

"The production of knowledge is always a collaborative task and never solely a product of the individual"

Discuss with reference to two areas of knowledge

Word Count: 1411

Composed by TOK12014

Dame Athene Donald said, "In science a genius never works alone,"¹ suggesting that different perspectives and insights within these perspectives need to be brought together to create knowledge. To discuss the statement above it should first be interpreted: The production of knowledge can be considered to be creating a new approach or understanding to the world. It is also important to consider what is meant by collaborative and individual, as this will influence our understanding of the statement. There can be more than one definition. In this essay collaborative will be considered to mean working along side or with at least one other person and individual will be considered to mean working alone. These definitions set limits to the question. Other limits to the question include the use of always and never which are specific and suggest an absolute approach, which is hard to create in the real world.

In accordance with the statement in the area of knowledge of the natural sciences the vast majority of discoveries and production of knowledge come from collaborative work amongst scientist sometimes of different disciplines in order to share their knowledge . For example the discovery of DNA where a single scientist did not discover it but a group including most notably Watson, Crick, Franklin and Wilkins.² Even before they were involved other scientists had already made headways into what DNA was, therefore they used previous shared knowledge as a foundation and inductive reasoning to build the understanding of the shape of DNA. Use of this shared knowledge was

¹Athene Donald, The Guardian, 2013, <https://www.theguardian.com/commentisfree/2013/feb/03/teamwork-science-transforming-the-world> (January 19 2019)

² Andrew Allcot, David Mindorff, IB Biology Course Companion, (Oxford, Oxford University Press, 2014) 109, 110

extremely important; without it they would not have been able to make their discovery. Collaboration was vital to the success in this instance of the production of knowledge.

Another example that proves just how important collaboration is for producing knowledge in the area of knowledge of the natural sciences is the Golden Foil Experiment that led to the discovery of the structure of the atom.³ This production of knowledge was down to a team of scientist not one individual, it was a collaboration between Geiger and Marson who carried out the experiments and Rutherford who orchestrated it. Rutherford shared his knowledge to get the help of Geiger and Marson and together they used their intuition and inductive reasoning to continue repeating the experiment until they together fully understood what was occurring. They also had to use each of their unique sense perception when observing the experiment. This experiment shows us that at least three people were required to produce the knowledge we have today of the structure of the atom. Overall in the area of the natural sciences it appears that the production of knowledge does require collaboration.

A counter claim to this in the natural sciences could be that there is an element of the production of knowledge that is down to the work of an individual. This can be seen in the discovery and production of penicillin. There is a general misconception that Penicillin's success was solely down to

³ Steve Woolley, Edexcel Interational GCSE Physics, (Harlow, Pearson Education Limited, 2011)

Fleming.⁴ To a certain extent this is correct as he discovered this by himself by intuition working alone, as an individual. So the first step was taken by an individual however he later shared his knowledge with Florey and Chain who then worked out how to produce and use penicillin. Through Florey and Chain's inductive reasoning from looking at the issues in past experiments they were able to make penicillin useful in hospital and particularly in the war. Therefore the production of penicillin was actually a collaborative effort however it all stemmed from the work of an individual and the knowledge he produced. However penicillin would not have been so useful had he not shared his knowledge to be developed by a team. This challenges the statement as it can be seen that the production of knowledge can stem from the work of an individual but later collaboration will further the production of knowledge and so it cannot be said that it is "always" collaborative and "never" individual as it can be a mix.

A counter claim to the initial statement is that it can be suggested that knowledge does not have to be produced collaboratively but can be produced on an individual basis. This can be seen in the area of knowledge of the arts. Creating fictional stories can be considered the production of knowledge by an individual for example the Harry Potter series by J.K Rowling. These stories are created using her own imagination and the way in which she uses language and different literary techniques in order to produce a new imaginary world. These books are cleverly created using not only the area of knowledge of the arts but also incorporating historical information with mythological and

⁴ Andrew Allcot, David Mindorff, IB Biology Course Companion, (Oxford, Oxford University Press, 2014) 307, 308

religious references and different languages such as Latin in order to give the books more depth and meaning. This example shows us that an individual can produce knowledge using only their knowledge without any direct collaboration from others. An artistic painting can be considered knowledge as they often have hidden meanings and these are often done alone without the help of others for example van Gogh's paintings or the progression of Picasso's paintings. Artists generally work alone using their personal knowledge to create their own knowledge/art using imagination to create pieces of art that are all different, through their unique interpretation of experiences. Their interpretation not only includes the use of imagination to create it but also their emotion and memory of events this means that their interpretation is entirely individualistic without direct help of anyone else. Within the area of knowledge of the arts there is music and within this there are composers. Composers generally work alone to create a piece of music such as Beethoven and the piece Fur Elise. These sorts of pieces are created using imagination and emotion to produce their own music. This makes the pieces personal and unique as the knowledge is personal to the composer. Showing that an individual without the help of others can produce knowledge.

A further counter claim would be that knowledge can often begin with an individual's ideas but then this knowledge is furthered through the help of others. This counter claim can be seen through the importance of shared knowledge within the area of knowledge of the arts. This can be seen in the domain of music within the area of knowledge of the arts, through the example of songwriters. Most songwriters will create the lyrics to a song alone

using their imagination and often their emotion. Although some songwriters will work alone they often share their knowledge and work in collaboration with a singer in order to produce their music/knowledge. Therefore to start off with their knowledge is personal using their emotion, imagination and language to create lyrics often with layers of meaning. Then it is shared with a singer in order to strengthen the meaning of the song. There is an aspect to this where the knowledge is created by an individual but then shared in order to improve the meaning of that knowledge. Similarly composers that create pieces for orchestras such as Tchaikovsky. Tchaikovsky created his pieces by himself but then he shared his knowledge with others who can perform it helping create and interpret the original piece of music. As orchestra pieces require a large number of people to play all the parts. This is another example of how an individual's personal production of knowledge can become shared and a collaborative effort; therefore knowledge is not always produced individually.

This statement is made difficult to agree with through the use of the absolutes always and never. It might be argued that in the area of knowledge of the natural sciences all production of knowledge requires some element of collaboration whereas in the area of knowledge of the arts there is a mixture of collaboration and individual work and therefore not conforming to statement. However it is important to consider the definitions of the key words in the statement specifically that of individual as it could be suggested that nothing is ever done on an individual basis as everyone is influenced by their experiences. That impacts the meaning and scope of an individual and would

suggest that no knowledge can be produced solely by an individual without some sort of external influence. However this is not the definition that has been used in this essay therefore it can be said that sometimes, an individual may produce knowledge alone.

Bibliography

Andrew Allcot, David Mindorff, 18 Biology Course Companion, (Oxford, Oxford University Press, 2014) 109, 110, 307, 308

Athene Donald, The Guardian, 2013,

<https://www.theguardian.com/commentisfree/2013/feb/03/teamwork-science-transforming-the-world> (January 19 2019)

Steve Woolley, Edexcel Interational GCSE Physics, (Harlow, Pearson Education Limited, 2011)