience synthesized and adapted precisely thanks to the artificial (Sibilio et al., 2023).

The *communicative* and *narrative* dimension of sound, as well as the possibility of adapting thanks to it, also restores a central role to perception, to interaction, a mechanism in which two communication systems place spaces and times in direct sharing (Sibilio, 2020), also intersecting in a third dimension, namely that of co-construction, sharing and growth in respect of the other than oneself, according to an inclusive approach (Laurillard, 2015). Sound, therefore, adaptable to one's own peculiarities, also allows the recognition of the peculiarities of others, especially when it is necessary to be able to manage one's own negative emotional bearing in favour of the positive one. This positive consciousness also favours a better perception of one's own experiences, helps to understand which beautiful aspects are intrinsically present despite living strongly negative experiences, and which therefore would potentially favour the emergence of equally negative emotions (Crichton et al., 2014)

The dialogical-emotional consciousness, therefore, present in a musical composition, albeit artificial, would make it possible to empathize with the other, where empathy means the possibility for the individual to consciously explore the experiences of others, having the ability to be able to discern one's own action, one's own feelings, while understanding those of the different from oneself, in a positive re-writing of experiences (Brinck, 2018).

This way of conceiving artificial intelligence in relation to music, especially in relation to the positive emotions that can be discriminated thanks to the help of sounds and music generated by AI, leads us to also consider the education of teachers necessary to propose activities with awareness, and oriented precisely to

adapt sound in artificial form to the peculiarities of their learners (Lameras & Arnab, 2021). It should not be forgotten that Artificial Intelligence, technological tools, represent the means by which we *act* and that they take on meaning only when they are included in a well-defined educational project and in which the learner has an active role, is required to participate in the proposed activities, also reinforcing in this sense the motivation to learn and curiosity (Mori & Newint, 2019). The teacher, therefore, aims to train on these issues, through paths capable not only of raising awareness *of the artificial* as a means not as a substitute for man, but as a help, and support, but also able to make future educators aware of what are the means available and how these can be used in order to create environments tailored to each and every one, following an inclusive trajectory (Salas-Pilco et al., 2022).

Following training that can encourage teachers to become aware of artificial in order to generate works capable of enhancing positive emotionality, may be useful in the future in order to enhance one's own and others' actions, consequently improving the dialogic inherent in the learning process and which is expressed through a plurality of means, in which the protean aspect with which sound can be generated and interpreted allows alignment with new *hemispheres hetero-centric* (Cross, 2001) in which to converge one's own weighting, as well as one's own experience, one's own emotionality, harmoniously intertwined with that of those who will be trained.

The dialogic and narrative sound, generated by the artificial, would improve the feedback between teacher and student, favouring a reshaping of contents, and methods, on the basis of the needs emerging during the educational process and embodied in the expressive potential of sound, in the logical-semantic capacity given by dialogue, which laterally enhances skills traceable in listening, in the active and transformative potential implicit in it (Duman, 2023). In this perspective, the narrative and communicative language of music, declined in the different forms of listening, of speaking, would allow an increase in human relationships, and interactions, promoting a process of growth both for *each and every one* and becoming a proponent of an *ongoing formation* based on creativity, expressiveness, and the encounter between *ars educandi* and *ars comunicandi*. The possibility of paving the way for free dialogue is also an expression of linguistic *demos*, represented by the possibility given to anyone to have their say and enhance the multifaceted nature of human action and communication (Moreno, 2020).

Intelligence, in its evolution through time and technology, has therefore led to a reconsideration of the very concept of artificial intelligence and its relationship with emotions. The use of music to promote the awareness of positive feelings through artificial products is a territory still to be explored in the plurality of its application possibilities. Yet music, whether artificially generated or not, remains an anchor of social connection and a means of exploring and understanding ourselves and others. In the training of teachers and in the design of inclusive educational paths, artificial technology becomes an ally to enhance positive emotionality and create learning environments that reflect the plurality and complexity of the human being. Through real and artificial dialogic and narrative sound, it is, therefore, possible to shape and transform the different educational paths of learners, enriching human relationships and promoting collective and individual growth. In this constant dialogue between man and technology, the inclusive potential can be traced, where everyone can express themselves and contribute to the richness of our human experience in the emotional harmony of the artificial as a framework for action.

