Design and Exploratory Findings of an AIGC-Supported Junior Secondary Art Classroom: A Two-School Case in Guangzhou

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Abstract. This article studies one AIGC-aided junior high-school arts class that has been designed and carried out in two schools in Guangzhou. However, this study cannot make a claim of intervention control, since it uses a mixture of methods consisting of two baseline online surveys (n=233), participation record sheets (n=114), exit survey questionnaires after class (n=104), 52 works-in-progress samples, 6 group presentations, and ten end-of-term works. Such lessons revolve around one topic: “My Planet,” with Midjourney being the main software tool. Analysis is mainly focused on four dimensions, namely aesthetic engagement, collaboration, creation practices, and students' interest towards arts. The descriptive results showed at least three common phenomena. One is that students tend to accept introducing AIGC into an art class since they feel excited about this brand new way which may increase their involvement and interest. The second one is that students show positive changes in creativity, willingness to explore unfamiliar visual patterns/styles, and enthusiasm towards future artistic activities, etc. Meanwhile, there are some conflicts shown through the class materials. Some students focus more on how to use the tools rather than slowing down and analyzing aesthetics. Furthermore, some teams complain that sometimes the outcomes generated by AI cannot completely express what they want to say. Thus, the study proves that AIGC might act as a good spark/starting point when motivating students’ participation and collective imagination in Art lessons at junior secondary level. However, it doesn’t mean that teachers just need to provide them with novel things; teachers also need to pay proper attention to pace, prompt design/scaffolding, and theme profundity instead of only emphasizing being new.

Keywords: AIGC, artwork education, lower secondary education, midjourney, classroom designing, students’ reaction.

1. Introduction

Generative AI has developed so fast: from specific research and commercial applications to daily cultural production. The emergence of midjourney-like text-to-graphics software allows laymen to create pictures, whereas previous studies about machine-generated artworks have already proven that those systems can learn certain types of visual aesthetics first and then reproduce them in different forms or even consciously change what they have just learned [1]. Some later literature reviews on empirical research of fine arts stated that at present, AI has begun changing ways of creating artworks and also people’s cognition towards art itself [2].

Meanwhile, the educational significance involved is still under research. Recently, some academics have discussed what large-scale language models and similar generation tools might provide for education and what they might threaten [3, 4]; however, there is relatively little in-school evidence on such applications at classroom level so far, although more recent studies imply that when properly targeted at specific didactic aims, generative AI could help facilitate discovery, customization, and investigation [5].

In terms of art education, the following discussion will be even more talkative. And scholars believe that the discussion of AI in art education should focus on both its role as a creation tool and as one kind of space where people could reflect their own opinions about authorship; about moral standards; about aesthetic judgment; about what kind of value would exist in their classroom [6]. Some of the latest research results have shown that recently there has already been rising public interest regarding topics about artificial intelligence literacy, prompts designing, classroom trials, etc [7, 8].

The following article is therefore focused upon a particular example of implementation of such teaching, which happened during one lesson at junior secondary level in each of two schools located in Guangdong province. The aim was to examine whether lessons using AIGC could improve students' performance across four different areas: aesthetic judgement; group work skills; creativity through practicing; and finally, interest towards art. As the author does not have enough materials/resources to conduct an experiment under controlled conditions (i.e., having both pre- and post-tests), the structure and organization of the current paper will follow more closely the logic of an exploratory case study.

Two research questions guide the paper:

RQ1: How was the AIGC-supported art classroom designed and implemented?

RQ2 asks what is known based on existing information regarding students' level of participation concerning aesthetic evaluation/critique, teamwork, creation/practice, and passion toward artwork.

2. Related Work

2.1. AIGC, Art Production, and Art Education

The research field of AI's output artworks expands rather fast as well. Among them, some empirical results concerning fine art can be found AI has been used as an instrument for producing paintings, making music, writing stories, performing, and interacting with audiences, etc. Besides, people sometimes have difficulties recognizing whether the artwork was produced by human beings or AI [2]. Still, in terms of education, the argument does not center around what kind of work this tool could generate. Instead, this paper will also discuss how teachers and students understand creativity, responsibility, authorship, and criticism when they encounter some kind of AI in their classrooms [6].

The latest art education research gives a mixed but hopeful answer. This is because artificial intelligence can provide brand-new channels to study across various disciplines, visualize thoughts, and think based on prompts; at the same time, there is more and more evidence that art educators learn AI. They also acquire some hands-on experience of making things with the help of machines [7]. In China, there are pioneering people trying them out even today. For example, Wenzhou builds up its own AI curriculum covering elementary schools, junior highs, and senior highs, introducing certain parts of AIGC knowledge to every level mentioned above. When a geography teacher taught in middle school, he/she created teaching pictures and videos using this kind of tool, so students could easily understand how the Loess Plateau had changed through those vivid pictures produced by MidJourney. Yet, these examples sound exciting, but they’re usually just some descriptions instead of any formal assessment of what students learned [8].

