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"Why Are We Even Learning This?"; The Effectiveness of Using Games to Teach about the Sustainable Development Goals with a Focus on Inequality

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Abstract

This thesis examines which pedagogical method best connects students to the Sustainable Development Goals, particularly inequality. There are two pedagogical methods presented, game-play, and current pedagogical approaches. In addition, the thesis explores how the students can further this connection by identifying how the SDGs, including inequality, relate to their own lives and how they can contribute to realising the SDGs and disparaging inequality. The findings, in this thesis, suggest that a pedagogical approach using games is more effective at expanding student knowledge, understanding, and engagement of the SDGs. It discusses how students define 'inequality' before and after the case study lessons, how games encourage both collaboration and competitiveness, the difference between student learning and encouraging students to take action, and suggestions for further development of the curriculum and the study.

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Finally, I would like to dedicate this thesis to my parentals, who have been an unwavering support for me in the toughest of times, and whose love and life lessons have been guiding and uplifting. I couldn't have done it without you- or at least not nearly quite as well!

Table of Contents

List of Figures and Tables

1.0 Introduction

For my master thesis I have chosen to focus on an issue I believe is very topical in our current climate; the Sustainable Development Goals with a focus on inequality, and how students learn about these complex issues. The Sustainable Development Goals were created with the intent to disparage current issues from becoming more prevalent in the future. The pursuit of equality is included in the SDGs, and I believe that it is particularly relevant to students today and therefore a good way of framing teaching of the SDGs. Since the students of today will become the adult society of tomorrow, I believe it is particularly important to gain an understanding of how to best engage them with the SDGs and, in particular, inequality.

During this thesis I examine current school curriculums that aim to teach the SDGs, particularly inequality, which approach the topic either directly or indirectly. I also observe whether different applied methods, specifically game-play, produce better understanding and connection with the students.

When I was a child, I was always more engaged with classes where there was some aspect of play involved and also when I could understand the relationship between the lesson and how to apply it in real life. As a substitute teacher I have noticed that the students are always more motivated in the classroom when the incentive of a game or a fun whole-class activity is offered. For these reasons, during the case study I will be presenting two different lesson plans; one involving a game and an alternative, more structured, plan.

By studying the outcomes of these two different lessons I hope to gain a better, more concrete understanding of how to best engage the students with the SDGs with a focus on inequality.

2.0 Thesis Outline

2.1 Research Objective

I believe that it is very important that students gain a good understanding of the world around them and how they contribute to it. The research objective for this thesis will therefore examine which teaching methods will best connect students to the Sustainable Development Goals, particularly inequality, game-play, or current pedagogical approaches. In addition, the research objective will explore how the students can further this connection by identifying how the SDGs, including inequality, relate to their own lives and how they can contribute to realising the SDGs and disparaging inequality.

2.2 Research Questions

2.2.1 Main Research Question

How can games be utilised as classroom tools to improve upon current pedagogical approaches in teaching students about the UN Sustainable Development Goals and, in particular, inequality?

2.2.2 Sub-Research Questions

1. How engaged are students with the SDGs, particularly inequality, regarding ability to identify ways in which they contribute towards them in everyday life?
2. To what degree, and how might the above viewpoint change according to how the material is taught?
3. Which lesson plan is more effective at teaching students what the SDGs are and giving them the ability to name some?

2.3 Hypothesis

The hypothesis of this thesis examines some assumptions that I have about the study as well as examine the research questions and what I hypothesize the answers will be.

During this research I believe that I will come across a number of parameters already in place to encourage understanding of the Sustainable Development Goals including inequality in the classroom. The study will be conducted in Norway at an international school. The common discourse on Norway is that it is known as being a very forward-thinking country with the added aspect of internationalism. I believe that there will already be a large curriculum in place to promote understanding of the SDGs including inequality.

The main research question is "How can games be utilised as classroom tools to best teach students about the UN Sustainable Development Goals and, in particular, inequality?". I think it will be interesting to see what the students take away from the different lessons I have planned for them. Looking back on my education, a few lessons stick out to me, and these lessons often involved some aspect of play. During my time working as a substitute teacher, I have also noticed that the children seem to be more motivated and engaged when play is involved. This leads me to hypothesize that the lesson planned around a game will help the students to learn more or be more connected with a subject. However, during some game-oriented lessons I have taught, I have noticed that the children can become over-zealous and may lose focus of what the topic is that they are studying. Comparatively, during alternate lessons I have previously taught, I have noticed that children are calmer and seem more focused when I read to them. I plan to include a reading in the alternate lesson plan to accompany the topic.

The first sub- research question, "How engaged are students with the SDGs, can they identify ways in which they contribute towards them in everyday life?" refers to the prior knowledge & engagement of the students to the SDGs. I hypothesize that they will have some prior knowledge because of their age and education.

I hypothesize that using a game as a pedagogic tool will be more effective than an alternate lesson plan; the children that take part in the game lesson will have a more holistic view of

the Sustainable Development Goals, including inequality. The term 'holistic' can be defined using the first sub- research question "How engaged are students with the SDGs, can they identify ways in which they contribute towards them in everyday life?". By using the term 'holistic' I refer to the students' ability to identify ways in which they can identify progress made (or contributions that they can make to enable progress) towards the SDGs in their lives. Therefore, I hypothesize that the students that take part in the game lesson may be more likely/ better able to make connections between specific SDGs, including inequality, and their own lives, which refers to sub- research question 2, "Does this viewpoint change according to how the material is taught?".

Additionally, the students that take part in the alternate lesson will be able to remember more of the SDGs, and perhaps come to a more factual based understanding. If my hypothesis is correct then the answer to sub- research question 3, "Which lesson plan is more effective at teaching students what the SDGs are and giving them the ability to name some?", will be the alternate lesson plan.

2.4 Scope of Study

The scope of the study covers 5 (five) classes of students aged 8 to 15 that are at different levels of learning about the SDGs. In this study I will draw on questionnaires completed by each of the participating students as well as the in-person responses that I receive whilst conducting the lessons. Each of these lessons will give me a better understanding of how students at different ages respond to the learning tools used. All six classes were available for the case study, although some children in each class were absent. Each of these classes attend the same international school in Norway, which allows us only a snapshot of what these students learnt/ have learnt over time and does not necessarily represent other students of the same age/ year level in other schools or countries (Barratt, 2009). This study will offer a glimpse into the students learning; however, it does not assess the changes to their understanding or behaviour relating to the SDGs, including inequality, over time. The study will, instead, provide a good basis for further investigations spanning more learning institutions over time.

2.5 Design of Thesis

This thesis begins, as all good academic writing does, by reviewing the work of others. In order to gain an understanding of the relevance of this investigation I begin by looking into the validity of the Sustainable Development Goals, justifying the importance of teaching the SDGs to school aged children, and explaining why I have chosen to focus particularly on inequality. Some of the concepts discussed here are the criticisms of a set of global goals and their questionable achievability. This section also, conversely, delves into the many advantages of students gaining good working knowledge of the SDGs including the economic benefits, student interest in the subject, and business interest in student engagement with the SDGs.

Next, I examine how games are being used as pedagogical tools by other practitioners, and, finally, I explain how the Game of Inequality was created and the inspiration behind it from Jane Elliott, the creator of the exercise 'Brown Eyes Blue Eyes'. I was lucky enough to hear from Jane Elliott herself when writing this thesis, so I have included her as a primary source.

The conclusion of the conceptual framework leads into designing my own study. I begin this chapter by explaining the research design of the case study, which is essentially the nitty gritty of the case study, including the methods of sampling, the population and sample size, and the study area and setting. I then outline the methods that I use, which are mixed qualitative and quantitative, and participatory. From here I move into how the case study has been conducted, preluded by the test done on the case study before the methods were finalized. In this section of the methodology chapter the reader will find the specific lesson plans used when conducting the case study.

The next section of the methodology chapter addresses the methods of data collection including the questionnaire that was provided to students both before and after the lessons, my role as a participant observer, and the audio recordings and transcriptions. This is followed by the ethical considerations taken when conducting the case study such as parental consent, students' understanding of the study and their consent, and the anonymity of School X.

Then I review the current pedagogical approaches, which focus on indirect teaching of the SDGs through units in a variety of school subjects. I examine a number of these units and refer to students' understanding of the SDGs. One of the year levels in the middle school have a unit that specifically focuses on the SDGs, so I examine the unit plan to better understand the current curriculum and teaching style. This allows me to gain a good overview of how introducing teaching through game play differs from current approaches.

The methodology chapter is concluded by addressing the methods of analysis used to analyse the data, which leads us into the next chapter of the thesis, *6.0 Findings*. At this point I have clearly justified the study, taken note of any knowledge gaps, and planned my own study taking into account what I have learned. The next section of the paper grants me the opportunity to test the understanding gained through the conceptual framework and methodology in a practical study. *6.0 Findings* from the case studies, show an overall increase in student understanding with a greater increase being demonstrated in those students that took part in the game lesson.

The findings of the data collected, shows some common concepts and themes with the reviewed literature, which are discussed further in the final chapter of this thesis, *7.0 Discussion*. The discussion attempts to answer the research questions by comparing the current curriculum and pedagogical approaches with student understanding, reviewing the Game of Inequality in action, considering student interpretation of inequality, comparing how collaboration and competitiveness were demonstrated, discussing student engagement, exploring how to encourage students to take further action, and elaborating on the next steps that may be taken in furthering this study.

Finally, at the conclusion of this thesis I summarize my findings and tie the thesis up with a neat bow. This colloquialism is written with some irony since, as any social scientist knows, there is no quick fix or easy answer to developmental issues. In the conclusion, I draw on the comparison between the conceptual framework and my findings, then discuss the implication of teaching the SDGs with a focus on inequality.

3.0 Conceptual Framework

This chapter of the thesis will review current literature covering a wide range of focuses. It is important to cover the conceptual framework before conducting my own research in order to fully grasp the current discourses. The pieces of literature that I have chosen to review cover the validity of the Sustainable Development Goals, the importance of teaching the SDGs to school aged children, the reason that a focus on inequality is particularly relevant in education today, and the pertinence of using games to teach children about the SDGs. At the end of each section, I will explore any knowledge gaps to create an accurate depiction of what this thesis does and does not cover. I will also cover the inspiration and process behind creating The Game of Inequality, which is the game that will be used in my case study.

3.1 The Validity of the SDGs

Before researching the best way to teach any subject, it is important to first investigate whether the subject is worth teaching at all. The subject that this thesis advocates teaching is the UN Sustainable Development Goals, particularly inequality. As such, this section of the conceptual framework will offer a critical analysis of the SDGs and their origin, discussing the validity of them as reasonable goals, including why these particular issues have been highlighted. The reason that inequality is a focus in this thesis will be covered later in the conceptual framework.

The SDGs were created in 2015 by the United Nations, building upon and improving the Millennium Development Goals (MDGs) (Fukuda-Parr, 2016). Since that time their value has been widely disputed in the academic community. This is, in part, due to their origin (Fukuda-Parr, 2016). Whilst the SDGs are a relatively new set of goals on which to scaffold society, they have a long history. The MDGs were not the first set of goals that were created, in fact there has been a long line of successive goals and objectives created by various institutions and agents, with the first set of goals being created in 1996 by the Organization for Economic Cooperation's and Development (OECD) (Fukuda-Parr, 2016). The goals created by the OECD were named in a strategy called 'Shaping the 21st Century' and were

largely focused on international economies and trade (OECD, 1996). The goals outlined in 'Shaping the 21st Century' "…were streamlined in 2000, when the document 'A Better World for All' was released by the OECD, the World Bank, the IMF, and the UN. (Nygaard, 2004)" (Schafer, 2018).

There have been a number of issues surrounding these goals including their origin from a broadly economic interest point, their attainability, and the uneven progression of the goals (Nygaard, 2004). This was well documented in a letter from Konrad Raiser, the general secretary of the World Council of Churches, to General Kofi Annan, The UN secretary at the time. A quotation from his letter states:

> "This report was received with great astonishment, disappointment and even anger by many representatives of civil society and of non-governmental organizations... The consternation of these civil society representatives, and a good many of the government delegates as well, was aroused by your participation in, what amounted to a propaganda exercise for international finance institutions whose policies are widely held to be at the root of many of the most grave social problems facing the poor all over the world and especially those in the poor nations."
>
> *(Rasier, 2000)*

Whilst the goals themselves have been created in order to be utilised as a vessel for development, this development has not necessarily been centred on the right issues. When the first strategy was presented in the 1990s the boardroom scene was quite different and as such the strategy was heavily westernized (Fukuda-Parr, 2016). To create a universal set of goals one would hope that they would be created in a transdisciplinary fashion, but as the SDGs have been built from the MDGs, 'A Better World for All', and, prior to these, 'Shaping the 21st Century' the question arises; can they really be seen as transdisciplinary (Vedeld, 2018)? In 2015, as the MDG period came to a close, we saw varying results achieved of the goals. Some countries struggled to achieve the goals whilst others flourished and set good precedent (Fukuda-Parr, 2016). I believe that we must be careful not to fall into the trap of making the rich richer, and the poor poorer by putting more weight on their shoulders and offering no support. I believe that we cannot solve the same issues in the same way in

different contexts. Whilst issues may look the same or very similar, they might in fact be very different.

Whilst the SDGs have been based on these previous sets of goals and strategies, the goals today look very different. This is confirmed in the article written by Nazar et. al, 'Role of Quality Education for Sustainable Development Goals (SDGs)', "The main point of the 17 SDGs is to secure a feasible, quiet, prosperous and fair life on the earth for everybody now and later on. The objectives cover worldwide difficulties that are critical for the survival of humankind" (Nazar, 2018).

In her article, '17 Goals to Rule Them All: How the SDGs Can Benefit Organizations', Nadia Kähkönen explains that "The playing field and the adoption of the SDGs marks a new era for both the public and private sector to deepen and broaden their sustainability efforts. In comparison to their predecessors, the SDGs are much broader and more difficult to measure. However, they represent a bold move towards a more ambitious, yet more realistic and inclusive development agenda - a golden opportunity for governments, private enterprise and civil society to work together in tackling the biggest challenges on the planet" (Kähkönen, 2015).

The articles that these quotes come from are two of many that critically analyse the SDGs but agree on their validity and importance. There are a number of other examples of this with more specific goals or sectors in mind, such as the paper written by S. Morton, D. Pencheon, and G. Bickler, titled 'The Sustainable Development Goals Provide An Important Framework For Addressing Dangerous Climate Change And Achieving Wider Public Health Benefits'. They say;

> "The SDGs present public health professionals with an important opportunity to create the right conditions for a better future through the organised efforts of society. Getting the best health outcomes from SDG implementation will require a new form of systems thinking across the three dimensions of sustainable development (planet, people and prosperity). To do this, we may need to make new alliances and broaden our narrative to communicate the many co-benefits from good evidence-based practice on sustainability."
>
> *(Morton, 2019)*

My understanding of these articles and papers is that, whilst the SDGs have some drawbacks, overall, they can be used as a good framework in which to further develop businesses, communities, science, and humankind in general.

As I wrote in a previous paper on the topic, "…it is easy to merely sit back and criticize the outcomes of these goals, but I think it must be mentioned that behind good intent there is reason to pause and further evaluate and expand. Are the SDGs providing hope rather than targets? Is there not some intrinsic value in this hope, at the very least, and a chance for actors to reflect on their own targets? If the SDGs can be seen as a sort of compass, and used critically, I believe that they can be applied on a grassroots level for smaller companies or organizations, which in turn can create real change and steps towards development on the greater scale" (Schafer, 2018).

The grassroots level mentioned here could refer to small companies and organisations, but it could also apply to individuals in societies, such as students. The SDGs are mainly voluntary, so teaching students about them could help to obtain a better result (Gottschalk J., 2017). This leads us into the next section of the conceptual framework; the importance of teaching the SDGs to school aged children.

3.2 A Justification For the Importance of Teaching the SDGs

This section of the conceptual framework of the thesis discusses the reasoning behind teaching the Sustainable Development Goals to school aged children, why it is important for students to understand the SDGs, the current demand for addressing global issues, and how these issues impact future generations.

Children are taking more control over their lives and learning opportunities (Smith, 2007). Instead of being merely vessels to mould and shape, children are becoming increasingly participatory in their own education and learning (Smith, 2007). Allowing children to have voice, choice, and ownership, nurtures agency within the student (Smith, 2007). When we say that children are the future of the world, this is literally the case, as explained by Ingrid Pramling Samuelsson in her article, 'How to Educate Children for Sustainable Learning and for a Sustainable World';

> "Many researchers agree that a path to sustainability depends on how societies educate the next generation. How learning can be made sustainable for children and what they learn about the world around them should be addressed seriously (Siraj-Blatchford et al. 2016). More than ever, countries should recognise that the global society is sustainable only if it can be perpetuated, that is, sustained by future generations."
>
> *(Pramling Samuelsson, 2017)*

Nazar et. al explain the many ways that education and the SDGs can work in collaboration in their article, 'Role of Quality Education for Sustainable Development Goals (SDGs)';

> "Through education, we can achieve many other Sustainable Development Goals (SDGs). The people can break the vicious cycle of poverty when they are able to obtain quality education. Through education, the inequalities can be reduced and it also empowers the people to live more sustainable and healthy life [sic]. Education can also foster tolerance in people and make the society more peaceful (Adegbesan et al, 2010). Education is considered the top priority of UNESCO because it is included in basic human rights and it is helpful to build peace in society and to achieve

> sustainable development. Education is the specialized agency of United Nations and it provides regional and global leadership and it also responds [to] contemporary global challenges and strengthens [the] education system of a country with special focus on the gender equality (United Nations, 2015)."
>
> *(Nazar, 2018)*

Essentially what Nazar et. al mean by this is that, whilst education is *one* of the SDGs, it can also be used to help to *achieve* the SDGs. UNESCO and the UN prioritize education highly as it is included in basic human rights and raises leadership in future generations (Nazar, 2018). Nazar et. al go on to explain that "Consequently, regarding the SDGs, all nations can be considered as creating and all nations need to make [an] earnest move" (Nazar, 2018). This relates to the concluding statement in the previous chapter, "The SDGs are mainly voluntary, so teaching students about them could help to obtain a better result". The SDGs are marked as a vessel for development, but with them being largely voluntary, we must teach them with a 'faith based narrative' (Gottschalk J., 2017). As Aristotle once said, "The whole is greater than the sum of its parts", meaning that by having faith in engaging students as well as the rest of the population we may be more likely to accomplish the SDGs, which could not be done in isolation (Gottschalk J., 2017).

Another reason to teach the SDGs, and perhaps the most important reason of all, is the current student interest in sustainability. This thesis is titled '"Why Are We Even Learning This?"; The Effectiveness of Using Games to Teach about the Sustainable Development Goals with a Focus on Inequality'. The first part of this title is no mistake. Working as a substitute teacher, this is a phrase that I hear almost weekly. Students like to understand how their learning can be contextualized in the world around them. By teaching topics that directly relate to their interests, students are more engaged (Flowerday, 2015). In their research, 'Disentangling the effects of interest and choice on learning, engagement, and attitude' Flowerday and Shell discovered that "…situational interest had strong direct and indirect effects on learning, engagement, and attitude. Topic interest had a direct effect on situational interest and indirect effect on engagement through situational interest" (Flowerday, 2015). This means that students were more engaged when they already had an interest in the topic that was being taught.

Generation Z is more interested in sustainability than any other (Bemporad Baranowski Marketing Group & GlobeScan, 2020). Teaching the SDGs allows them to gain an understanding of what the world is already doing to address the issue of sustainability. GreenBiz recently published an article called "Why younger generations are more willing to change in the name of sustainability", which was based on the 'Healthy and Sustainable Living' study conducted by GlobeScan & BBMG. The article outlines findings about differing interest levels in lifestyles and sustainability practises between generations and highlights the findings with the use of tables.

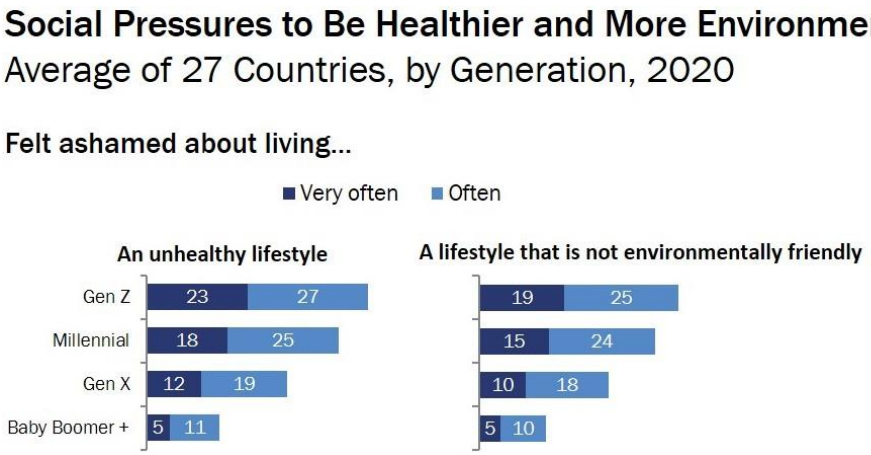


Figure 1 Social Pressures to Be Healthier and More Environmentally Friendly

Figure 1 Social Pressures to Be Healthier and More Environmentally Friendly indicates a clear difference in interest between Generation Z and older generations in living an environmentally friendly lifestyle. This interest is not only helpful in the classroom, but also in the working world, as reported on by Think Global and British Council;

> "For job seekers, knowledge and awareness of the wider world is more important than degree classification or A-levels: In recruiting new employees, more employers (79%) say knowledge and awareness of the wider world is important than the numbers of employers who say the following are important: degree subject and classification (74%), A-level results (68%), or A-level subjects (63%)."
>
> *(Think Global and British Council , 2011)*

Let's break down this quote a little further. Think Global and British Council have found that 79% of employers are looking for 'knowledge and awareness of the wider world', with the next highest statistic, 74%, representing 'degree subject and classification'. Succinctly put, this means that employers want to hire employees that are engaged with their type of business *as well as* global issues. So, students are interested in the subject of sustainability, and businesses want to employ young people who are engaged with the subject of sustainability. It is therefore natural that the majority of businesses are in agreement that students should be learning about global issues and what is being done to resolve them, such as the SDGs. Think Global and British Council went on to clarify this further in their report, 'The Global Skills Gap Preparing young people for the new global economy'.