4. Methodology and results

The research was conducted following a mixed approach, providing participants with the administration of a questionnaire with qualitative-quantitative items The qualitative questions were aimed at investigating, particularly the motivation of the answers given, to understand the reason for certain choices and, laterally, also the knowledge of the issues in question.

4.1. Participants and times

There were 532 participants in the questionnaire, all attending specialization courses for support activities for students with disabilities at the University of Salerno. The study was conducted during the months of January-April 2024, as part of the laboratory activities.

4.2. Tools and structure of the questionnaire

How useful do you think the use of AI is to create music that has a positive impact on the reflections related to the design of inclusive educational activities?

How often do you listen to music to reflect on your life experiences?
Do you believe that AI-generated music can have an emotional impact similar to that created by human composers?

In your opinion, could the use of artificial intelligence in music creation broaden your understanding and interpretation of your life experiences?
Would you rather listen to AI-generated music or music composed by human artists when it comes to reflecting on your life experiences?
Do you believe that Artificial Intelligence can create music that can convey complex and deep emotions?
Have you ever used applications or services that offer AI-generated music for introspection or reflection purposes?
How useful do you think the support of AI is to create music that arouses positive emotions related to life experiences?
How useful do you think the support of AI is to create music that arouses positive emotions related to didactic-educational experiences?
How useful do you think the use of AI is to create music that has a positive impact on the reflections related to the design of inclusive educational activities?

Table 1. Items generated by Artificial Intelligence based on the inputs originally provided

The questions included in the second section of the questionnaire, in particular, mostly included answers of agreement or disagreement ("Yes" or "No"); those of the second section of the questionnaire, on the other hand, was set up following the logic of choosing a certain utility value on the basis of a Likert scale already structured with values from 1 (Not very useful) to 5 (very useful), based on the questions asked. For all questions, the justification for the answer has been entered.

4.3. Data analysis

The data analysis was carried out following a mixed approach. For the quantitative analysis, data directly provided by the integrated Google Forms system were examined. The response percentages were analysed if the question provided positive or negative feedback, as well as the result of the preferences with respect to the Likert scales. For the current phase of the work, among the reasons given to the questions, only those given to the following items were examined: "*In your opinion, could the use of artificial intelligence in music creation expand your understanding and interpretation of your life experiences?", "How useful do you think the support of AI is in order to create music that arouses positive emotions related to didactic-educational experiences?", "How useful do you think the use of AI is in order to create music that has a positive impact on the reflections related to the design of inclusive educational activities?"* A bottom-up approach was chosen for the qualitative data analysis, with the help of the MAXQDA data analysis

software and following the thematic analysis steps (Boyatzis, 1998). For each item, all the answers provided by the participants were read and initial synthesis codes were created, thus following an in vivo decoding. It was realized that often some codes were frequent and therefore, a second phase of decoding was necessary, which involved the merging of the initial codes into further higher codes; Therefore, the initial codes have become sub-codes of further higher macro-codes, which have made it possible to detect the key themes and the general motivations provided for the individual items.

4.4. Results related to previous experience

Regarding previous experience, participants were asked what degree they are currently postgraduate on. Most of these (48.8%) are postgraduate students on educational support for pupils with disabilities for Upper Secondary School (46.8%), with a high percentage of postgraduate students for Lower Secondary School (36.7%). A smaller percentage, on the other hand, are postgraduate students in Childhood (15%) and the rest in Primary (Fig. 1).

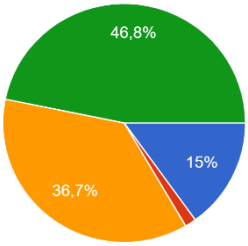

Figure 1. Summary report on the degree of specialization

As far as previous teaching experience is concerned, most of the participants have taught (66.5%) (Fig. 2.), but for a period not exceeding 5 years (70.5%) (Table 2). Therefore, the groups, at a working level, are young and do not have a great deal of experience behind them in the world of teaching.

