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Bridging formal and informal learning outside  
school: Investigating participation in an online  
educational social network for ‘bright’ young  
people

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A thesis submitted in fulfilment of the  
requirements for the degree of Doctor of  
Philosophy in Education

University of Warwick  
Centre for Education Studies

June 2021

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## ACKNOWLEDGEMENT

Throughout this study I have received a great deal of support and assistance. I would first like to thank my supervisors, Dr Michael Hammond and Dr Adam Boddison, for their invaluable encouragement and guidance. The completion of this thesis would not have been possible without their help. Thank you for believing in me from the very start.

I would also like to thank my friend, Dr Koula Charitonos, for her insightful comments on the introduction of the thesis.

I wish to express my gratitude to the IGGY members and mentors who gave their time generously and participated in the study. Further thanks to IGGY for providing funding to cover the tuition fees and made this work possible.

Finally, I am deeply grateful to my family. ΕΥΧΑΡΙΣΤΩ. To my parents, siblings and my husband's family, thank you for your support and for just being in my life. Dad, thank you for coming to help during the writing of the thesis. I could not have done it without you. I hope I make you proud. To my little boy, Petros. I love you and thank you for giving me the strength to finish. To my second baby coming into the world. You've been a motivation to keep going. To my husband, partner and best friend, Neophytos. I cannot thank you enough for being there for me in every way possible and for giving me the strength to carry on. I dedicate this thesis to you.

## DECLARATION

The work in this thesis was developed and conducted by the author between December 2012 and June 2021. I declare that, apart from work whose authors are explicitly acknowledged, this thesis and the materials contained in this thesis represent original work undertaken solely by the author. I confirm that this thesis has not been submitted for a degree at another university.

Parts of this study have been published as follows:

### *Journal publications*

1. Hammond, M., & Charalampidi, M. (2020). 'Should Britain leave the EU? An exploration of online argument through a Toulmin perspective.', *Italian Journal of Educational Technology*, Vol. 28, No. 1, 5-19. doi: 10.17471/2499-4324/1097
2. Charalampidi, M., Hammond, M. (2016). 'How do we know what is happening online?: A mixed methods approach to analysing online activity.', *Interactive Technology and Smart Education*, Vol. 13, No. 4.

### *Conference papers*

3. Charalampidi, M., Hammond, M. (2017). 'What makes a good argument?: Analysing texts in an online learning network.', BAAL2017, Leeds, UK: British Association for Applied Linguistics (BAAL).
4. Charalampidi, M., Hammond, M. (2016). 'How do we know what is happening online?: A triangulated approach to data analysis.', *e-Learning 2016: 10<sup>th</sup> International Conference*. Madeira, Portugal: iadis. – **Best paper award**
5. Charalampidi, M., Hammond, M., Boddison, A. (2014). 'Exploring aspects of participation in an international online network for 'gifted' students – A research in progress.', in L. G. Chova, A. L. Martínez, & I. C. Torres (Ed.), *EDULEARN 2014: 6th International Conference on Education and New Learning Technologies* (pp. 6250-6259). Barcelona, Spain: IATED Academy.
6. Charalampidi, M. (2014). 'Exploring aspects of participation in an international online network for gifted students – A research in progress.', in M. Jurišević (Ed.), *Re:Thinking Giftedness in the Digital Age: 14th International ECHA Conference* (pp. 136-137). Ljubljana, Slovenia: University of Ljubljana.

7. Charalampidi, M. (2014). 'Labelling the students as 'gifted': Does it really matter?', *BERA 2014 Annual Conference*. Institute of Education, London, UK.
8. Charalampidi, M. (2013). 'Can gifted students benefit from an international online community? A research in progress.', *BERA 2013 Annual Conference*. University of Sussex, Brighton, UK.

### ***Workshops***

9. Charalampidi, M. (2017). 'Why and how to analyse online discussions - Looking for arguments.', *Technologies for learning conference on 'Social media, post truth and what makes a good argument'*. University of Warwick, Coventry.

### ***Posters***

10. Charalampidi, M. (2017). 'Exploring IGGY.', *ABTA Doctoral Researcher Awards 2017*. University College London, London. – ***Honourable mention award***
11. Charalampidi, M. (2014). 'International Gateway for Gifted Youth.', *Research Postgraduate Poster Showcase*. University of Warwick, Coventry.
12. Charalampidi, M. (2013). 'Participation in an online social network – The case of five IGGY members.', *Global and Gifted Conference*. University of Warwick, Coventry.

## ABBREVIATIONS AND LIST OF TRADEMARKED SOFTWARE PACKAGES AND SITES

Abbreviation	Meaning
A level	Advanced level
BBC	British Broadcasting Corporation
BERA	British Educational Research Association
CoP	Community of Practice
CSCL	Computer-Supported Collaborative Learning
DIY	Do It Yourself
GCSE	General Certificate of Secondary Education
HE	Higher Education
ICT	Information and Communication Technologies
IGGY	International Gateway for Gifted Youth
JC	Junior Commission
JCs	Junior Commissioners
MMR	Mixed Methods Research
MOOCs	Massive Open Online Courses
NAGTY	National Academy for Gifted and Talented Youth
RQ	Research Question
SNS	Social Networking Site
SRL	Self-Regulated Learning

List of trademarked software packages and sites	
Facebook	<a href="https://www.facebook.com/">https://www.facebook.com/</a>
Flickr	<a href="https://www.flickr.com/">https://www.flickr.com/</a>
Google+	Google+ was shut down on April, 2019
Instagram	<a href="https://www.instagram.com/">https://www.instagram.com/</a>
LinkedIn	<a href="https://www.linkedin.com/">https://www.linkedin.com/</a>
TikTok	<a href="https://www.tiktok.com/">https://www.tiktok.com/</a>
Tumblr	<a href="https://www.tumblr.com/">https://www.tumblr.com/</a>
Twitter	<a href="https://twitter.com/">https://twitter.com/</a>
WhatsApp	<a href="https://www.whatsapp.com/">https://www.whatsapp.com/</a>
yEd	<a href="https://www.yworks.com/products/yed">https://www.yworks.com/products/yed</a>
YouTube	<a href="https://www.youtube.com/">https://www.youtube.com/</a>
Zoom	<a href="https://zoom.us/">https://zoom.us/</a>



## **ABSTRACT**

This is a study about learning online outside school. It examines participation in IGGY, an international network for high achieving students aged 13 to 18. IGGY was hosted by the University of Warwick and ran from 2012 to 2017. It had around 7,000 registered members though not all were active. IGGY was designed to support young learners through access to enrichment academic materials and to open debates on everyday and academic topics. There is much public and academic discussion of online social networks for young people but much less is known about social networks with educational aims such as IGGY. This study focused on describing this particular learning context, elucidating its value and discussing its feasibility.

The study employed a mixed methods approach to explore the case of participation in IGGY. Qualitative data were collected through semi-structured interviews with IGGY members ( $n = 12$ ) and IGGY mentors ( $n = 2$ ), content analysis and visualisation diagrams of 20 conversations from the debate forum. Quantitative data were collected in the form of online surveys ( $n = 161$ ) and data on posts obtained from the online archive and the IGGY team. The different sets of data allowed the analysis of participation both as it was perceived by the research participants and as it was borne out by actual online activity.

Although this study set out to be an inquiry into different experiences of participation, its focus shifted to the more active members. These members accessed learning resources related to what they were taught at school and content that was not covered in the school curriculum. They interacted with others in the forums where they discussed a variety of topics, ranging from ones characterised as fun and social to

more in-depth and academic ones. Discussions were constructive and meaningful, and marked by respectful understanding of each other's positions. Through their social interaction members felt connected and formed friendships that they valued, albeit of different depths and types. Active members would also take part in educational activities either collaboratively or as individuals.

Participation in IGGY was motivated by intrinsic, environmental and extrinsic factors. While members were self-directed, the distinct character of the network, the people who made up the community, the technology used to build the network and events outside the network had an impact on their engagement with it.

Participation in the network brought about personal, social and cognitive benefits. Members were able to extend their social networks, to communicate with people of like mind and experience feelings of belonging, to increase their self-esteem and sense of identity, to receive peer and expert support and to access useful resources for studies and career. They viewed IGGY as enhancing their school performance but also as expanding their knowledge and skills beyond the formal curriculum. The study offers a vision of how young learners can engage in an exemplary form of argumentative discourse that is valued and often asked for by teachers in classrooms. Debates in IGGY were characterised by commitment to justification of opinions and ideas, openness to different beliefs, kindness and tolerance of others.

In light of the above, this study provides a model of an educational network that bridges older and newer perceptions of learning i.e. the conventional understanding of formal learning and the contemporary understanding of learning-as-participation. It highlights the significance of members; mentors; technology; outside factors in sustaining a network.

The study contributes to an under-researched area, that of out-of-school education networks. The findings of this study fit into a more positive view of communication technology, however, it does not offer an over romanticised view. Participation in networks with educational objectives has limits and the study brings those to light. The study also shows the value of a mixed methods research design that draws on person-focused and message-focused approaches and exploits the opportunities afforded by each to better and more fully understand online participation and learning.

# 1 INTRODUCTION

This thesis examines the use of an out-of-school academic and social networking site (SNS) in order to shed light on the online social and cognitive practices of its members, school-age students 13 to 18 years old. The study was designed to investigate the ways in which academically high-performing learners were using the network, their perceptions of their online activities and the relationships between online practices, learning and context. Through a detailed account of the participants' experience it shows how young people used an explicitly educational social network to learn by themselves and with each other.

The network that this thesis reports on is the International Gateway for Gifted Youth (hereafter IGGY). This was hosted by the University of Warwick and was created to 'connect and challenge the world's brightest young minds' (*IGGY*, no date). The network went live in 2012, after a 4-year pilot phase, and numbered around 7,000 registered members. Prior to IGGY, from 2002 until 2007, the University of Warwick was host to the 'National Academy for Gifted and Talented Youth' (NAGTY), a government-funded initiative to support high-achieving secondary students in England. The University's goal was to continue its gifted and talented education provision and to 'create a global community of gifted students, offering them top quality resources and encouraging them to collaborate and achieve their full potential.' (Warwick insite, 2012). In brief, it provided its young members an online space for networking and sharing of experiences, ideas and opinions, as well as an archive of material grouped around academic categories. Educational material varied in form but a common structure was the presentation of content through a video or an

article, followed by tasks (e.g. challenges, competitions etc.) for members to tackle. A more detailed account of the network and its content is given in the next section.

This is a timely and important study as social networking and communication are integral parts of many young people's lives, leading to calls for a research agenda that investigates, among other things, new opportunities for technology-mediated learning in these contexts (e.g. Greenhow, 2011; Livingstone, Mascheroni and Staksrud, 2017). The study also has a wider significance at a time when there are increasing concerns over people's online practices in such spaces (e.g. isolation, use of insults and derogatory language in debates, radicalisation, commercial exploitation). In fact, adolescents' social media usage in everyday life has been described by popular media as destructive and even damaging to academic learning. This thesis provides a countervailing case, with due awareness of limitations and constraints, of a largely positive and educational use of technology.

The remaining part of this chapter proceeds as follows: I first explain my personal interest and motivation in undertaking this research. Following this I elaborate on the context of the study and I particularly discuss IGGY as a distinct case of a network, and I offer an account of the idea of giftedness. Next, I present the main theme of the study (i.e. online learning and social networks) to situate this work within its broader research background. Then I state the research questions and I briefly explain how I went about conducting the research to answer the questions. In this section I also include a discussion of the importance and originality of the study. Finally, I conclude the chapter with an overview of the structure of the thesis.

## **1.1 MY RESEARCH MOTIVATION**

I came to the decision to pursue further studies after a four-year gap from my Master level degree in educational technology. In the face of the rapid technological changes I felt that what I knew was becoming outdated and I was keen to expand my knowledge and practice. Hence, the Institute's of Education call for a part-time PhD research scholarship to investigate IGGY was very timely for me. The research area, though quite broad at the time, matched my personal and professional interest in young people's use of technology and in particular of their engagement with social networks for educational purposes.

The idea of investigating participation in IGGY and its relation to learning was appealing, not least because it presented an opportunity to gain insight into the way young people used a social network with educational objectives. Social technologies provide us with new channels of communication and enable us to maintain or expand our social networks. From a teacher's perspective like myself, their value also lies in the possibilities they may afford in pursuing opportunities for learning. I was aware though that the introduction of social media in schools has not been a challenge-free endeavour. Apart from facing safety concerns and issues around privacy and data protection, educators often encounter disengagement or unwillingness on behalf of students to use such tools for learning (e.g. Selwyn, 2009; Prescott, Wilson and Becket, 2013; Manca and Grion, 2017). Given their prominent use in everyday life, it often comes as a surprise to teachers to discover that social technology introduced in classroom learning is not embraced as eagerly. This was among the insights I gained while carrying out a collaborative action research project a few years ago. In our study we sought to integrate mobile and web-based technologies and heritage language learning. In brief, we had asked students to use their mobile or tablet to take

pictures and create visual representations of Greek loanwords that would be uploaded on an SNS on a weekly basis (see Charitonos and Charalampidi, 2015). Though the findings of this study were overall positive, we also came to a realisation that participation was largely linked to assigning tasks as a homework assignment. We had similar findings in a follow-on project which included the use of the online Citizen Inquiry platform ‘nQuire-It’ in which students could join ‘missions’ and conduct their own small scale investigations (see Charitonos, Charalampidi and Scanlon, 2016). Further to these two studies, my own day-to-day teaching experience within the school environment had stimulated further interest in investigating voluntary participation in an educational social network outside of school. Therefore, through my doctoral studies I was keen to develop a stronger understanding of what participation in such a network means and what drives or prohibits engagement. Such an investigation would allow me to identify good practice when networked media are used for both formal and informal learning purposes, and feed this knowledge back into my teaching.