> "The vast majority of businesses think it is important for schools to be helping young people to think more globally and lead more sustainable lives, and four fifths think schools should be doing more: 93% of businesses think it is important for schools to help young people develop the ability to think globally. 80% think schools should be doing more; only 2% think they should be doing less."
>
> *(Think Global and British Council , 2011)*

This leads us to question, *why* would businesses be interested in students learning about global issues and the measures put in place to address them? In a previous paper, I wrote about the issues surrounding the SDGs, including the cost of implementation.

> "Implementation is another difficult case for the SDGs. Even with full willingness and cooperation to implement the SDGs, countries may lack the proper tools needed to effectuate the goals and I would argue that without the means the goal is futile."
>
> *(Schafer, 2018)*

The answer to this is simple; employees that are global thinkers are good for the business and generate more economic turnover (Think Global and British Council , 2011).

> "Unless we improve the way in which we support young people to think more globally, through teaching in schools, the UK is in danger of being left behind by emerging economies such as China, India and Brazil, according to the survey."
>
> *(Think Global and British Council , 2011)*

In their article, “Why younger generations are more willing to change in the name of sustainability”, GreenBiz and BBMG explain why this is.

> “The next generation is looking for brands to lead the way — 81 percent of those under 30 believe brands are an essential part of the solution for the global challenges facing humanity today. In addition, they want brands to create change with them, not just for them — 85 percent want to share ideas and experiences with brands to develop better solutions. And they will reward brands that take responsibility for their role in creating the change they seek — 93 percent of corporate employees under 30 agree that the more socially and environmentally responsible their companies become, the more motivated and loyal they will be as employees.”
>
> *(Bemporad Baranowski Marketing Group & GlobeScan, 2020)*

This essentially means that the young people of today want to support businesses that are addressing global challenges, both by buying from them and being employed by them. The demand from both buyers and sellers is for global issues to be considered, and measures put in place to diminish them. Ingrid Pramling Samuelsson sums this up nicely, writing;

> “Researchers like James Heckman (2006) and other economists showed clearly how societies accrue benefits by spending money on the youngest generation, because it yields greatest returns compared to spending money on programs at later stages of children’s development. We also know from research that the family and the individual child benefit from high-quality early education (Pramling Samuelsson and Wagner 2012). Lifelong learning begins at birth, and the learning experiences children receive during childhood will provide enduring benefits”
>
> *(Pramling Samuelsson, 2017).*

This section of the conceptual framework has discussed the importance of education, students taking action, both in the classroom and in their futures, teaching to student interests, and the worldwide implications of teaching the SDGs to school aged children. It can be summarised then, that with more conscientious consumers and workers it is more likely that the SDGs will be achieved (Nazar, 2018). By teaching these goals to school aged children we are preparing the next generation of employees to demand more sustainability and that their

employers put measures, such as the SDGs, in place to solve current issues (Pramling Samuelsson, 2017). By teaching the SDGs, specifically, we could be arming them with the knowledge and the language to ask for exactly what they want.

3.3 A Justification for the Focus on Inequality

Inequality is an underlying issue that can, perhaps, be found in all the Sustainable Development Goals. It has also become particularly prevalent in today's society, which was highlighted for me in the initial phase of planning for this thesis. Originally the game was made to help teach about inequality to a primary aged class that was struggling with issues of racism in the classroom and the playground. This section of the conceptual framework will justify why inequality is a focus in this thesis and in the lessons created for the case study.

Before expanding on the importance of teaching inequality it is first pertinent to define 'equality'. This is a term that I have been struggling to define since beginning my bachelor's degree in 2014 as there are so many strands of thinking to examine, and it seems as though there is no one right answer. Professor Amartya Sen discussed this in his seminal, 'Equality of What?', where he examines three approaches to understanding equality.

"...utilitarian equality, total utility equality and Rawlsian equality. These relate well-being to either wealth (income or possessions), utility (pleasure, getting what you want) or access to primary social goods (basic liberties and basic goods). Sen shows that each of these approaches has shortcomings; even a combination of the three fails to provide an adequate framework for understanding individual advantage."

(Sen, 1980)

Finding these three approaches insufficient, Sen went on to create his own framework to define inequality, 'Basic Capability Equality'.

> "This approach focuses on a person being able to do certain basic things, such as feed themselves and participate in community life. It concerns a person's ability to function and achieve.
>
> Key arguments of this thesis include:
>
> - It is essential to recognise the diversity among people.
> - People's needs vary depending on a range of factors: for example health, body size, location, climatic conditions.

- Because people's needs differ, people will also differ in the use they can make of certain goods: for example, a disabled person may need certain things that an able-bodied person does not just to achieve mobility.
- The capability approach focuses on a person's actual capability to make use of the goods, services and opportunities available to them.
- Capabilities depend on people's health (physical and mental) and the circumstances in which they are living.
- Some capabilities are universal while others can be culturally specific."

(Sen, 1980)

Whilst Sen's definition is multifaceted and nicely combines several different approaches to define equality, it is very academic and, still, only one definition. The students that will take part in the case study will likely have a very different, and perhaps limited, understanding of what equality, and therefore inequality means. In his book, 'The Practice of Inclusion in Diverse Organizations', Bernardo M. Ferdman argues that "…the core of inclusion is how people experience it—the psychological experience of inclusion, operating at the individual level (and often collectively as well)" (Ferdman, 2014). If the same principles are compared to defining equality, the most important definition is that which the students themselves understand, which needs to be made known for this thesis. This knowledge gap will be addressed in the case study questionnaire by asking the students what inequality means to them.

In my bachelor's thesis I reviewed one issue that needs to be addressed in order to help achieve equality, single sex schooling. In the bachelor's thesis I discussed the importance of intersectionality theory and how, when used in education it can lend itself to students understanding one another better.

> "After recognising the different aspects of a person's identity one needs to understand how these aspects are important to the person's character and the history and reasoning behind the aspect. (McCall, 2005)…" "It is key for oneself to be aware of one's own history, and it is also essential that everybody has awareness of the different aspects of identity that others have, and the history behind these aspects, to better understand their peers and colleagues."

(Schafer, No Boys Allowed; Single Sex Schools and Their Relevance Today, 2017)

I also examined the women's movement in comparison with the civil rights movement and applied the concepts from each to education. I found that providing quality education means teaching students about equality.

> "Segregation of white and colored children in public schools has a detrimental effect upon the colored children…" "…A sense of inferiority affects the motivation of a child to learn. Segregation with the sanction of law, therefore, has a tendency to [retard] the educational and mental development of Negro children and to deprive them of some of the benefits they would receive in a racially integrated school system... We conclude that, in the field of public education, the doctrine of "separate but equal" has no place. Separate educational facilities are inherently unequal."
>
> *(The Leadership Conference , 2017)*

This quote can be applied to coeducational schooling too. When interviewed, the head teacher of the primary school at School X explained to me that children are particularly concerned with 'fairness' and without equal treatment in the classroom students may be less motivated to learn (PHT, 2021). This is, again, backed up by an exercise conducted by Jane Elliott called 'The Blue Eyes Brown Eyes Exercise', where she found that students that had lesser opportunities or were belittled in the classroom tended to struggle more than those who were praised and given more privilege (Bloom, 2005). In the previous chapter, 3.2 A Justification of the Importance of Teaching the SDGs, I explained that by teaching topics that directly relate to student interests, students are more engaged (Flowerday, 2015). This, combined with the understanding that children are particularly concerned with 'fairness' leads me to believe that students will be engaged in the topic of inequality (PHT, 2021).

The topic of inequality is also one of the SDGs that is relatable to school aged children studying at a private school in Norway. Most of them don't have to deal with poverty, hunger, or water shortages, they could however, have experienced some form of discrimination in their lifetime, or know someone else that has (PHT, 2021). The ability to relate to a subject also effects the level of interest for the subject (Flowerday, 2015).

I, once again, refer to my bachelor's thesis, where I discussed my "…opinion that two key qualities to any classroom are that the children are treated equally by assisting every child based on their individual needs, and that the classroom mirrors the ideal social discourse…. I also have the belief that to create a harmonious society, we need to start by instilling children with the tools that they need to be a well-equipped member of society" (Schafer, No Boys Allowed; Single Sex Schools and Their Relevance Today, 2017).

The second key quality mentioned here is a 'classroom that mirrors the ideal social discourse'. There are a number of social movements that have been observed as prevalent in society today. Many of these centre on discrimination and inequality such as Black Lives Matter, #MeToo, and indigenous rights (Lebron, 2017) (Bhattacharyya, 2018) (Martin, 2003). There has also been a push in the business world towards inclusion and diversity, with many companies specifically employing to address these issues (Ferdman, 2014). In the last section, 3.2 A Justification of the Importance of Teaching the SDGs, I discussed the link between business demands on employees and student learning, explaining that employees that are global thinkers are good for the business and generate more economic turnover (Think Global and British Council , 2011). The next section of the conceptual framework discusses the current curriculum and pedagogical approaches of teaching global issues, specifically the SDGs.

3.4 The Use of Games as a Pedagogical Tool

Now that we have examined the current curriculum and pedagogical approaches of School X, it is pertinent to investigate other methods of teaching. In this section of the conceptual framework, I review a secondary case study that has been facilitated by Pablo Suarez to gain a better contextual understanding of how using games in theory works in practise.

> "This report lays the foundation to link two seemingly disconnected topics—innovation in risk management and gameplay. It investigates ways that games can help people from diverse disciplines and sectors involved in humanitarian and development work be more effective, providing innovative ways to accelerate learning and dialogue to better manage climate risk. It creates opportunities to develop improved outcomes in both the near and longer-range future."
>
> *(Mendler de Suarez, 2012).*

This case study examines tools that are already available, which will shed light on why this topic is important and help to answer the question; Why should games be used in teaching? Suarez et. al. has based their research on the premise that education has become swamped with PowerPoint learning, and that this kind of learning does not do the subject of humanitarian work justice (Mendler de Suarez, 2012).

> "Over the last decade, knowledge-sharing processes have become dominated by a frustratingly unsatisfactory format: "Death by PowerPoint" (Winn 2003), the dreaded sequence of PowerPoint presentations followed by usually insufficient time for questions and answers. Goodman (2006, 71) argues that we are accepting bad, unidirectional presentations as "a fact of life. Low expectations become the norm, and with no real incentive to improve, presentation quality will continue the inevitable slide downward. We can do better"."
>
> *(Mendler de Suarez, 2012)*

So, why use games as the new tools for learning? Suarez et. al. argue that "Games can provide a context for experimenting with alternative strategies and for attempting to apprehend problems through their representation as a system where failure is acceptable."

(Suarez, 2012). Put simply, games allow players to learn through experience in a safe environment. In addition, Suarez et. al. argue that games are arenas for decision making, and that "…Decision science has shown elegantly and irrefutably that experience, because of the emotional pathways it triggers, is a much better teacher than exposure to information" (Mendler de Suarez, 2012), that "Games can help people from diverse disciplines and sectors involved in humanitarian and development work be more effective" (Mendler de Suarez, 2012) and that "As training tools games can simulate changing conditions, plausible decisions, and related outcomes" (Mendler de Suarez, 2012).

Student engagement in lessons is another important factor to consider when selecting a pedagogical approach. In their article, 'Gamification in Education', Gabriela Kiryakova, Nadezhda Angelova, Lina Yordanova explain how games can increase student engagement in lessons.

> "The main problems in modern education are related to the lack of engagement and motivation of students to participate actively in the learning process. Because of that, teachers try to use new techniques and approaches to provoke students' activity and motivate them to participate in training. One possible solution is to reward the efforts and achieved results by awards, which leads to increased motivation for participation and activity. That decision is based on the use of game elements in the learning process."
>
> *(Kiryakova, 2014)*

This links back to the section of the conceptual framework, 3.2 A Justification for the Importance of Teaching the SDGs, where I have discussed how students' interest levels in a topic effect their engagement with the topic. In this section I explained that "Students like to understand how their learning can be contextualized in the world around them".

Pablo Suarez facilitated 'The Pardee Center Task Force on Games for a New Climate', which "…is a joint project of the Red Cross/Red Crescent Climate Centre and Boston University's Frederick S. Pardee Center for the Study of the Longer-Range Future". As part of their investigation, The Pardee Task Force executed a one day event at Boston University where 30 participants came together to play games and join in on discussions "…on the potential

role of games in academia, government, NGOs and the private sector" (Mendler de Suarez, 2012).

"Participants experienced five very different games:

- "Dissolving Disasters" on crop choices among subsistence farmers given changing seasonal rainfall;
- "Urban Trade-offs" on government investments in public infrastructure given rising risk of extreme events;
- "Humans versus Mosquitoes" on dengue fever given climate change;
- "Broken Cities" on managing land use given adaptation and mitigation needs;
- "FAIR" on microinsurance for Ethiopian farmers in safety net programs.

An 8-minute video on the event was produced by the Pardee Center"

(Mendler de Suarez, 2012)

This video was interesting to watch, with Pablo Suarez himself explaining how the day worked and what the 'aim of the game' was.

> "Games can create dialogue, games can create learning, games can create optimization. You learn which is the best strategy given what you have and what may come your way. Games can create icebreaking. It builds an atmosphere of shared experiences, which is just so much fun, and as such it enables people to have a serious time exploring plausible futures."
>
> *(Mendler de Suarez, Games for a New Climate: Experiencing the Complexity of Future Risks, 2012)*

He further explains that, whilst games can be experiential for players that are not immersed in the issues at hand, there are limitations to game play, "The game is a simplified representation of reality, it is not reality, we cannot capture reality in a 40 minute long game" (Mendler de Suarez, Games for a New Climate).

One participant explained that "…the point is to make it maybe a little more fun so that it is more accessible to people instead of it being so deadly serious" (Mendler de Suarez, Games

for a New Climate, 2012). Both Suarez et. al. and Kiryakova et. al back this up explaining that games provided educators with a tool that generates student interest, which, in turn, increases engagement (Kiryakova, 2014) (Mendler de Suarez, 2012).

Another participant commented on how the games brought players together, "That was, I think, one of the most interesting things about the game, bringing people together and really, not requiring but, strongly encouraging them to come up with some sort of group plan and the rules were nicely flexible" (Mendler de Suarez, Games for a New Climate). A third participant expanded on this a little further, explaining that "Collaboration may be more likely to happen when you have fewer resources and you have to talk to people, and then once you get a lot of your own resources it doesn't seem as important and communication starts to break down a little bit" (Mendler de Suarez, Games for a New Climate, 2012). This will be reviewed further in chapter 4.3.1 Testing the Case Study.

Suarez et. al. explain that "Games can generate emotional experience while also inspiring individual discipline and collective cohesion" (Mendler de Suarez, 2012). Kiryakova et. al. expand on this by discussing the important distinction between fostering collaboration skills rather than competition.

> "Collaboration in education is a milestone for the effective implementation of active learning. Unlike training games possess a strong competitive element. The focus in learning process should be rather towards developing skills for collaboration and teamwork and responsibility for the performance of the group instead of competition between students. Gamification is not directly associated with knowledge and skills. Gamification affects students' behavior, commitment and motivation, which can lead to improvement of knowledge and skills (W. Hsin-Yuan Huang, D.Soman, 2013)."
>
> (Kiryakova, 2014)

Suarez et. al. explain in the video of their event that "Games should have different outcomes. There should be a way for the players to change the outcome" (Mendler de Suarez, Games for a New Climate). The Game of Inequality allows players to change the outcome by helping one another. The outcome is based on circumstances, tools, knowledge, and luck. In 4.3.1 Testing the Case Study, I examine how the Game of Inequality balances the

competitiveness of students and their collaboration to affect the outcome. This is further explored in chapter *7.0 Discussion*.

Kiryakova et. al. sum up well the benefits of the use of games as pedagogical tools in their article, Gamification in Education.

> "Implementation of game elements in education is logical since there are some facts that are typical for the games and training. Users' actions in games are aimed at achieving a specific goal (win) in the presence of obstacles. In education there is a learning objective, which has to be achieved by performing specific learning activities or interaction with educational content. Tracking the players' progress in games is an important element, because next steps and moves are based on their results. In education tracking the students' progress is essential to achieve the learning objectives. Students' learning path is determined by the achieved levels of knowledge and skills (Glover, 2013)."
>
> *(Kiryakova, 2014)*

In its essence, this section has argued that game play introduces the 'why?'/ 'how?' rather than the 'what?' to children by reviewing the work of several academics.

3.5 The Inspiration and Creation of The Game of Inequality

The game that I created, The Game of Inequality, is based on the Sustainable Development Goals with a focus on inequality. I originally created the game to assist a teacher in teaching her class about how to treat one another. I have no prior experience with creating games but had the idea to create an experiential learning opportunity for the students by being inspired by Jane Elliott's exercise in 1968 (Bloom, 2005). The purpose of her exercise was to teach the, primarily, caucasian children in her class about inequality (justice) and discrimination in the wake of the assassination of Martin Luther King Jr (Bloom, 2005). She devised a plan to *show*, rather than tell, her students what it was like to be black in that day and age (Bloom, 2005). This plan involved dividing the children based on eye colour, allowing them different privileges, and creating a different narrative to explain behaviour. Elliott found that the children had strong reactions to the exercise. When told that they were lesser than their peers, student work worsened, and confidences were diminished. When told that they were better than their peers Elliott noted more bullying and condescension (Bloom, 2005).

> "When the exercise ended, some of the kids hugged, some cried. Elliott reminded them that the reason for the lesson was the King assassination, and she asked them to write down what they had learned. Typical of their responses was that of Debbie Hughes, who reported that "the people in Mrs. Elliott's room who had brown eyes got to discriminate against the people who had blue eyes. I have brown eyes. I felt like hitting them if I wanted to. I got to have five minutes extra of recess." The next day when the tables were turned, "I felt like quitting school. . . . I felt mad. That's what it feels like when you're discriminated against."."
>
> *(Bloom, 2005)*

The exercise allowed the children to experience a reality different from their own, which helped them to grasp the concepts better (Bloom, 2005). The exercise was so profound for the students that, when interviewed, years later many of them commented on the monumental effect that it had had on their lives (Bloom, 2005).

> "Ray Hansen was [sic] pegged a slow learner. Now 43 and an attorney in Rochester, Minnesota, Ray says that because of Jane, "I go out of my way to offer a kind word to

> people of color. I don't think I would do that if not for Jane. What Jane taught is woven into the fabric of my being. You cannot underestimate the impact that such an experience has had on us. I don't know how anyone who went through the experience can say that they have not been changed. Jane must get the credit she deserves for making the world a better place, and making us better human beings. The level of impact of the experiment is on the same magnitude as your first love, the first death of someone close to you, the birth of a child."
>
> *(Bloom, 2005)*

Another student, Rex Kozak commented that, "Jane taught that if you don't have expectations or goals for yourself then you'll only be willing to go as far as what other people expect of you. She showed me anything was possible, that if you want it, you can achieve it. For me the exercise wasn't about black and white, it was about a whole lot more. It showed how you should live." (Bloom, 2005).

The impact of this exercise cannot be argued but not all of the responses were positive. Bloom explains that "Interviews with many of the retired teachers who worked with Jane show a deep rancor. Fourth generation Riceville resident Jane Elliott is detested by residents as an arrogant, self-centered opportunist who turned against her town and inflicted untold harm on hundreds of Riceville's children" (Bloom, 2005). The disapproval from the exercise revolved around how the white children were being treated. One woman wrote to Jane accusingly, "How dare you try this cruel experiment out on white children. Black children grow up accustomed to such behavior, but white children, there's no way they could possibly understand it. It's cruel to white children and will cause them great psychological damage" (Bloom, 2005).

I had the opportunity to correspond with Elliott directly, which gave me an understanding of why equality is important and how she views it.

> "You might think less of me once you realize that I don't believe that all people are equal, except in the eyes of God, or whatever superior being is responsible for this dimension. You see, I don't work with God all day, every day; I work with fallible human beings who do not see me as their equal in size, age, color, gender, education, talent, etc., etc., etc. However, in this country, we are guaranteed equal treatment,

> under the law, and we can provide that, whether or not we see one another as equals. You and I know that the children you teach are not your equals, and to act as though you think they are is to teach them to lie to one another, just as you lie to them.
> I am more concerned with justice than I am with equality. We can, and must, treat one another justly, whether or not we see them as our equals."
>
> *(Elliott, 2021)*

Understanding how Elliott approaches justice (equality) gave me an understanding about why she did what she did in creating this exercise and continuing with it despite the resistance towards it. Understanding this perspective helped me to see that it is important to have different tools and motivation for the students to create a realistic experience as that will be more impactful. This concept guided me in how I created the Game of Inequality.