2.2. Creativity, Motivation, and Social-Emotional Dimensions

The paper retains all four previous dimensions since they remain relevant when applied to schools' arts contexts. In secondary visual arts, previous studies have found that being creative relies both on how talented students are and how well teachers perceive & assist them regarding creativity during class sessions [9]; as far as arts/culture learning is concerned, research indicates that students' motivation is affected by certain ways/methods through which teaching takes place, plus some specific kinds of circumstances in which learning happens [10]; apart from having an impact on motivation, visual arts education has even been linked with developing reflective abilities/attitudes, communication skills, etc., and promoting the kind of socio-emotional development occurring among students at actual schools [11].

2.3. Design-Based Classroom Learning and Group Processes

This lesson described above has been set up around one such short design assignment, which uses lots of tools (as mentioned earlier). Previous studies show that design-based activities could increase students' engagement and their participation in higher cognitive levels [12]; however, they also have

some issues, like emotional oscillation and pace variations across groups, etc., which need management from teachers [13]. Since collaboration is an important part of design work, both class reflection and role coordination are needed [14].

Therefore, what is contributed by this paper should be considered modest rather than grandiose. Instead of providing an all-round theory of how AI affects art education, I record one case of my own teaching for a few weeks in junior high school classes in China, and interpret some data cautiously, paying close attention to its potential as well as conflicts.

3. Methodology

3.1. Research Design

This paper adopts an exploratory case study approach. The baseline survey aims at understanding students' current situation in learning arts and their attitude towards AI tools; classroom practice and post-class materials describe what happens when applying AI tools in classes. All the evidence presented in the paper is mostly of a descriptive nature instead of experimental.

It needs mentioning that the research employs a one-group design instead of having a comparison group. And both the pre-survey and the post-class questionnaire were delivered to somewhat overlapping rather than the same groups of people, as well. Therefore, all results need to be taken as exploratory and descriptive findings rather than causal ones.

3.2. Participants and Data Sources

This study obtained 233 valid samples among junior secondary students in Guangzhou City through the online basic questionnaires. Table 1 lists their demographic profiles.

Table 1. Baseline Questionnaire Respondent Profile (N = 233)

Category	Group	n	%
Grade	Grade 7	29	12.45
	Grade 8	174	74.68
	Grade 9	30	12.88
Gender	Female	109	46.78
	Male	124	53.22

Table 2. Data Sources Used in The Analysis

Data source	Scope	Value
Baseline questionnaire	Valid responses	233
Classroom implementation	Participants	114 (School A: 72, School B: 42)
	Groups	19
Post-class questionnaire	Valid responses	104
Worksheets	Valid worksheets	52
Group presentations	Groups invited	6
Final works	Selected for analysis	10

The teaching experiment was carried out at two junior secondary schools in Guangzhou, among which there were a total of 114 students who participated (aged 13-15 years old), shown in Table 2. They studied in groups of five or six people, with 19 groups altogether. At last, 104 useful post-class feedback questionnaires were received.

3.3. Instruments

In order to conduct this research, two questionnaires were prepared through the Wenjuanxing Online Survey Platform. The baseline questionnaire consisted of 25 questions (out of which 3 covered general information about participants, and 22 dealt with main content). This tool evaluated students'

artistic literacy across four dimensions and their knowledge about AI-powered arts tools. The second questionnaire collected feedback from course participants regarding changes in their level of artistic literacy and opinion about AIGC lessons. Questions within both questionnaires were mainly presented as Likert scale options and multiple choices.

It must also be pointed out that neither of these two scales had been officially tested for their reliability and validity, because they had been specially created for this study. And here lies one of the study's weaknesses.

3.4. Classroom Task and Procedure

The selected theme was "My Planet." First, a short introduction based on *The Little Prince* was given, then Midjourney was introduced to the students, asking them to think about, discuss, and design their own planets. Firstly, students created their own pictures, then they thought about issues regarding their prompts, studied several pieces of famous artworks, adjusted keywords, and then carried out creations again as a team; finally, each group shared their works, followed by a short feedback session. There is also a brief version of this lesson plan attached in the Appendix.

