# IB TOK ESSAY SAMPLE


## TITLE

IS OUR MOST REVERED KNOWLEDGE MORE FRAGILE THAN WE ASSUME IT TO BE?

# Is our most revered knowledge more fragile than we assume it to be? Discuss concerning the arts and mathematics.

## Introduction

Knowledge is regarded as the first step in human development and the personal understanding of the world and ourselves. Arts and mathematics occupy the highest point on this long list of fields that give rise to knowledge-forming domains of the highest worth due to their nature and relevance to human beings. The arts are rich since they possess emotional appeal; they reveal facets of life because they have a subject interpretation. On the other hand, mathematics is primarily quantitative in nature; its concepts are fact-based and eternal, and its methods remain correct everywhere.

Yet, the question remains: Is our most valued knowledge as robust as we likely believe or, in fact, more vulnerable as we predispose it to be? Consequently, the arts and mathematics do not exclude themselves from being made to confront specific authoritative issues, which complicates their immutability. Many things in the arts are open to interpretation, and the nuances of culture can alter or make the formerly prominent no longer all that profound. The acquisition of new knowledge or a new paradigm in mathematics can destabilize the truths that form this hard and concrete science, which are fragile despite their surroundings. This paper will describe the arguments in each area of value concerning knowledge of the arts and mathematics using real-life examples for the positions taken.

**Art:**

There is a claim in art that the Subjectivity of Art Makes Its Knowledge Fragile. Art has deep connections to the cultural, historical, and personal settings in which it is conceived and analyzed. This deep subjectivity makes the knowledge of the art fragile as its meanings and values fade from time or over cultures. A good example of how delicate this art knowledge is is the highly changing reception of Vincent van Gogh's work[1]. During his lifetime, Van Gogh's works were considered irrelevant and unimportant. It took decades after his death to recognize

[1] Van Gogh Museum. "Vincent van Gogh." Van Gogh Museum, www.vangoghmuseum.nl/en/art-and-stories/art/vincent-van-gogh. Accessed 21 Dec. 2024.

his paintings as masterpieces. This delayed recognition reminds us that knowledge and appreciation of art can be a matter of shifting societal attitudes and values.

Let us take cultural appropriation as an example from contemporary art[2]. Works that were once celebrated are now reassessed and criticized for exploitation and offense in the modern-day moral compass. For instance, the use of African masks in Pablo Picasso's monumental Les Demoiselles d'Avignon[3] was criticized decades ago because it does not indicate a clue about the culture it came from. This change in perspective underlines the vulnerability of artistic knowledge, which can be redefined or undercut by changing cultural mores.

Moreover, the subjective nature of art means that its interpretation can vary widely among different audiences. A piece of art that evokes profound emotions and insights in one viewer might leave another indifferent. This variability in reception further contributes to the fragility of artistic knowledge. For instance, abstract art[4] often creates polarization; some perceive it differently and perhaps even as meaningless to others. The very reason that makes it polarized suggests the fragile nature of art-related knowledge: this is primarily because of individual perception and experience.

Advancements in technology can also be considered a fragility factor in artistic knowledge. With each innovation, new media and art forms can rival or overshadow old art forms. New digital art and virtual reality forms have introduced novel ways of making and experiencing art, including lowering the appeal of traditional art forms. This technological shift can lead to reevaluating what the art world deems valuable or significant, further emphasizing that artistic knowledge is fragile.

There is also a counterclaim that the universality of human experience provides resilience to the knowledge of art. Despite the subjective nature, there is resilience in arts to strike the chord of shared experiences among most humankind and its sentiments. Art that evokes fundamental human characteristics endures the test of time, cutting across all sorts of boundaries- be it

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[2] Walker Art Center. "What Is Contemporary Art?" Walker Art Center, www.walkerart.org/visit/what-is-contemporary-art/. Accessed 21 Dec. 2024.

[3] The Museum of Modern Art. "The Starry Night." MoMA, www.moma.org/collection/works/79766. Accessed 21 Dec. 2024.

[4] Tate. "Abstract Art." Tate, www.tate.org.uk/art/art-terms/a/abstract-art#:~:text=Abstract%20art%20is%20art%20that,marks%20to%20achieve%20its%20effect. Accessed 21 Dec. 2024.

cultural or temporal. His Hamlet and Macbeth[5] are, among many others, still evident hundreds of years after their first composition.

Another excellent example is folk music, which has survived for ages. Auld Lang Syne's music has been around for centuries, withstanding cultural revolutions and technological advancements. Works of this nature exist because they connect at a visceral level and form relationships beyond the specifics of time and place. Though subjective, these examples prove that the arts have an inherent strength born of shared human experience that can override their weaknesses.

Some artistic themes and motifs transcend their particular cultural and historical context to achieve universality, which allows for a sense of continuity and connection between cultures and epochs. For instance, as Joseph Campbell conceptualized, the hero's journey recurs in forms across many cultures and ages, from ancient myths to modern storytelling. This recurring motif shows how some artistic expressions can remain relevant and meaningful by tapping into universal human experiences.