4.0 Methodology

4.1 Research Design

4.1.1 Methods of Sampling – stratified, convenience, & quota sampling

The sampling for this case study has employed two different approaches: stratified sampling, and quota sampling. Stratified sampling is used by selecting classes of different age ranges to research. Different age levels will have had more or less teaching exposure to the SDGs and inequality prior to this case study, and by including all students that are in attendance for each class I will be able to reduce sampling bias. I will be taking the different age levels into account in the data analysis stage of the case study (Barratt, 2009).

The second type of sampling, quota sampling, has been used in a similar way. The quota here can be defined as the students in each class/ year level, and these students will act as a representation of other students of the same age. Of course, there is some bias here, as each class attends the same international school in Norway. This may mean that the sample is not representative of other students of the same age/ year level in other schools or countries (Barratt, 2009).

4.1.2 Population/ Sample Size

In this study the school aged children in 3 years levels at School X act as the population. The case studies span five classes/ age groups. The first two are in year 6 and a mixed age classes from years 4-6. The children in these two classes age between 9-12. These classes have been used as test classes for me to better learn how to conduct the case study amongst the other four. The remaining three classes will be conducted in the middle school section of the international school in grades 1, 2, and 3. The children age between 11 and 15. Each of these classes will give me a better understanding of how kids at different ages respond. The population will be three age groups, divided up by class and year level. Each sample (class)

is roughly the same size, around 20-26 students, but will differ slightly depending on attendance.

4.1.3 Study Area/ Setting

The case studies have taken place in an international school in Norway. The school has allowed me to conduct these case studies during normal scheduled classes that each class has. Each case study has started in their regular classroom (Classroom 1), where the teacher has introduced me, and the students filled out the questionnaire (explained further in 4.3.1). The students then drew a random number/symbol out of a hat, which determined which of the students would be playing the game and which would participate in the alternate planned lesson. By having the students draw numbers out of a hat I have avoided bias. The possible numbers/symbols they could have drawn were 1, 2, 3, 4, 5, 6, 7, O, or star (*). Each of the students that drew a number 1-7, or an 'O' participated in the game lesson. The numbers corresponded to their numbers in the game, whilst the students that drew an 'O' acted as observers during this lesson. All students that drew a star '*' participated in the alternate planned lesson.

The students that were playing the game then moved to another room (Classroom 2) with me to ensure that there was no chance of muddying the research by divulging information to the other participants. Once the students were finished with the game and discussion, they re-joined Classroom 1 and had the chance to answer the second questionnaire and the additional questionnaire. At this point I took the students selected for the alternate planned lesson to Classroom 2 and I commenced the lesson with them. Once this concluded, the students joined Classroom 1 again and filled out their second questionnaires and additional questionnaires.

The data has been collected through 2 guided lesson plans, conducted once each for each age group (classes split in half, first half does lesson plan 1, second half does lesson plan 2). This amounted to a total of 8 lessons being conducted with the middle school students.

4.2 Research Methods

4.2.1 Qualitative & Quantitative Methods

In conducting the case studies for this thesis, both qualitative and quantitative methodological approaches were adopted to collect and understand data in order to answer the research questions I have posed. Students were given a questionnaire to complete before and after each lesson to gauge their understanding prior to each lesson and what they had learnt, respectively. The questionnaire is comprised of some qualitative questions and some 'yes/no' quantitative questions (see appendix 9.6). I also gathered quantitative data by asking questions such as; 'how many students felt that they had learnt something during the lesson?', 'how many students could name more of the SDGs after the lesson?', and 'how many students were able to identify more ways in which they can contribute to the SDGs and achieving equality after the lesson compared to before?'. The methods of analysis are covered in chapter 4.7.

4.2.2 Participatory Observation

Throughout the case studies I acted as a participant observer, meaning that I studied the students learning throughout the lessons as well as taking an active role as the teacher/facilitator of the lessons. Throughout the lessons, I observed to ascertain how engaged the students were and what they were learning/ needed more help with.

This type of data collection allowed for the students to speak freely but have clear instruction and framework to aid them in providing the best possible learning outcome. By allowing them to speak freely (and observing this) I was able to gain more information in a relaxed environment. This method is somewhat similar to semi-structured interviews where questions are used to guide speech but allow for un-structured discussion too.

The method of participant observation is outlined in the book 'Social Research Methods' by Alan Bryman, who explains that participant observation is one of the two more prominent

methods of data collection (Bryman, 2015). Participatory observation allows the researcher to not only inquire but also take action (USAID, u.d.). In this case study I have acted as the teacher as well as the observer, meaning that I conducted the lessons that provided me with the data to study.

As a participant I could have taken on a number of different roles and collected data a variety of ways; "(a) **participatory** listening and observation; (b) visual tools such as maps, daily activity diagrams, institutional diagrams and Venn diagrams, flow diagrams and livelihood analysis; (c) semi-structured interviews; and. (d) focus group discussions" (USAID, u.d.).

In this case study I devised two lesson plans, one utilising a game and one alternative. I taught the groups of students using the lesson plans, and contributed to group discussions by asking the students questions and guiding them to establish clearer ideas. I also collected questionnaires from the participants to analyse later. As the teacher I needed to be careful that I was giving each group the same opportunities to learn. By devising my lesson plans prior to teaching the lessons I was able to cancel out some bias.

As everyone that has ever taught a class knows, however, children respond to teaching in different ways depending on the class dynamic, the other classes they have had that day, and what they are dealing with in their home lives, along with a vast number of other factors. There is a saying amongst filmmakers coined by W.C. Fields that one should "never work with children or animals" because they are unpredictable, ergo when working with children the data analysis must take into account the human element (Harrington, 1999).

4.3 Conducting the Case Study

4.3.1 Testing the Case Study

Before launching into my case study, I decided to test out the game that I had created for the lessons. A primary school teacher had originally asked me to come in as a guest to teach her class about racism, an issue that the children had been struggling with in the playground. The test study spanned two classes, one mixed aged class with students aged 9- 12, and one year 6 primary class with students aged 11- 12.

Roughly 34 students were in attendance at school on the day of the test study and they were divided up into groups of 11- 12 with 7 students acting as the game players and 4- 5 acting as the observers. As explained in *4.1 Study Area/ Setting*, the students drew numbers or symbols out of a hat to allocate them to a game and player number. There were 3 games that occurred simultaneously, which was made possible because, along with me, both the homeroom teacher for the mixed aged class, and the homeroom teacher for the year 6 class were in attendance to help facilitate the games.

The student observers took notes during the games, which I collected at the conclusion of the lesson. Each of the students also wrote a reflection, which allowed me to develop a better understanding of their experiences. In the following section I have selected some quotes from student reflections that highlight the overall reactions to the game. The spelling in these quotes has been edited for clarity.

Player 1 wrote, “I feel really bad. I had everything but I was forced to watch my friends suffer. I was not allowed to help. It was horrible, it was torture, I hated it”, whilst Player 1 in a different game group explained that… “ The game was EPIC!! I was 1 and the richest. I kinda feel bad for 7 because she was sooo poor and had to be blindfolded…. Sadly I lost a smartie. After the game some people started getting a bit mad saying “I had NOTHING and you are sad about a smartie.” That was kinda rude”. These responses are clearly very different. This could be because of the personal characteristics of the children, meaning that they would interpret the lesson in different ways and act differently surrounding game play.

Player 5 responded to the reflection explaining that "I didn't really like the game because people weren't treated equally. But this game taught us about how people feel and gave us empathy (for those who were over number 4). I believe that no person should suffer in that way and that every creature on Earth should be treated equally even if they are one of the poor or disliked. I won't forget the feeling of being treated differently…. So, I guess I kind of liked the game!". These observations echoed the response from Player 5 in a different game group, who wrote "…now I know what it kind of felt like to not be treated equally". Player 3 had a similar response, stating "I was lucky to land how I actually kind of live! But now I want to help people that live in a worse way than everyone else".

Many of the student reflections discussed how the students felt during the game, and how they plan to act in the future to ensure that others don't feel the same inequality that they experienced during game play. Player 6 made some interesting observations about this, "I really enjoyed the game and now I understand inequality much better. It was weird that the most privileged people did not get first. That shows that even the less privileged can still get to the top if they work hard and are lucky. This game really represented the actual world well and showed what very poor people got and what rich people have. Now I will be more grateful for what I have and try to help people who don't have as much".

Player 6 from a different game group commented that, "It was fun seeing what you are going to get and how many smarties we each got… The maths questions were hard but I did manage to get some of them with the help of other players".

Many of the students noted the help that they did or did not receive from their peers, along with other interactions that occurred amongst the game players and the observers. It was interesting for me, as a participant observer, to note that, although I did not specify that they were allowed to ask for help from their peers or teachers, some groups seemed to intuitively do so, whilst others felt that it may be considered cheating. In a section of the conceptual framework, *3.4 The Use of Games as a Pedagogical Tool,* I commented on a film produced by the Pardee Center, where the Pardee Task Force explained that flexible rules encourage people to work together to overcome challenges (Mendler de Suarez, Games for a New Climate). It was fascinating to see this concept in action as some player and observers asked for help and aided one another. However, some students that felt that helping one another

would be considered cheating, and demonstrated an alternate response than the concept than that suggested by the Pardee Task Force. The students that felt that helping one another could be considered cheating may have responded in this way because of their ages. As mentioned later in the thesis, in chapter *5.0 Study Area Current Pedagogical Approaches*, the head teacher of the primary school explained to me that children of this age (9-12) are particularly concerned with 'fairness', so if an action could be considered as 'cheating' the students may have a strong oppositional reaction (PHT, 2021).

However, in chapter 3.4 I noted that one participant that attended The Pardee Center's event explained that "Collaboration may be more likely to happen when you have fewer resources and you have to talk to people, and then once you get a lot of your own resources it doesn't seem as important and communication starts to break down a little bit" (Mendler de Suarez, Games for a New Climate, 2012). I anticipate that this could be another explanation as to why students didn't choose to work together to overcome challenges. The case study will be done with students that are in middle school, meaning an older age range of students, who may be more willing to help one another. The data analysis of the case study should help to address this knowledge gap and may reflect on the concept by the Pardee Task Force.

Overall, I felt that the case study test went well, and I gained some understanding of how well the game worked in practise. Upon reflection I realised that I needed to address the issue of data analysis. Whilst the observations and written reflections from the students were helpful, I felt that I would need some more concrete evidence to argue that the game has been a success. In order to achieve this, I decided to create an alternate lesson plan, that would be informed using current pedagogical approaches, to compare learning outcomes with. Although the reflections were interesting to read, I decided that I would gain a more accurate understanding of student learning by channelling the reflections into specific questions, so I devised a questionnaire that the students could complete after each lesson.

Some students that had the same role in different games had widely varying responses to the game, which, as explained earlier, could be due to personality, previous knowledge, or characteristic differences. I felt that without having a good indication of prior knowledge it would be difficult to test the success rates of the different lessons. I decided that the best way to resolve this issue would be to present the questionnaire to the students both before and after the game to establish any differences in understanding or knowledge. There was some

interesting discussion happening during the game, so I also decided to record the case study lessons as further evidence to analyse.

After learning from the case study test, I devised the two lesson plans that could be taught to the students at the international school. Both lesson plans have the same learning objectives, namely;

- Students can explain what the SDGs are and why they're important.
- Students can make connections between specific SDGs and their own contributions towards achieving the goals
- Students understand the importance of equality for all.

4.3.2 Game Lesson

In the first lesson plan each group has played a game of my own creation. The board game is called 'The Game of Inequality' and consists of 6 rounds. See rules in the appendices.
After the game had been played, I engaged in a class discussion with the students. I asked them the following questions and facilitated their dialogue;

1. Which circumstances did you relate to the most, either in your own life or in your community/country?
2. How do you think the game reflects real life?
3. Who won?
4. Did anybody cheat? How? Was it actually cheating?
5. What do you think was necessary to win?

Moving on from the discussion, I then introduced the SDGs with the aid of a graphic depiction of them. Each student had their own copy to look at during this part of the lesson (see appendix 9.4). Once I explained the SDGs to the students, intermittently posing questions to them to gauge their understanding, I posed a final question to the class; "Which of the SDGs relate to the circumstances in the game?".

This concluded the game lesson. The students were sent back to Classroom 1 and had the chance to answer the questionnaire for a second time, plus an additional questionnaire with 3 more questions pertaining to what they have learnt.

4.3.3 Alternate Lesson

In the second lesson plan we conducted group work, class discussion time, and a reading. When the students arrived in the classroom, they were first asked to consider the biggest problems faced by Norway and the world today. I chose to take a couple of answers whilst they were all gathered. They were then split into groups to discuss their answers before we came back together as a whole

See lesson plan in appendices.

Start with a class discussion; "What are the biggest problems faced by people in Norway and the world?" Encourage children to think from different perspectives; companies, government, parents, etc.

Group work: 5 minutes

In small groups the children will discuss and write down the issues that they have come up with. We will then come back together as a class and write some of them on the board.

Introduction of the SDGs: 10 minutes

Hand out of the SDG poster. SDGS were created by the UN in 2015 to reduce inequality, eliminate poverty, and fight climate change by the year 2030.

The United Nations noticed that there were many problems with the world that would become more prevalent in the upcoming years. These problems included; global warming, hunger and starvation, poverty, and inequality. Some of these problems stem from the lack of reliable resources. The SDGs guide the use of sustainable resources, such as sustainable farming, affordable housing, and education (The United Nations, u.d.)

Discussion on SDGs

"Which of the SDGs relate to the issues we came up with at the beginning of class?"

Storytime – The Wind in the Willows 5 minutes

At the end of the story ask which of the goals the students think the story was about.

4.4 Methods of Data Collection, Research Instruments

4.4.1 Questionnaire

The questionnaire, previously discussed in 4.3.1 Testing the Case Study, was created to facilitate data analysis. It is important for two reasons. Firstly, it allowed me to mark the students' understanding before the lessons began, and then compare these answers with the answers provided upon the conclusion of the lessons. It also offered a chance to record my findings in a more quantitative manner. By combing this method with the participatory method I was able to develop a broader overview and understanding. There are 2 parts to the questionnaire. The first, titled 'Questionnaire', addresses the student understanding before and after the lesson, whilst the second part, titled 'Additional Questionnaire' was only provided at the end of the lesson and allowed me to gather some additional information that may be useful in the qualitative analysis.

4.4.2 Audio Recordings & Transcription

Each lesson was planned to be recorded using audio only. The recordings should have then been transcribed and provide me with some anecdotal qualitative data. Unfortunately, there was a problem with the recordings, as the noise level in the classroom was too loud and/or distant to accurately pick up student interactions. This could be rectified by making use of more high-tech equipment, such as microphones. The budget for this study did not allow for this, so I, instead, rely on my role as a participant observer to make note of student interactions. This is not the most reliable method, as I took an active role in the lessons and could not take notes during them.

4.5 Timeframe & Limitations

My thesis writing began in January of 2021. I began with the thesis proposal and planning of the process. In January 2021 I began constructing my case studies, and these were conducted throughout February and March. The writing of the thesis occurred concurrently with the case studies. During this time, I focused on the first 3 chapters of the thesis, namely, the thesis outline, conceptual framework, and methodology.

Since the case studies have been conducted within a school, I had to adhere to the available lesson times that the teachers had to offer me. I predicted that this may delay my data collection depending on timetabling. The data has been processed in April 2021, and then analysed in May 2021, and the discussion was written once this was completed.

I did not need a big budget to conduct my research, instead I utilised tools that were already at my disposal.

I was concerned about the length of time needed to conduct each case study. Since I planned to avoid bias amongst the students the two lessons needed to be taught consecutively. School X granted me one 1.5 hour lesson for each year level. The first lesson took a minimum of one hour, and from experience I know that transition times between lessons can take longer than expected. I planned to mitigate this by teaching the lessons right before a scheduled break period (recess) so that if time ran over, I was still able to complete each case study.

4.6 Ethical Considerations

As the school wishes to remain anonymous, I will be referring to them as School X throughout my paper and will not discuss any of my findings with their name attached. I have signed a confidentiality agreement, which my supervisor has also signed, to ensure complete anonymity. I hoped that I would be able to collect as much data as possible to ensure the most valid results, but I have been respectful of peoples' wishes and have not intruded unless I have been invited to conduct my case studies and teach. I have obtained consent from School X and all parents who have children that have taken part in the case study.

For each case study I have conducted I have asked the students for their permission to record audio. I have explained to the students that the audio is to be for my own personal use as I write my thesis and, in particular, for analysing my findings, and that none of their names or any clues that could be associated with them will be included in my paper. I also informed them that my supervisor may or may not also hear the recordings, but that we have signed confidentiality agreements and will not divulge their identities.

I plan to retain the recordings until my thesis is handed in and graded, after which I will delete them. Although this could have limited me somewhat, I think that it was be crucial to record the lessons to gain an accurate depiction of the findings. Since the case studies involve me being an active participant, I was unable to take notes at the same time. I provided students with age adapted information, which outlined the study and their consent. This information was provided on the questionnaire hand-outs, found in appendix 9.6 and 9.7. I planned to exclude any students that were not comfortable with this arrangement from my study, however all students that were asked to participate were happy to be recorded and fill in the questionnaires.

At every stage I have taken measures to ensure trustworthiness, validity, ethics, and that there is no harm to those involved.

4.7 Methods of Analysis

The methods of data analysis were guided by the principles outlined by Bryman when he explained techniques for data analysis in his book, 'Social Research Methods'. Bryman explains that "You cannot apply just any technique to any variable. Techniques have to be appropriately matched to the types of variables that you have created through your research" (Bryman, 2015). Taking this into account, I chose to divide the data using the questions from the questionnaire. Some of the questions provided me with easily quantifiable raw data, such as question 4, 'Do you feel that you, personally, are working towards the Sustainable Development Goals?'. Other questions were framed to allow only a set number of correct responses, such as question 2, 'Can you name any of the Sustainable Development Goals?', whilst some questions provided purely qualitative data, such as question 3, 'What does inequality mean to you?'. Each response could be categorized into one of four groups, before the game lesson, after the game lesson, before the alternate lesson, and after the alternate lesson. All student responses were grouped as such before any other processing was done. The next portion of this section of the methodology chapter examines each question in turn, and the methods that were used to analyse the raw data.

4.7.1 Question One

Question 1, 'What are the Sustainable Development Goals' could be viewed as either quantitative or qualitative. As I wanted to gain an accurate picture of student prior knowledge and compare this with the knowledge gained after the lessons, I chose to approach this data in a quantitative fashion. Each student response was graded, and each individual student was categorized as either having either 'no knowledge', 'some knowledge', or 'good knowledge'. The following outlines the grading scheme.

Good Knowledge	Students can list at least 3 of the following; The aim of the goals, the creator of the goals, the year that the goals became effective, the year that the goals should be completed.

Some Knowledge	Students can list 1-2 of the following; The aim of the goals, the creator of the goals, the year that the goals became effective, the year that the goals should be completed.
No Knowledge	Students cannot list any of the following; The aim of the goals, the creator of the goals, the year that the goals became effective, the year that the goals should be completed.

Table 1 Grading Scheme for Question One Data Analysis

Once the answers were categorized, I counted the number of students in each class, the number of responses in each category and then found the averages for the whole school. These averages were put into pie charts, which clearly depict student knowledge before and after the game lesson and before and after the alternate lesson.

4.7.2 Question Two

Question 2 was ‘Can you name any of the Sustainable Development Goals?’. This raw data was rather straight forward to process. Each of the student responses listed any number of the SDGs, which I tallied, logged, and then found the averages for the whole school before and after the game and alternate lesson, respectively. These averages were then input to bar graphs to present a clear depiction of student knowledge.

4.7.3 Question Three

Question 3 asked, ‘What does inequality mean to you?’. As discussed earlier in chapter 3.3 A Justification for the Focus on Inequality, this question has been included because of the historically ambiguous attempts at defining ‘equality’. I summarized in chapter 3.3 that the

most important definition is that which the students themselves understand. This student understanding cannot be quantified and is therefore examined through a qualitative lens.

Individual student understanding, in this case study, is not as imperative to consider as the collective understanding. This thesis aims to address the effectiveness of teaching methods that could be applied to a whole class. The qualitative approach used to analyse the data from question 3 is grounded theory, which is outlined by Bryman using its main features, theoretical sampling, coding, theoretical saturation, and constant comparison (Bryman, 2015). One of these features, coding, is explained as "…one of the most central processes in grounded theory. It entails reviewing transcripts and/or field notes and giving labels (names) to component parts that seem to be of potential theoretical significance and/or that appear to be particularly salient within the social worlds of those being studied" (Bryman, 2015).

The type of coding that I utilised first is called open coding, which is "… 'the process of breaking down, examining, comparing, conceptualizing and categorizing data' (1990: 61); this process of coding yields concepts, which are later to be grouped and turned into categories" (Bryman, 2015).

To code the data collected from this question, the responses were first divided into groups, before and after the game lesson, and before and after the alternate lesson. Then the words used in the responses in each category were coded. Repetition of words across several responses indicated a common understanding. To depict this in a visually demonstrative manner I created word clouds, where the words shown in larger font are most often repeated throughout responses. By examining each word cloud, I was able to note trends and extract connections.

This type of coding is called 'axial coding', "'a set of procedures whereby data are put back together in new ways after open coding, by making connections between categories' (1990: 96). This is done by linking codes to contexts, to consequences, to patterns of interaction, and to causes" (Bryman, 2015).