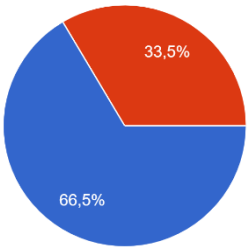

Figure 2. Summary report on previous experience

Years of teaching	**Percentage**
From 1 to 5 years	70,5
5 to 10 years	23
10 to 15 years	17
For over 15 years	6

Table 2. Years of previous teaching

Despite the homogeneity in the indication of the degree of specialization, the participants have varied previous experience, mostly concentrated in Upper Secondary School (42%) and Primary School (25%), followed by Lower Secondary School (24%) and Kindergarten (9%).

Regarding the current situation, the majority of participants do not teach (52.9%) (Fig. 3). The levels of teaching in which the participants are teachers are varied (Table 3). Most of them, however, are employed in teaching at Upper Secondary Schools (35%), followed by a fairly high percentage of teachers at Primary Schools (27%); Thus, although most of them are postgraduate students at a higher grade, they are employed at a lower level of education.

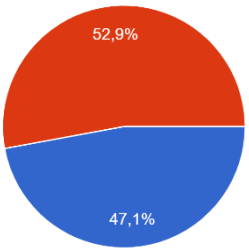

Figure 3. Summary report on current situation

Current level of education	Percentage
Kindergarten	8
Primary school	27
Lower Secondary School	30
Upper Secondary School	35

Table 3. Participants' job placement in the teaching field

It should also be noted that there are few who are engaged as support teachers (28.1%) or curricular teachers (29.2%) at the teaching level, all carrying out activities other than those of teaching (Fig. 4)

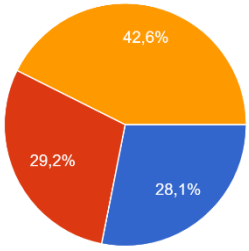

Figure 4. Participants' job placement

With respect to the previous working conditions on support, it should be noted that most of the participants stated that they did not have any (58.3%) (Fig 5). Also in this case, the majority of those who said they had experience, in any case, did not work for more than 5 years (86.1%) (Tab. 4); This confirms that the participants, from a work point of view, are young.

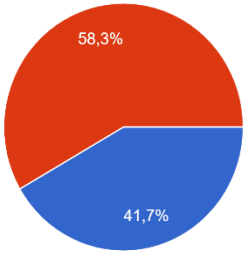

Figure 5. Summary report on current situation

Years of teaching on support	Percentage
From 1 to 5 years	86,1
5 to 10 years	12,6
10 to 15 years	2
For over 15 years	1

Table 4. Years of previous experience as a support teacher

Shifting the focus of attention to the use of Artificial Intelligence to promote positive reflective processes, thanks to the integration with sound, it should be noted that most of the participants were sceptical. For them, first, AI-generated music cannot have a positive impact compared to human-generated music (69.7%) and cannot even expand the understanding and interpretation of their own life experiences (53.5%). Therefore, for the participants, the help of AI in the compositional and reflection processes tends to have a negative impact in terms of positive reflection (Figs. 6 and 7).

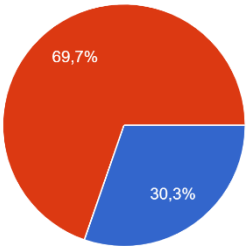

Figure 6. Answers to the question "*Do you believe that AI-generated music can have an emotional impact similar to that created by human composers?"*

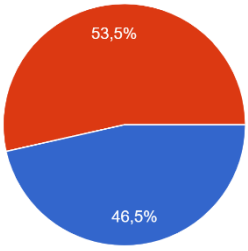

Figure 7. Answers to the question "*In your opinion, could the use of artificial intelligence in music creation broaden your understanding and interpretation of your life experiences?"*

The general trend is confirmed when participants are asked whether, in the reflection processes, they would prefer to listen to music generated by human composers or by the AI system. The majority expressed a clear preference for music generated by real composers (97.2 %) (Fig. 8).