At the same time, I welcomed the fact that IGGY’s population consisted of young members identified as ‘gifted’. Though technology use was in the spotlight of the research and ‘giftedness’ in the backdrop, my study could inform my professional practice in both fields. Personally I employ a more pragmatic consideration of the concept of giftedness in which labels per se do not serve teaching and learning objectives. I also believe that academically high achieving students are a group that needs additional or even different educational provision. As a teacher I have on many occasions felt that the needs of these students were not catered for in the classroom for many reasons, including limited time or resources, lack of the necessary expertise and the ‘know-how’. At the time of my PhD application the merge of technology and

gifted education seemed to provide a pathway for overcoming these restrictions. Examining a network such as IGGY would allow me to draw on resources and expertise to adapt my teaching and provide support to such students.

Beyond my personal motivation, this particular inquiry was appealing because it aspired to make an important contribution to the academic and educational community. This work can be of interest to educational technologists and professionals who try to make sense of young people's educational use of SNSs and seek ways to use social technologies for learning. It gives insight into the kinds of social interaction and learning an educational network might support and the necessary conditions that enable such learning experiences. The study also suggests a way to bridge young people's everyday media practices with schooled knowledge and skills valued by educators, parents and society at large. Finally, the study's implications for members of educational networks, people who act as mentors, managers and people or organisations who want to set up such networks was a key motivation for me to start my doctoral studies on this particular area.

## **1.2 SETTING THE CONTEXT**

### **1.2.1 An educational social network as a hybrid case**

Much of the previous work on young people and social media use has focused on the use of commercial platforms within formal contexts, for example the use of Facebook (e.g. Chugh and Ruhi, 2018), Twitter (e.g. Tang and Hew, 2017) and other popular platforms (e.g. Manca, 2020) in higher education (HE). A number of studies have also been published on the use of tools designed to support online discussion and collaborative knowledge building in educational settings (e.g. Blake and Scanlon, 2014; Hong and Scardamalia, 2014; Zhang, Yuan and Bogouslavsky, 2020).



Academic attention has also been drawn towards the integration of digital technologies, including SNSs, without – at least explicit or intentional – educational objectives into young people’s daily practices (e.g. Ito *et al.*, 2008; Scolari *et al.*, 2020; Twining, 2021). In contrast, the home use of designed education-related social networks such as IGGY is underresearched (Greenhow, Gleason and Li, 2014). In this sense, IGGY constituted an atypical case of technology use as it was neither an educational technology introduced in classroom settings nor only an out-of-school network developed for socialisation. It was a hybrid case of a network offering an online learning space and social networking capacity, ‘something in between Facebook and BBC Bitesize’ (IGGY member).

IGGY was structured in five sections, namely the *Profile*, *Members*, *Debate*, *News & Events* and *Knowledge* (see Figure 1). The network’s hybrid character was apparent when looking at the *Debate* and *Knowledge* sections that, respectively, offered social and educational opportunities to its members. The *Debate* section was broad and included anything that could be of interest to the members. Some of these debates felt more social in tone (for example *Do you prefer kindles or books?* or *Who are your favourite Disney characters?*) but most debates set a more academic, or at least serious, agenda (e.g. *Is genetic engineering a step forward for mankind?*, *Overuse of antibiotics* or *Is London developing into a different economy than the rest of Britain?*). Debates were created by members of the IGGY staff and University students who had been trained to act as mentors for members. Members could also initiate a debate and suggest new projects for study. Debates were moderated and while they tended to be conversational they were also discursive and were seen by members as different from the everyday SNSs in which they participated.

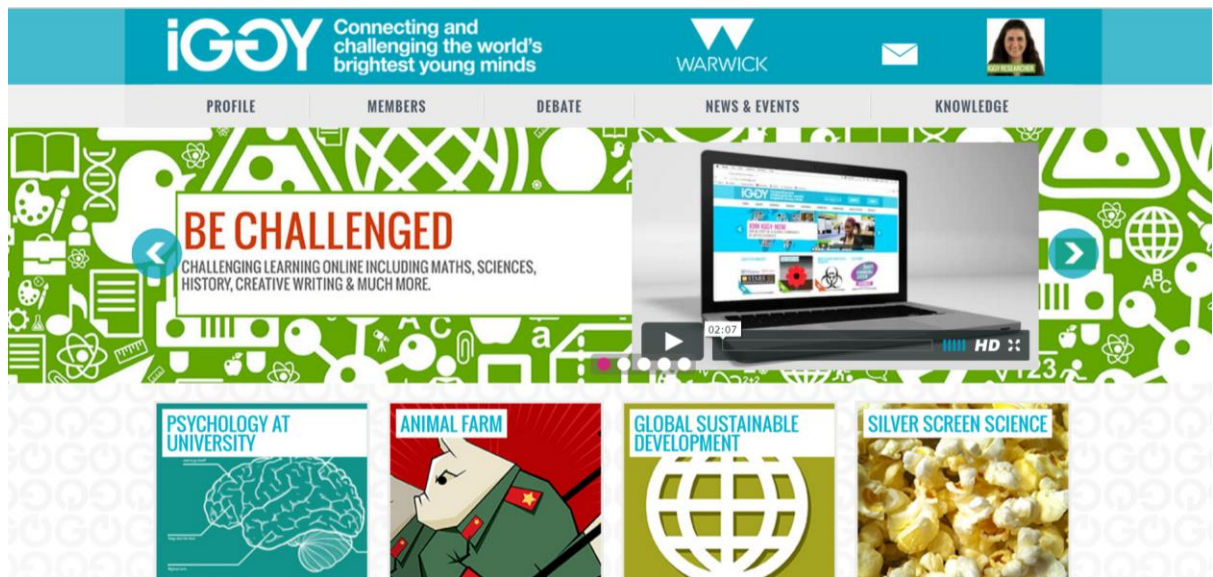


Figure 1 IGGY's front page, taken from <https://www.iggy.net/>.

A more explicitly educational aspect of IGGY was the *Knowledge* section. Content was obtained by external partners (such as the National Grid, an electricity and gas utility company that has also created educational resources for teachers and students) or developed by internal partners (e.g. academics at the University), the IGGY staff and the mentors. IGGY did not offer its members a guided programme, rather they were expected to identify for themselves relevant 'challenges' from a series of extension tasks. These tasks covered topics of interest to the online community but were not matched against any particular awarding body's programme of study. The tasks were intended to be complementary, certainly not working against members' academic achievement at school, but offering 'enrichment' rather than 'acceleration' of learning. For example, IGGY provided challenges on topics which were not covered or at least not covered in depth in many school curricula (e.g. examining legal cases critically) or covered in ways that allowed deeper engagement with a topic (for example coding, mathematical investigations or creative writing). Many of these challenges were designed with a 'low threshold, high ceiling' in mind and could be

tackled at different levels. For example, a six-part series on the development of conventional automotive technologies began with a basic introduction to the field and the work being done to find cleaner alternatives. Upon completion of the whole unit, students were expected to understand the different technologies and the impact they have on environmental, economic and social issues. They had also had the opportunity to take part in a challenge which asked them to suggest transportation technologies that met their country's needs, culture and economy. Participation in challenges was not formally assessed but was led by members of the IGGY team, mostly the University student mentors or invited academics. Members could access general feedback on the challenges and if relevant, see answers. They could discuss these challenges, and indeed tackle them, with other IGGY members.

### **1.2.2 Context giftedness**

The concept of giftedness, or rather catering for the needs of gifted students, was an integral part of the study and had featured in numerous discussions with my supervisors from early on until the late stages of the research process. However, as the study advanced the concept became less important.

Giftedness as a concept is much disputed and is a term that some policy makers may seek to avoid altogether. Not surprisingly there is much academic debate around what constitutes giftedness, whether giftedness covers a wide scope of domains or specific ones and whether nature or nurture is at the foreground of giftedness development (Dai, 2009, 2018). Indeed, a universal definition of giftedness does not exist (Borland, 2005; Kaufman and Sternberg, 2008; Davidson, 2009; Stoeger, 2009) and it would be unrealistic to imagine that full agreement could be reached on 'what it means' to be gifted. Kaufman and Sternberg (2008) describe four main waves of interpretations of

the term giftedness: domain-general models; domain-specific models; systems models; and developmental models. Broadly speaking, domain-general models were the models that viewed giftedness as a general intellectual ability spanning across several domains while domain-specific models emphasised exceptional abilities in specific areas such as maths. These models tended to equate giftedness to innate cognitive ability, almost as if there was something in the make-up of the brain that bestowed giftedness on particular people. Systems models provided a wider view on giftedness by suggesting that there were constructs such as creativity or task commitment that could strengthen gifted traits. Finally, developmental models provided a wider definition by adding environmental factors to the equation. In fact, emphasis has now shifted to the influence of social-contextual factors on giftedness and this has helped move debates from whether someone is gifted towards how to support giftedness and indeed how to help all students reach their potential (Dai, 2018). As stated by Dai (2018, p. 11),

human potential is much more pluralistic, and more contextually and developmentally shaped than the founding scholars of the field believed. With this in mind, I argue in favor of going beyond ‘giftedness’ to embrace a broader vision of not only understanding what ‘nature’ bestows on each individual, but, more importantly, how to cultivate human potential and help create productive and fulfilling life trajectories and pathways for those showing great promise, which are beneficial to society as well as individuals.

For some scholars making special provision of the gifted appears elitist (as discussed in Gallagher, 2000; and Borland, 2005) and the very label has been seen as creating and/or sustaining racial, ethnic, social and economic inequalities in education and, by extension, in society (Borland, 2005). The counter argument is that equity requires each to receive an appropriate educational provision and in the case of gifted students

this will not happen if schools believe that ‘bright students can succeed on their own if treated with a policy of benign neglect’ (ibid, p. 2).

In my view, and indeed in line with the research participants’ perceptions, a more pragmatic approach to the idea of giftedness would be useful, and in effect, attention needs to be relocated from labelling to provision. Indeed the natural stance of a teacher like myself is to see all children as unique and having special talents. The term gifted can confuse if used to focus attention on only one section of a class or group of children. It can, as discussed in the literature review, later lead to labelling which neither helps those classed as gifted or those excluded. However, the discussion of giftedness within UK education over the last few years has at least raised awareness of just what should be expected of high achieving children. It is not a term I would embrace but I do not have the instinctive aversion to it that some feel and at times I experienced in contribution from colleagues from other countries, particularly Finland.

In the context of this study, the concept is not scrutinised in detail but rather is treated as a synonym for ‘high academic achievement’ and is examined in relation to the network’s affordances and potential to cater for the needs of high academic achievers. A reason for which a network such as IGGY is believed to correspond to these learners’ abilities and interests is the idea that high achieving students are intrinsically motivated to learn, can work independently and self-regulate their learning in an online environment (Wan and Howard, 2007; Thomson, 2010; Fung, Yuen and Yuen, 2014).

IGGY employed giftedness in a flexible approach too. They had largely side-stepped controversy by having an inclusive policy on membership by asking for a written

endorsement of the student's potential to benefit from participation in the network. This endorsement could be from the school, from parents teaching their child at home, or could be a self-nomination of a student interested in joining IGGY. IGGY was also becoming more comfortable with other terms to describe their members (e.g. 'brightest') though they did not proceed with changing the name of the network.

### **1.3 THE MAIN THEME: ONLINE LEARNING AND SOCIAL NETWORKS**

Facebook, WhatsApp, Twitter, Instagram, TikTok and Zoom are only a few of the social media embedded in the daily lives of adults and teenagers alike. At the time of the Corona virus pandemic and restrictions on movement, the pervasive take-up of social media became more evident as people sought to stay connected and up-to-date with the latest news. Social media's role in the dissemination of information has also been so profound that the World Health Organisation (WHO, 2020) addressed the issue of an unprecedented 'infodemic': 'an over-abundance of information – some accurate and some not – that makes it hard for people to find trustworthy sources and reliable guidance when they need it.'