3.5. Analytical Approach

All quantitative results have been presented in terms of simple descriptives (%); no inferential statistics have been done since it is an exploratory study and there has been no matching control group. Meanwhile, qualitative data collected from students' presentations, class observation, and their own creations have been analysed with regard to thematic analysis, so that the results would focus more on patterns/convergence (or divergence/tension) instead of cause-effect relationships.

4. Findings

4.1. Need for a More Engaging Art Class

According to Figure 1, 23.18% of the people who answered the questionnaire said that they had no interest at all in their school's art lessons. And the reasons they chose were boring lesson contents (accounting for 72.22%), boring lesson process (42.59%), pressure from studies (42.59%).

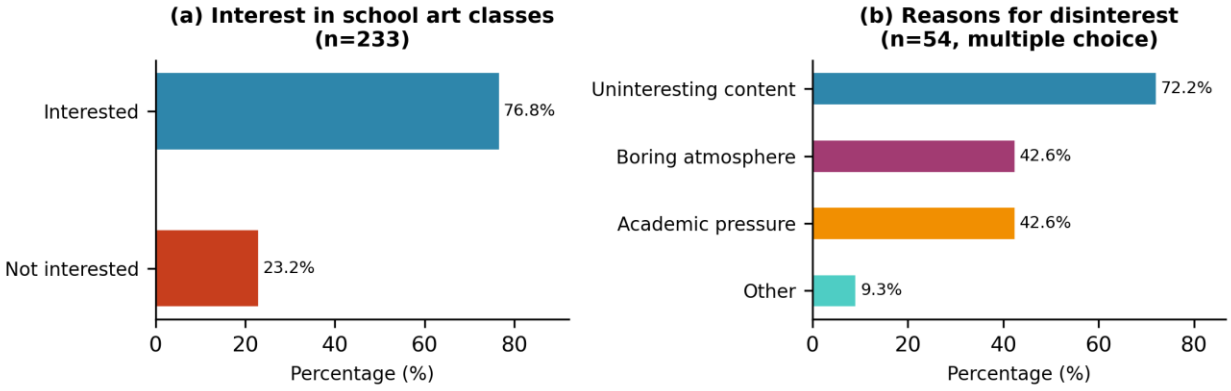


Fig. 1 Baseline interest in school art classes and reported reasons for low interest.

When implemented in class, most participants still showed their approval of incorporating AIGC into regular school arts lessons. According to them, as many as 88.60% of participants approved such implementation. However, they also brought up some technical problems, like poor internet connection speed and difficulties in processing suffix commands. This occasionally interrupted their artistic creation experience.

That kind of entry into the work is important. The lesson didn't just make artistic stuff "easier," but rather made getting going with the task seem possible. This would count as a real improvement in art classes, too, although maybe that needs to be understood modestly.

4.2. Aesthetic Engagement

In Fig. 2, two main trends are shown here. As can be seen from there, when pupils look at a picture, what they more frequently than anything else notice are: colour combination (69.53%), described topic or plot (63.95%), and composition (61.8%). At the same time, fewer people refer to other aspects. Also, at the same time, most respondents declare themselves to be just casual viewers of artworks, instead of being among those students who are often involved in deeper examination and analysis.

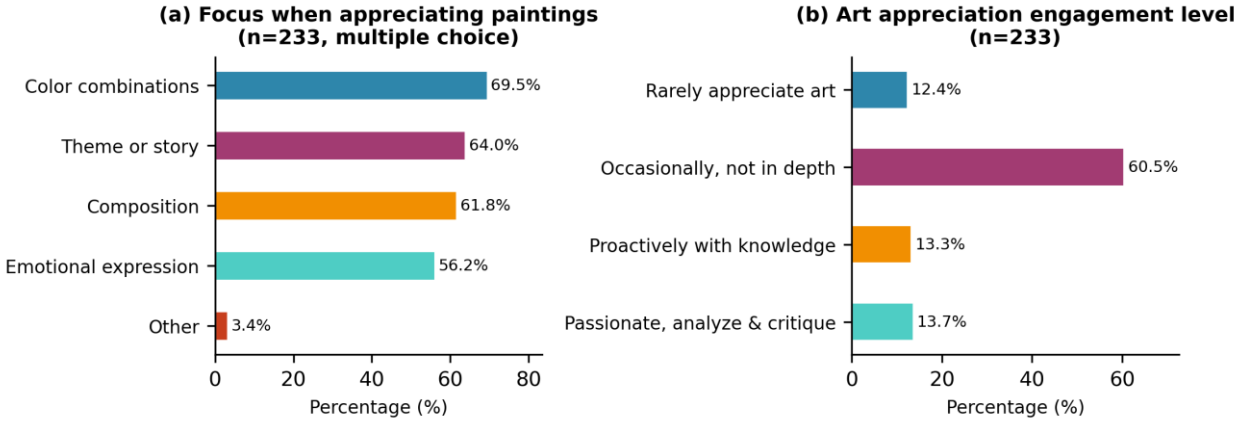


Fig. 2 Baseline aesthetic attention and art-appreciation tendency.