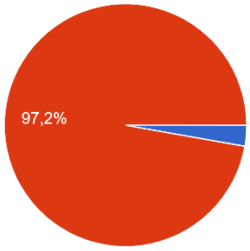

Figure 8. Summary chart with respect to the preference to listen to music generated by real authors or virtually to reflect on life experiences

For participants, AI is also unable to convey complex and deep emotions (62.9%) (Fig. 9)

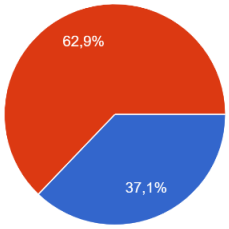

Figure 9 Answers to the question about AI to convey complex and deep emotions

However, compared to the mostly negative answers provided, an interesting fact emerges, namely that the participants have never used AI either for personal purposes (94.6%) (Fig. 10) or for strictly educational purposes (69.1%) (Fig. 11)

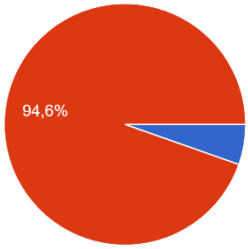

Figure 10. Percentage of AI use for personal purposes by participants

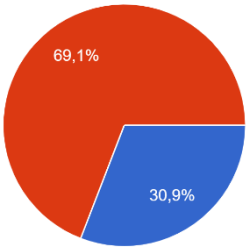

Figure 11. Percentage of AI use for educational purposes by participants

In relation to the second part of the questionnaire, aimed at investigating the relationship between AI and music in order to arouse positive reflection on life experiences, it should be noted that, in general, participants believe that the support of AI is quite useful (34.6%); however, a large part of the participants (29.2%) also expressed a negative opinion, therefore they did not consider the mediation of AI valid in order to generate positive emotions related to life experiences, compared to those who consider it a valid means (4.5%) (Fig. 12)

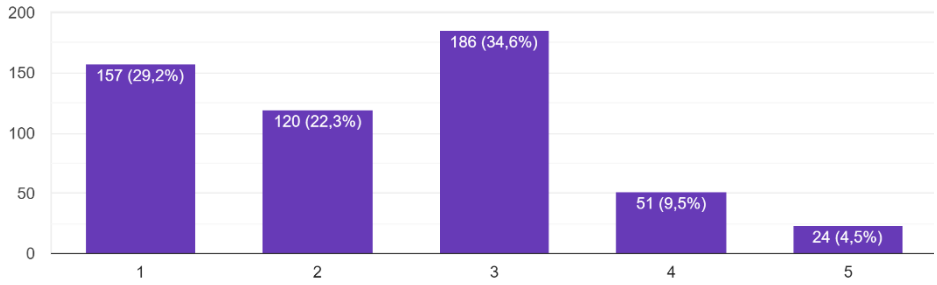

Figure 12. Preferences for the use of AI to elicit music that evokes positive experiences

Asking the same question in relation to the educational and didactic field, the answers are not very dissimilar. For most participants (37%), therefore, the help of AI is partially useful to elicit music that generates positive emotions related to life experiences. A high percentage (23.2%), moreover, expresses complete distrust towards a possible intertwining between the two components, as they are completely reluctant to the help of AI in the field of training (Fig. 13).

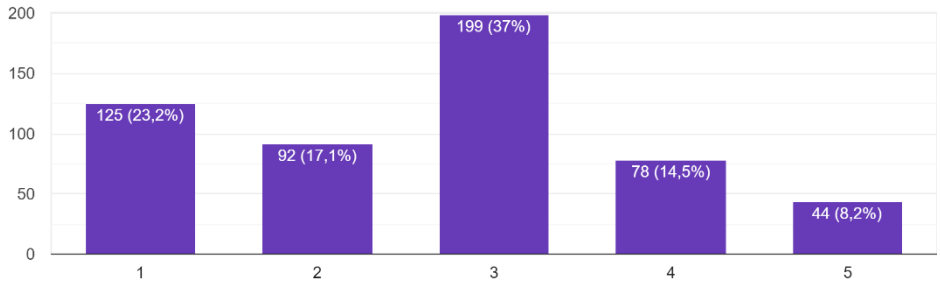

Figure 13. Preferences with respect to the possibility of using AI in order to elicit music that evokes positive experiences in education and training

Further bending the analysis towards the field of inclusive teaching, it should be noted that, even in this case, the response of the participants is on average positive (35.7%), compared to a large slice of them (24.1%) who instead highlighted how the contribution of AI in didactic-inclusive processes is not sufficient in order to design reflective activities of a positive nature. On the other hand, a smaller percentage (9.7%) believes that integrated activities with the help of AI are useful for the maturation of positive experiences and for the rise of positive emotions in contexts where learners with Special Educational Needs are present (Fig. 14).