4.7.4 Question Four & Six

Question 4, ‘Do you feel that you, personally, are working towards the Sustainable Development Goals?’ and Question 6, ‘Do you feel that you, personally, are working against inequality?’, gave students the option of circling one of two possible responses, ‘yes’ or ‘no’. The raw data was collected by counting the number of total student responses and dividing this by the number of ‘yes’s’ and ‘no’s’. This data is displayed in pie charts that are, again, divided by the responses before and after the game and alternate lesson, respectively, and for each question.

4.7.5 Question Five & Seven

Question 5, ‘If you answered, ‘yes’ to question 4, how do you feel that you are working towards the goals?’ and question 7, ‘If you answered, ‘Yes’ to question 6, how do you feel that you are working against inequality?’ were also analysed in the same way as one another. Students responded in several ways that they felt that they are addressing the SDGs and inequality, respectively. The number of ways mentioned in each response were tallied and the total number of ways, across all classes, before and after the lesson and game, respectively, were presented using a bar graph.

4.7.6 Additional Questionnaire

The additional questionnaire was provided to students only after the game lesson and alternate lesson had been completed. See appendix 9.7 for the additional questionnaire. Much like question 3 of the questionnaire, the additional questionnaire provided me with qualitative data to study and was processed in the same way as the data from question 3, using grounded theory, specifically open coding, and axial coding, by examining trends in responses and picking out key words that were repeated in several responses. Unlike the analysis of question 3, I do not include word clouds for the analysis of the additional questionnaire and have, instead, processed the raw data manually. By utilising axial coding,

the questions in the additional questionnaire provided me with supplementary data that had the possibility of strengthening my hypothesis.

4.7.7 Comparison Study Between Year Levels

In order to close a knowledge gap found in the conceptual framework a comparison is also made between the second year class responses and the third year class responses. There is one unit that specifically covers the SDGs in the current curriculum, which is taught in the second year. At the time of this study, the unit had not yet been taught for this academic year so, although I could have compared first year and third year, I was able to compare two classes that were closer in age range, which contributes to obtaining more accurate results. Succinctly put, students in the second year had had no prior direct teaching of the SDGs, whilst students in the third year had been taught about the SDGs directly the year before. Again, the analysis to compare these two year levels takes into account the prior knowledge that students had, as well as what their responses indicate after the lessons.

4.7.8 Limitations of the Data

As touched upon in chapter *4.1.2 Participatory Observation*, examining the effectiveness of pedagogical approaches means working with children, which inherently includes a human element that must be taken into account (Harrington, 1999). One such example occurred in the study conducted with the second year of students. On the day of the study there had been a social issue in the classroom involving hateful slurs and physical violence. The students were, understandably, effected by this. School X uses a kind of situational teaching to help students to learn, which they call ‘teachable moments’ (PHT, 2021). As this issue came to light immediately preceding the case study, I addressed the issue before the lessons could begin, and in doing so I explained what hateful speech is and the damage that it can have. This ‘teachable moment’ only occurred with the second year class, so none of the other classes had the opportunity to engage in this discussion with me before we began the case study. This could have skewed the results.

5.0 Study Area Current Pedagogical Approaches

Some common phrases heard whenever discussing development and the future of the world are that ‘education is the cornerstone we need for change’, ‘we need to educate the next generation better’, ‘the children of today are the leaders of tomorrow, we need better education systems in place’ (Mubbsher Munawar Khan, 2011). Whilst it seems that the social discourse is generally that education is important, we need to delve further into this discourse and realise just how important education actually is. In order to do so, who better to ask than the head teacher of a primary school who works with education every day and witnesses the effect that it has. The following quote is from the head teacher of the primary school at School X, here on out referred to as PHT.

> “Education helps you open your mind to new concepts and ideas. It allows you to appreciate different perspectives. It builds relationships. By being educated you can contextualize issues in the real world. You can be a more upstanding, contributing, and resourceful member of society. You can build a better future for yourself and communities, locally & globally. It allows you to make connections between things and find your place in the world.
>
> Once you have understood concepts you can then use them trans disciplinarily to make connections across different disciplines in education. Understanding concepts and being able to put a name to them, supports this connection. By being educated holistically you can better solve problems creatively. Education is important not just in the academic sense but also in the social sense-approaches to learning. It enables you to learn skills that will help you operate better both within the educational setting and out in the real world. Some examples of these approaches to learning are, self-management, thinking, communication, social, and research skills. Education can spur you to take action.”
>
> *(PHT, 2021)*

Having discussed the importance of education in general, the next section of this chapter examines the current curriculums that are being used to teach students about the Sustainable Development Goals including inequality, and the methods used to teach them. To gain

understanding about the current curriculum and pedagogical approaches I have interviewed the middle school head teacher at the international school (School X) where I will be conducting my case studies. They have provided the current humanities curriculum that covers the students' learning about the SDGs including inequality. Since School X will remain anonymous in this thesis, the middle school head teacher at School X will be referenced anonymously and referred to in the following text as 'MHT'. MHT has also provided me with the course aims and objectives used to prepare the curriculum extracted from a document called '[Retracted] Guide'. This document is also anonymised as it contains some information that may jeopardise the anonymity of School X. This document will here on out be referred to in the text as 'Subject Guide'.

The case study for this thesis spans four year levels of the middle school and, as such, I focused on these four year levels when interviewing MHT. MHT explained that each subject that is taught at School X is divided up into a number of units that cover a variety of topics (MHT, 2021). Some or all of the unit in any one subject may line up with a unit in another subject. These are called interdisciplinary units (MHT, 2021). School X teaches a humanities subject (here on out referred to as 'Humanities') as part of the yearly curriculum, which is the subject most likely to cover the SDGs. The Subject Guide lists the aims of Humanities, which state the expectations around teaching this subject and assumes that the student will be changed by the learning experience. They are as follows:

> "The aims of…" Humanities is "…to encourage and enable students to:
>
> - appreciate human and environmental commonalities and diversity
> - understand the interactions and interdependence of individuals, societies and the environment
> - understand how both environmental and human systems operate and evolve
> - identify and develop concern for the well-being of human communities and the natural environment
> - act as responsible citizens of local and global communities
> - develop inquiry skills that lead towards conceptual understandings of the relationships between individuals, societies and the environments in which they live."
>
> *([Retracted] Educational System, 2014)*

The learning objectives, also listed in the Subject Guide, “state the specific targets that are set for learning in that subject” and outline what the students are expected to achieve upon completion of the subject:

“**A Knowing and understanding**

Students develop factual and conceptual knowledge about individuals and societies.

In order to reach the aims of individuals and societies, students should be able to:

i. use terminology in context
ii. demonstrate knowledge and understanding of subject-specific content and concepts through descriptions, explanations and examples.

B Investigating

Students develop systematic research skills and processes associated with disciplines in the humanities and social sciences. Students develop successful strategies for investigating independently and in collaboration with others.

In order to reach the aims of individuals and societies, students should be able to:

i. formulate a clear and focused research question and justify its relevance
ii. formulate and follow an action plan to investigate a research question
iii. use research methods to collect and record relevant information
iv. evaluate the process and results of the investigation.

C Communicating

Students develop skills to organize, document and communicate their learning using a variety of media and presentation formats.

In order to reach the aims of individuals and societies, students should be able to:

i. communicate information and ideas using an appropriate style for the audience and purpose
ii. structure information and ideas in a way that is appropriate to the specified format

iii. document sources of information using a recognized convention.

D Thinking critically

Students use critical thinking skills to develop and apply their understanding of individuals and societies and the process of investigation.

In order to reach the aims of individuals and societies, students should be able to:

i. discuss concepts, issues, models, visual representation and theories
ii. synthesize information to make valid arguments
iii. analyse and evaluate a range of sources/data in terms of origin and purpose, examining value and limitations
iv. interpret different perspectives and their implications."

([Retracted] Educational System, 2014)

MHT clarified that there are several Humanities units in each year level, which indirectly cover the SDGs (MHT, 2021). These units include water usage and distribution, genocide, governments, social process movements in the US and South Africa, and natural disasters, among others (MHT, 2021). I will examine two of these units for clarification.

In the first year of the middle school the unit pertaining to the SDGs is 'Global Citizenship' (MHT, 2021). In this unit the students look at global issues facing the world today starting with plastic pollution in oceans (MHT, 2021). They will begin the unit by finding current issues individually and then conduct a class or group discussion about their findings (MHT, 2021). After this they conduct an investigation into any number of global issues, e.g., political representation, human rights, environment, terrorism and create mind maps to document their findings (MHT, 2021). This unit also focuses on teaching students about source analysis according to origin and purpose (MHT, 2021). The students then conduct a guided investigation into the Great Pacific Garbage Patch, using a collection of sources (MHT, 2021). Finally, the students create an infographic to highlight and raise awareness to an issue of their choice (MHT, 2021). This unit covers good research skills, training the students in organising their notes and giving feedback (MHT, 2021). Whilst there is no direct mention of the SDGs in this unit the students may choose to use the SDGs of their own

accord (MHT, 2021). MHT elaborates that the students should be able to apply critical thinking to the SDGs as a resource by the end of the unit (MHT, 2021).

Another example of an indirectly related unit is the second year Humanities unit about water, where the students do a water carrying exercise to teach them to gain empathy for children that have to carry water in their daily lives (MHT, 2021). They also inventory water usage in their own life and compare and contrast with another person's water usage (MHT, 2021). This unit is interdisciplinary. The data is analysed in Maths, Humanities covers water use and scarcity using appropriate resources, and a novel study about water is done in English (MHT, 2021). At the end of this unit students will have produced a single product that each discipline assesses in their own way (MHT, 2021).

There are more examples of units that indirectly relate to the SDGs in other subjects/ disciplines. In first year Design the students start their year off with a unit called 'Design for Awareness', where they create posters about an endangered species (MHT, 2021). In third year Science, the students partake in a unit about sustainable homes and research the different materials that may be used for a build (MHT, 2021). The first year English class work on a novel study, 'The Breadwinner' by Deborah Ellis, which includes themes of gender oppression, war, and education among many more (MHT, 2021). In each of these units, in these subjects, there is no clear parallel drawn between the SDGs and the unit. Despite there being no direct link taught in these subjects, MHT informs me that the students are developing the tools needed to critically analyse the SDGs, reference them in their work, and develop an understanding of their place in society as instigators of positive change (MHT, 2021).

To gain a better picture of student understanding of their curriculum and how the SDGs come into it, I asked a number of students to write a short statement about their learning. The following is a quote from one student, in first year, whose statement encompasses the overall understanding;

> "I have never learned about SDGs. However, we have done a unit in [Humanities] where we talked about global problems. I did my projects about supply chains and looking back at it now, I realize that this could relate to SDGs in terms of developing

> sustainable modes of transport instead of using huge cargo shipments with high gas usage."
>
> *(Student, 2021)*

When discussing the inclusion of teaching the SDGs to middle school students, MHT explains in our interview that;

> "…The SDGs are so huge you could structure your entire curriculum around them. There are other topics that we feel we need to teach that are integrated, including economics, history, civil rights, & social protests. It is important for the students to touch upon current day issues. Previously we taught the Millennium Development Goals and found that they are pretty broad and big. [Global Goals, such as the SDGs are] being controlled by this huge international and global organisation, which leads me to question, 'how effective are they really?', 'How effective are they, realistically, in creating change?'. It seems as though the SDGs can be seen as yet another western organisation coming in to save the day".
>
> *(MHT, 2021)*

MHT further clarifies that the SDGs can be used as a good starting point to teaching Humanities, but that they are not the be all and end all of the subject (MHT, 2021). However, MHT explained that Humanities has one unit that is specific to the SDGs in second year. This unit is called 'Distribution of Wealth' (MHT, 2021). The unit is introduced by showing the students a video by Hans Rosling, '200 countries, 200 years, 4 minutes', which examines the life expectancy and income of 200 countries over the course of 200 years and the discrepancies between Western countries and the rest of the world (Rosling, 2010). This springboards the unit into a lesson about how wealth is measured, examining GDPs using choropleth maps (MHT, 2021). The students examine data from the World Bank and look at various economic and human development indicators (MHT, 2021). They then choose some of those indicators and compare them with different countries by creating a table to display their findings (MHT, 2021). The aim of this part of the unit is to teach the students how to organise data (MHT, 2021). In the next section of the unit students compare 5 countries based on specific Human Rights Indicators and create graphs to represent the human development of particular countries (MHT, 2021). The final section of the unit focuses specifically on the SDGs and begins by showing the students a video called ''We the People'

for The Global Goals', which features many famous personalities reading the SDGs (Goals, 2015). The final assessment for this unit involves students choosing one goal from the SDGs, examining the targets, and creating graphs for the progress made by at least two different countries, then writing an explanation about what the graphs mean (MHT, 2021).

There exists a knowledge gap in the Current Curriculum and Pedagogical Approaches. It would be interesting to measure student understanding before and after the unit that they have on the SDGs in second year. Having taken note of this knowledge gap, this thesis will attempt to address it in the Data Analysis section by comparing the prior knowledge of students in second year, before they have been taught this unit, to the prior knowledge of students in third year, who were taught the unit the year before. I will also compare the learning outcomes of the case study lessons between these two year levels. This will allow me to differentiate between student understanding before and after the direct curriculum approach to the SDGs.

6.0 Findings

As mentioned in the previous chapter, 4.7 Methods of Analysis, the findings are divided up by question. The data for each question that has been processed quantitatively begins with a graphic depiction of the findings and is followed by an explanation. Data from questions that have been analysed qualitatively begin with coding of key words and follow with the understanding that can be extracted from these.

6.1 Question One Findings

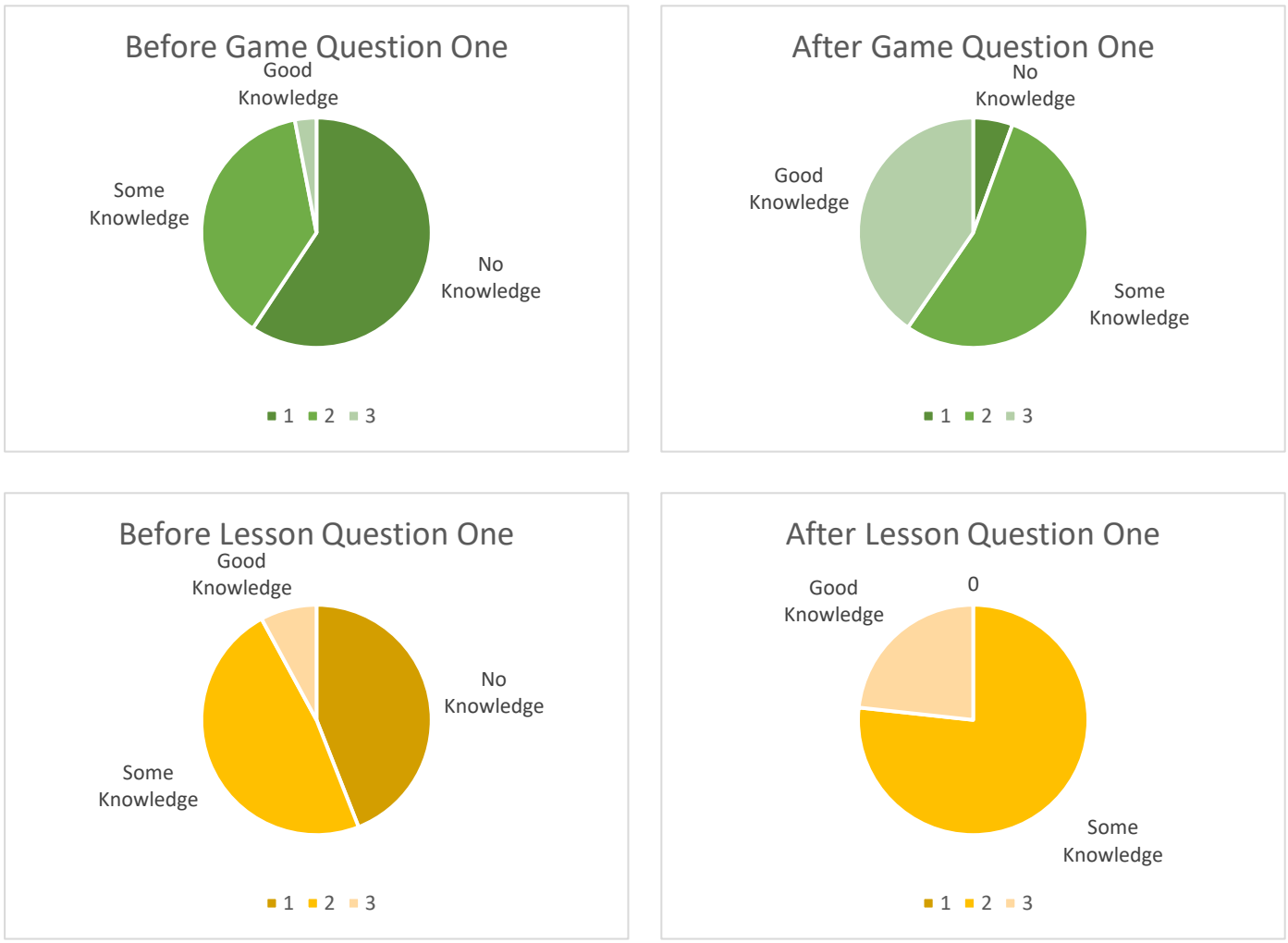


Figure 2 Pie Charts as Question One Findings

(What are the Sustainable Development Goals?)

As clarified in 4.7.1 Question One, responses from students were categorized dependent on a grading scheme, covering evidence of knowledge of the aim of the goals, the creator of the goals, the year that the goals became effective, and the year that the goals should be completed. The following statistics are represented in *Figure 2 Pie Charts as Question One Findings*.

Before the game lesson the students had majorly 'no knowledge' on what the Sustainable Development Goals are (59%), with only 3% demonstrating 'good knowledge'. After the game lesson the percentage of students that demonstrated 'no knowledge' had been dramatically reduced with only 6% falling into this category. The percentage of students demonstrating 'good knowledge' increased to 40%. This clearly represents that student overall knowledge was better after the game lesson.

Comparatively, 44% of students that took part in the alternate lesson demonstrated 'no knowledge' before the lesson and 8% demonstrated 'good knowledge'. The trend continued with the percentage of students demonstrating 'no knowledge' after the alternate lesson being reduced to 0%, and the percentage of students demonstrating 'good knowledge' after the alternate lesson increasing to 23%.

Whilst both lessons have shown to increase student knowledge overall, the game lesson had a greater effect on student knowledge. The percentage of students participating in the game lesson that demonstrated 'good knowledge' increased from 3% to 40%, in total, a 37% increase. The percentage of students participating in the alternate lesson that demonstrated 'good knowledge' increased from 8% to 23%, in total, a 15% increase.

Interesting to note, is that the percentage of students that demonstrated 'no knowledge' reduced to 0% after the alternate lesson with a total decrease of 44%. The percentage decrease of students that demonstrated 'no knowledge' after the game lesson was 53%. Comparing the decrease in students that demonstrated 'no knowledge' still shows a clear trend that students that took part in the game lesson gained more knowledge overall. The 6% of students that still demonstrated 'no knowledge' after the game lesson could be then understood as an outlier.

6.2 Question Two Findings

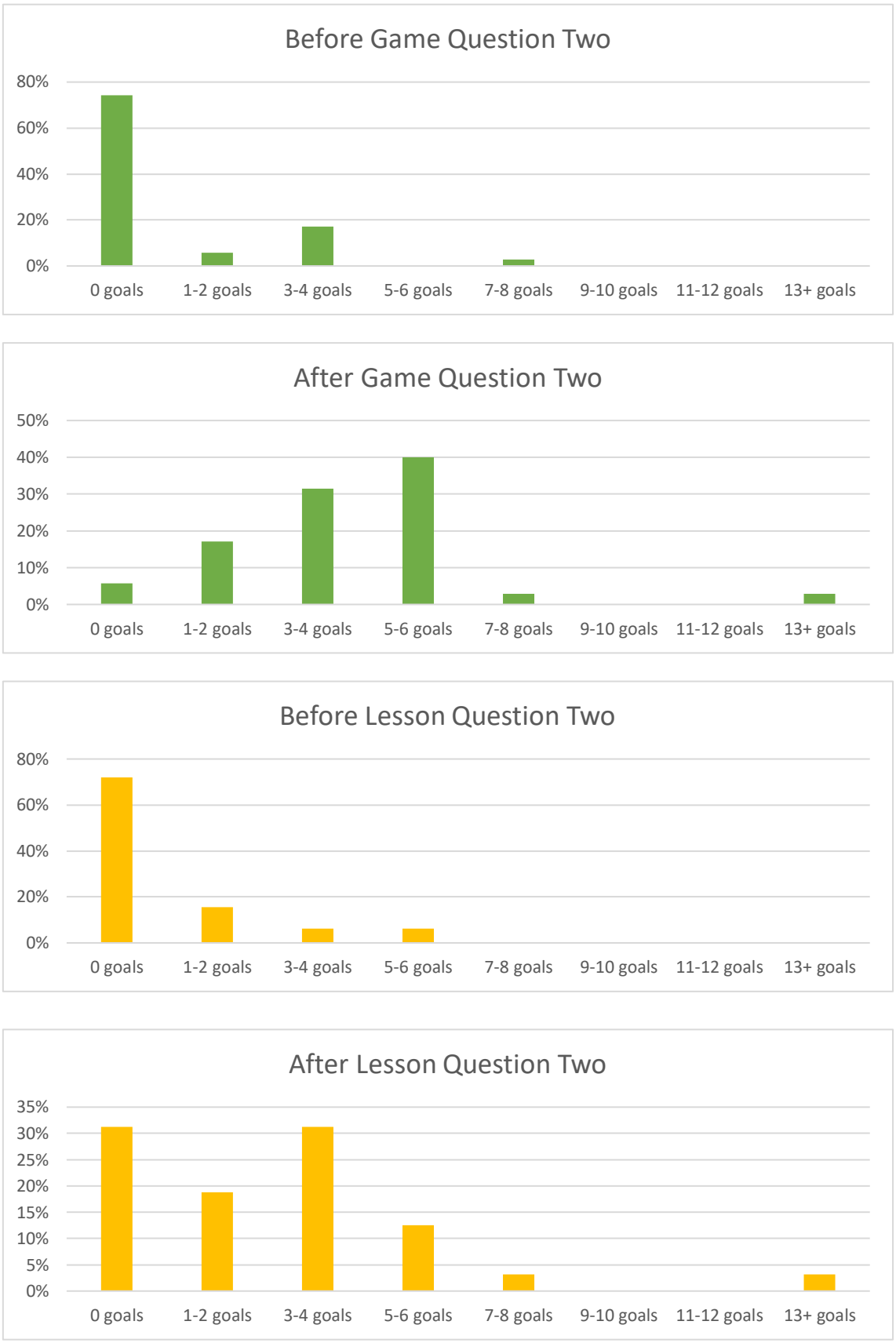


Figure 3 Bar Graphs as Question Two Findings

(Can you name any of the Sustainable Development Goals?)