Though the extraordinary circumstance of a global epidemic has accentuated the use of social media, Ofcom's annual reports show that young people going online is not new. A growing 'digital dependency' and a need for constant internet connection are revealed (Ofcom, 2018). In 2014, it was found that text based communication such as instant messaging and social networking became the norm for young people aged 12-15, replacing talking on the telephone (Ofcom, 2014). A more recent report shows that it is common for 12-15 years-old to have a social media account (mainly on Facebook, Instagram and WhatsApp), to use YouTube to watch or create and share videos and to play online games (Ofcom, 2019). In the US the picture is similar. A

report by Pew Research Center examined American teenagers' (aged 13-17) use of technology and revealed that around 90% of teens went online every day and 76% used social media, with Facebook, Instagram and Snapchat being the most popular platforms (Lenhart and Page, 2015).

It is not a surprise then that since the early 2000s there has been growing interest and academic discussion of networking technologies, particularly of what young people are using these technologies for in their day-to-day lives and how this online activity might relate to learning (Sefton-Green, 2004; Ito *et al.*, 2008; Greenhow, Robelia and Hughes, 2009; Pereira, Fillol and Moura, 2019; Scolari *et al.*, 2020). Much of the literature emphasises the potential of technology to support new kinds of informal learning, in particular those that reflect the metaphor of 'learning-as-participation' (Sfard, 1998). Online spaces such as networks and communities provide young people with opportunities for self-expression and identity formation and engage them in social lessons about how to act and be in the world (e.g. boyd, 2008; Greenhow and Robelia, 2009), though these opportunities might come with associated risks e.g. on privacy, misunderstanding and exclusion (Livingstone, 2008, 2014). At the same time, these digital networks constitute informal learning environments where youth develop informal learning strategies and the necessary transmedia skills to produce and share media content (Guerrero-Pico, Masanet and Scolari, 2019).

Because of the prominence of social media in young people's lives scholars have put forth the idea of harnessing this technology for learning in institutional contexts (Stewart, 2015; Van Den Beemt, Thurlings and Willems, 2020). The idea is predicated on the belief that it is possible to capitalise on the enthusiasm and the social learning practices young people exercise in their leisure, at play and in the

home to raise educational standards and, more ambitiously, to reform and align the curriculum to a learner-centred, socially constructivist pedagogy (Hammond, 2014). The expectation of change and transformation of education by technology has prompted the introduction of computer-supported collaborative learning (CSCL) and knowledge building environments (e.g. Garrison, Anderson and Archer, 2010; Lucas, Gunawardena and Moreira, 2014; Chen, Scardamalia and Bereiter, 2015) and of mainstream social media (e.g. Kio, 2016; Chawinga, 2017; Manca and Grion, 2017) in formal institutions.

The above claims have been, however, strongly contested in recent years by a number of scholars. Selwyn (2010, 2016), for instance, has been critical of the exaggerating and overly enthusiastic language used in the educational technology scholarship and the disparity between rhetoric (i.e. how educational technologies could and should be used) and reality (how and why educational technologies are actually being used). Meanwhile, concerns have been raised about the use of commercial platforms for teaching and learning and the mechanisms of datafication and commodification that underpin their operation (e.g. Dijck and Poell, 2018). It has proven even more difficult to achieve a change in conceptual understandings of teaching and learning by schools (Hammond, 2014), and the sorts of online learning that take place in young people's day-to-day lives remain largely detached from formal learning contexts.

#### **1.4 WHAT THIS STUDY DOES**

This study examines young people's use of an out-of-school educational social network and its relation to traditional (i.e. school learning) and contemporary (i.e. learning-as-participation) perceptions of learning. Following on from the previous section, discussion of online learning raises questions as to its value and impact; how



learning is supported; and the limits on participation. In response, the thesis addresses an overarching question: What is an educational network and how is it achieved?

And in answering this question three secondary research questions (RQs) were developed within this project:

RQ1. What did participants do in the network?

RQ2. What facilitated or constrained participation?

RQ3. What did participants gain from participation?

I dealt with these questions through a mixed methods single case study with a convergent design (see sections 3.1 and 3.2). Data collection lasted for approximately four and a half years (from May 2013 to December 2017) and included the use of interviews, questionnaire survey, content analysis, visualisation diagrams and quantitative analysis of posts and archives. The data analysis process started with a separate analysis of each dataset, followed by a categorisation of the findings into person-focused and message-focused (see Chapter 4). Person-focused analysis presents the analysis of data from the interviews and the survey while message-focused analysis presents the analysis of data from the online discussions. To answer the RQs I drew on both person-focused and message-focused analysis to compare and contrast the research participants' perceptions of their participation and their visible online activity.

The importance and originality of this study are that it reports on the use of a social network with overt educational purposes and offers important insights into the value and form of such a network as well as what is required to construct and maintain it.

This can be useful for educational institutions such as universities, corporations and

other organisations concerned with providing online environments for their students, employees etc. to connect, learn and develop their knowledge, skills and practice. Further, it is also of relevance to researchers looking at the use of social media and their impact on learning, as well as to individuals (e.g. educators, parents, students) wanting to purposefully combine these tools with curricular activities. Significantly, the study presents a different approach to addressing the bridging of formal and informal learning, specifically it showcases how the bridging could take place in an out of school context, and it does so by providing a critical account of technology use and the learning that could take place within it. The study also makes a methodological contribution as, hitherto, analysis of online activity has been largely performed by either message (e.g. content analysis) or person focused (e.g. interviews) approaches whereas the present study exploits both.

## **1.5 A GUIDE TO THE THESIS**

The thesis is organised into six parts. Following the Introduction is a literature review of the key concepts that guided the study. Specifically, I give a brief account of formal and informal learning and expand on the grounds on which the decision to create IGGY had been based. To do so, I touch upon the concept of giftedness and the debates surrounding it. Next, I discuss social networks drawing on studies that focused specifically on SNSs and social media but also on studies on online communities and educational technology more broadly. Emphasis is placed on how social networks have been used by young people in different contexts and how their use has been linked to learning. The third chapter is concerned with the methodology and methods I used to collect and analyse data (i.e. interviews, questionnaire survey, analysis of posts and archives), and in doing so I put forward the argument for a mixed methods approach in social research. Chapter 4 provides the findings from

each method used, and these are put together in the next chapter to answer the research sub-questions, in reference to the literature. Deriving from this is a discussion of the overarching question. In Chapter 6 I focus on the main conclusion of the research, with a reflection on what I did and how I did it. I also cover the limitations of the study and make recommendations for future research and practice.

## 2 LITERATURE REVIEW

This chapter examines the key concepts that have framed the research and identifies problems and questions regarding the use of social networks in and beyond formal institutions, primarily in relation to learning. It is divided into sections covering: formal and informal learning; gifted learners; social networks and learning; out-of-school networked learning; networked learning in school; bridging informal and formal learning; counter perspectives; summary.

### 2.1 FORMAL AND INFORMAL LEARNING

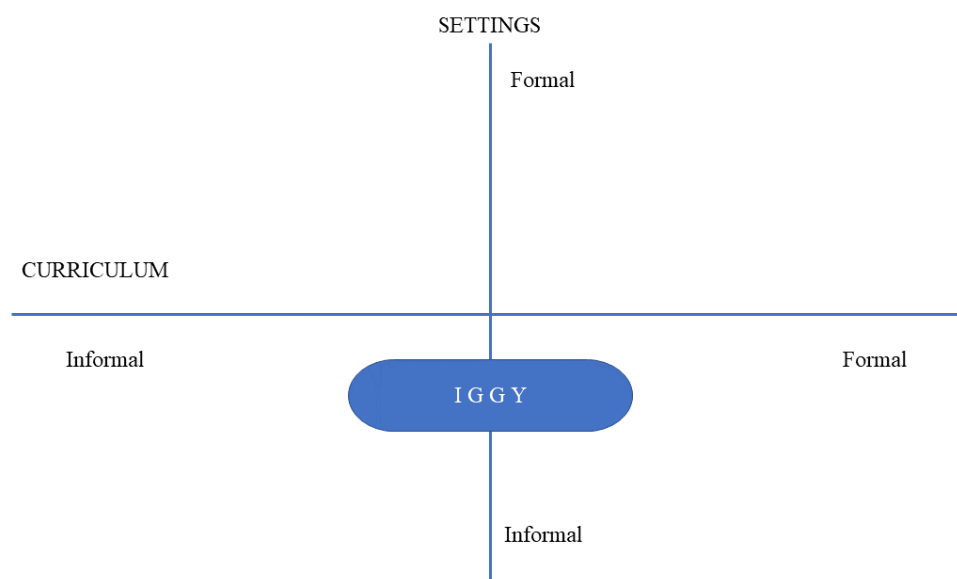
A useful starting point to the literature review is to repeat that IGGY was an online environment that offered access to both curriculum *related* (or curriculum *inspired*) content as well as social interaction on a variety of topics, academic and non-academic. Online educational resources that support discipline-based curriculum have been linked to the more conventional view of academic or ‘formal’ learning. While social interaction has a widely recognised role to play in this type of formal learning, it has also been linked to new kinds of learning.

Out of school or ‘not-school learning’ has been described as *informal* or *non-formal* learning and has commonly been defined ‘by the degree they vary from the norms derived from the common sense of schooling.’ (Sefton-Green, 2013, p. 16). In other words, definitions of informal learning are usually contrasted with formal learning, i.e. learning that is structured, planned, externally guided (e.g. by an instructor) and leads to curriculum knowledge and formal qualifications. Informal learning, on the other hand, is unstructured, unplanned, self-driven and interest-based (Czerkowski, 2016).

Categorising learning in formal vs informal has been contested on the grounds that it simplifies the complex multidimensional nature of learning, which in reality nearly always combines attributes of formality and informality (Colley, Hodgkinson and Malcolm, 2003; Greenhow and Lewin, 2016). For instance, Greenhow and Lewin (2016, p. 10) underline that

students may practise learning with formal, informal, and non-formal attributes across a wide range of contexts and exercise considerable authority over how they learn, when they learn, and with whom.

While acknowledging the intricate nature of learning and with no intention to downplay its complexity, I consider it useful to describe IGGY in terms of the types of learning that were on offer to show its hybrid character. To do so, I will draw on Sefton-Green's (2004) typology of the learning experiences (see Figure 2).



*Figure 2 Types of learning in relation to the setting and the curriculum. Adapted from Sefton-Green (2004).*

The typology consists of two continua that reflect the intentions (ranging from organised curriculum learning to unintentional learning) and the structure (ranging from formal environments such as schools to informal environments such as home) of the learning experiences. Four broad categories of learning experiences can be distinguished:

1. Curriculum learning in formal settings: The formal end of both continua signifies the learning that takes place in formal educational institutions.
2. Curriculum learning in informal settings: This grouping signifies the learning that occurs in informal settings but which relates to curricular led lessons, for example when students practise school subject content on the Bite Size educational pages of the British Broadcasting Corporation (BBC) website.
3. Non-curriculum learning in informal settings: On the informal end it is young people's everyday uses of digital and networked technologies which are not (or not perceived to be) related to what is taught in classrooms.
4. Non-curriculum learning in formal settings: This category refers to the kinds of informal learning that take place for example during break times at schools.

There are of course further categories located at different points along the two lines, such as the learning experiences gained during a museum visit. In this case, the visitor is at a semi-formal learning site and accesses resources and information that it is more easily associated with formal education and that is socially valued (Sefton-Green, 2004).

In light of the foregoing, IGGY can be understood as an informal setting which provided content and opportunities for both curriculum and non-curriculum learning

experiences. Its hybrid identity, then, situates the network in the cross section of the formal/informal intentions.

Following this short introduction, I continue by looking at the context in which the research took place and cover the debates surrounding the educational provision for gifted learners. This builds on early comments about the gaps in school provision, raised in the Introduction.

## **2.2 GIFTED LEARNERS**

As stated in the Introduction, the concept of giftedness is much disputed and it would not be hyperbole to say that full agreement on its definition could not be reached as it is highly dependent on temporal as well as cultural particularities and on what society chooses to value at a particular time (Sternberg, 2007; Kaufman and Sternberg, 2008). In the context of this study the term is used in line with the network's inclusive definition of its membership (i.e. anyone who would benefit from participation). In this respect IGGY was set up in the hope that it would provide a space that addressed gifted students' need for academic challenge and social interaction with others of like mind, in the belief that online interest communities offer members support pursuing specialist interests not usually accessible otherwise.

The rationale for the construction of IGGY can be understood by looking at debates on gifted education. Essentially, issues of egalitarianism versus elitism lie at the heart of these debates. On the one hand, educating the gifted has received criticisms as an elitist provision of advantages to those already privileged. Indeed, the very label has been linked to not only educational but wider societal inequalities (Borland, 2005). On the other hand, equality dictates that everyone is entitled to an appropriate

educational provision that meets their unique needs and disputes the idea that gifted students can or should be expected to succeed without support (ibid). Freeman's longitudinal comparative study of 210 gifted and non-gifted children in the UK showed that an education that suited their potential was, among other things, a determinant for a successful adult future (Freeman, 2013). Robinson (2003, p. 251) emphatically maintains that

Because of our failure to solve the inequalities of our society – the first wrong – we are allowing too many gifted students to be denied an appropriate education – the second wrong.