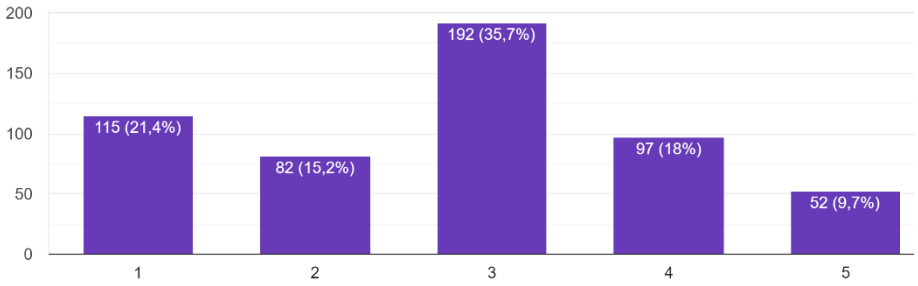

Figure 14. Preferences with respect to the possibility of using AI in order to elicit music that evokes positive experiences in the educational and inclusive field

5. Data Discussion

A synthetic analysis of the data collected shows that, in general, teachers are quite reluctant to positively accept the impact of Artificial Intelligence in relation to music in order to generate experiences and arouse positive emotions; the resistance to innovation, however, is not supported by considerations or evidence such as to make one believe that participants are actually aware of the formative and transformative potential that AI, now new social modus communicants, as well as a predominant tool of expression and didactic mediation, has in order to support man in the full expression of identity. There are several studies that show how Artificial Intelligence has a good impact on humans in general, not only in terms of helping work, but also emotional, and socio relational (Saxena et al., 2020; Khare et al., 2023; Ballesteros et al., 2024). AI is often considered a support for structuring training courses in which positive feelings emerge (Treacy & Westerlund, 2019), it is used in focus group activities to structure questions that somehow let the positive emerge rather than the negative. In addition, the musical element as a further form of support for the design of training courses, together with Artificial Intelligence, meet flexibly to foster in participants the security of expression, the freedom to be able to have their say also through vicarious modes of action (Cowley & Gahrn-Andersen, 2023). AI, in particular, with its ability to analyze complex data and model emotional patterns, is a valid support for educational design in order to choose trajectories, and operational paths congenial to the structuring of useful paths for the identification of the positive (Treacy, 2022); This is because it operates through sophisticated processing algorithms, which make it possible to capture the beauty and importance of melodies, lyrics that evoke joy, serenity and hope. The ability to manage unlimited data allows you to explore new frontiers of sound, transforming abstract concepts into tangible harmonies. AI-generated music is not just a technological exercise, but a vehicle capable of eliciting feelings of happiness and gratitude through notes and rhythms (Rahman et al., 2021). From this point of view, the participants in the survey were divided into three macro-groups: the distrustful, the supporters, and the neutrals. As for the distrustful, they justified their choice in the negative by arguing that the compositions of real authors are charged with greater emotion (58%), that AI is unable to reflect experiences (16%), experiences that in some way are configured as the basis on which to shape the musical composition and that it becomes a reflection of it; moreover, they recognize that

actual musical composition has a greater impact on the intentionality and perception of the listener (16%) (Fig. 15).