The data from question two was processed by tallying, logging, and then finding average student responses. The following findings refer to *Figure 3 Bar Graphs as Question Two Findings*.

It is clear to see that the number of goals that students could name before the game lesson and the alternate lesson were lower than the number that they could name after each of the lessons. Before the game lesson 74% of students were able to list 0 goals, 6% were able to list 1-2 goals, 17% were able to list 3-4 goals, and only 3% were able to list 7-8 goals. The total number of respondents both before and after the game lesson was 35. This means that 3% is equivalent to only one student, so the 3% that were able to list 7-8 goals can be considered an outlier. After the game lesson 6% were able to list 0 goals, 17% were able to list 1-2 goals, 31% were able to list 3-4 goals, 40% were able to list 5-6 goals, 3% were able to list 7-8 goals, and finally 3% were able to list 13 or more of the goals.

The total number of respondents both before and after the alternate lesson was 32. As all percentages have been rounded to the nearest whole number, 3% still represents 1 respondent. Before the alternate lesson 72% of students were able to list 0 goals, 16% were able to list 1-2 goals, 6% were able to list 3-4 goals, and 6% were able to list 5-6 goals. After the alternate lesson 31% were able to list 0 goals, 19% were able to list 1-2 goals, 31% were able to list 3-4 goals, 13% were able to list 5-6 goals, 3% were able to list 7-8 goals, and 3% were able to list 13 or more of the goals.

Whilst students from both lessons showed an increase in the number of goals that they could list by the end of the lessons, it seems that the game lesson had a greater impact. There was a 68% difference for students before and after the game lesson that could not list any goals, but only a 41% difference for students before and after the alternate lesson. This could otherwise be explained, that out of 26 students that could not list any goals before, only 2 were still unable to after the game lesson. Out of 23 students that could not list any goals before, 10 were still unable to after the alternate lesson.

6.3 Question Three Findings

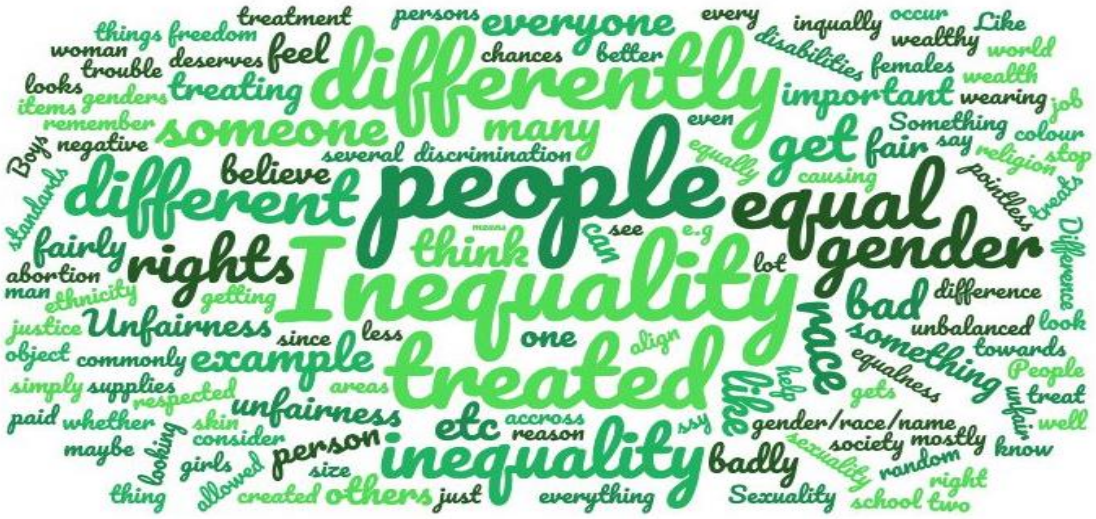


Figure 4 Word Cloud as Question Three Findings Before the Game

Figure 5 Word Cloud as Question Three Findings After the Game

(What does inequality mean to you?)

Referring to *Figure 4 Word Cloud as Question Three Findings Before the Game,* before the game lesson students most commonly used words such as ‘people’, ‘differently’, ‘gender’, ‘different’, ‘rights’, and ‘treated’ to describe inequality. Examples of some student answers follow.

> “That means some people is not being treated fairly.”
>
> “Not the same.”

> “If it is not fair for everyone.”
> “Inequality means that some other people doesn't get the same right as the other people get.”
> “Inequality is two things that aren't equal.”
> “Inequality is like you are not wearing same as the persons. Like: gender. Boys are allowed to go to school but not girls.”
> “That people consider something better than the other, like gender.”

These responses demonstrated quite a basic understanding of inequality by the students, with many students also leaving this question blank or writing “I don’t know”.

Referring to *Figure 5 Word Cloud as Question Three Findings After the Game*, after the game lesson the most commonly used words included ‘people’, ‘different’, ‘unfair’, ‘money’, ‘race’, ‘gender’, ‘others’, ‘everyone’, ‘education’, and ‘access’. Examples of some student answers follow.

> “For me inequality means when people don't have the same opportunities because they are treated like they don't belong and that is a huge disadvantage in their life.”
> “For me inequality means two things or living things that aren't equal, like gap between poor and rich, and how the poor lives harder lives than rich people with easier lives.”
> “Inequality for me personally means when someone with a certain race, sexuality, colour isn't treated fair and doesn't have the same rights as others.”
> “What inequality means to me is unfair treatment amongst others over things that one may not even have gotten to choose. It also means to me the advantages and disadvantages between people around the world resulting in the issue of inequality.”
> “It means a lot because it will effect the people around me and that's something that effects all people. The fact that people are treated unfairly is not right to me, differences shouldn't be treated poorly because we are all the same.”

The responses after the game lesson proved to be a lot more comprehensive, with students including some different aspects that inequality exists within, including race, sexuality, gender, and wealth.

Figure 6 Word Cloud as Question Three Findings Before the Lesson

Figure 7 Word Cloud as Question Three Findings After the Lesson

Referring to *Figure 6 Word Cloud as Question Three Findings Before the Lesson,* before the alternate lesson students most commonly used words such as ‘people’, ‘differently’, ‘lives’, ‘things, ‘others, and ‘treated’ to describe inequality. Examples of some student answers follow.

> “Inequality means negative properties in people unfairly spread.”
>
> “That not everyone is as lucky as the rich.”

"Things that are not equal to each other."
"It means people being treated differently. I am really against it."
"The difference between how people are treated."
"It means discrimination with wealth, race, etc."
"Should not exist because we should all be treated same."

These responses, again, demonstrated quite a basic understanding of inequality by the students, with many students also leaving this question blank or writing "I don't know".

Referring to *Figure 7 Word Cloud as Question Three Findings After the Lesson*, after the alternate lesson the most commonly used words included 'people', 'different', 'something, 'someone, 'opportunities', and 'others'. Examples of some student answers follow.

"Inequality is not getting the same opportunities as others."
"Inequality is something we need because if everything had been the same it would not have been the same."
"It means unfair chance at life."
"It means inequality between people and people to me."
"Inequality means that people in the world are not having the same rights than the others."
"When people with disadvantages don't have the same opportunities."

The responses after the alternate lesson were very similar to the responses before the alternate lesson, demonstrating that this lesson was not as effective as the game lesson at helping students to expand their understanding.

6.4 Question Four Findings

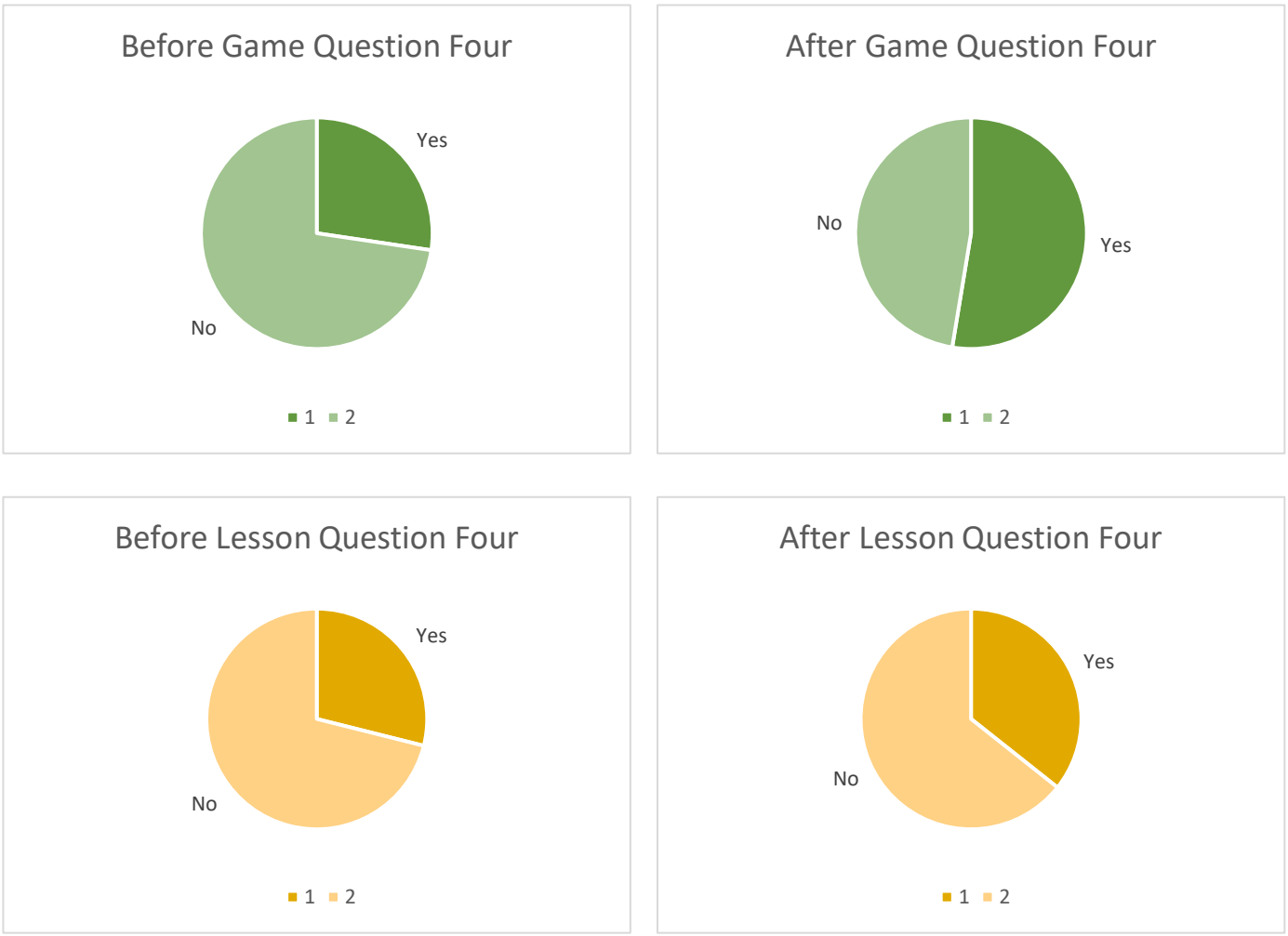


Figure 8 Pie Charts as Question Four Findings

(Do you feel that you, personally, are working towards the Sustainable Development Goals?)

The following statistics are represented in *Figure 8 Pie Charts as Question Four Findings*. Before the game lesson the majority of students answered 'No', they did not feel that they were personally working towards the SDGs (73%), with only 27% answering 'Yes' they do feel that they are working towards the SDGs. After the game lesson the percentage of students that answered 'no' had decreased to 47%, and the percentage that answered 'yes' had increased to 53%.

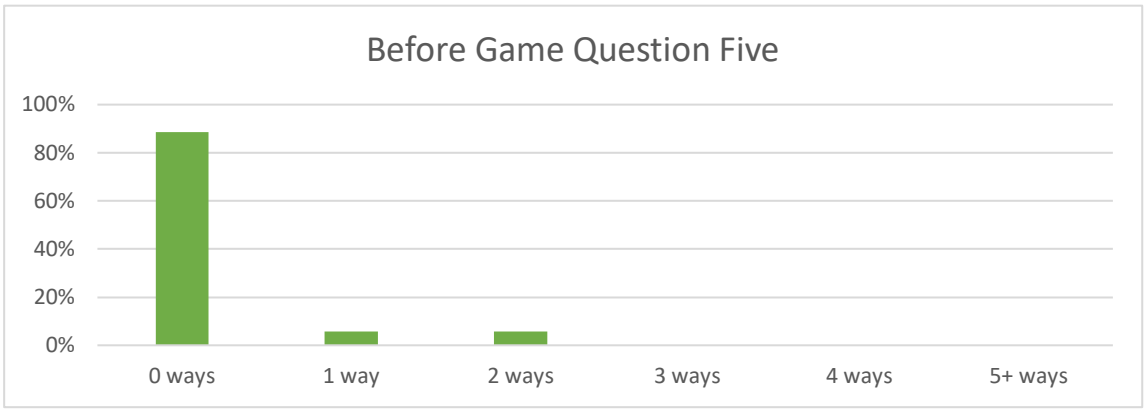
Before the alternate lesson, 71% of students answered 'no', and 29% answered 'yes'. The percentage of students that answered 'no' decreased to 64%, and the percentage that answered 'yes' increased to 36%.

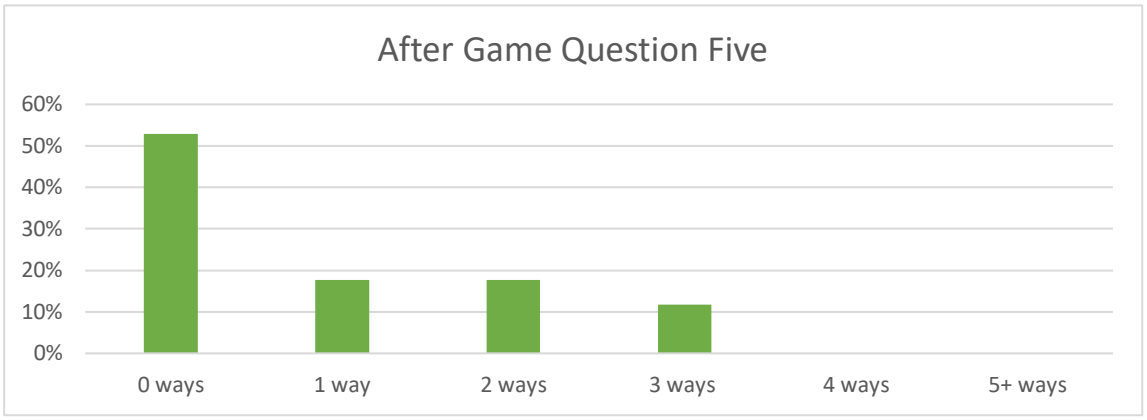
Although after both of the lessons more students answered ‘yes’, there is a large difference between how much of an increase was demonstrated. 26% more of the students that took part in the game lesson responded ‘yes’ after the lesson, almost double the number of students.

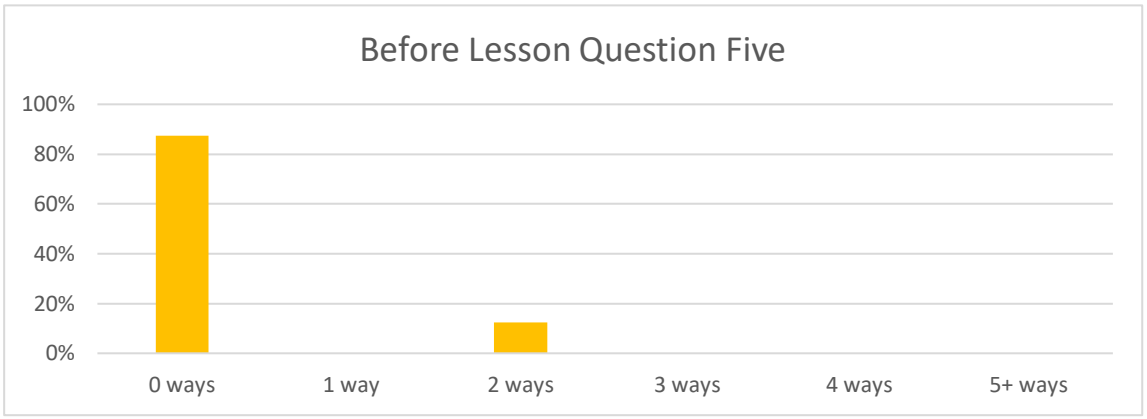
Only 7% more of the students that took part in the alternate lesson responded ‘yes’ after the lesson, roughly 24% more.

These statistics show that the game lesson seems to have had a greater effect on student recognition of how they are working towards the SDGs in their own lives.

6.5 Question Five Findings







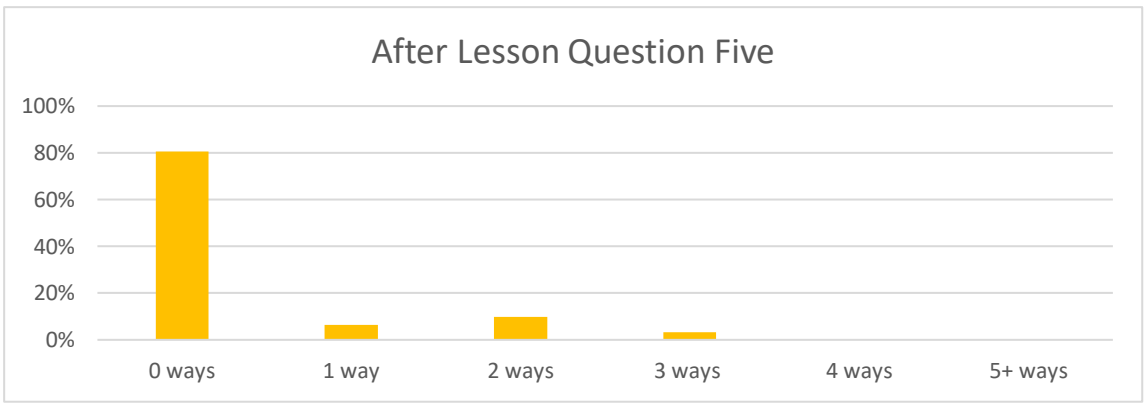


Figure 9 Bar Graphs as Question Five Findings

(If you answered 'Yes' to question 4, how do you feel that you are working towards the goals?)

The data from question five was processed by tallying, logging, and then finding average student responses. The following analysis refers to *Figure 9 Bar Graphs as Question Five Findings*.

Although there is not a great increase, there is a difference in the number of ways that students listed that they feel they are working towards the SDGs after the lessons. Before the game lesson 89% of students were able to list 0 ways, 6% were able to list 1 way, and 6% were able to list 2 ways. After the game lesson 53% of students were able to list 0 ways, 18% were able to list 1 way, 18% were able to list 2 ways, and 12% were able to list 3 ways.

The total number of respondents before the game lesson was 35, and after the game lesson was 34. This means that around 3% is equivalent to one student. The total number of respondents before the alternate lesson was 32, and after the alternate lesson was 31. As percentages have been rounded to the nearest whole number, 3% still represents 1 respondent.

Before the alternate lesson 87.5% of students were able to list 0 ways, and 12.5% were able to list 2 ways. After the alternate lesson 81% of students were able to list 0 ways, 6% were able to 1 way, 10% were able to list 2 ways, and 3% were able to list 3 ways.

The easiest way to interpret this data is by observing the percentage differences of students that could list 0 ways that they feel they are working towards the SDGs and comparing the game lesson and alternate lesson. There was a 36% difference for students before and after the game lesson that could not list any ways, and a 6.5% difference for students before and after the alternate lesson. Whilst students from both lessons showed an increase in the number of ways that they could list by the end of the lessons, it seems that the game lesson, once again, had a greater effect.

