The Artist and Mathematician at Work-Methodology Symposium

Theory of Knowledge

**Introduction:**

The Arts and Mathematics, represented in the IB Diploma Programme as Group 6 and Group 5 respectively, not only reflect reality back to us but also create new knowledge that can inspire, challenge and transform how we see our world. During today’s activity we have the unique opportunity to draw upon a collection of artists and mathematicians that have graciously volunteered their time to share with us their approach to creating a piece of mathematics/art in their specialty. Hopefully by the end of today’s session we will all gain greater insight into the mind of the mathematicians/artist and give us a series of ideas that we can evaluate against our other Areas of Knowledge.

**The Plan**

**The Interview (Approximately 40 mins)**

Each mathematician/artist will be setup around the room. They have already reflected upon “how” they create knowledge in their AOK and it is your job to extract that method through a series of insightful and informed questions. Below are a few you could consider but you are free to craft your own. You should spend approximately 5-7 minutes with each volunteer with the goal being to visit at least 4 different experts before the end of the symposium.

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| Starter Questions for Mathematicians | Starter Questions for Artists |
| 1. What are the key components in your mind in the creation of new mathematics?
2. How did you learn the methodology of Mathematics and which components are most challenging?
3. What is the most common misconception that non-mathematicians have about the methodology of mathematics?
4. Why is reason such an important component of mathematics?
5. Are there aspects of mathematics that one can choose whether or not to believe?
6. Do the terms “beauty” or “elegance” have a role in mathematical thought?
7. What is the role of inspiration in Mathematics? Where do you think that comes from?
8. How have technological innovations, such as developments in computing, affected the nature and practice of mathematics?
 | 1. What is the role of inspiration in the your process? Where do you think that comes from?
2. Do you draw from other art to influence your own? What about other areas of knowledge or ways of knowing?
3. Do you repeat the same method each time you create a new piece or is it different each time?
4. What do you do when you struggle to be creative?
5. How do you select your materials, instruments, etc…?
6. What is the influence of other artists (peers or previous generations) on your method?
7. How do you know a piece of art is finished?
8. How much do you reflect about a piece of art once it is completed? How does that inform the next piece?
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**The Reflection (15 minutes)**

Once you have completed your interviews, you should break up into groups of 4-5 students and consolidate what you have learned by discussing the below questions. You will be expected to select **one** of the below questions to create a 2-3 paragraph short answer response to, which will be due next lesson.

1. What is common to all artists’ creative process? Can we say that is a “right” way to approach the creation of art? Why/why not?
2. To what extent and in what ways might the arts be regarded as a representation of reality? What kinds of art might be seen as “realistic”?
3. Most arts have used technology, over many centuries (for example, musical instruments, pencils). Has the relationship between the arts and technology changed as a result of the possibilities of mechanical reproduction and digital manipulation?
4. Mathematical ratios and relationships can be found naturally occurring throughout the universe (i.e. Fibonacci sequence). To what extent is mathematics discovered rather than a man-made creation?
5. Is the future of mathematics the future of human civilization? To what extent should the mathematician be seen as a “high priest” of the 21st Century?
6. Does the fact that modern mathematics can only be comprehended by less than .05% of the entire world population limit its relevance as an AOK? How do we know that there have been new developments in mathematics if we cannot understand them?















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