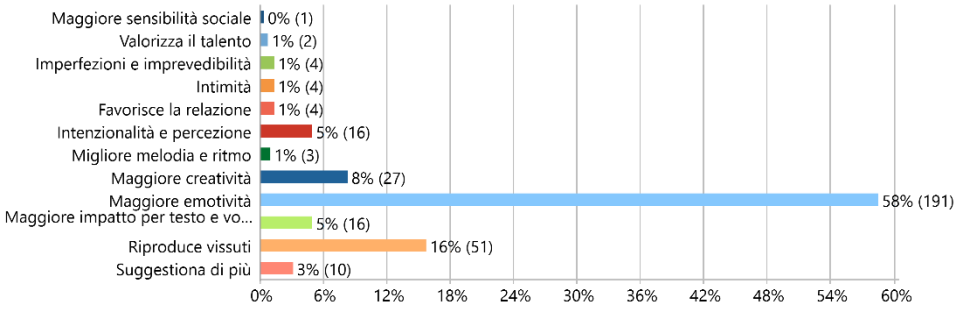

Figure 15. Participants' reasons for preferring non-AI-mediated compositions

On the other hand, those who expressed a favourable opinion on the use of AI see it as equally capable of arousing the same emotions, as it arises in any case from human input (44%). It is the man himself, through his own intervention, who gives peculiarities to the composition, to favour the composition of pieces that perfectly correspond to the parameters dictated directly by the composer and therefore able to favour, in the moment of listening, the same involvement (7%) and also intervening on the sphere of simulation and imagination (7%) in order to positively interpret the surrounding world and everything that characterizes it, positively reinterpreting life experiences (Fig. 16).

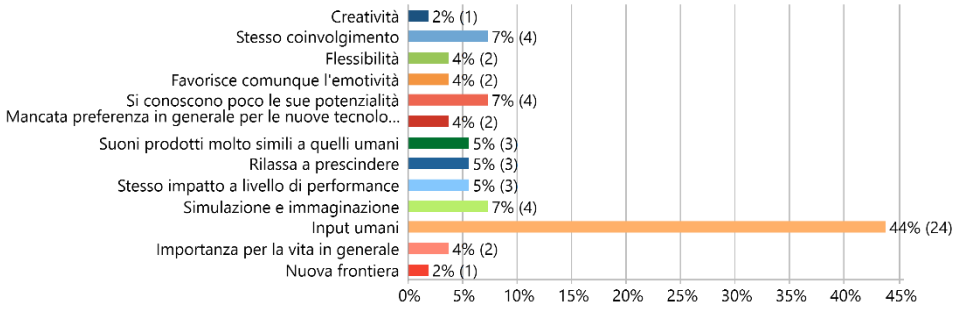

Figure 16. Participants' reasons for their preference for AI-mediated compositions

A similar interpretative trajectory also emerges from those who have shown themselves to be neutral, who have highlighted that music is a universal language

capable of fostering, regardless of the medium, the same emotions and sensations that can be transferred through musical pieces composed by physical authors (36%), this is because at the base of the work, it is always the man who acts, to move the ranks of the composition and steer it steadily towards the positive (Fig. 17).

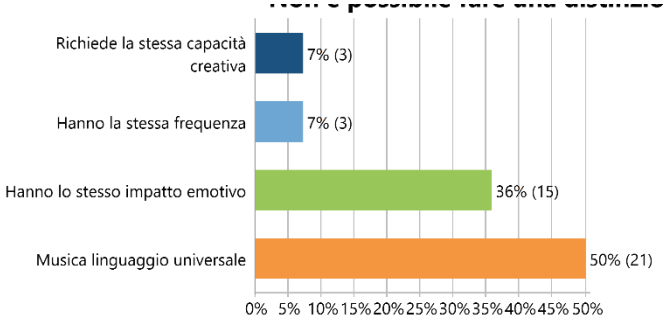

Figure 17 Participants' reasons for not distinguishing between AI-mediated compositions or real composers in order to generate positive emotions

This fact is evident, in addition, when the items went to explore the specific dimension of positive reflection, for which the participants highlighted once again that AI, according to their own point of view, is not able to arouse such positive emotions and is able to promote, at the same time, meditations on one's own experiences (12%); however, a similar percentage of participants expressed the impossibility of expressing themselves due to the lack of knowledge they have about Artificial Intelligence systems, in particular with respect to the potential that AI can have in mediating educational processes, even more reflective. Therefore, the negative data contrasts with the impossibility of the answer. Participants seem to have given answers more based on common opinions rather than on the actual awareness linked to training on AI and all the potential related to it. This would highlight how the structuring of training courses, in which more space is also given to the concrete exercise of AI, highlighting strengths, and criticalities, could be useful to future teachers for greater awareness of it, as well as for a more conscious use of it, especially where it is intended to be used to promote self-expression in the learner, the recognition of diversity (Fig. 18).