6.6 Question Six Findings

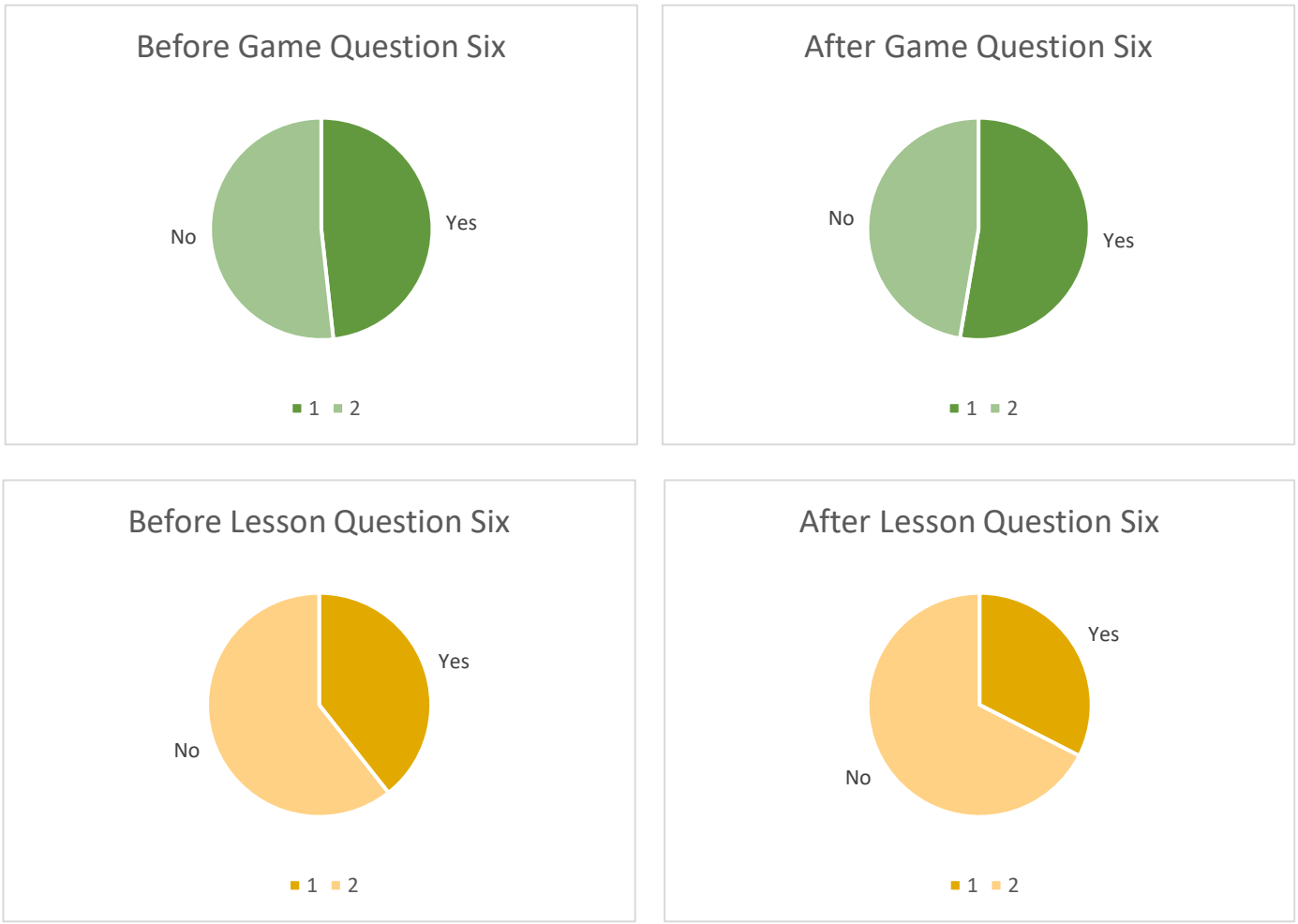


Figure 10 Pie Charts as Question Six Findings

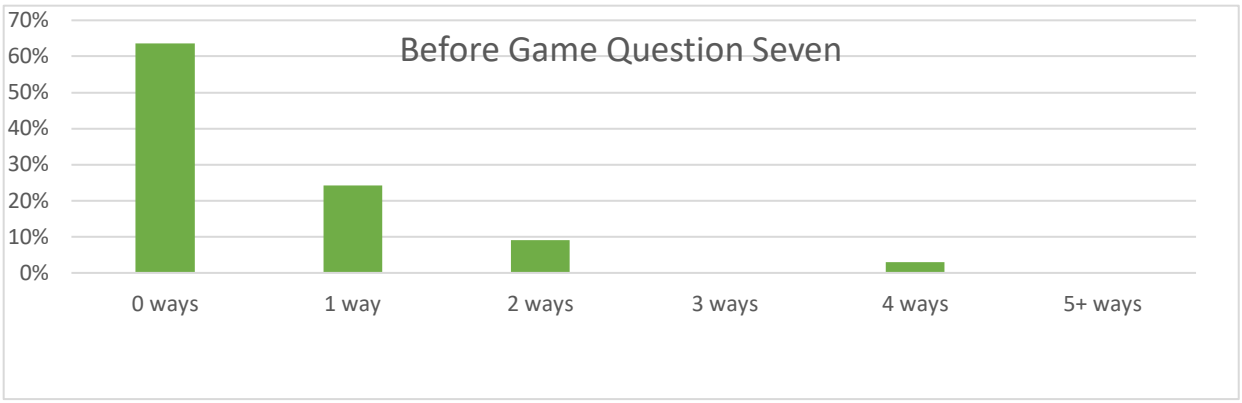
(Do you feel that you, personally, are working against inequality?)

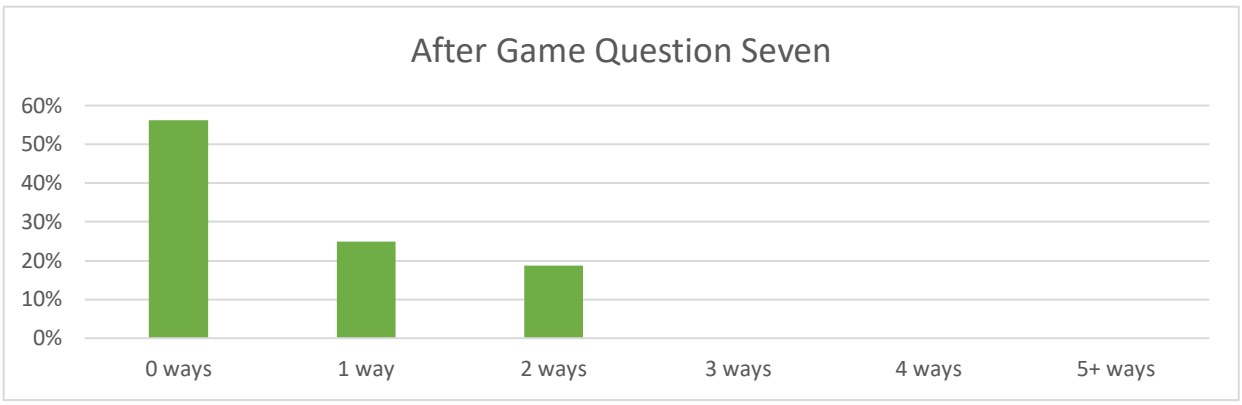
The following statistics are represented in *Figure 10 Pie Charts as Question Six Findings*. Before the game lesson a small majority, 52%, of students answered 'No', they did not feel that they were personally working against inequality, whilst 48% answered 'Yes' they do feel that they are working against inequality. After the game lesson the percentage of students that answered 'no' had decreased to 47%, and the percentage that answered 'yes' had increased to 53%.

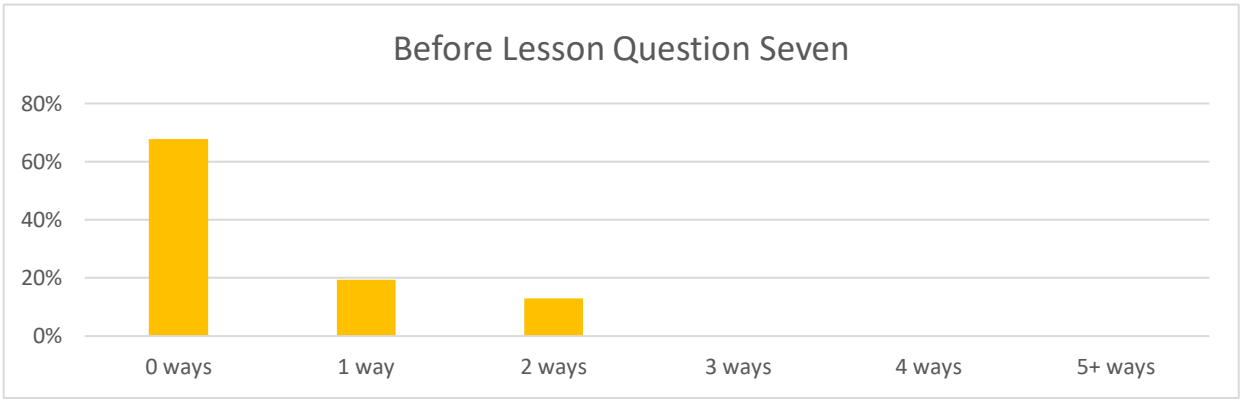
Before the alternate lesson, 61% of students answered ‘no’, and 39% answered ‘yes’. The percentage of students that answered ‘no’ actually increased to 67%, and the percentage that answered ‘yes’ decreased to 33%.

5% more of the students that took part in the game lesson responded ‘yes’ after the lesson, a relatively small increase. Interestingly the alternate lesson seemed to have the opposite effect, with 6% fewer students that took part in the alternate lesson responding ‘yes’ after the lesson. There could be several reasons for this; students may have redefined their understanding of ‘inequality’, they may have felt discouraged to take action in their own lives, or they may have misunderstood the lesson. This is explored further in the discussion chapter.

6.7 Question Seven Findings







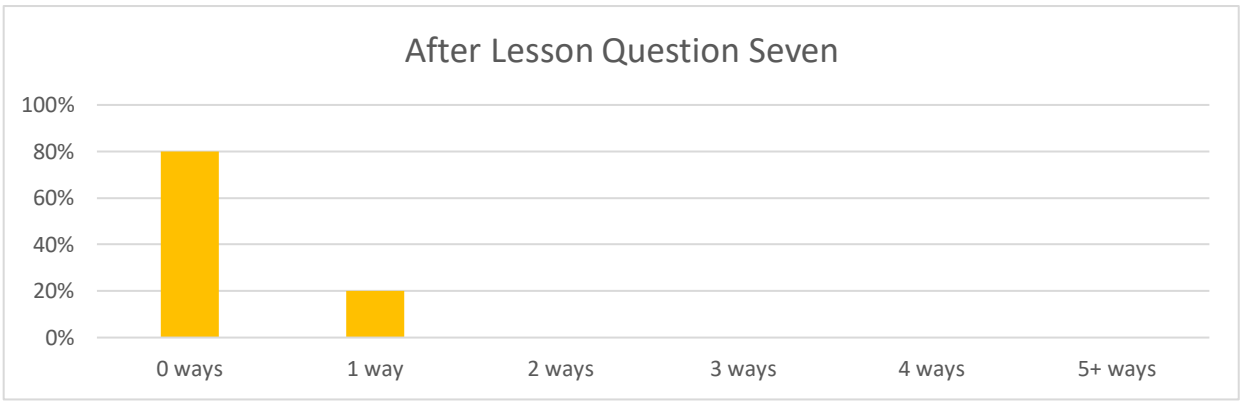


Figure 11 Bar Graphs as Question Seven Findings

(If you answered 'Yes' to question 6, how do you feel that you are working against inequality?)

The data from question seven was processed by tallying, logging, and then finding average student responses. The following analysis refers to *Figure 11 Bar Graphs as Question Seven Findings*.

The total number of respondents before the game lesson was 33, and after the game lesson was 32. This means that around 3% is equivalent to one student. The total number of respondents before the alternate lesson was 31, and after the alternate lesson was 30. As percentages have been rounded to the nearest whole number, 3% still represents 1 respondent.

Before the game lesson 64% of students were able to list 0 ways, 24% were able to list 1 way, 9% were able to list 2 ways, and 3% were able to list 4 ways. After the game lesson 56% of students were able to list 0 ways, 25% were able to list 1 way, and 19% were able to list 2 ways.

Before the alternate lesson 68% of students were able to list 0 ways, 19% were able to list 1 way, and 13% were able to list 2 ways. After the alternate lesson 80% of students were able to list 0 ways, and 20% were able to 1 way.

I observe the percentage differences of students that could list 0 ways that they feel they are working against inequality and compare the game lesson and alternate lesson. There was an 8% decrease in students before and after the game lesson that could not list any ways, and a 12% increase for students before and after the alternate lesson. This follows the same trend as the previous question, with more students being unable to list any ways to work against inequality after the alternate lesson. Again, there could be many reasons for this and it will be explored further in the discussion chapter.

6.8 Additional Questionnaire Findings

As explained in 4.7.6 Additional Questionnaire the data for this section is analysed using grounded theory, specifically open coding, and axial coding, by examining trends in responses and picking out key words that were repeated in several responses. Following are several quotes that encapsulate overall responses well. Quotes marked 'GL' denote responses given after the game lesson, and quotes marked AL denote responses given after the alternate lesson.

1. (How could the game/lesson be improved?)

GL- "They could have given people different races and ethnicities to show the inequalities we have today in real life."

GL- "It could have different types of questions instead of just maths questions."

GL- "Give the observers more stuff to do because it was kind [of] boring to be an observer."

AL- "We could come up with our own ways to take action on all of these problems."

AL- "I don't know."

2. (How could you action the SDGs in real life?)

AL "Raise awareness: posters, articles, etc. Take action: clean the city, always turn out lights when unused, recycling."

GL "I could try to be more aware of the things happening around me and look out for places that I could make a difference."

GL/AL- "I don't know."

3. (What do you feel you have learnt/gained from the game/lesson today (if anything)?)

GL "I have learnt more about privilege."

GL "I have a better understanding of the SDGs."

GL "I feel that I have got a memory of what we learnt last year."

GL“I have learnt that there is a big variety of people and their gains around the world. Many people work hard to get good things but many just have really bad luck in life and don’t have what they need.”
AL “In todays lesson I learnt about the SDGs and how they connect/remove many of the issues we have today.”
AL “That there are many problems around us and that they can get worse and worse as we go. And that we can find them everywhere, even in children’s books.”

Responses to question one showed some distinction between students that took part in the different lessons. Responses from students that took part in the game lesson most commonly commented on individual aspects of the game. These responses will be further examined in the discussion. “I don’t know” was a very typical response from students that took part in the alternate lesson, which we could interpret as lack of engagement. Only a few students commented on taking future action, but I found this feedback very interesting. It is further examined in the discussion.

There was not much distinction between responses to questions two and three dependant on the lesson. Many respondents answered “I don’t know” to question two, several discoursed that they could make more difference when they are older, or by spreading awareness. A few students noted practical ways to take action such as recycling.

The responses to question three allowed me to understand what the students felt that they had learnt. Having analysed the responses to the initial questionnaire, I gained my own understanding of their learning, which majorly lined up with student responses to this question.

6.9 Comparison Study Findings

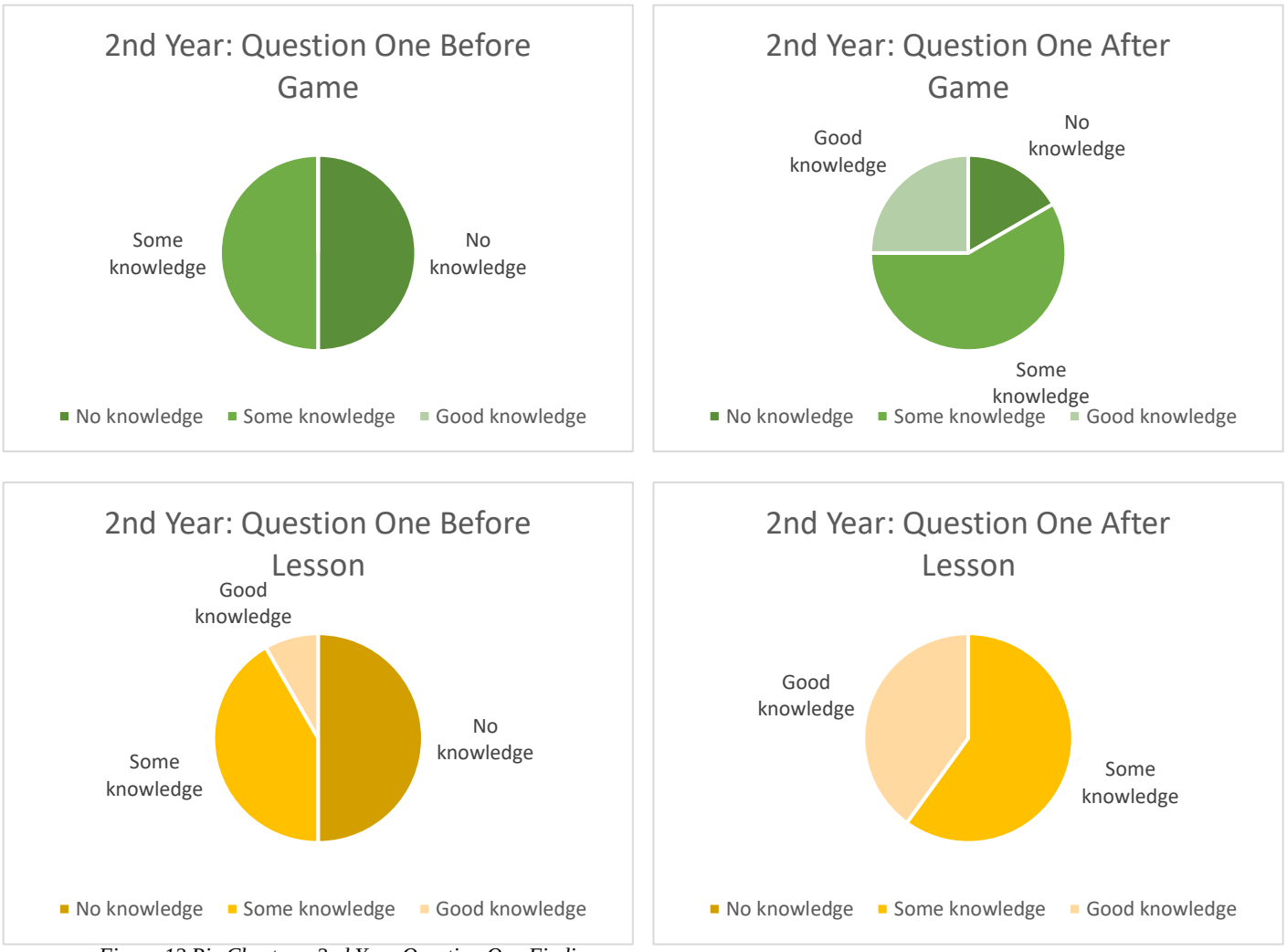
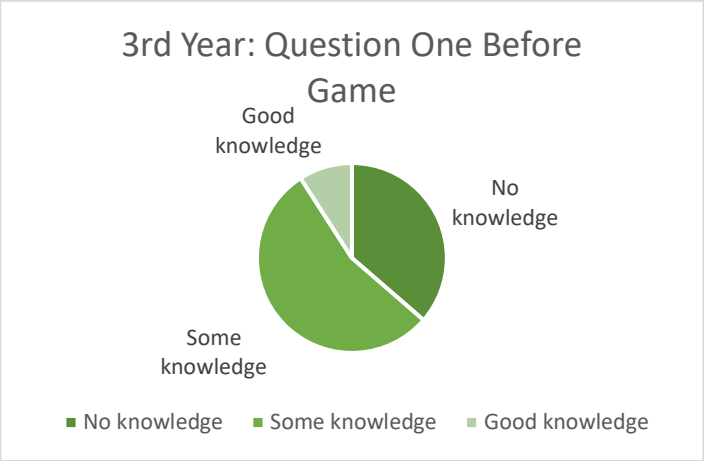


Figure 12 Pie Charts as 2nd Year Question One Findings

(What are the SDGs?)

The following analysis refers to *Figure 12 Pie Charts as 2nd Year Question One Findings*. Before the game lesson the students had majorly 'no knowledge', 50%, or 'some knowledge', 50%, on what the Sustainable Development Goals are, with 0% demonstrating 'good knowledge'. After the game lesson the percentage of students that demonstrated 'no knowledge' had been reduced to only 17%. The percentage of students demonstrating 'good knowledge' increased to 25%.

50% of students that took part in the alternate lesson demonstrated 'no knowledge' before the lesson and 8% demonstrated 'good knowledge'. The trend continued with the percentage of students demonstrating 'no knowledge' after the alternate lesson being reduced to 0%, and the percentage of students demonstrating 'good knowledge' after the alternate lesson increasing to 40%.



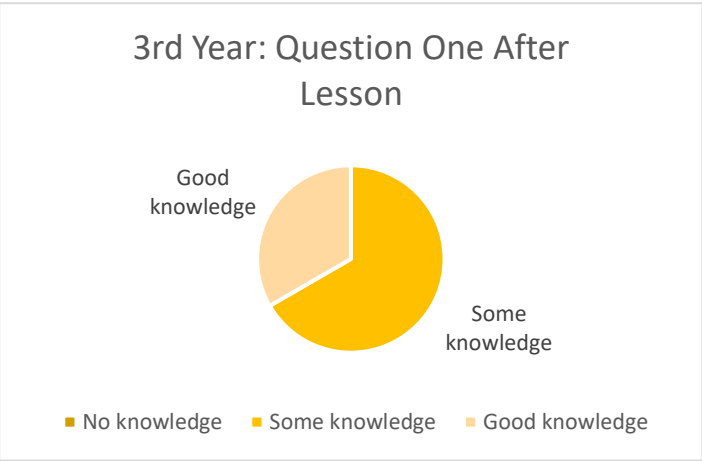


Figure 13 Pie Charts as 3rd Year Question One Findings

The following analysis refers to *Figure 13 Pie Chart as 3rd Year Question One Findings*. 36% of students that took part in the game lesson demonstrated 'no knowledge' on what the Sustainable Development Goals are, and only 9% demonstrated 'good knowledge'. After the game lesson 67% of students demonstrated 'good knowledge' and 0% demonstrated 'no knowledge'.