In order to deal with such a situation, this class tried to add a very brief appreciation session based on four famous artworks — a Chinese ink painting, an oil painting (Western), plus two examples of Impressionism. Students were required to choose some key words out of these pieces of art and modify their questions accordingly. Unfortunately, however, among all 52 valid ones, less than one-fifth of the students had done their job with respect to keywords, according to my checking results. Furthermore, classroom surveillance found that quite a lot of pupils had started paying attention to what was happening within Midjourney instead of doing the above-mentioned appreciation activity.

From post-class feedback (see Figure 3), the picture that emerges is varied, yet helpful: several aspects increased among respondents. Of these, paying greater attention to the visual effects increased most obviously (66.35%), followed by appreciating the differences regarding painting styles (56.73%) and having creative thoughts concerning colours (55.77%). Paying closer attention towards concept and cultural meanings came after (42.31%) compared with others. When it comes to being inspired, 82.69% chose “often” or “sometimes”.

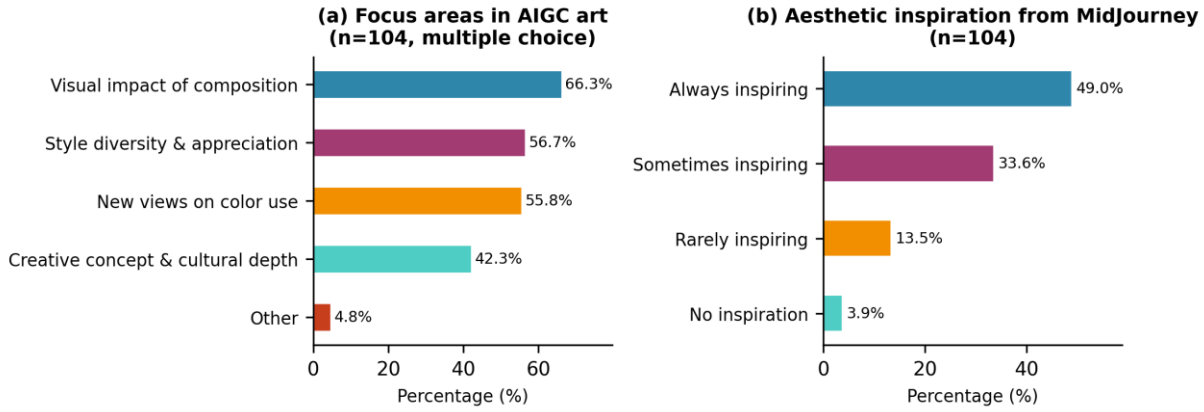


Fig. 3 Reported aesthetic attention and inspiration after using MidJourney.

This means to say that the lesson seems to have worked better right away with regard to making people pay visual attention than keeping their slow, thoughtful way of observing. In short, AIGC can help students see faster; however, it cannot ensure they look deeper automatically.

4.3. Collaboration

The students also had quite an optimistic attitude about collaborative drawing before this course began. According to Figure 4, as many as 82.83% chose “Very willing” and “Somewhat willing,” whereas only a few people tended to stay away from cooperation.