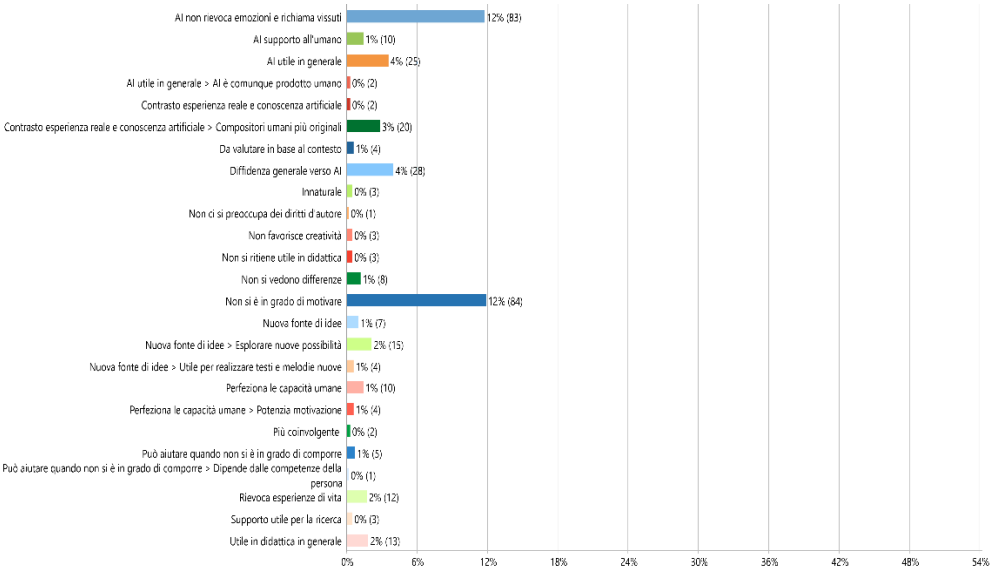

Figure 18. Summary of the motivations given by the participants about the relationship between AI and music in order to encourage positive reflection in the educational field

This contrast emerges even more when the focus shifts to inclusive design mediated through the intertwining of Artificial Intelligence and music, following the phases of Appreciative Inquiry. The participants, also in this case, expressed the impossibility of being able to give their own opinion because they were not aware of the potential of AI in the educational field and, even more, in the inclusive field (22%). In addition, a large part of the participants recognized, in general, the usefulness of AI in teaching (12%), since it contrasts with the answers collected in the quantitative section of the questionnaire and, even more, with respect to the motivations that push participants to give negative answers about AI and its potential. Participants, in fact, recognize how the design of educational and inclusive paths mediated by AI from a positive perspective, are still able to stimulate learners in communication (2%), foster attention (2%) and creativity (2%), therefore useful for inclusion (11%) and personalization (7%). The disagreement evidently stems from the fear that AI could somehow replace the teacher and could lead to a loss of values rather than their direct acquisition. The positive outlook required is not applied when thinking of AI as a possible form of didactic mediation and not as a replacement for human, as the participants expressed in the various codified qualitative segments. Therefore, it is essential to have specific training aimed at understanding the potential, not only generic but also design, that AI, together with

music, can have in the educational paths of students, to encourage the expression of positive emotions, avoiding the logic of a naïve knowledge that pushes to demonize the help of AI just because it is “devoid of emotions”. It is the man himself who guides the AI and provides the input, and this input is the result of emotions and personal experiences. AI does not replace them but didactically mediates the human in the exercise of positive expression and reflection (Fig. 19).