17% of students that took part in the alternate lesson demonstrated 'no knowledge' before the lesson and 17% demonstrated 'good knowledge'. The trend continued with the percentage of students demonstrating 'no knowledge' after the alternate lesson being reduced to 0%, and the percentage of students demonstrating 'good knowledge' after the alternate lesson increasing to 33%.

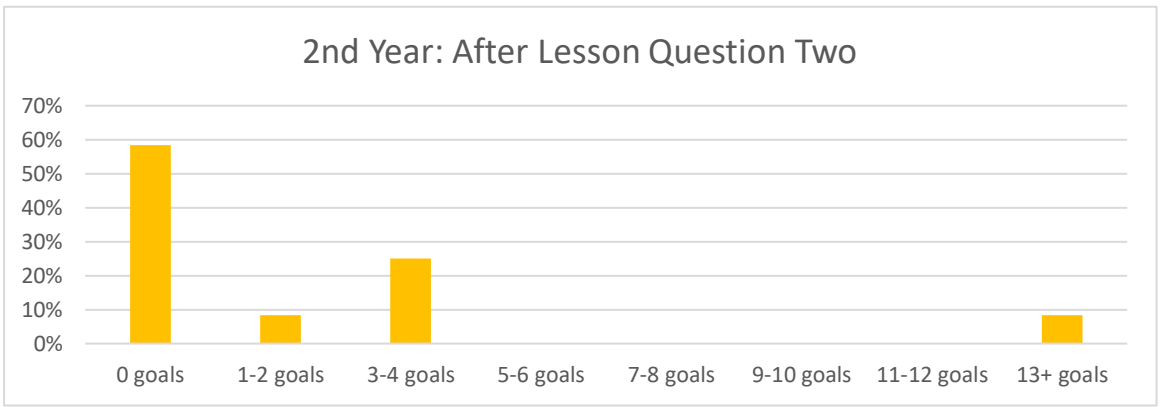


Figure 14 Bar Graphs as 2nd Year Question Two Findings

(Can you name any of the Sustainable Development Goals?)

The following analysis refers to *Figure 14 Bar Graphs as 2nd Year Question Two Findings*. Before the game lesson 75% of students were able to list 0 goals, 8% were able to list 1-2 goals, and 17% were able to list 3-4 goals. After the game lesson 17% were able to list 0 goals, 25% were able to list 1-2 goals, 25% were able to list 3-4 goals, and 33% were able to list 5-6 goals.

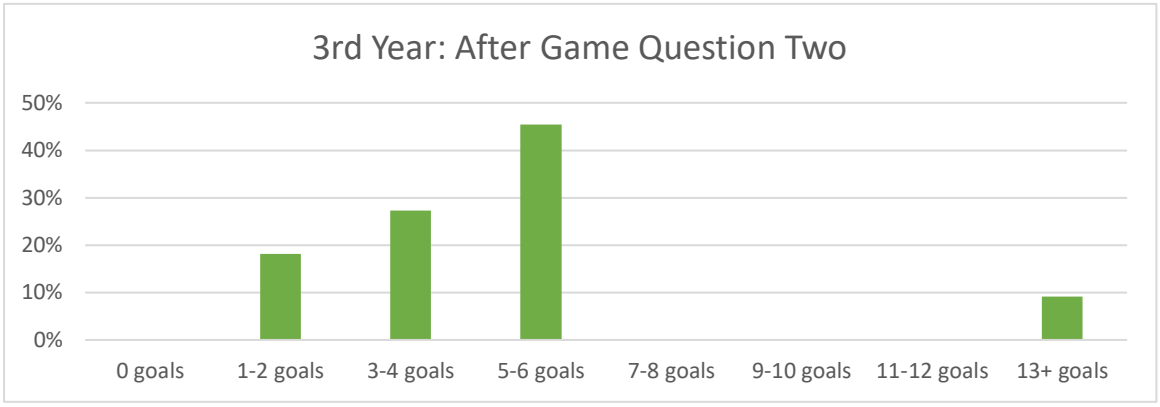
Before the alternate lesson 58% of students were able to list 0 goals, 25% were able to list 1-2 goals, 8% were able to list 3-4 goals, and 8% were able to list 5-6 goals. After the alternate lesson 58% were able to list 0 goals, 8% were able to list 1-2 goals, 25% were able to list 3-4 goals, and 8% were able to list 13+ goals.

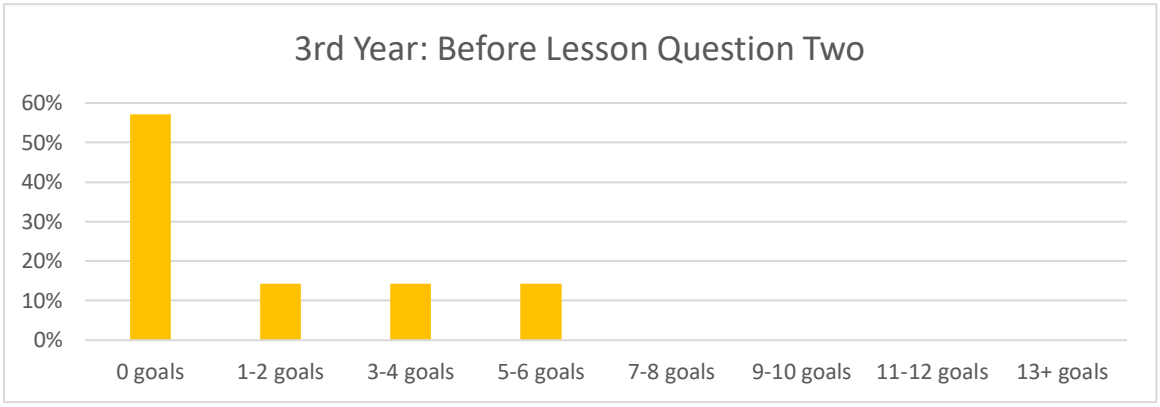
The following analysis refers to *Figure 15 Bar Graphs as 3rd Year Question Two Analysis*. Before the game lesson 45% of students were able to list 0 goals, 9% were able to list 1-2 goals, 36% were able to list 3-4 goals, and 9% were able to list 7-8 goals. After the game lesson 0% were able to list 0 goals, 18% were able to list 1-2 goals, 27% were able to list 3-4 goals, 45% were able to list 5-6 goals, and 9% were able to list 13+ goals.

Before the alternate lesson 57% of students were able to list 0 goals, 14% were able to list 1-2 goals, 14% were able to list 3-4 goals, and 14% were able to list 5-6 goals. After the alternate lesson 43% were able to list 0 goals, 0% were able to list 1-2 goals, 14% were able to list 3-4 goals, 29% were able to list 5-6 goals, and 14% were able to list 7-8 goals.

Whilst students from both lessons showed an increase in the number of goals that they could list by the end of the lessons, it seems that the game lesson had a greater impact in both year levels. There was a 68% difference for students in 2nd year before and after the game lesson that could not list any goals, and a 45% difference for students in 3rd year.

Comparatively there was 0% difference for students in 2nd year before and after the alternate lesson, and a 14% difference for students in 3rd year.





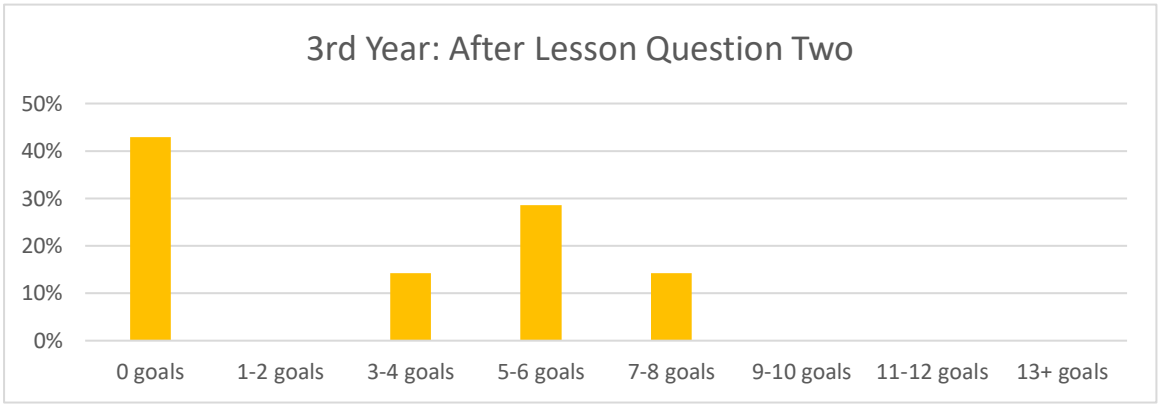


Figure 15 Bar Graphs as 3rd Year Question Two Findings

Referring to the analysis of *Figure 12* & *Figure 13*, it is possible to make a table for further analysis. In the following table, *Table 1 Comparative Increase/Decrease of Answers Question One*, the top row denotes the year level and type of lesson, and the columns state the relative increase or decrease of two possible categories, 'no knowledge', or 'good knowledge'.

	2: Game	3: Game	2: Alternate	3: Alternate
No Knowledge	-33%	-36%	-50%	-17%
Good Knowledge	+25%	+58%	+32%	+16%

Table 2 Comparative Increase/Decrease of Answers Question One

From this table we can see that, whilst both classes demonstrated an increase in knowledge, they did so at different rates. The decrease in the category 'no knowledge' after the game lesson is similar between the two year levels. However, the increase in the category 'good knowledge' was significantly higher in the 3rd year group. This could be because they had a direct unit on the SDGs the year previous and only needed to refresh their knowledge, whilst the 2nd year group had not yet directly learnt about the SDGs (MHT, 2021).

The increase in the category 'good knowledge' after the alternate lesson is similar between the year levels, however the 3rd year group showed a drastically higher increase after the game lesson as compared to the alternate lesson. The decrease in the category 'no knowledge' after the alternate lesson differs greatly between the year levels. This could be because the 2nd year group had not yet directly learnt about the SDGs (MHT, 2021).

Referring to the analysis of *Figure 14* & *Figure 15*, it is, again, prudent to look at a table for further analysis. In the following table, *Table 2 Comparative Increase/Decrease of Answers Question Two*, the top row denotes the year level and type of lesson, and the columns state the relative increase or decrease of two possible responses, '0 goals', or '3-4 goals'. I chose to include these responses as they demonstrated the most significant change.

	2: Game	3: Game	2: Alternate	3: Alternate
0 Goals	-58%	-45%	0%	-14%
3-4 Goals	+8%	-9%	+17%	0%

Table 3 Comparative Increase/Decrease of Answers Question Two

Aside from the information presented in the table, there are some other interesting points that must be noted.

In 3rd year 14% were able to list 5-6 goals before the game lesson.

In 2nd year 33% were able to list 5-6 goals after the game lesson.
In 3rd year 29% were able to list 5-6 goals, and 14% were able to list 7-8 goals after the game lesson.

In 3rd year 14% were able to list 5-6 goals before the alternate lesson.

In 2nd year 8% were able to list 13+ goals after the alternate lesson.
In 3rd year 29% were able to list 5-6 goals, and 14% were able to list 7-8 goals after the alternate lesson.

There are a few interesting observations that can be made by comparing the data from these two classes. Firstly, there was a significant decrease in the category '0 goals' after the game lesson in both year levels. The 2nd year group demonstrated a small increase in the category '3-4 goals' after the game lesson, whilst the 3rd year group actually showed a small decrease in this category. This could be because more 43% of responses fell into the '5-6 goals' and '7-8 goals' categories after the game lesson, meaning that overall knowledge was more greatly improved in the 3rd year group after the game lesson.

There was little or no decrease in the category '0 goals' after the alternate lesson in both year levels. The 2nd year group demonstrated a small increase in the category '3-4 goals' after the game lesson, whilst the 3rd year group showed no increase or decrease. Again, this could be because 43% of responses fell into the '5-6 goals' and '7-8 goals' categories after the alternate lesson, meaning that overall knowledge was more greatly improved in the 3rd year group after the alternate lesson. There was also 8% of responses in the 2nd year that fell into the category '13+ goals' after the alternate lesson. This 8% represents 1 student and may be classified as an outlier.

7.0 Discussion

7.1 Changes in Student Understanding

7.1.1 Foundational Understanding Influenced by Current Curriculum

In chapter *5.0 Study Area Current Pedagogical Approaches* MHT explained that although there are several Humanities units in each year level, only one unit throughout the middle school teaches the SDGs directly (MHT, 2021). Student understanding after indirect teaching about the SDGs demonstrated that students were able to make connections between the SDGs and their former projects. However, this connection was only made *after* taking part in the case study for this thesis. The unit taught in second year, which directly focuses on the SDGs, only specifically incorporates them in the final section of the unit, demonstrating how the pedagogical approach to teaching the SDGs can be viewed as an afterthought.

MHT's personal opinion on the SDGs could explain why they are so indirectly included in the current curriculum. They explained that previously the MDGs had been included in teaching, but the subject was very broad. They also commented on the validity of the SDGs, which demonstrated their justification for treating the topic as an afterthought.

> "[Global Goals, such as the SDGs are] being controlled by this huge international and global organisation, which leads me to question, 'how effective are they really?', 'How effective are they, realistically, in creating change?'. It seems as though the SDGs can be seen as yet another western organisation coming in to save the day".
>
> *(MHT, 2021)*

In Chapter 3.1 The Validity of the SDGs I presented my argument that the although the SDGs have received some negative reviews, the MDGs have been improved upon to create a set of goals, which are a much more effective framework that can be used as a compass to address global issues.

> "In comparison to their predecessors, the SDGs are much broader and more difficult to measure. However, they represent a bold move towards a more ambitious, yet more

> realistic and inclusive development agenda - a golden opportunity for governments, private enterprise and civil society to work together in tackling the biggest challenges on the planet"
>
> *(Kähkönen, 2015)*

In Chapter 3.2 A Justification for the Importance of Teaching the SDGs I expanded on why the SDGs should be included in curricula by explaining that education can be used to help to achieve the SDGs by engaging students, that students are interested in global issues, and that students tend to engage more with subjects that they are interested in.

7.1.2 Shifting Student Understanding of the SDGs

In Chapter 6.9 Comparison Study Findings I compared two year levels, one which had already completed the direct unit on the SDGs, and one that had not. I found that student knowledge in 3rd year, of what the SDGs are, increased at a greater rate after each of the case study lessons. Comparatively, the 2nd year students also demonstrated increased knowledge after each of the lessons but at a lesser rate. The same trend was shown when students in each year level demonstrated their ability to list the goals after each lesson. The 3rd year students were able to list more, faster, than the 2nd year students.

The greater rate of improved knowledge in 3rd years students could be accounted for because they had already completed the direct unit on the SDGs, and the case study lessons provided them with the opportunity to refresh their understanding. Before each of the lessons 3rd year students demonstrated significantly lower understanding, indicating that they had forgotten what they had learnt previously. This begs the question, why did the students need to be reminded of what they had learnt? This could be because of how the material was previously taught, as an afterthought.

MHT noted that, if a unit was constructed solely on the SDGs, the alternate lesson could be used as a good starting point for students, and that the game lesson could be used in the middle of the unit for students to reanalyse global issues and methods (MHT, 2021).

7.2 Reflections of Implementation of The Game of Inequality

In chapter 6.8 Additional Questionnaire I discussed some student opinions about how the game could be improved. Student responses were generally very helpful and reflected my own feelings about the use of the game in action. As Suarez et. al pointed out in chapter *3.4 The Use of Games as a Pedagogical Tool*, games can create dialogue, learning, optimization, strategical thinking, and act as ice breakers. I observed all of these processes occurring when students played The Game of Inequality. In the next section of this chapter I explore the attributes of The Game of Inequality and their effectiveness.

7.2.1 Circumstances

The aim when creating the game was to generate circumstances that represent the SDGs. After the lesson, students took part in a discussion, where they observed which of the SDGs each circumstance could relate to. Students were able to list many of the goals in relation to the circumstances, so I felt that this aspect of the game was successful.

7.2.2 Tools

There was a wide variety of tools used in the game, from chocolate smarties, to calculators, to a blindfold. Collecting all of these materials and carrying them from classroom to classroom was a bit of a hassle. However, students were very excited about each of the tools, as noted in chapter 4.3.1 Testing the Case Study. The other issue that I noted was including perishables as tools. This meant that I needed to individually purchase these tools before each time the game was played.

7.2.3 Knowledge

The most common response from students, on how the game could be improved, was in regard to the questions provided. Each of the questions were maths based, either addition, subtraction, multiplication, or division. The students did not enjoy this aspect of the game.

7.2.4 Luck

In order for students to progress forwards on the game board they needed to roll a die. I found that the circumstances, tools, and knowledge that each student had were made inconsequential by including the use of the die.

The game had a lot of components, and whilst it did not necessarily require a facilitator it was easier to manage play with one. The game can only be played once, similarly to Jane Elliott's exercise discussed in chapter *3.5 The Inspiration and Creation of The Game of Inequality*. As Suarez et. al explain, the game has limitations as a "simplified representation of reality, it is not reality, we cannot capture reality in a 40 minute long game" (Mendler de Suarez, Games for a New Climate). Overall, The Game of Inequality worked well for this case study but needs improvement if it is to be used as a regularly utilised pedagogical tool. This will be explored in chapter 7.6 Suggestions for Further Development.

7.3 Student Comprehension of Inequality

7.3.1 Previous Definitions of Equality

I discussed previously understood meanings of ‘equality’ in chapter *3.3 A Justification for the Focus on Inequality*. I did not find, nor have I ever found, *one* clear definition encapsulating the meaning of equality. Sen ran into the same problem, and attempted to create his own definition of ‘equality’ by taking into account three approaches, “...utilitarian equality, total utility equality and Rawlsian equality”, which focus on “…either wealth (income or possessions), utility (pleasure, getting what you want) or access to primary social goods (basic liberties and basic goods)” (Sen, 1980). Sen’s definition, ‘Basic Capability Equality’ explains that ‘equality’ must consider diversity amongst people, the differing of peoples’ needs, and the capability of people to make use of certain goods, which are dependent on their health, circumstances, and culture (Sen, 1980).

Jane Elliott exhibited a different definition of ‘equality’, which I covered in chapter *3.5 The Inspiration and Creation of The Game of Inequality*. She explained that she works with “…fallible human beings who do not see me as their equal in size, age, color, gender, education, talent, etc….”, and that she is “…more concerned with justice than I am with equality. We can, and must, treat one another justly, whether or not we see them as our equals” (Elliott, 2021).

7.3.2 Student Definitions of Equality

The goal of this thesis was not to define ‘equality’, but rather to understand how students define ‘inequality’. This was explained in chapter *3.3 A Justification for the Focus on Inequality*, where I introduced the definition of inclusion by Bernardo M. Ferdman, which states that “…the core of inclusion is how people experience it” (Ferdman, 2014).

As mentioned multiple times earlier, the game was originally made to help teach about inequality to a primary aged class that were struggling with issues of racism in the classroom and the playground. This is evidence that students already had some prior experience and,

perhaps, understanding of inequality. Some quotes from student responses to the question "what does inequality mean to you" are included in chapter *6.3 Question Three Findings*. I noted that, contrary to this evidence, many students exhibited a basic understanding of inequality before each of the lessons, majorly noting 'difference in treatment' and 'unfairness'. This understanding improved after the game lesson, with students able to comment upon specific aspects that inequality exists withing including race, sexuality, gender, and wealth.

The basic understanding students exhibited before the lessons does not demonstrate a *strong* similarity to any of the above definitions but could be compared to Elliott's definition of justice as equality. The slight similarity here is, that both the students and Elliott, comment on the treatment of people. The understanding after the game, however, could be somewhat compared to Sen's 'Basic Capability Equality' in that the new student definitions recognise the diversity among people.

7.4 Collaboration vs. Competition

7.4.1 Expectations for Collaboration

In chapter *3.4 The Use of Games as a Pedagogical Tool* I explained the expectation of students to work collaboratively whilst engaging in game play. Suarez et. al commented that games can generate collective cohesion (Mendler de Suarez, Games for a New Climate). A participant in the study conducted by Suarez et. al offered one reason that players may be more likely to collaborate, explaining that in his experience, "Collaboration may be more likely to happen when you have fewer resources and you have to talk to people, and then once you get a lot of your own resources it doesn't seem as important and communication starts to break down a little bit" (Mendler de Suarez, Games for a New Climate, 2012).

Kiryakova et. al. expanded on the suggestion from Suarez et. al, suggesting that "games possess a strong competitive element" and that they can provide students with the motivation, behaviour, and commitment needed to improve knowledge and understanding (Kiryakova, 2014). She also explained that there is a difference between collaboration and competitiveness "…for the effective implementation of active learning" (Kiryakova, 2014).

7.4.2 Collaboration in Effect

In chapter *4.4.2 Audio Recording & Transcription* I explained that I planned to use the transcriptions from audio recorded during the lessons to help me to analyse student interactions, but was unable to, and instead had to rely on my role as a participant observer to mentally make note of student interactions.