Brown and Wishney (2017, p. 31) encapsulate how political forces, historical events and public perceptions of gifted students define gifted education in the United States and abroad:

If the gifted student population is viewed as vital to human capital and thus national security, programming and funding follow. If serving gifted students is perceived as pulling resources away from the 'neediest' students it is viewed as elitist.

In practice there is considerable evidence that the needs of gifted students are not well met in many schools both in the UK (Eyre, 2011; Casey and Koshy, 2013) and the US (Gallagher, 2000; Robinson, 2003; Reis and Renzulli, 2010). In particular, many classes consistently fail to stimulate students intellectually: as Eyre (1997, p. 100) comments that 'it is possible for a school to be a good school for the majority of its pupils but not be effective in challenging its most able', even when schools have a particular focus on achievement (e.g. selective secondary schools). An important finding from a study that examined how primary and secondary school students perceived their all-day gifted programs was that, despite perceived benefits, the majority of students wanted more challenge and learning that exceeded what was



provided (Kitsantas, Bland and Chirinos, 2017). Furthermore, the authors noted that ‘the programs were not sufficiently fulfilling for the most advanced learners.’ (ibid, 2017, p. 281). Gallagher, Harradine and Coleman (1997) explored nearly 900 gifted students’ views on their science, language arts and social studies classes and found that half of them perceived the lessons as slow, boring and repetitive. More recently, Coleman, Micko and Cross (2015) analysed studies conducted over the past 25 years on gifted and talented students’ school experiences and noted a clash between the students’ characteristics and school life when the students attended non-specialist schools. This mismatch was realised in issues such as having to wait for others, not being challenged, resisting academic progression and bullying. Plucker and Callahan (2014) reported that absence of differentiation within the regular classroom is common, leaving advanced students’ needs unanswered. They added that when teachers do employ differentiation it is usually intended for low-performing students, based on the assumption that high-achieving students do not need it.

If the educational setting does not reflect their aptitudes, gifted students are thought to run the risk of feeling unmotivated and unchallenged. A consequence here could be subsequent underachievement, most commonly defined as ‘a discrepancy between potential and performance’ (Reis and McCoach, 2000, p. 153), a reluctance to stretch performance and to demonstrate giftedness (Coleman and Cross, 2005; Coleman, Micko and Cross, 2015), and even dropping out of school (Renzulli and Park, 2000). Coleman and Cross (2005) also suggest that academically gifted students are more vulnerable to potential conflicts in school and in the community while growing up, particularly if school culture feels ‘anti-intellectual’ in orientation. The conflict will manifest itself in both social relationships and the development of the student’s

identity. It seems that some gifted students struggle to find a balance between social acceptance and personal development. This can result in a variety of reactions including reinforcing one's strengths to suppressing them and social withdrawal, with the problem heightening during adolescence (ibid).

Creating challenge for gifted students is not a straightforward task especially for teachers who have not been trained in educating gifted students or who struggle to provide differentiated activities for a diverse student population (VanTassel-Baska and Stambaugh, 2005). Casey and Koshy (2013) found that making practical provisions for gifted and talented pupils was felt by teachers in England to be the most uncomfortable and uncertain part in their effort to adhere to the gifted education policy. This becomes more demanding when teaching students with extraordinarily advanced intellectual skills (Roedell, 1984).

At the same time, online learning has been discussed as an alternative to compensate for the lack of challenge found in a regular classroom (Wan and Howard, 2007).

Online programs that allow gifted students to access advanced material and to study independently, at their own time and pace, can cater for gifted students' academic needs (Wallace, 2009; Thomson, 2010). Drawing on student and parent evaluations and final grades, Wallace (2009) investigated the learning outcomes of school-aged gifted students who participated in an online program by Johns Hopkins University Center for Talented Youth. The students had enrolled in one of 54 different online courses in math, writing, science, language arts, computer science and advanced placement. The courses were led by instructors and interaction with students was mostly asynchronous. Students were given assignments and were awarded a final grade. The author asserted that the course was an effective learning experience in

several aspects: its length and intellectual challenge level; its suitability for different age groups; the instructors' effectiveness; the ease of installation, ease of use and overall effectiveness of the software as a learning tool; students' enjoyment and overall satisfaction with their academic experience; students' final course grades and interest in the subject after completion of the course. A recent review of the literature on online mathematics learning for mathematically gifted students found that 'This form of learning has proved to be effective in motivating students and maximizing their cognitive engagement in mathematical processes' (Fung, Yuen and Yuen, 2014, p. 119). Pyryt (2009) also argues that technology has the potential to accommodate intellectually gifted students by accelerating the pace of learning; supporting the development of higher-order process skills; allowing them to pursue areas of passion; facilitating product creation; and enabling interaction with intellectual peers. Similarly, Eriksson (2012) suggests that computer-mediated learning supports the cognitive development of gifted students at different levels, from mastering content through drill and practice to developing and communicating independent investigations of real problems.

Though online learning suits the needs of a variety of students, it appears to be a particularly good match for gifted students:

In line with the learning characteristics, gifted students are attracted to new technologies that cater to their drive for depth and complexity, the rapid pace of their learning, the inductive nature of the materials presented, the interdisciplinary focus and linkages, the open source materials available, the visual formatting and the exposure to the methods of practicing professionals. (Eriksson, 2012, p. 13).

The above argument is further strengthened by taking into consideration research that portrays gifted students as possessing attributes that are necessary when engaging in

online activities, such as commitment to task, persistency and being in control of the learning process (Wan and Howard, 2007). Related to these is the idea that high achieving students are intrinsically motivated to learn, able to work independently and to self-regulate their learning in an online environment (Wan and Howard, 2007; Thomson, 2010; Fung, Yuen and Yuen, 2014). Self-regulated learning (SRL) has received attention in the literature especially with reference to flexible learning environments such as IGGY and MOOCs (Wong *et al.*, 2019). Indeed, self-regulatory skills appear to be critical for successful learning even in more structured courses, such as higher education distance learning courses (Artino Jr, 2007; Artino Jr and Stephens, 2009) or the kinds of online learning school students have experienced during the ongoing pandemic (Carter Jr *et al.*, 2020). In general, SRL has been seen as problematic for younger students (Zimmerman, 2002). Yet, scholars from the field of giftedness and gifted education demonstrate a strong connection between gifted students and SRL (though some describe research findings in this area as inconclusive, e.g. Sontag, Stoeger and Harder, 2012). For instance, gifted students may use self-regulatory learning strategies more often than non-gifted students (Risemberg and Zimmerman, 1992) and some have already developed the ability to use these strategies in reading as early as fifth grade (Housand and Reis, 2008). Scholars have also stressed the importance of teaching these skills to gifted individuals who work toward excellence in a certain talent domain (Stoeger, Fleischmann and Obergriesser, 2015). Sontag and Stoeger (2015) claim that such training benefits all students, with immediate and long-term effects occurring for high-achieving students.

Further, an online environment could constitute a space for gifted students to socialise and interact, something that is considered useful for their sense of identity and motivation (Housand and Housand, 2012). As Housand and Housand (2012) argue, gifted students are not always fortunate enough to be physically surrounded by people with the same passions. Internet technology enables them to connect to social groups based on interests, to share thoughts and ideas and to develop feelings of belonging, acceptance, or social relatedness. Wan and Howard (2007) proposed that information communication technology (ICT) provides a space in which secondary gifted individuals, who might otherwise remain isolated and disconnected, can build a supportive, virtual learning community.

There seems to be, then, good reasons for creating a network such as IGGY for academically high achieving students. At the same time, the context of giftedness and online networks is under-researched (Thomson, 2010; Freeman, 2014) as are cases of networks with the hybrid character of IGGY.

In the next section I go on to, first, introduce the concept of social networks and how they have become a core component of young people's lives, and then I outline the different ways in which online social networks have been researched in relation to learning.

### **2.3 SOCIAL NETWORKS AND LEARNING**

Several definitions of SNSs have been proposed in the literature but many are built around the concepts of communication, interaction and collaboration (Akçayır and Akçayır, 2016). Park et al. (2014, p. 97) define SNSs as

web-based services or communities that emphasize Internet-based interactions grounded in social relations. This technology normally consists of user

profiles, social network links and several additional functions such as e-mail, instant messaging with multimedia and group discussion.

Ellison and boyd (2013, p. 158) suggest a definition that identifies social exchanges (i.e. communication and content/information sharing) as the primary reason for using the sites:

A social network site is a networked communication platform in which participants 1) have uniquely identifiable profiles that consist of user-supplied content, content provided by other users, and/or system-level data; 2) can publicly articulate connections that can be viewed and traversed by others; and 3) can consume, produce, and/or interact with streams of user-generated content provided by their connections on the site.

A further definition is given by Greenhow and Askari (2017, p. 625) who describe SNSs as ‘Web-based services through which individuals can maintain existing ties and develop new social ties with people outside their network.’.

Typically, SNSs provide possibilities for various levels and modes of engagement and interaction with people and content. For instance one may choose to have a private account (i.e. only approved followers or friends can see posts) and an invisible presence in the network in contrast to someone who may opt for a public account and a strong online presence by generating content regularly freely viewable. The purposes of the networks also vary – for example, social, commercial, educational, or a mix, as well as their membership in that there exist tight, closed networks as well as loose, open ones alongside all sorts of hybrid such as IGGY which feels open but is tightly controlled and open networks which feel very closed.

SNSs constitute an important part of many young people’s lives and there has been growing research interest in why they go online and exactly what they are doing (for example see research by the MacArthur Foundation and the EU Kids Online

network). Findings from the latest large scale survey by the EU Kids Online network of 9-16 year-olds in 19 European countries show that visiting SNSs is a common daily practice in most of the countries though note that in Spain, France, Germany and Malta a considerable proportion of respondents never or hardly ever visit a social network (Smahel *et al.*, 2020). Participation in networks can be friendship and/or interest-driven (Ito *et al.*, 2008). Friendship-driven networks are formed by people who often know each other in person through for example school, clubs, the neighbourhood, church etc. and use the networks to sustain or deepen these friendships. Interest-driven networks connect people with shared specialised interests or other characteristics, for example leisure (e.g. gaming communities), solidarity (e.g. feminist or expatriates groups), group interests (e.g. teachers or authors). Merchant (2012) differentiates between sites in which social networking develops around a specific activity (e.g. Flickr, a photo and video sharing community that provides its members networking options) and those sites that are specifically created to initiate or maintain social relationships and interaction (e.g. Facebook). In these 'networked publics' (boyd, 2008) youth activity varies from socialising or *hanging out*, *messing around* with the content and the operating of the technology and media, or *geeking out* with a strong commitment to obtaining deep knowledge and expertise in an area of interest such as gaming (Ito *et al.*, 2008). Through these practices, many teens access participatory cultures (Jenkins *et al.*, 2006) in which they do not only consume media content but also become media producers, or 'produsers' (producer + user) (Guerrero-Pico, Masanet and Scolari, 2019), e.g. by creating blogs or webpages, posting original work or editing online content.

Social networking practices have been investigated in many different ways e.g. social psychology has reported on internet addiction and tended to look at more extreme and disturbing use; sociologists have explored notions of community (e.g. Santos and Hammond, 2007); technologists have explored properties of media (e.g. Chung and Paredes, 2015). Overall in education there has been a largely cautiously optimistic approach, e.g. Livingstone (2012, p. 19) concomitantly acknowledges ‘the apparently unlimited capacity of ICTs, especially the internet, in terms of information and educational potential’ and the shortage of strong evidence in support of such claims. Not surprisingly there is a large literature on online presence in formal learning (e.g. Gunawardena and Zittle, 1997; Rourke *et al.*, 1999; Tu and McIsaac, 2002; Richardson and Swan, 2003; Swan and Shih, 2005; Sung and Mayer, 2012) and its impact on learning. There is also considerable interest in blended learning (Horn and Heather, 2011) with the term becoming mainstream ‘to describe the use of learning management systems as a complement to campus education and the use of digital technology in K-12 classrooms’ (Hrastinski, 2019). The flipped classroom, a particular type of blended learning, appears promising and is gaining popularity, notwithstanding the challenges it poses (Akçayır and Akçayır, 2018). In short, the idea of flipped classrooms is that teaching activities traditionally delivered in school (e.g. presentation of content knowledge) are carried out at home by students themselves, allowing for more meaningful and student-centred activities to take place in class (e.g. problem-solving, discussion, deeper exploration of topics, hands-on activities and so on). As a result, a number of studies report improved ‘student attitudes, motivation, interest, self-efficacy and overall engagement’ (Bond, 2020, p. 30).



In formal learning the literature focused more on HE, and to some extent further education, than in schools (Manca and Ranieri, 2013, 2016; Van Den Beemt, Thurlings and Willems, 2020). This is probably because much teaching in HE institutes takes place in front of very large numbers of students and there is relatively infrequent face-to-face contact with tutors. Many learners are at a distance from their institution and learners are expected to show the self-motivation that would lead them to access materials and discussion of their own volition. HE institutes may, in addition, have specialist technology support services (Hammond, 2010b; Younie and Leask, 2013). Further, as these technologies are viewed as primarily social, their educational potential might not be realised by teachers and schools (and indeed students themselves), thus leading to the implementation of strict regulations or even banning of their use from the school setting (Clark *et al.*, 2009). Such restrictions inevitably cast schools as sites of ICT restriction rather than ICT exploration, limiting instead of broadening the range of activities students can engage with (Selwyn, Potter and Cranmer, 2009).