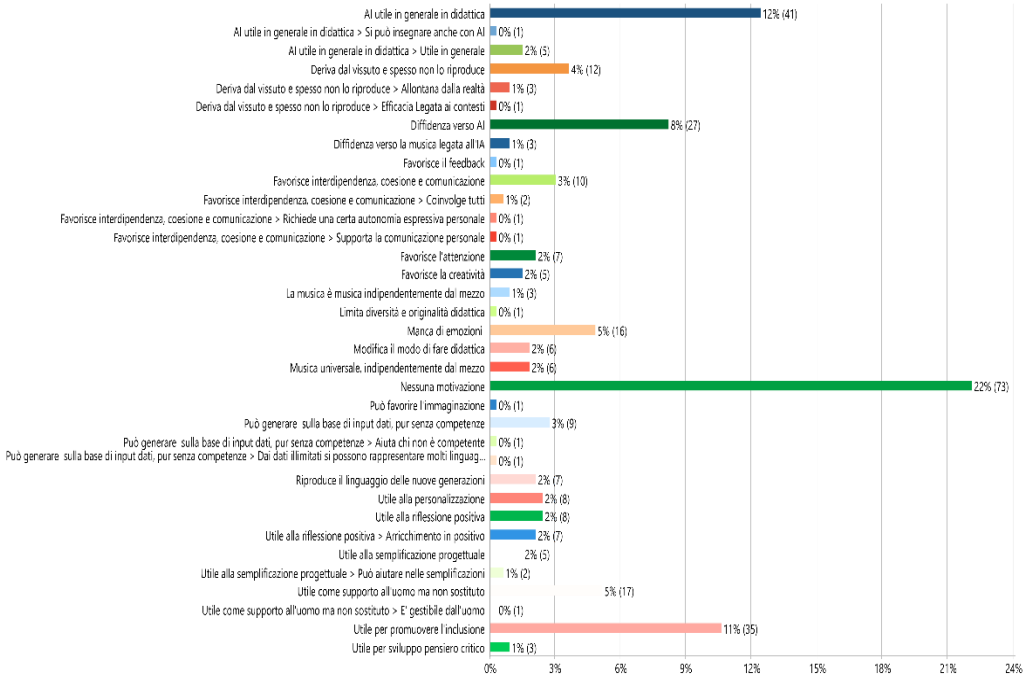

Figure 19. Summary of the motivations given by the participants about the relationship between AI and music in order to foster positive reflection in the educational and inclusive field

6. Conclusions

The study shows that there is a significant lack of understanding and awareness regarding the use of Artificial Intelligence (AI) and music as tools for inclusive educational design in a positive way. The results show that negative responses to these tools are not supported by an in-depth knowledge of their potential and applications; in particular, there is a lack of awareness of how Appreciative Inquiry could foster, together with music and AI, positive reflection, and inclusive educational design. This suggests the need for more information and training

regarding the capabilities of AI and music in the educational context, to fully exploit its benefits for all students, including those with Special Educational Needs. In addition, the relevance of pedagogical approaches that encourage a positive and proactive view in the use of these technologies emerges, thus promoting an inclusive and success-oriented culture for everyone.

In addition, data analysis revealed that the integration of AI and music into instructional design can play a significant role in increasing the inclusion of students with disabilities, as evidenced by several studies (Gioti, 2020; Miranda, 2021; Civit et al., 2022).

Looking to the future, there is a need to continue research and development in the field of integrating Artificial Intelligence and music into inclusive educational design and according to the key of Appreciative Inquiry. It would be useful to further explore the ways in which these technologies can be used effectively to support learners in expressing their feelings through, of course, the prior training of teaching staff. In addition, with the advancement of technology and the constant improvement of artificial intelligence algorithms, new possibilities are possible to develop even more sophisticated and personalized tools and resources, thus overcoming naïve logics that negatively view the mediation of artificial in design processes, which in any case start and are mediated by humans. Ultimately, investing in the positive potential of Artificial Intelligence in education can help shape a future in which every student has access to quality education and can fully manifest their potential, and their emotional and expressive freedom, through the mediation of sound and its harmonious interweaving with AI.

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