Whether or not students helped each other seemed to be up to the characteristic of the individual rather than a clear trend. Some students rushed straight to their peers to ask for, or offer, help, whilst others retreated from the group, preferring to work alone. Some students commented on their peers helping one another, speculating that they were cheating, but, in general, it was observed that once some students started helping one another, the rest followed.

7.4.3 Evaluation of Competitiveness

In chapter *4.3.1 Testing the Case Study* I ruminated that, older students may respond differently than the younger age group that made up the test study sample. This was not the case, in fact students in all age groups acted very similarly to one another.

A few students chose *not* to collaborate and, instead, played the game competitively. This could have been for a number of reasons. As mentioned earlier, students with more advantages may have felt that they didn't need the help, and therefore neglected to offer it to their peers. On the other hand, students with more advantages may have also become greedy.

Students with average or fewer advantages may have felt that helping one another would be cheating, and that that would be 'unfair'. These students may have responded in this way because of their understanding of 'inequality'.

Whilst the game *can* inspire collective cohesion, it can also provide an arena for competition. To encourage collaboration, a suggestion for this could also be included in the rules for the game.

7.5 Student Engagement & Encouraging Social Action

As written in 2.0 Thesis Outline, this thesis aims to study the use of games as pedagogical tools to see if they provide students with a better understanding of a particular subject through higher levels of engagement. I previously hypothesized that students that participate in the game based lesson would gain a more holistic view of the Sustainable Development Goals, including inequality, that the students that take part in the game lesson may be more likely/ better able to make connections between specific SDGs, including inequality, and their own lives, and that the students that take part in the alternate lesson will be able to remember more of the SDGs, and perhaps come to a more factual based understanding.

7.5.1 The Difference Between Learning and Taking Action

In chapter *3.2 A Justification for the Importance of Teaching the SDGs* I explained the discourse that students are taking more ownership of their learning, and that this ownership, nurtures agency within the student (Smith, 2007). Reflecting further on how education can spur students to take action, I also quote Pramling Samuelsson, who explains that "Many researchers agree that a path to sustainability depends on how societies educate the next generation. …the global society is sustainable only if it can be perpetuated, that is, sustained by future generations" (Pramling Samuelsson, 2017).

7.5.2 Utilizing Lessons to Engage Students with the SDGs

Looking back on chapter *6.0 Findings,* it is clear to see that, overall, students demonstrated more knowledge/engagement with the SDGs after the game lesson as opposed to the alternate lesson. Each of the responses from the questionnaire back this up.

In question one, after the lessons there was a difference of 22% more students after the game that demonstrated 'good knowledge' of the SDGs. In question two, only 2 out of 26 students were still unable to list any of the goals after the game lesson, compared to 10 out of 23 students after the alternate lesson. In question three, students were able to provide more comprehensive definition of inequality after the game lesson, whilst definitions after the

alternate lesson did not show significant change. In question four, the percentage of students that responded that they *are* working towards the SDGs increased 26% after the game lesson, and only 7% after the alternate lesson. In question five, 36% fewer students could not list any ways that they are working towards the SDGs after the game lesson, compared to 6.5% after the alternate lesson. In question six, after the game lesson 5% more of the students responded that they are working against inequality in their own lives, whilst 6% *fewer* students said the same after the alternate lesson. In question seven, after the game lesson 8% fewer students could list no ways in which they are working against inequality, whilst 12% *more* students could not list any after the alternate lesson.

In summation, the game lesson clearly elicited better knowledge and understanding from students than the alternate lesson, which is based on the current pedagogical approach. This could mean that the use of games in pedagogy is a step up from the current approach.

7.5.3 Further Encouragement of Students to Take Action

If the use of games as a pedagogical approach is one step up from the current approach, then encouraging *and* aiding them in taking action could be viewed as one step further. In chapter *6.8 Additional Questionnaire Findings* I noted one student response about how the lessons could be improved, “We could come up with our own ways to take action on all of these problems”. Only a few students commented on taking future action, with some merely stating that they would like to do so, some listing some basic practical ways to take action, and some saying that they would take action by spreading awareness. Clearly, neither of the lessons achieved this next step in pedagogy.

7.6 Suggestions for Further Development

7.6.1 Introduce Games to The Curriculum.

The first development has been clearly argued for throughout the thesis, that games should be introduced to the curriculum, with chapter 7.5.*2 Utilizing Lessons to Engage Students with the SDGs* summing this up nicely. In chapter *7.1 Changes in Student Understanding* I expanded on student understanding related to the current curriculum, and how this understanding was improved with the use of a game. I referred to chapter *6.9 Comparison Study Findings*, which found that students that had already been taught the SDGs through a direct unit, still demonstrated low knowledge before each of the lessons, with this improving at a greater rate after the game lesson. All of this makes it clear that games can be used as a useful pedagogical tool.

7.6.2 Create an Improved Version of The Game of Inequality

The development of this section of 7.6 relates to chapter *7.2 Reflections of Implementation of The Game of Inequality*, which outline the various pitfalls of The Game of Inequality that were experienced by me and the students. I felt that the circumstances in the game were a good representation of the SDGs. Students backed this up by having the ability to name SDGs that related to each of the circumstances in the discussion portion of the lesson. In chapter *3.2 A Justification for the Importance of Teaching the SDGs* I explained an interest in students' learning about global issues from businesses. It could be interesting to collaborate with some businesses/organizations to find out how they feel that student learning, here, should be approached. It would be fascinating to see if any of them can suggest ways that would make the game more directly relevant to their interests.

I noted some issues that were presented regarding the tools in the game including the hassle of collecting and carrying them to each classroom. This could be rectified by creating in-game tools rather than external tools. Imagine, for example, 'chance cards' in the game of Monopoly.

I also found some issues with the questions included in the game. Many of the students commented that this was the part of the game that they enjoyed the least. The reason that I created questions for students to answer, before they could move forwards in the game, was because I felt that people, in general, are affected by circumstance, tools, prior knowledge, and luck in life. The maths questions in the game were made to represent prior knowledge. These could be altered to include a wider variety of questions; imagine the questions in trivial pursuit as an example. Another way to address this issue is to remove the questions altogether. Conceptualizing people, in general from birth, nobody comes into the world with any prior knowledge. My understanding is that what one learns is a result of circumstances and tools, otherwise understood as 'the luck of the draw'.

This leads into the final aspect of the game, luck, or rolling the die. By removing the questions, the die could play a more important role in the game, thereby regaining its usefulness.

In chapter 7.2 I mentioned a few other issues that were found with the game including the facilitator presence, and the singularity of the game (it can only be played once per group of students). Musing on this, could the game be recreated to fit contextually into more diverse classroom settings?, could it be recreated so as to eliminate the want for a facilitator?, could a new version provide more outcomes, i.e. could a new version be played more than once by the same group of students?.

In chapter *3.3 A Justification for the Focus on Inequality* I referred to my bachelor's thesis, in which, I spoke of the two key qualities to any classroom. One of these was 'a classroom that mirrors the ideal social discourse'. If this sentiment were to be applied to the game, then it would have to be rereleased every few years to mirror evolutions in development. Clearly, I have some work to do!

7.6.3 Replicate the Study on a Broader Scale

The final development that I suggest for this thesis is the replication of the case study spanning a larger population and higher number of settings. The current study is rather narrow, including only one school and roughly 70 students. These limitations exist because

of the restrictions of the thesis. I suggest that improvements to The Game of Inequality be made, and perhaps other games sourced/created to compare it with. It could also be interesting to differentiate more by including more variables in the data analysis, such as the possible difference in responses amongst ‘players’, a broader range of age groups, and a comparison of settings.

8.0 Conclusion

This thesis has examined the validity of the Sustainable Development Goals as a set of global goals, the importance of teaching them, a justification for focusing on inequality, how games have been used as pedagogical tools, how The Game of Inequality was created, and the current pedagogical approach. The data from the case study was collected, processed, and analysed, revealing answers to the research questions.

The main research question, 'How can games be utilised as classroom tools to improve upon current pedagogical approaches in teaching students about the UN Sustainable Development Goals and, in particular, inequality?', has been answered by implementing the use of The Game of Inequality and discoursing about why, and how to do so.

Sub-research question one, 'How engaged are students with the SDGs, particularly inequality, regarding ability to identify ways in which they contribute towards them in everyday life?', examined the previous engagement of students, which was done so with the responses from the first questionnaire.

Sub-research question two asks 'To what degree, and how might the above viewpoint change according to how the material is taught?'. This has been answered by analysing the data from before and after each lesson, and findings have been made by comparing the two lessons, which show that a game-based pedagogical approach has been more successful in engaging students with the SDGs, particularly inequality.

Finally, sub-research question three asks 'Which lesson plan is more effective at teaching students what the SDGs are and giving them the ability to name some?'. This question was also answered in the findings portion of the thesis and proves that in this case study the game lesson was more effective.

In the discussion chapter of the thesis comparisons have been drawn between the findings and the conceptual framework. As stated in the scope of study, this does not mean that the study of teaching the Sustainable Development Goals, including inequality, is drawn to a close.

Rather, this thesis has given some insight into different learning approaches and their effectiveness on a small scale.

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10.0 Appendices

10.1 The Game of Inequality Lesson Plan

Learning Objectives:

- Students can explain what the SDGs are and why they're important.
- Students can make connections between specific SDGs and their own contributions towards achieving the goals
- Students understand the importance of equality for all.

Introduction: 30 minutes

Students are randomly assigned a number and play the Game of Inequality.
(remind students to bring their drink bottles with them). 12 students (7 players, 5 observers).

Game Discussion: 15 minutes

1. Which circumstances did you relate to the most, either in your own life or in your community/country?
2. How do you think the game reflects real life?
3. Who won?
4. Did anybody cheat? How? Was it actually cheating?
5. What do you think was necessary to win?

Introduction of the SDGs: 5 minutes

Hand out of the SDG poster.
SDGS were created by the UN in 2015 to reduce inequality, eliminate poverty, and fight climate change by the year 2030.
The United Nations noticed that there were many problems with the world that would become more prevalent in the upcoming years. These problems included; global warming, hunger and starvation, poverty, and inequality. Some of these problems stem from the lack of reliable resources. The SDGs guide the use of sustainable resources, such as sustainable farming, affordable housing, and education.

Discussion on SDGs

"Which of the SDGs relate to the circumstances in the game?"

10.2 The Game of Inequality- Rules

Set Up

Each game requires 7 players.
The players will be numbered randomly from 1-7 and each player will represent a different demographic.
Each player needs a counter to move along the game board.
Each board will have one die and a set of 6 questions.
The teacher/game facilitator will have a set of 6 circumstance cards for each of the 7 players (42 cards in total). The teacher/game facilitator will also need to ensure they have access to a stopwatch and each of the tools listed on the circumstance cards.

Game Play

The game consists of 6 rounds, with different themes for each round. The rounds will be played in the following order;

1. Food
2. Practical Needs
3. Healthcare
4. Strategic Needs
5. Community
6. Education

Before each round the teacher/game facilitator will hand out the corresponding circumstance card to each player. The circumstance cards will explain the different privileges/ lack thereof that each player has. The players will then be allowed to collect the tools that they have been granted depending on their privilege.

Once each player has read their circumstance card and has their tools/ has taken away tools, they will have the chance to answer the question card.

If a player has answered the question correctly, they will be allowed to roll the die and move their counter along the board. If they do not answer the question correctly, or at all, they will not be allowed to roll the die, and their counter will not be moved.

The first player to reach the finish line with their counter wins.

NB: Students are allowed to share tools and help each other but will not be told this.

10.3 The Game of Inequality Circumstance Cards

Player One - Food

You always have access to a variety of healthy food and clean water. Your family eats out once a week.

You receive 6 smarties.

Player One – Practical Needs

You live in a nice house with heating, wi-fi, and electricity. You can afford to buy anything that would make life more comfortable.

You receive a cushion, drink bottle, and stress ball to use for the rest of the game.

Player One - Healthcare

You have access to the best medical care and preventative medicine in the world and paid sick leave.

You will have 4 minutes to answer each of the remaining questions.

Player One – Strategic Needs

Both of your parents/guardians live and work at home and are rich. They have a lot of free time to spend with you.

You will have 2 possible answers provided for the rest of the questions.

Player One - Community

You can ask your parents/guardians for help. You attend a few clubs outside of school, so you have friends from school and your clubs to ask for help too. You have many adults to talk to apart from your parents/guardians who can also be helpful.

You may ask anyone in the room for help including teachers.

Player One - Education

Your parents/guardians pay for your education at the best school, and you have access to the latest technology and all the books you need.

You receive a calculator, 2 pens & 4 pieces of paper.

Player Two - Food

You have access to healthy food and clean water.

You receive 5 smarties.

Player Two – Practical Needs

You live in a house with heating, wi-fi, and electricity. You can afford some things that makes life a little more comfortable.

You receive a cushion and drink bottle to use for the rest of the game.

Player Two - Healthcare

You have access to free medical care and paid sick leave.

You will have 3.5 minutes to answer each of the remaining questions.

Player Two – Strategic Needs

Both of your parents/guardians live at home. One is a stay at home parent and has free time to spend with you.

You will have 3 possible answers provided for the rest of the questions.

Player Two - Community

You can ask your parents/guardians for help. You attend a few clubs outside of school, so you have friends from school and your clubs to ask for help too.

You may ask any students in the room for help.

Player Two - Education

Your parents/guardians pay for your education at a good school, and all the books you need.

You receive 2 pens & 4 pieces of paper.

Player Three – Food

You have access to some healthy food and your family can grow vegetables in your garden. You have access to clean water.

You receive 4 smarties.

Player Three – Practical Needs

You live in a house with heating, wi-fi, and electricity. You can't afford to buy new things.

You may access your drink bottle for the rest of the game.

Player Three - Healthcare

You pay insurance to have access to cheap medical care and paid sick leave.

You will have 3 minutes to answer each of the remaining questions.

Player Three- Strategic Needs

Your parents/guardians work full time. They have some time to spend with you in the evening and at the weekend.

You will have 4 possible answers provided for the rest of the questions.

Player Three - Community

You can ask your parents/guardians for help. You attend two clubs outside of school, so you have friends from school and your clubs to ask for help too.

You can ask up to 4 student observers for help.

Player Three - Education

You have access to good education where you live, and you received scholarships, which covered the cost of school and some of your books.

You receive 1 pen & 3 pieces of paper.

Player Four – Food

You have some access to healthy food, but your family buys food on a strict budget. There are never any leftovers. You have access to clean water.

You receive 3 smarties.

Player Four – Practical Needs

You live in a house with heating and electricity.

You may take a quick drink of water now, and then put your drink bottle away for the rest of the game.

Player Four – Healthcare

You have access to medical care and half paid sick leave.

You will have 2.5 minutes to answer each of the remaining questions.

Player Four – Strategic Needs

Your parents/guardians don't live together so you spend some time at each house. They each work full time and have some time to spend with you in the evening and at the weekend.

You will have 5 possible answers provided for the rest of the questions.

Player Four – Community

You can ask your parents/guardians for help. You attend one club outside of school, so you have friends from school and your club to ask for help too.

You can ask up to 3 student observers for help

Player Four – Education

You have access to education where you live, but your parents/guardians can't afford to buy you books.

You receive 1 pen & 2 pieces of paper.

Player Five – Food

You have limited access to healthy food, and you have to rely on charity. You have some access to clean water.

You receive 2 smarties.

Player Five – Practical Needs

You live in a house with electricity. You don't have wi-fi. You buy firewood to stay warm in winter.

You receive no tools.

Player Five – Healthcare

You have access to basic medical care and no sick leave.

You will have 2 minutes to answer each of the remaining questions.

Player Five – Strategic Needs

You only have one parent/guardian and they work full time. They don't have much time to spend with you.

You will have 6 possible answers provided for the rest of the questions.

Player Five – Community

You can ask your parents/guardians for help, but they are quite busy, so they aren't always that helpful. You can also ask your friends at school.

You can ask up to 2 student observers for help.

Player Five – Education

You have limited access to education, and you have to borrow money to pay for it.

You receive 1 pen & 1 piece of paper.

Player Six – Food

You only have access to cheap unhealthy food and the water from the tap is dirty.

You receive 1 smarty.

Player Six – Practical Needs

You live in a shack with electricity, but it sometimes gets turned off because it costs too much. You don't have wi-fi. You collect firewood to stay warm in winter.

You must stand for the rest of the game.

Player Six – Healthcare

You have access to poor medical care and no sick leave.

You will have 1.5 minutes to answer each of the remaining questions.

Player Six – Strategic Needs

You live in foster care. Your foster parents are very busy and don't spend any time with you.

You will have 7 possible answers provided for the rest of the questions.

Player Six – Community

You can't get much help from the adults around you, but you can ask your friends at school for help.

You can ask up to 1 student observer for help.

Player Six – Education

You have limited access to part-time education, and you have to borrow money to pay for it. It takes you twice as long to finish your schooling.

You receive 1 piece of paper.

Player Seven – Food

You can't afford much food, so you are hungry all the time. You collect water from a well.

You receive no smarties.

Player Seven – Practical Needs

You live in a shack that doesn't have heating, wi-fi, or electricity. Sometimes you are able to collect firewood to stay warm in winter.

You must be blindfolded for the rest of the game.

Player Seven – Healthcare

You do not have access to medical care and no sick leave.

You will have 1 minutes to answer each of the remaining questions.

Player Seven – Strategic Needs

You don't have a parent/guardian and you have to take care of yourself.

You will have 8 possible answers provided for the rest of the questions.

Player Seven – Community

You don't go to school or have any parents/guardians to ask for help. You can ask people around you for help but might not get any.

You can only ask other players for help.

Player Seven – Education

You do not have access to education because you have to work to support yourself.

You do not receive any tools.

10.4 SDG Hand-Out

10.5 Alternate Lesson Plan

Introduction: 5 minutes
Start with a class discussion; "What are the biggest problems faced by people in Norway and the world?" Encourage children to think from different perspectives; companies, government, parents, etc.

Group work: 5 minutes
In small groups the children will discuss and write down the issues that they have come up with. We will then come back together as a class and write some of them on the board.

Introduction of the SDGs: 10 minutes
Hand out of the SDG poster. SDGS were created by the UN in 2015 to reduce inequality, eliminate poverty, and fight climate change by the year 2030.
The United Nations noticed that there were many problems with the world that would become more prevalent in the upcoming years. These problems included; global warming, hunger and starvation, poverty, and inequality. Some of these problems stem from the lack of reliable resources. The SDGs guide the use of sustainable resources, such as sustainable farming, affordable housing, and education (The United Nations, u.d.)

Discussion on SDGs
"Which of the SDGs relate to the issues we came up with at the beginning of class?"

Storytime – The Wind in the Willows 5 minutes
At the end of the story ask which of the goals the students think the story was about.

'What lies over THERE' asked the Mole, waving a paw towards a background of woodland that darkly framed the water-meadows on one side of the river.

'That? O, that's just the Wild Wood,' said the Rat shortly. 'We don't go there very much, we river-bankers.'

'Aren't they – aren't they very NICE people in there?' said the Mole, a trifle nervously.

'W-e-ll,' replied the Rat, 'let me see. The squirrels are all right. AND the rabbits – some of 'em, but rabbits are a mixed lot. And then there's Badger, of course. He lives right in the heart of it; wouldn't live anywhere else, either, if you paid him to do it. Dear old Badger! Nobody interferes with HIM. They'd better not,' he added significantly.

'Why, who SHOULD interfere with him?' asked the Mole.

'Well, of course – there – are others,' explained the Rat in a hesitating sort of way.

'Weasels – and stoats – and foxes – and so on. They're all right in a way – I'm very good friends with them – pass the time of day when we meet, and all that – but they break out sometimes, there's no denying it, and then – well, you can't really trust them, and that's the fact.'

The Mole knew well that it is quite against animal-etiquette to dwell on possible trouble ahead, or even to allude to it; so he dropped the subject. ***Invalid source specified.***

10.6 Questionnaire

SDG/Inequality Questionnaire

The purpose of this questionnaire is to determine how much you learn and how your opinions may change on the Sustainable Development Goals and inequality. The results of the questionnaire will be used in a master's level thesis study and will remain confidential. This means that the results may be published but will be recorded anonymously and no factors that could potentially identify any individual student will be included. By filling in this questionnaire and taking part in the lesson you are consenting to be part of the project. You may withdraw consent at any time.

1. What are the Sustainable Development Goals?

2. Can you name any of the Sustainable Development Goals?

3. What does inequality mean to you?

4. Do you feel that you, personally, are working towards the Sustainable Development Goals?

   Yes / No

5. If you answered 'Yes' to question 4, how do you feel that you are working towards the goals?

6. Do you feel that you, personally, are working against inequality?

   Yes / No

7. If you answered 'Yes' to question 6, how do you feel that you are working against inequality?

10.7 Additional Questionnaire

SDG/Inequality Additional Questionnaire

The purpose of this questionnaire is to determine how much you learn and how your opinions may change on the Sustainable Development Goals and inequality. The results of the questionnaire will be used in a master's level thesis study and will remain confidential. This means that the results may be published but will be recorded anonymously and no factors that could potentially identify any individual student will be included. By filling in this questionnaire and taking part in the lesson you are consenting to be part of the project. You may withdraw consent at any time.

1. How could the game be improved?

2. How could you action the Sustainable Development Goals in real life?

3. What do you feel you have learnt/gained from the lesson today (if anything)?

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