Nonetheless, there is a literature on learning platforms for schools (e.g. Jewitt, Clark and Hadjithoma-Garstka, 2011; Younie and Leask, 2013) which does point to an opportunity for extending learning through access to material and types of discussion which would not be available within the confines of the school classroom. There have, further, been attempts to create institution wide learning communities which have shown to have an indirect impact on students' learning by enhancing the depth and breadth of their social relationships, namely their bridging and bonding social capital. Simply put, bridging capital describes distant connections (e.g. friends of friends) between people from different backgrounds while bonding capital describes

close relationships (e.g. between friends or family members) between people with similar backgrounds. An Italian study (Tomai *et al.*, 2010) compared the levels of social capital of two groups of high school students, one that belonged to the school's online community and one that did not, and found that members of the community had higher levels of social capital. Members developed more a sense of belonging to both their school and the wider community, had increased interest in their school and were keener to support its activities. They also felt more emotionally and practically supported by people in their school.

Finally, and not least important, young people have created their own networks using Facebook and other social platforms, with an increasing number of recent studies exploring their pedagogical and other potential. From my review of the literature I have identified two main themes, the first being that new conceptions of learning have emerged, and the second being that much of this learning remains separate from institutionalised learning. It is in this context of out-of-school learning that I now turn to.

## **2.4 OUT-OF-SCHOOL NETWORKED LEARNING**

In a critical appraisal of the historical developments in learning theories vis-à-vis technology, Lowyck (2014, p. 3) documents an evolution

from individual toward community learning, from content-driven learning toward process-driven approaches, from isolated media toward integrated use, from presentation media toward interactive media, from learning settings dependent on place and time toward ubiquitous learning, and from fixed tools toward handheld devices.

Studies on out-of-school networked learning have been framed by a prevalent theoretical approach to informal learning, namely learning-as-participation in a

community (Sfard, 1998). There are several definitions of community but a key to many is the idea of belonging, a sense of being related to others and feeling that one's participation matters to others (McMillan and Chavis, 1986). There is a further sense that a community may address its members' needs and interests through sharing, so that each member will gain something of value that could not be easily achieved individually. A sense of community has been commonly seen as positive and beneficial, in some cases insofar as if this sense 'is threatened, the prospect of leading rewarding lives is to a greater or lesser extent diminished.' (Puddifoot, 1996, p. 327). The concept of a learning community in particular has been associated with cognitive, affective, behavioural and social gains for their members (Tinto, 2003; West and Williams, 2017). The term 'cognitive' is used to refer to the enhancement or acquisition of new knowledge and skills pertaining to a particular domain of knowledge. 'Affective' relates to learners' feelings and emotions such as satisfaction and enjoyment gained within a learning community. 'Behavioural' signifies the development of behavioural skills such as engagement with the content, the practices and the people in the community, completion of tasks etc. 'Social' refers to members' interactions and the development of relationships that bring about benefits for both the individual (e.g. they further their participation) and the community (e.g. they enable its creation and sustainment).

A seminal contribution in this area is the work of Wenger on communities of practice (CoP). Though the concept of CoP was originally developed to describe offline organisational and workplace learning (Wenger, 1998), with the advent of networking technologies it has found wide applicability in research on online communities and the learning that takes place within them. CoP are defined as 'groups of people who

share a concern or a passion for something they do and learn how to do it better as they interact regularly.’ (Wenger-Trayner and Wenger-Trayner, 2015, p. 1). Learning in such a community is situated in social practices and tied to the specific contexts in which it occurs (Lave and Wenger, 1991). As members become committed to the community and its domain of interest, they endeavour to improve individually and collectively through learning from each other. Learning is also fundamentally connected to identity construction and negotiation, to ‘becoming a certain person – a knower in a context where what it means to know is negotiated with respect to the regime of competence of a community.’ (Wenger, 2010, p. 181).

The idea of CoP challenges people’s traditional understanding of learning as something happening in schools and other formal institutions. A widely held conception of learning in these settings is the internalisation of knowledge following instruction by a more knowledgeable other (i.e. the teacher). The CoP perspective provides another way of conceptualising the process and outcomes of learning. A CoP calls for participation in a process of collective learning (Wenger-Trayner and Wenger-Trayner, 2015); this means that learners are not merely receivers of knowledge but engage actively in its construction by taking part in discussions and deliberating meanings with others in the community. In a CoP learning is, thus, not limited to the less knowledgeable but to everyone in the community. Members learn together through their interaction and develop a shared competence that distinguishes them from people outside the community.

The concept of community has been used interchangeably with other concepts including networks, however, a number of scholars differentiate between the two (e.g. Reich, 2010; Wenger, Trayner and de Laat, 2011; Hammond, 2017) or use weaker

terms such as ‘community minded’ to describe attitudes and experiences of online participation (Santos and Hammond, 2007). Communities vary and can be weak or strong or, as is often the case, contain a mix of strong and weak characteristics, but they insinuate a minimum level of interaction, commitment and connection (Hammond, 2017). In contrast, it has been suggested that typical individual use of SNSs resembles networked individualism rather than embodies a sense of community (Reich, 2010). Reich (2010) investigated adolescent uses of MySpace and Facebook and found that they lacked important characteristics that would generate commitment and attachment to a group, namely a sense of membership; influence on and by the community; integration and fulfilment of needs; shared emotional connection; and immersion in the community. On the other hand, Wellman, Boase and Chen (2002, p. 161) consider networked individualism to be a fundamental transformation in the nature of community with

each person operating a separate personal community network and switching rapidly among multiple sub-networks. In effect, the Internet and other new communication technology are helping individuals to personalize their own communities.

Whatever the case, research on networked learning in informal contexts, be it networks or communities, celebrates what can be learnt in these spaces which is, for the most part, not covered or covered well in school and how it can be learnt, i.e. in ways which are unusual in school.

One major form of informal learning identified in the literature is engagement in identity work (boyd, 2008; Ito *et al.*, 2008; Livingstone, 2008; Greenhow and Robelia, 2009; Livingstone, Mascheroni and Murru, 2011). SNSs and their particular technological affordances allow experimentation with ‘risky opportunities’ for

negotiation of identity, self-presentation and peer relations (Livingstone, 2008, 2014). Drawing on her ethnographic work with American teenagers who used MySpace, boyd (2008) contended that young people need access to both unmediated (i.e. offline) and networked publics (such as SNSs) to be socialised into society and to mature. Research on under-represented or marginalised groups suggests that online communities or social networks can have a positive impact on identity formation and empowerment. Cole et al. (2011) reflected on how an online community of women with disabilities constituted a safe place for them to be themselves, to share experiences and ideas, discuss concerns and problems and address life's challenges. In one study, high school students from low-income families in the US were found to use a social network to discover and construct their identity and while doing so they also developed digital competencies (Greenhow and Robelia, 2009). Another study that focused on this particular group of young people reported benefits deriving from participation in SNSs such as 'greater access to information, emotional support, peer feedback, and reinforcement of a college-going identity' (Greenhow and Burton, 2011, p. 241).

Other examples of informal learning have been provided by research on shared interest groups and hobby communities. Research on game fan communities, for example, depicts how video gamers inhabit 'affinity spaces' in which learning is 'distributed across many locations, people, and practices' and 'the goal of teaching and learning is to develop skills that allow them to solve the particular sorts of problems that matter to the group.' (Gee, 2018, p. 8). This is echoed in a growing body of research that has looked into youth's creative media production and engagement in DIY (Do It Yourself) learning communities (Kafai and Peppler, 2011).

Such communities support members in making and distributing their own media artefacts including, for instance, fanfiction writings and art (Chandler-Olcott and Mahar, 2003; Black, 2009; Manifold, 2012; DeLuca, 2018), ‘machinima’ – animated movies with the use of computer game software (Lowood, 2008), and a diverse range of projects such as videogames, music videos, interactive art etc. created with a programming language (Peppler and Kafai, 2007). Young people move between these online communities and affinity groups to acquire and/or share knowledge that is ‘in the service of something beyond itself’ (Gee and Hayes, 2012, p. 147), i.e. it is not about learning content per se but in using it for decision making and problem solving. Participation in these interest-based communities facilitates youths’ DIY practices and supports their development of technical, critical, creative and ethical competencies (Kafai and Peppler, 2011), or to use a term recently proposed, their ‘transmedia skills’,

a series of advanced competences related to digital interactive media production and consumption [that] range from problem-solving processes in videogames to content production and sharing in web platforms and social media, as well as narrative content (fanfiction, fanvids, etc.) produced in digital networks. (Scolari *et al.*, 2020, p. 270).

A number of recent studies conducted as part of an international Transmedia Literacy project focused particularly on identifying the transmedia skills teenagers (12–18 years old) use and how they acquire these skills outside formal educational establishments (e.g. Guerrero-Pico, Masanet and Scolari, 2019; Masanet, Guerrero-Pico and Establés, 2019; Pereira, Fillol and Moura, 2019). The overarching goal of the project is to make pedagogical suggestions for the incorporation of these skills and learning strategies into the classrooms. This is part of a wider argument about the need to connect classroom-based teaching and learning with students’ out-of-school

everyday interests, experiences and environments to bridge the educational, cultural and technological gap between the lives of young people inside and outside the classroom. The following section discusses previous work that introduced informal learning into the school context.

## **2.5 NETWORKED LEARNING IN SCHOOL**

This section discusses how the above interest in community, identity and learning has spilled over into formal contexts. However, education researchers' interests go beyond the idea of community but want to link community activity with knowledge building in a way sociologists of community do not. In other words, academic interest has expanded from the concept of CoP as a naturally occurring phenomenon to one that can be deliberately created and cultivated through technology platforms (Hoadley, 2012). This highlights the educational implications of importing informal conceptions of learning into the school setting and places emphasis on planning and designing appropriate environments and structures for such learning to happen. Facer (2012) advocates that schools should be reimagined as spaces that bring together formal education, informal digital learning and other out-of-school lived experiences, or else we might witness the de-institutionalising of education. However, attempts to 'radically' transform curriculum learning by bringing the digital cultures of young people into the school setting have been proven difficult as they are framed by long-standing and enduring cultures of schooling (Morgan, 2011; Hammond, 2014). Meanwhile, others suggest that social media is merely a place for socialisation (e.g. Gosper, Malfroy and McKenzie, 2013) or that it might be best to keep students' informal practices behind-the-scenes (Selwyn, 2009). I further explore the difficulties



in integrating the official knowledge of the curriculum and the informal social media practices of young people later in this chapter.

In educational technology research the shift towards a new schooling is reflected for example in the idea of CSCL and knowledge building (e.g. Gunawardena, Lowe and Anderson, 1997; Scardamalia and Bereiter, 2006, 2003; Salmon, 2004; Schrire, 2006; Stahl, Koschmann and Suthers, 2006; de Laat *et al.*, 2007; Garrison, Anderson and Archer, 2010; Salmon, Nie and Edirisingha, 2010; Goldman and Scardamalia, 2013; Hong and Scardamalia, 2014; Lucas, Gunawardena and Moreira, 2014; Chen, Scardamalia and Bereiter, 2015). This work has produced models and schemata to describe the development of collective and individual knowledge construction through social participation. For instance, the Community of Inquiry framework posits that three overlapping elements, namely cognitive, social and teaching presence, need to be ‘present’ for an online community of inquiry to develop in CSCL environments (Garrison, Anderson and Archer, 2010). Gunawardena, Lowe and Anderson (1997) devised the Interaction Analysis model consisting of five phases to examine collaborative knowledge construction in computer-mediated conferencing. The model is now being used in different types of communication tools to analyse the content of asynchronous discussions and assess their quality (Lucas, Gunawardena and Moreira, 2014). It progresses from lower levels of thinking (namely sharing and comparing of information and cognitive dissonance) to higher levels of thinking (namely negotiation of meaning and co-construction of knowledge, testing and modification of tentative constructions, agreement and application of newly constructed meanings) with each phase containing a set of learning processes. Salmon (2004) created a five-stage model for successful online courses that takes e-learners

and e-moderators through a structured developmental process from access and motivation to online socialisation, information exchange, knowledge construction and, finally, knowledge development. The model was found to be applicable in both text-based asynchronous environments and a 3D social software application (i.e. Second Life), notwithstanding differences as a result of the characteristics of each environment (e.g. in Second Life discussions resembled face-to-face communication) (Salmon, Nie and Edirisingha, 2010).