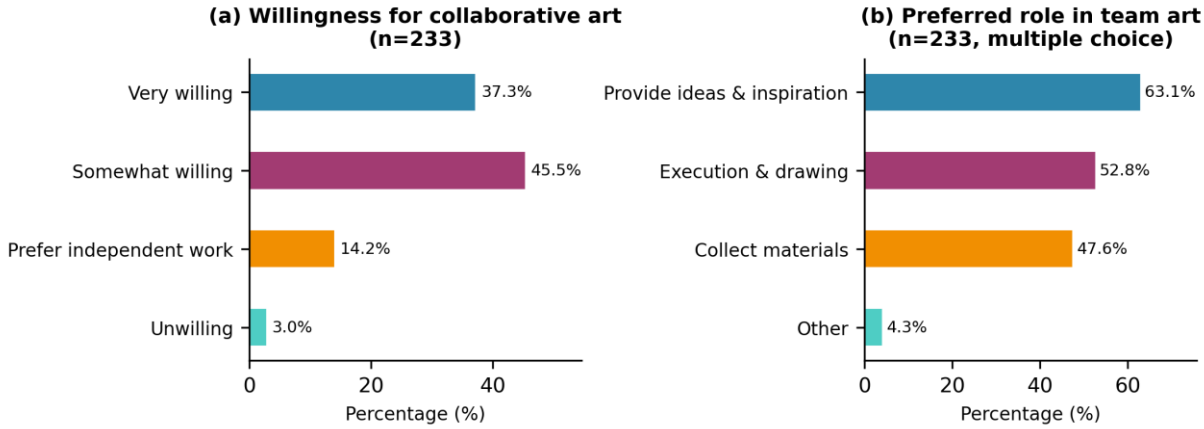


Fig. 4 Baseline willingness to collaborate and preferred roles in team-based artwork.

Collaboration was an intrinsic part of the lessons inside the classroom as well. Students had been assigned to work in groups composed of five or six members, who would talk about their ideas concerning their planets respectively, formulate some hints jointly, make some rough drawings/images, correct those initial drafts, and get ready for their very short presentations. Based on these presentations’ synopses, almost all teams stated that they cooperated easily. Their disputes were not about whether/how to cooperate, but rather what their core idea would be, e.g., whether they wanted to focus more on oceans or planets when developing their last designs, according to one team’s explanation.

From post-class survey results in Figure 5, it could be seen that discussion plus partial separation of roles is one of the most common forms of group cooperation; students usually play several kinds of roles at once. Among them are idea designer, technical operator, coordinator, and aesthetic reviewer .

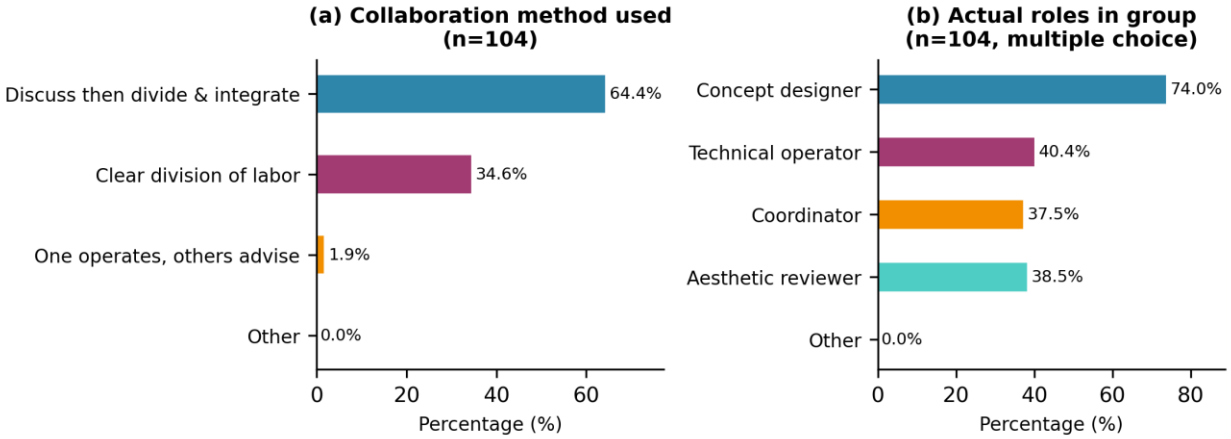


Fig. 5 Reported collaboration modes and actual group roles during the lesson.

This seems like one of the brighter spots here. And what's interesting about that is this: this AIGC tool didn't destroy teamwork. Rather, it looks like it has reallocated teamwork. Students still need to make sense together, turn instructions into some kind of written-out thing, and evaluate if generated outcomes really fit their collective aim.

4.4. Creative Practice

The results of the baseline showed (see Fig. 6). Most people placed themselves at the centre of the continuum regarding creativity. In particular, about half (55.36%) stated that 'very occasionally'/'occasionally' they came up with ideas different from others. Besides, students identified many possible sources of creativity: other works of art, their own experiences, different types of art, and observations of nature/society, etc.