Art is also a way to reach into people's minds and foster feelings of empathy and understanding by bringing together various cultures and viewpoints. Its power allows one to peek into others' lives and experiences, thus evoking shared humanity. This motivates people to maintain their knowledge and love of art and appreciate its expressions.

**Mathematics:**

There is a claim that paradigm Shifts and Foundational Crises Reveal the Fragility of Mathematical Knowledge. Mathematics is often perceived as an infallible knowledge domain built upon logical consistency and universal truths. However, history reveals moments where mathematical foundations were questioned, exposing its fragility. One notable example is the discovery of non-Euclidean geometries[6] in the 19th century. For centuries, Euclidean geometry was considered the definitive framework for understanding space. This assumption was

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[5] Redalyc. Redalyc, www.redalyc.org/journal/7039/703974277003/html/. Accessed 21 Dec. 2024.

[6] Encyclopaedia Britannica. "Non-Euclidean Geometry." Britannica, www.britannica.com/science/non-Euclidean-geometry#:~:text=non%2DEuclidean%20geometry%2C%20literally%20any,Euclidean%20geometry%20(see%20table). Accessed 21 Dec. 2024.

challenged by mathematicians such as Lobachevsky and Riemann[7], who introduced alternative geometries, showing that mathematical truths could depend on the axioms chosen.

Another example is the foundational crisis in mathematics during the early 20th century, epitomized by Kurt Gödel's incompleteness theorems. Gödel proved that within any consistent axiomatic system, there are propositions that cannot be proven true or false using the system's rules. This revelation undermined the notion of mathematics as a complete and self-sufficient body of knowledge, highlighting its inherent limitations and fragility.

The development of set theory also shows the fragility of mathematical knowledge. In the late 19th and early 20th centuries, mathematicians such as Georg Cantor introduced the concept of different sizes of infinity, which led to paradoxes and contradictions within the existing mathematical framework. The famous Russell's paradox, discovered by Bertrand Russell, exposed inconsistencies in naive set theory, prompting the need for more rigorous foundations. This crisis led to the development of axiomatic set theory but also pointed out the vulnerability of mathematical knowledge to foundational issues.

In addition, axiomatic systems are based on axioms in which the truths of a most miniature mathematical system rely. Therefore, axioms' selectivity inducted makes them valid, and depending on them- when one changes the grounded axioms, it significantly changes the methods, classification, and truth of the mathematics derived from the changed axioms. The dependence results suggest that knowledge in mathematics can be fragile because it cannot exist without succumbing to variations in the foundation assumption.

There is also an argument that goes with it: the Logical Framework of Mathematics Makes It Impregnable. Nevertheless, mathematics is still immune because it is founded and backed by a highly authoritative logical system, and its concepts are cut across the globe. As soon as a mathematical theory has been developed, mathematical statements are eternal and fixed within the system of axioms. For instance, principles such as the so-called Pythagorean theorem, first proven more than two millennia ago, can still hold in the context of Euclidean geometry and are still prominent concepts taught in mathematics today.

This brings us to the versatility of using mathematics in many disciplines, as demonstrated below. Razor-sharp ideas like Calculus, developed by Newton and Leibniz simultaneously, hold ground and sustain such great depth and breadth that they are still used in physics, engineering, and economics. Such knowledge is robust because it produces correct results in

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[7] Encyclopaedia Britannica. "Nikolay Ivanovich Lobachevsky." Britannica, www.britannica.com/biography/Nikolay-Ivanovich-Lobachevsky. Accessed 21 Dec. 2024.

various settings. Such applications remain valid even today, which supports my argument that mathematics is a discipline with a specific intrinsic strength that nullifies this perceived weakness despite facing challenges.

The universality of mathematical principles also contributes to their robustness. Mathematical concepts such as numbers, operations, and geometric shapes are understood and utilized across cultures and historical periods. This universality ensures that mathematical knowledge remains relevant and applicable, regardless of cultural or temporal context. For example, the concept of zero, which originated in ancient India, has become a fundamental element of mathematics worldwide.

**Conclusion**

Arts and mathematics represent the domains that are stable and fragile simultaneously. If art knowledge is thus conditioned in this way, the fundamentals upon which such art knowledge is based are still sensitive to changing culture and the progress of man's history. However, regarding almost all the human experience, Discussion maintains knowledge over time. Still, due to mathematics's logical consistency and fundamentality, there is a framework for stability in response to Kuhnian paradigm shifts and even mathematics crises.

For this reason, one can conclude with the innate weak-kneed state of canonical knowledge that all knowledge is fluid. It pushes us to learn as if knowing very little and reminds us constantly that even the sacrosanct principles must be reinterpreted and rethought occasionally. This in no way detracts from the value of such knowledge. Still, it underscores that such learning constantly evolves within a continually changing realm of discovery and imagination. With that in mind, let me congratulate the arts and mathematics on their stamina and weakness inherent in timeless significance and the ability to change the world.

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