Apart from the analysis of discussions held in forums which usually belong to institutional online platforms, the employment of mainstream social media sites for teaching and learning has featured in the literature. In recent years a number of reviews of studies on the educational use of open social technologies have been published, with several focusing on a specific platform such as Facebook (Aydin, 2012; Manca and Ranieri, 2013, 2016; Chugh and Ruhi, 2018) or Twitter (Aydin, 2014; Tang and Hew, 2017), while others investigated a selection of platforms (e.g. Manca's (2020) study of Instagram, Pinterest, Snapchat and WhatsApp) or social media in general (Tess, 2013; Stewart, 2015; Greenhow and Askari, 2017; Van Den Beemt, Thurlings and Willems, 2020). The reviews outline the potential benefits of appropriating these technologies into learning contexts. For instance, the integration of social media in the classroom offers students opportunities for: authoring to larger and interactive audiences and developing traditional and new literacy practices (Stewart, 2015); mixing information and learning resources, interacting with external learners and professionals and blending academic and social contexts of learning (Manca and Ranieri, 2013, 2016); better academic performance, peer collaboration and reciprocal learning (Tang and Hew, 2017). The studies included in Greenhow's

and Askari's (2017) literature review of educational uses of SNSs in secondary education reported improvements in creativity; new literacies and language learning; student engagement with subject content; student-student and teacher-student communication; academic collaboration; and the quality of work produced.

The above examples show that educators and instructional designers can indeed provide deliberate support and foster online learning networks and communities, and technology seems to be a viable means by which to achieve this. This work has been very useful in many ways including calling attention to the content of discussions, patterns of interaction, instructional conditions and the technological affordances that might support an educationally valuable computer-mediated discourse. However, the efficiency and effectiveness of social technologies to facilitate and enhance learning is contested (e.g. Tess, 2013; Selwyn, 2016) and research shows that their affordances remain underexploited by educators (Manca and Ranieri, 2016). Here it is useful to think about affordance as opportunities which only come into play once they are perceived and acted upon (see the discussion in Hammond, 2010a). Additionally, there have been challenges and methodological issues in researching learning in online contexts, regarding for example validity of knowledge claims and finding evidence of learning 'lying in' discussion threads (Naidu and Järvelä, 2006; Hammond, 2015), or extolling the benefits of social interaction at the expense of quiet participation (also referred to as lurking) (Pena-Shaff and Nicholls, 2004; Wise, Hausknecht and Zhao, 2014).

Besides the aforesaid, the conception of learning as a social process is not without controversy. For instance, as with CoP, in knowledge building communities learning is understood primarily as developing through social processes along the lines of

knowledge created within work contexts (Bereiter and Scardamalia, 2014). CSCL environments are designed primarily to encourage and support interaction among learners, as opposed to tools that promote individual work or even cooperation (Stahl, Koschmann and Suthers, 2006). According to Bereiter and Scardamalia (2014, p. 37), in both educational and organisational settings the principal aim is the intentional advancement of knowledge for the benefit of the group, with individual learning being a ‘by-product’. In contrast, formal education is mainly interested in the individual learner and is bounded by national curricula and assessment, contributing to the development of tensions between the traditions and demands of schooling and students’ out-of-school cultures (Crook, 2012).

Apart from attempts to apply informal learning practices in formal institutions, a small part of the literature has looked at promoting curricular topics in out-of-school social networks. The following is a discussion of this research.

## **2.6 BRIDGING INFORMAL AND FORMAL LEARNING OUTSIDE SCHOOL**

Of particular relevance to this study is a small body of literature concerned with online environments that bridge formal and informal learning by providing students a ‘third space’ (Aaen and Dalsgaard, 2016) between social life and formal schooling. Aaen and Dalsgaard (2016) make a distinction between SNSs as ‘first’, ‘second’ and ‘third’ spaces: the first space is constructed when formal institutions employ SNSs for educational purposes; the second space signifies the personal (non-institutional) use of SNSs; the third space emerges in the boundaries and enables the merging of discourses from the other two spaces. Accordingly, the authors used a mixed methods approach to examine the social and academic interactions taking place in six Facebook groups created and managed by students in secondary schools in Denmark

with no participation from teachers. Drawing on data from a survey, group interviews and content analysis of posts and comments they concluded that Facebook groups acted as a third space in which students' communication focused on 'school life', a blend of social and schoolwork topics.

Greenhow and colleagues (Greenhow, 2010; Greenhow, Gibbins and Menzer, 2015; Greenhow and Lewin, 2016) investigated young people's (aged 16–25) voluntary participation in a social networking application in which they discussed environmental science and climate change issues. The application was hosted within Facebook and shared similar characteristics with IGGY, for example it offered offline and online challenges, facilitated user-generated content in addition to content provided by an external partner, enabled users to read and comment on others' contributions, as well as to create profiles and navigate the profiles of others. Findings indicated that participants' developed their scientific literacy through debating about socio-scientific issues and pointed to the network's potential to function as a third space where participants moved beyond 'socializing to debating socio-scientific issues of common interest, collaboratively pursuing civic actions, and networking related to their school- or career interests.' (Greenhow and Lewin, 2016, p. 22).

Pratt and Back (2009, 2013) examined secondary school students' discussion boards on NRICH (<https://nrich.maths.org/>), an online environment for students to discuss mathematical topics. Like IGGY, NRICH aimed to provide learning support for high ability students through problems, puzzles, articles, games as well as an electronic answering service managed by university mathematics students, albeit exclusively around mathematics (Jones and Simons, 1999). Participation in NRICH can be understood as

participation in a ‘research’ community of mathematicians *doing* mathematics together on the discussion boards, but also as a move from learner to teacher within a community of ‘school’ mathematics teaching and learning *about* mathematics.’ (Pratt and Back, 2009, p. 128, emphasis in original).

In other words, NRICH constituted a virtual learning environment which offered opportunities for users to advance their learning of mathematics in both the scholarly and the participatory view of learning.

Another study (Lantz-Andersson, Vigmo and Bowen, 2013) that bears similarities to the above and to my own examined interactions in a private Facebook group for English-learning students aged 13 to 16 from Colombia, Finland, Sweden and Taiwan. Students were introduced to the group by their teachers in order for them to communicate with other learners of English but joining and participating in the group was voluntary. In addition, interactions took place mainly after school and the postings were not quantified or assessed by the teachers. Discussion topics were originally introduced by the researchers but students were also urged to introduce their own. The authors concluded that Facebook served as an extended space where students could combine their language learning in schools and their everyday communicative uses of language.

In their book on effective teaching in gifted education Robinson and Campbell (2010) discuss the efficiency of an online reading group as a learning environment for high-achieving secondary students in England. They give an account of the teaching and learning in the group as experienced and perceived by the academic who convened the group and present the lessons learnt during the oversight of this online learning environment. The online reading group was part of a broader range of activities provided to gifted and talented students by NAGTY. NAGTY was a government

initiative and was, in a sense, IGGY's predecessor as it was hosted by the University of Warwick. This particular group operated in a way that was similar to the debates in IGGY, but confined to one subject, i.e. literature. It was set up for students to read and discuss literary content and to interact with an academic from the University specialising in English literature and a tutor who was facilitating and monitoring the discussions. Each month the group discussed two novels set by the academic but the students could also engage in 'chat' threads as well as establish threads themselves. The two novels selected for the monthly discussions were taken from a reading list published in the forum six months in advance. Efforts were made to cater for the wide age and ability range of the membership, specifically one novel targeted the younger age group and those less advanced at literary studies and the second novel targeted the older or more advanced students. The reading group run on an existing University software (i.e. Warwick Forums) designed for adult users. This was recognised by the authors as a limitation of the project as the environment was 'austere in appearance and compelled in a linear, monological approach' thus 'not the most appropriate technology to foster a community of young readers.' (Robinson and Campbell, 2010, p. 120).

As in IGGY, participation was optional and members could engage as much or as little as they wished. Accordingly, the most distinctive characteristic of the online group was its hybrid character. The authors describe this as follows:

From the beginning, the reading group developed a hybrid identity. Because of the cultural popularity of reading groups, many of the students would have had preconceived ideas about being a member of such a group before joining. The term conjures up images of socialising with others who share similar interests and suggests informal learning. Yet, because of NAGTY's national status, combined with the way the reading group had been labelled an 'academic

study group', more formal images and associations were also attached to it. (Robinson and Campbell, 2010, p. 120).

This combination of fun and academic content was thought to provide for both cognitive challenge and a response to the students' interest in socialising with other members in the community. In fact, to the convener, participation in more fun and social threads allowed learners to achieve more explicit educational objectives as it fostered a sense of community, encouraged students to take on a more active role in the group and improved their critical and communication skills. This led the convener to suggest that informal threads could provide a place for students to develop their voice and confidence before engaging with the more formal educational content.

Taken together, the present studies suggest that there is value in participating in third or extended spaces between formal schooling and social life. Greenhow and Lewin (2016, p. 24) summarise the affordances of third spaces to purposefully integrate formal and informal learning and

facilitate the kinds of social–academic resources that support students towards becoming educated and fully contributing societal members. These include providing students opportunities to: meaningfully connect with peers; receive prompt feedback on content-related questions or performances; use peers as mentors; derive enjoyment from belonging to something larger than themselves; encounter diverse perspectives; and apply formal schooling (e.g., technological literacies, writing strategies) to tackling meaningful socio-scientific issues in their lives.

## **2.7 COUNTER PERSPECTIVES**

The above convey a positive image of the educational value of social networking in informal, formal or hybrid contexts. However, counter perspectives also exist and concerns about youth's social media use are not uncommon, albeit these concerns are not limited to young people. There is for example much reporting of uncivil and low



quality discourse on the comments section of news websites or their respective social media sites (Coe, Kenski and Rains, 2014; Springer, Engelmann and Pfaffinger, 2015; Ziegele and Jost, 2016); negative feelings caused by online social comparisons (Lee, 2014; Verduyn *et al.*, 2017); promoting narcissism (Mehdizadeh, 2010); selective exposure to information and confirmation bias (Knobloch-Westerwick, Mothes and Polavin, 2020) and, relatedly, the formation of polarised groups, i.e. ‘echo chambers’ (Del Vicario *et al.*, 2016) which challenges the view of online networking as enabling exposure to different perspectives and opinions. There is further the possibility that the internet expands choice in ways that enable many adolescents to avoid involvement with civic and political issues altogether (Kahne *et al.*, 2012) and that use of SNSs such as Facebook leads to entertainment-oriented rather than political participation (Theocharis and Quintelier, 2016).

Meanwhile, there is still considerable ambiguity with regard to learning with technology both in (e.g. Castañeda and Selwyn, 2018) and outside school (e.g. Merchant, 2012). A key problem with much of the literature on informal learning is that it has mainly concentrated on passionate and devoted engagement with technology whereas reality is less impressive and far from what the ‘evangelists’ of technology speak of, ‘characterized not by spectacular forms of innovation and creativity, but by relatively mundane forms of information retrieval.’ (Buckingham, 2013, p. 92). A recent study (Guerrero-Pico, Masanet and Scolari, 2019) found that it is far more common for teenagers’ ‘produsage’ of media content to be casual, characterised by simple production processes, than expert, i.e. characterised by complex production processes. This resembles findings from an earlier study (Ito *et al.*, 2008) that showed the majority of youth to hang out than geek out online.

Moreover, there is evidence that non-education related uses of SNSs can negatively affect young people's academic achievement (Kirschner and Karpinski, 2010; Junco, 2012; Salomon and Ben-David Kolikant, 2016). For instance, Kirschner and Karpinski (2010) and Junco (2012) found that university and college students' use of Facebook was negatively related to their grade point averages. A study by Salomon and Ben-David Kolikant (2016) reported similar findings for Israeli high-school students, i.e. the students perceived their non-academic use of ICT to negatively affect their academic scores.

Besides the above, over the past decade a considerable critical literature has grown up around the use of commercial platforms in education (Castañeda and Selwyn, 2018; Dijck and Poell, 2018). Critics have cast doubt on the suitability of commercial SNSs such as Facebook in cultivating debate and disagreement, and therefore learning, due to commercial imperatives underlying their construction and functioning (Friesen and Lowe, 2012). Going further, Dijck and Poell (2018) highlight three potential implications from the ongoing 'platformization' of education:

First, educational platforms tend to subjugate their pedagogical principles to social media mechanisms; second, the efficacy of educational software and data tracking systems in schools and universities have so far been poorly tested but are nevertheless presented as much-needed fixes to outdated educational institutions; and third, the incorporation of online education in a global world of commercial high- tech platforms may transform the notion of education as a public good. (Dijck and Poell, 2018, p. 587).

Scholars also caution against uncritical claims of the impact of social technologies on a transformational shift in education and the technological determinism surrounding educational technology discourse (Hammond, 2014; Selwyn, 2016). Despite optimistic claims there are considerable barriers in bringing about change in schooling

through the use of new technology both at the school level and the individual level (Hammond, 2014). Factors including school culture and policies, teachers' and students' attitudes, organisational and technical support and teachers' professional training make it difficult to make use of the full potential of social media (Van Den Beemt, Thurlings and Willems, 2020).