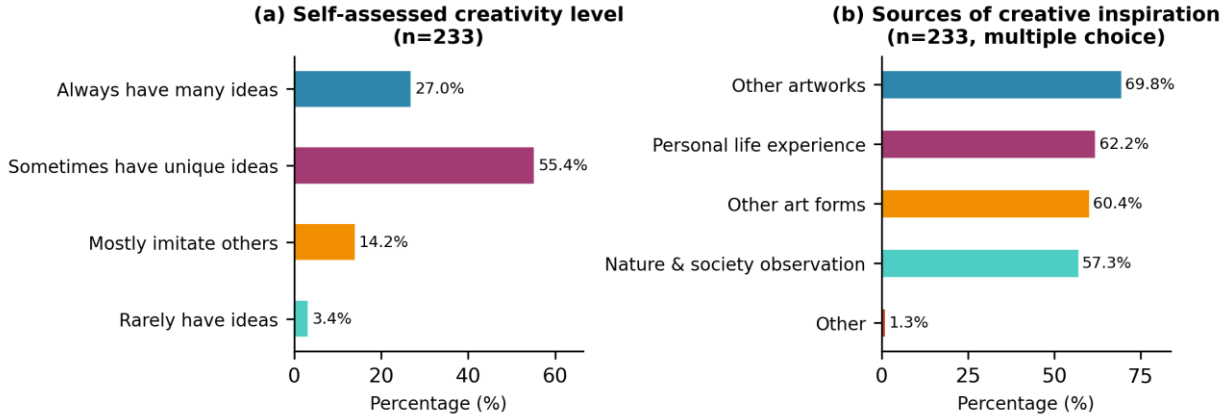


Fig. 6 Baseline creativity level and self-reported sources of creative ideas.

In terms of classroom materials and sample works, it was found that students liked to think boldly and imaginatively. Students' imaginations were very bold; they built various future buildings or strange space scenes, which contained abundant details and experimented with colors. Figure 7 gives some of their typical creations during this class (see Figure 7).



Fig. 7 Representative student work produced in the "My Planet" lesson.

Meanwhile, some groups also said that what their computer produced was not quite what they had been thinking about at first. This means the lesson worked better for generating ideas than achieving complete visual translation.

After class, the following results were obtained (see Fig. 8). Most of them said MidJourney could broaden their ideas (36.54% strongly agreed, 60.58% agreed). Quite a number of people expressed that they would have more courage to try out different kinds of styles afterwards.

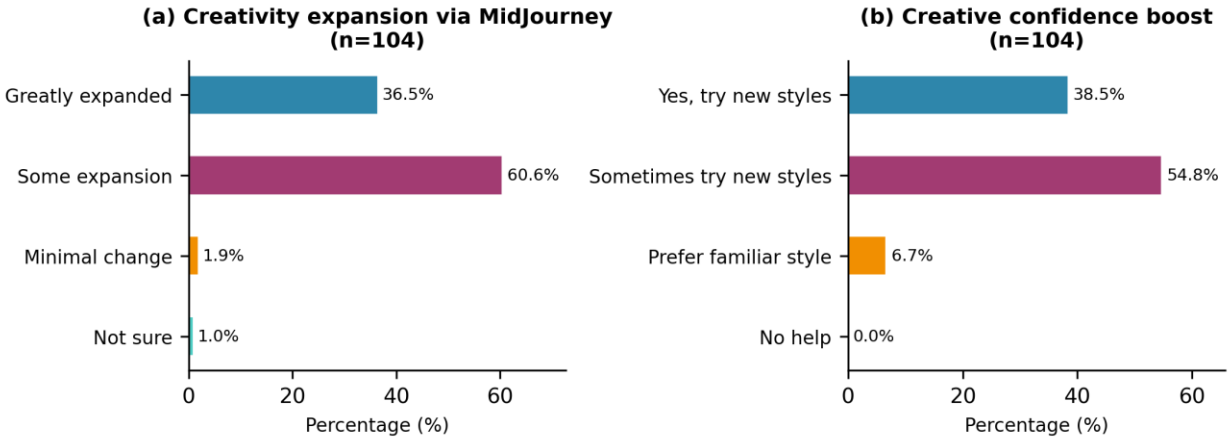


Fig. 8 Reported creative expansion and help with trying new styles after the lesson.

4.5. Interest in Art

In the baseline answers (Fig. 9), the kind of thing you'd expect from school students learning about art can be seen. There is interest, although somewhat inconsistent; about 60.95% chose either "very interested," or "rather interested," and the others showed more doubt. In general, however, most people said they would like to learn more about drawing.