A consequence of the limitations described above is the fact that the integration of social networking applications in the school setting is often done in a way which is divorced from students' everyday practices thus leading to frustration and dissatisfaction (e.g. Crook, 2012; Mao, 2014). Like others, Livingstone (2012) commented that schools have been quick in updating their technological infrastructure yet slow in changing their pedagogic practices. A study on high school students' perspectives about social media use in education found that 'The current uses of social media in a formal learning environment are not only limited in the frequencies of use, but also in the shortage of meeting the students' expectations.' (Mao, 2014, p. 221). Though the majority of students in the study were positive about the idea of using social media for learning, they expected more personalised and socialised uses of these tools than the ones currently adopted in schools and which mainly relate to assignment submission and grades management. Crook (2012) interviewed secondary school students aged 13 and 15 about the use of Web 2.0 services in and out of school and identified incompatibilities reflecting different ambitions and expectations between in-school and out-of-school cultures. Specifically, Web 2.0 opportunities for inquiry, collaboration, publication and literacy were perceived and performed differently within the two settings leading students to feel their participatory practices were taken out of context when imported in school.

Finally, despite the widely held assumption that students welcome or even desire the adoption of social media in education, some studies have found contradictory results. For example, research on the use of Facebook by university students shows that the site's popularity for social networking does not spill over into an endorsement for its appropriation into formal learning (Madge *et al.*, 2009; Selwyn, 2009; Jones *et al.*, 2010; Prescott, Wilson and Becket, 2013). In a study by Jones *et al.* (2010) students attending four universities rejected the use of social software for learning and studying. They perceived institutional web-based platforms to be appropriate for these purposes, whereas SNSs were perceived as suitable for use in their personal social spaces. Their views were predicated on the idea that learning/studying is separate from social life, alongside other practical considerations (e.g. confusion over originality and copyright of material, time constraints and concerns about information overflow) and dissatisfaction with current uses of technology by lecturers. A similar study by Madge *et al.* (2009) investigated how first year undergraduates used the university's Facebook network for social and academic reasons. The authors concluded that Facebook was first and foremost used as a social tool and less for learning purposes. Notably, when it was used for education, it was for informal learning tasks. In another study (Manca and Grion, 2017) conducted with secondary school students it was found that students were reluctant to participate in a Facebook group for school-related issues, even though they were already familiar with the site. A recommendation that emerged from the study was that the most appropriate digital space to foster young people's participation is not necessarily one they use in their social life.

Along the same lines, the literature on third or extended places presented in the previous section describes challenges in marrying school work and social life, many of which occur because the two settings have a different logic and framing (Lantz-Andersson, Vigmo and Bowen, 2013; Greenhow, Gleason and Li, 2014). In the study by Lantz-Andersson, Vigmo and Bowen (2013) that investigated English language learning in a private Facebook group, boundary crossing between the two settings proved an elaborate endeavour that required a reconstruction of the roles and expectations of both students and teachers. Specifically, the impact of schooling on students was evident at first, as when online they continued to abide by the conventional school practices and act as students who carried out individual school tasks. This suggests that they originally perceived the online group as a replica of an offline class and, thus, had to gradually and collaboratively

negotiate what it means to be a student in this boundary activity, finding new ways of framing, engaging in impression management and conforming their textual representations to the teachers' expectations (Lantz-Andersson, Vigmo and Bowen, 2013, p. 310).

From the instructors' perspective, there was a need to communicate to students what kind of participation and language use could be regarded apt in this space and establish the right balance between the practices of schooling and young people's out-of-school social media practices. In view of the above, the authors commented on the difficulty to design but also maintain such social spaces departing from an educational perspective and concluded that when bridging formal and informal practices interactions 'have to be deliberately and dynamically negotiated by educators and students to form a new language-learning space with its own possibilities and constraints.' (Lantz-Andersson, Vigmo and Bowen, 2013, p. 310).

Similar challenges were noted in Robinson's and Campbell's (2010) study of an online reading group of gifted and talented students introduced earlier. In this case, to keep the group going the convener had to make constant adjustments in response to the group's culture and dynamics, with several adjustments seen as diverging from the original organisation and objectives set for the group. For example, at the outset of the project the academic's expectations and accordingly her contributions and instructional techniques had been overtly educational and formal, bearing resemblance to university level teaching. The academic would preselect the texts to be discussed by the group, write comprehensive posts to introduce students to the topic and set questions. On the other hand, most students appeared to incline towards the more informal and communicative opportunities afforded by the environment. They engaged in more social topics e.g. about their favourite books, and even when they contributed to the academic's threads they deviated from the set questions. The academic reflected on this tension:

My preconceptions about 'giftedness' together with what constitutes challenging reading, had influenced my pedagogy and obscured my grasp of the students' needs. They also hindered me from recognising the distinctiveness, along with the transformative potential, of virtual learning. Accordingly, by altering my vision and recognising the importance of the students being granted the space to define the group's identity and objectives, it became a different place to the one I had originally envisaged – one that was far more collaborative, fluid and informal (as cited in Robinson and Campbell, 2010, p. 119).

It is evident from the quote that the academic had to alter many of her preconceptions in response to the aforementioned discrepancies. A more conversational and less teacherly style of communication as well as a less rigid idea of what constituted challenging literary content for the group was also taken up. These adaptations, however, were not without dilemmas, one being for instance whether the changes in

teaching practice promoted the sense that the reading group was more fun rather than educational.

Moreover, despite the continuous modifications to the tone, content, goals and management of the group, the authors note that in reality a lot of what was going on was out of the convener's and the tutor's control. Determinants such as the hybrid nature of the network; the continuous addition of new members that hindered the establishment of a core community; the voluntary nature of participation and code of 'learning for learning's sake'; the high level of commitment it required, all made it unfeasible for the reading group to appeal to the entirety of its diverse body of members but rather to a very particular audience. Significantly, this triggered questions about the value and the cost-effectiveness of the group.

## **2.8 SUMMARY**

This chapter began with a description of IGGY's hybrid identity, i.e. as an out-of-school setting that incorporated formal and informal learning. Then, it provided a rationale for the construction of a network such as IGGY in respect to its particular body of membership, i.e. gifted learners. The rationale was formulated on three reasons: 1) evidence points to a lack of challenging educational provision for gifted learners in schools, with important consequences deriving from this; 2) it is not easy for educators to create challenge for gifted learners; 3) online hybrid networks seem to be a particularly good choice for serving the affective and academic needs of this cohort of students.

Following from this I presented an overview of the use of social networks by young people and how this use has been researched in view of its educational potential. The

next section focused on how such potential has been seen as realised in the context of out-of-school networks and communities. The evidence reviewed indicated that there is a relationship between the informal practices of young people and the betterment of their personal, cognitive and skills development. This value of informal learning has been widely recognised from experts in various fields, including educational technologists. The efforts of educational technologists to import young people's out-of-school practices into formal institutions were discussed next. The section most congruent with this study is the one that reviewed cases that created a third or extended space in which formal curriculum and informal learning processes with social software were brought together.

One cannot question the significance of initiatives to bridge youth's practices derived from SNSs and curriculum and school practices. However, at the same time, we cannot ignore a number of contradictions and challenges faced when pursuing these endeavours, and these were documented in section 2.7. Notably, the tension between the traditions of schooling and the digital cultures of youth calls for a more realistic assessment of the impact and changes in learning that can be achieved.

In sum, it has been assumed that online learning environments comprise a good fit for gifted learners who have particular propensity to participate in independent learning-focused activity. Yet, this group is currently under-researched in scholarly discourse on digital networked learning. Further, there is a substantial body of research on youth's online practices and conceptualisations of those practices as new forms of learning. There is also a comparatively large body of research that investigates how these out-of-school experiences can be introduced into schools to support, develop or complement the kinds of learning and knowledge traditionally recognised and valued.



Less covered are cases of third or extended spaces, i.e. out-of-school networks that integrate curriculum content into young people's informal social media practices. IGGY belongs in this last category of, we could argue, alternative networks. The research presented here, then, examined the use of an unusual network by gifted learners, for which a case study methodology was deemed appropriate. The next chapter presents the methodology and methods employed to answer the research questions stated in the Introduction.

### **3 METHODOLOGY AND METHODS**

In this chapter I begin by delineating ‘case study’ and move on to explain the rationale for choosing it as my research methodology. Then I describe why I opted for a mixed methods approach to collect and analyse data and how the process evolved. Next, a detailed account of each method is given (i.e. interviews, survey, analysis of posts and archives) followed by an explanation of the data analysis process. The last two sections deal with the sampling strategy I employed and how I addressed the ethical considerations of the study.

#### **3.1 CASE STUDY**

There are several definitions of case study and they concern:

##### **1. The study of the particular**

Case study is about investigating something specific. This can be a particular person, a group, an organisation, a community, a process, relations and practices that take place within an institution and so on. To Stake (1995, p. 8)

The real business of case study is particularization, not generalization. We take a particular case and come to know it well, not primarily as to how it is different from others but what it is, what it does.

For a research to be a case study, it needs to have a narrow focus, the unit of analysis should not be general or abstract but concrete and confined (Cohen, Manion and Morrison, 2007; Merriam, 2009; Yin, 2009; Thomas, 2016).

##### **2. A contemporary phenomenon**

The case under study is a contemporary phenomenon, it is about ‘real people in real situations [and their] lived experiences of, thoughts about and feelings for a situation.’

(Cohen, Manion and Morrison, 2007, pp. 253, 254). The case is scrutinised as it evolves in its natural settings and not in, say, laboratory conditions (Stake, 1995). Another contrast to experiments or other studies is that the investigator has limited or zero control over the variables (Yin, 2009). The unpredictability of contemporary events is why researchers are advised to hold an open mind and continually revisit their research questions during their investigation.

### 3. In-depth exploration of case and context

Since case study is about finding out about a particular phenomenon, in-depth investigation is needed to try to understand its complexity and obtain the full picture. For this, a variety of methods may be utilised (Stake, 1995; Cohen, Manion and Morrison, 2007; Merriam, 2009; Yin, 2009; Simons, 2014). The purpose would be to produce a detailed, thorough description of both the case and its context, and of ‘the complex dynamic and unfolding interactions of events, human relationships and other factors in a unique instance’ (Cohen, Manion and Morrison, 2007, p. 253). To Yin (2009), data collection and analysis using a mix of methods is required when doing case study research. This kind of extensive and in-depth research allows ‘why’ and ‘how’ research questions (Yin, 2009; Thomas, 2016).

### 4. A bounded system

The case has defined boundaries. For instance, the case covers a specific time, it is located in a specific place and/or has characteristics that distinguish it from other cases (Cohen, Manion and Morrison, 2007). Gerring (2011, p. 1138) defines the case as ‘a spatially delimited phenomenon (a unit) observed at a single point in time or over some period of time’. The case as an integral system calls for an investigation in its entirety (Stake, 1995; Cohen, Manion and Morrison, 2007; Merriam, 2009). A case

study investigates the constituted parts of a system but moves further and tries to unravel interconnections and to create a holistic description (Cohen, Manion and Morrison, 2007; Merriam, 2009). In a number of occasions it is difficult to draw clear boundaries between what is in and out of the case (Yin, 2009). Indeed, in real-life situations elements of the case initially considered important might progressively lose their significance, and background elements might prove in the end to be critical.

Putting everything together, a case study can be defined as an in-depth exploration in real-time of a particular bounded system and its context. In this respect my research is a case study of the experience of participation in an educational social network in real time. Additionally, participation was explored *within* the network though broader environmental factors were also considered (see section 5.2).

Different types of case study research have been proposed in the literature with a variety of criteria for sorting them (Thomas, 2011). Here I draw attention to three key aspects of case study encountered frequently in the literature: the number of cases, the research purpose and the characteristics of the case itself.

The number of cases is the most straightforward classification. Specifically, if the case being investigated is an individual case, then the case study could be characterised as ‘single’ (Yin, 2009). In contrast, if the study has more than one case it would be characterised e.g. as ‘multiple’ (Yin, 2009), ‘multisite’ (Merriam, 2009), ‘collective’ (Stake, 1995) or ‘multicase’ (Stake, 2006). Yin (2009) analyses further these two types. As shown in Figure 3, both single and multiple case studies can be either holistic or embedded. If the case encompasses subunits worthy of examination, then we have an embedded case study. If the case is examined as a large unit of analysis, without the need for analysing smaller subunits, then we talk about a holistic

case study. It should be noted however that even in an embedded case study the holistic aspect of the case should not be ignored, as the very reason for examining the subunits is because they are considered helpful in shedding light on the larger case.