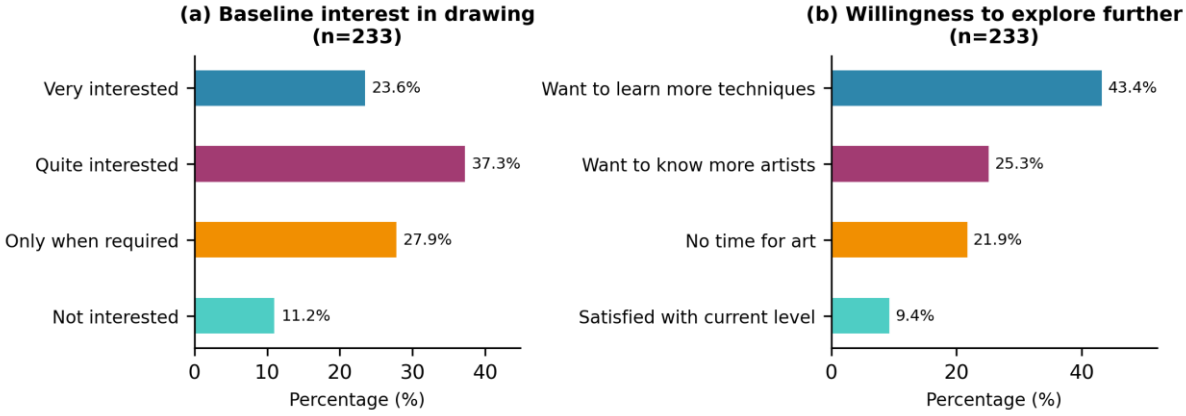


Fig. 9 Baseline interest in drawing and willingness to explore art more deeply.

In terms of post-class responses (Figure 10), things seem more positive. A majority of them reported either great increases (29.81%) or modest ones (51.92%) regarding their level of interest in drawing, while they also claimed they had become more interested in other types of art.

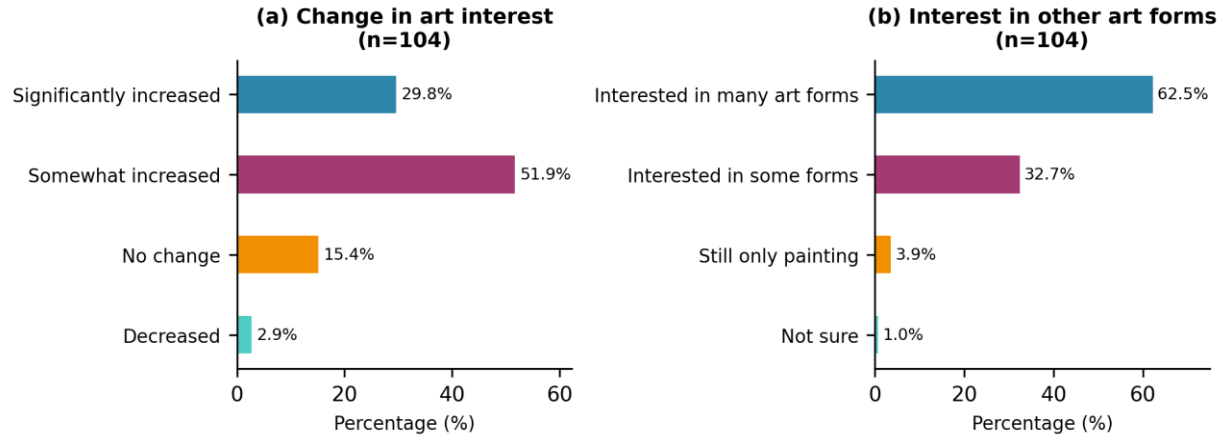


Fig. 10 Reported changes in art interest after the lesson.

This may very well be one of the biggest immediate benefits of the case because, regardless of whether part of these gains stem from its newness, this lesson seems to have already transformed Art class for them into something they want to go on discussing and exploring further outside of school.

In Fig. 11, the self-reported positive impact on each of the four dimensions is summarized; here, too, the same pattern emerges: most people report positive effects, and teamwork and creative practices score highest.

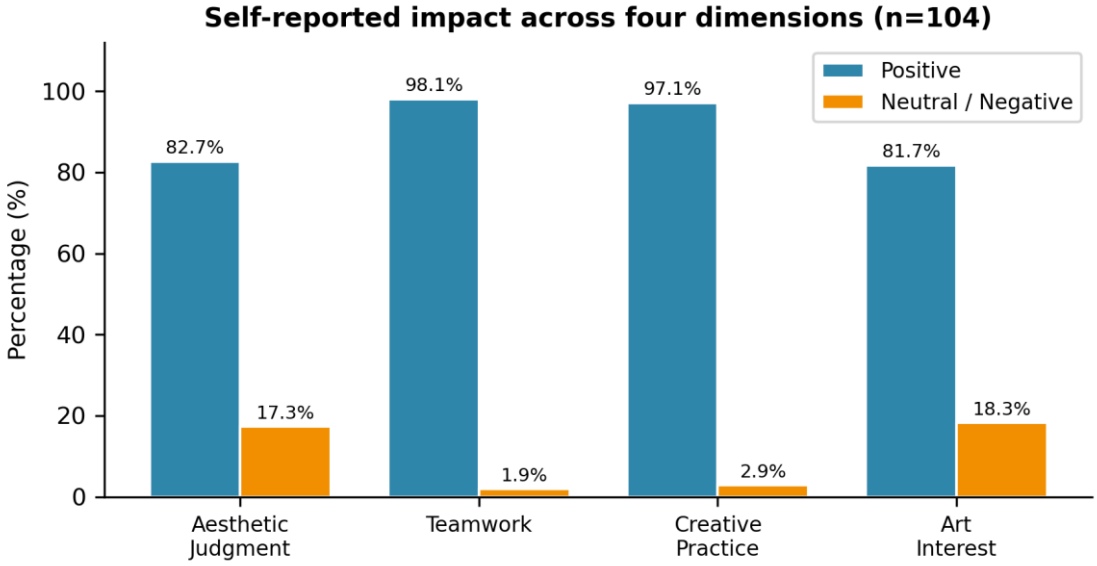


Fig. 11 Summary of self-reported positive impact across four dimensions of artistic literacy (n = 104).

5. Discussion

As far as short-term value is concerned, the AIGC-supported type has probably enjoyed its greatest success regarding access, novelty and immediacy. Those students who were hesitant at first about drawing manually could now join in the task easily, make visual outputs which appeared very attractive and discuss their thoughts with others. Therefore, it is reasonable to account for the great level of support concerning this classroom setting as well as an increase of interest once the lesson has finished.

At the same time, it cannot simply be concluded that "AI improves art education," because that exact same instrument which opened up the lesson also claimed students' attention. In the slow stage of appreciating artwork, there were already students who paid attention to operations inside Midjourney; thus, worksheet submission rates stayed low. This echoes what has been found more broadly in design-based learning research, which suggests that although such classroom activities with many tools can be highly engaging, they present pacing problems too, which need purposeful management by teachers [12-14].

The second kind of tension pertains directly to creativity. Some students found their ideas were more diversified; some of them even tried different ones. However, at the same time, some of these teams pointed out that these produced paintings don't completely match what they originally thought about. Therefore, it's reasonable to think that this technology helped stimulate divergent thinking as well as experimenting around but failed sometimes when it comes to accuracy. Such an idea echoes previous research concerning how AI helps art creation. Those studies imply that AI could increase people's sense of innovation while making people unsure about whether the artwork is authentic and who owns its copyright [15].

In terms of classroom design, this example suggests that AIGC will work better if it's viewed as a catalyst instead of a shortcut. Revising prompts; Comparing different outputs; Thinking about whether images fit with certain topics; Deliberating about ideas/cultures/concepts behind these

images: All of them require some time. There isn't much room for such slower types of activity when you have just one single lesson and the thrill of creating new pictures can take priority over everything else.

5.1. Limitations

Several restrictions need to be admitted. Firstly, because of the single-group design without a control group, it is not known if what has been observed changed due to the AIGC program. It could also result from other factors like the novelty effect, the Hawthorne effect, or just experiencing something new in class, which can make students feel better, rather than the particular effect of this specific intervention. Secondly, the samples of the pretest (n=233) and posttest of classes are different: the pre-test was done on people all over Guangzhou City, while the post-test of classes concerns only those who actually attended one of the interventions. Hence, comparing these two would be inappropriate. Thirdly, an intervention lasting only one and a half hours is fairly short to measure changes in such sophisticated concepts as aesthetic judgment or creativity. All that can be said here is how they feel right after experiencing it. Finally, neither of the two questionnaires has passed any kind of psychometric tests to check their reliability yet. Also, since the participants come solely from two schools within one city, the applicability of the conclusion is quite restricted.

In conclusion, future research would benefit from employing a pre-post design with matched control groups, making use of well-validated measurement tools, having a longer duration of interventions including several sessions, and recruiting a more heterogeneous population of participants. Furthermore, longitudinal follow-up will contribute towards telling apart real learning from the temporary effect of novelty.

6. Conclusion

To sum up, the author believes that "My Planet," an AIGC-backed lesson, has obvious exploratory significance as regards increasing participants' level of involvement, promoting collective imagination, and spurring artistic passion, etc. At the same time, however, this example also shows some concrete limitations, such as technological obstacles, imbalance in teaching speed, and a tendency towards superficial visual excitement at the cost of profound thematic comprehension. To put it more specifically, what the present research aims to provide is not a kind of very robust causal statement about its efficiency; on the contrary, the aim is to prove through a practicable class case how promising and conflicting the use of MidJourney-type art activities might be when it comes to teaching art education in schools.

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