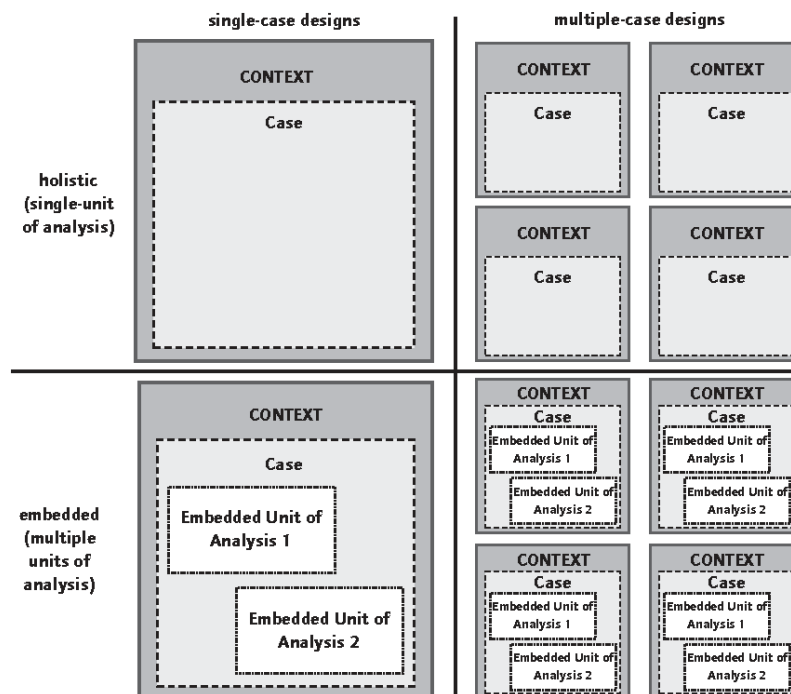


Figure 3 Yin's classification of single and multiple case studies (Yin, 2009, p. 46).

Another way to categorise case studies is in accordance with the purpose of the research (see Table 1). Stake (1995), for instance, differentiates between intrinsic and instrumental case studies. The former is a study of a case that is of interest in its own right and the aim is to learn about that precise case. The latter serves as a vehicle for answering questions beyond the case itself, for example for obtaining some understanding of a more general query or concern we might have. Yin (2003) identifies three research purposes for conducting a case study: exploration, description and explanation. To Yin, the first type serves as a preliminary or pilot phase of the main study for e.g. defining the research questions. The end product of the second type, the descriptive case study, is a detailed description of the case and its context.

Finally, the third type aims at explaining the phenomenon through the discovery of cause-effect relationships among variables. Merriam's (1998) definition of a descriptive case study resembles that of Yin's as the aim is again to thoroughly describe the case. Merriam's other two types of case study also contain description. However, if the researcher takes a step forward and uses the descriptive data to 'develop conceptual categories or to illustrate, support, or challenge theoretical assumptions held prior to the data gathering', she calls this an interpretive case study (Merriam, 1998, p. 38). If the researcher's interest is to evaluate, i.e. to judge a case, she describes this as an evaluative case study.

*Table 1 Examples of types of case studies based on research purpose.*

Author	Types of case studies based on research purpose		
Stake (1995)	Intrinsic: To learn about a specific case	Instrumental: To obtain some understanding of a more general query or concern by investigating one case	Collective: To obtain some understanding of a more general query or concern by investigating multiple cases
Yin (2003)	Exploratory: To explore a case in the initial stage of the research	Descriptive: To thoroughly describe a case and its context	Explanatory: To explain a case through causal links
Merriam (1998)	Descriptive: To thoroughly describe a case and its context	Interpretive: To develop concepts and to check theoretical assumptions	Evaluative: To describe, explain and judge a case

The third issue addressed here is with regard to the criterion/a for selecting, and accordingly naming, the case. The terminology used in the literature by different authors to denote the various sorts of cases is often inconsistent. For example, Yin (2009) lists several types of cases such as the critical case, the extreme or unique case, the representative or typical case, the revelatory case and the longitudinal case.

Thomas (2011) describes three types, namely the key case, the outlier case and the local knowledge case. Seawright and Gerring (2008) discuss how to select among typical, diverse, extreme, deviant, influential, most similar and most different cases, though they note the difficulty in distinguishing each type. Flyvbjerg (2006), in discussing strategies for case selection, refers to extreme or deviant cases, maximum variation cases, critical cases and paradigmatic cases. However, he also writes that ‘the various strategies of selection are not necessarily mutually exclusive. For example, a case can be simultaneously extreme, critical, and paradigmatic.’ (Flyvbjerg, 2006, p. 233). I determine the type of case study conducted in this particular inquiry with reference to the number of cases, the research purpose and the characteristics of the case in section 3.1.1.

Having defined case study and possible categorisations, I now move on to address two important issues with case study research. The first of these issues concerns limitations regarding the generalisability of findings from a single case study. As a reply to this criticism, case study scholars advocate that generalisation is not the primary concern of case study research (e.g. Stake, 1995; Merriam, 2009). As stated earlier, in a case study emphasis is placed on the particular and the primary concern is to understand each individual case.

Additionally, the notion of generalisability is assigned an alternative meaning in case study research, one that associates with the readers’ personal judgment of whether or not the results are useful to them. Flyvbjerg (2006, p. 238) underlines that ‘The goal is not to make the case study be all things to all people. The goal is to allow the study to be different things to different people.’. Merriam (2009, p. 226) expresses the same idea: ‘The person who reads the study decides whether the findings can apply to his or

her particular situation.’. Instead of the term ‘generalisation’ that is usually associated with quantitative research, case study researchers often use the concept of ‘transferability’, suggested first by Lincoln and Guba (1985), in which the reader takes away what is relevant/applicable to their circumstances.

One further dimension to this argument is that of analytic generalisation which, unlike statistical generalisation, it does not draw inferences from a sample to a population. Instead, analytic generalisation compares the findings of a case study to a previously developed theory and can either advance or challenge the theory (Yin, 2009).

The second issue concerns the criticism that the findings from case studies are biased towards the researcher’s predispositions thus deeming the study of limited value (Flyvbjerg, 2006; Cohen, Manion and Morrison, 2007). The response to this view has been that case study is no less rigorous than other approaches and that it requires researchers to address questions of validity and reliability too, though the ways one may accomplish this differ from the ones applied in quantitative research (Stake, 1995; Flyvbjerg, 2006; Cohen, Manion and Morrison, 2007). I explain the steps taken to ensure the validity and reliability of the research in the next section.

### **3.1.1 My study**

In respect to the above I now try to define my study. First, this study could be best described as a single case study on the basis of investigating a single phenomenon, that is the experience of participation for members of a specific hybrid network.

Taking into account Yin’s classification, I could further describe it as an embedded case study within which I looked at several subunits such as online activity, encouragers and barriers to participation and perceived gains.



Regarding my research purpose, description and interpretation were my primary interests. Though the study attempts to provide explanations of the findings, it is not explanatory in the same way Yin uses the term, i.e. to uncover causes and effects. Rather, the aim was to understand various aspects of the members' online experience, especially in relation to learning. Description is the initial step to reach this level of understanding, as stated earlier. Interpretation is further necessary when the researcher wishes to understand how people attribute meaning to a phenomenon or situation they experience (Merriam, 2009). Bryman (2012, p. 31) notes that there are three levels of interpretation in social science research:

There is a double interpretation going on: the researcher is providing an interpretation of others' interpretations. Indeed, there is a third level of interpretation going on, because the researcher's interpretations have to be further interpreted in terms of the concepts, theories, and literature of a discipline.

This sums up well what has happened in the current study.

The type of case will be determined by drawing, for the most part, on two terms proposed by Yin (2009), namely the extreme or unique case. Though the case is distinctive, as I explain below, it is not considered extreme in the meaning of something extraordinary that would amaze people, or unique in the meaning of one-of-a-kind. Instead, it feels more appropriate to use a milder description and argue that it has *unique features* or that it constitutes an *uncommon* or *unusual* case. Specifically, the distinctiveness of this online experience can be justified on the grounds of the network being hybrid (see section 1.2.1). Another peculiar feature of IGGY was the high level of participation safety. For example, the network was closed to non-members and non-disclosure of personal information was ensured through regular monitoring of communication by the moderators and the mentors and an automated

content moderation system. As a rule of thumb, members would also identify other members as user names which for e-safety reasons were anonymised. Further, the network felt simultaneously open and close; open in that members tended not to know each other in person, did not attend the same institutions or follow the same programmes of study, but closed as students usually needed to be recommended by a teacher in order to join the network. Lastly, there was not a prescribed route through online activity and no award bearing qualification on offer. On the whole, for all the reasons cited above, this was a case of a not-so-common online experience, and as such, this case also bore inherent interest. Finally, it could be said that the case was local too, a term used by Thomas (2011) for a case both familiar and accessible to the researcher, such as one occurring in their work environment. This case was local in the sense that the network was created by the University I was a student of, and the head offices were based on the campus. This gave me necessary access to the network, the people using it and members of staff, as well as useful information such as demographics and other numerical data which could not be obtained otherwise.

In conducting and writing this case study I took several measures to ensure the trustworthiness – a term used as an alternative to validity and reliability (Hammond and Wellington, 2013) – of the study. First, I employed triangulation in different forms (for a discussion of the types of triangulation see Thurmond, 2001) with a focus on continually cross-checking different data. Specifically, I used multiple methods to collect different sets of data which I later compared and contrasted. Apart from interviewing members, I interviewed IGGY mentors to see how people in different roles described and understood participation. During the analysis process I compared initial analysis of each type of data with my supervisors; when there was a disagreement we discussed the issues until we reached agreement. I asked the adults

participants of the study to check how I applied the content analysis scheme on some of the posts they had created and to give me feedback regarding the codes and their application. Further, I adopted a systematic way of collecting, organising, analysing and reporting evidence. Considerable time was dedicated to data collection and analysis until saturation was reached. I believe I have managed to collect and analyse sufficient data to allow for the illustration of numerous and varied snapshots of the experience of participation. Finally, throughout the study I have presented parts of the research in academic conferences and workshops and have published papers in conference proceedings and a peer-reviewed journal (see Declaration).

### **3.2 MIXED-METHODS**

As pointed out earlier, case study appears to be well-suited for the application of mixed methods (e.g. Yin, 2009; Kitchenham, 2010). Although the definitions of mixed methods research (MMR) vary, what most have in common is ‘the mixing of at least one qualitative and one quantitative method in the same research project.’ (Hesse-Biber, 2015, p. xxxix).

The literature suggests that MMR took off in the mid-20<sup>th</sup> century, after a heated debate among proponents of quantitative and qualitative research, often referred to as ‘the paradigm wars’ (Gage, 1989). During the dispute researchers were urged to join either the quantitative/positivist or the qualitative/interpretivist ‘camp’ and adopt a purist position (Johnson and Onwuegbuzie, 2009). The said differences among the two approaches revolved around philosophical assumptions, methodologies and methods.

The source of the quantitative versus qualitative controversy can be traced to philosophical assumptions or worldviews about the nature of reality and of knowledge

(Creswell and Plano Clark, 2018). On the one hand, advocates of quantitative research believe that there is an objective social reality, external to the inquirer. Though more recent thinking accepts that claims of knowledge regarding human affairs and behavior cannot be absolutely true, quantitative researchers in general maintain that knowledge of the reality can be acquired by means of the natural sciences such as for instance experiments. On the other hand, qualitative researchers support that there is not one single reality but that individuals attribute subjective meanings to their experiences. Thus, understandings of phenomena and situations vary. In addition, these meanings are shaped by social interactions, historical and cultural norms. Based on the above, qualitative researchers defend that the study of social reality cannot adopt the same canons and procedures as the study of the natural world.

Those who conduct MMR, on the other hand, uphold that methods are not strictly tied in with philosophical views and can be combined according to the research purposes (Bryman, 2012). MMR could thus be described as an approach that combines elements from both the quantitative and qualitative approaches with the criterion of ‘what works’ in relation to the research questions.

However, not all research questions justify the use of mixed methods. This is particularly important bearing in mind that completing a mixed methods study requires knowledge and skills of different data collection and analysis procedures, an extended time frame and resources (Creswell and Plano Clark, 2018). Venkatesh, Brown and Bala (2013) stress that researchers need to carefully consider the appropriateness of a mixed methods approach in relation to its value and the purposes it could serve. In terms of value, they discuss three major strengths of MMR. First, a mixed methods approach enables the simultaneous examination of two kinds of

questions, i.e. confirmatory and exploratory, and therefore test and generate theoretical insights at the same time. Second, it enables stronger claims about the results to be made, compared to a monomethod approach. For instance, depth can be achieved through qualitative methods and breadth can be achieved through quantitative methods, the combination of which leads to more thorough and accurate conclusions. Third, it enables the disclosure of complementary and contradictory findings which enrich our understanding, delineation and explanation of a phenomenon. Arguably, the major strength of a mixed methods approach is that it draws from the strengths of quantitative and qualitative methods counterbalancing their weaknesses (Creswell and Plano Clark, 2018).

In terms of purposes, a common reason for the application of mixed methods has been triangulation. The idea – though not the term itself – of triangulation was originally introduced to the social science methodological literature by Campbell and Fiske in 1959 who suggested the use of more than one method as a way of validating findings (Johnson, Onwuegbuzie and Turner, 2007). In their discussion of the history of the field of mixed methods, Johnson, Onwuegbuzie and Turner (2007) present the approach as having its origins in that early discourse on triangulation. This view of triangulation as the ‘ancestor’ of mixed methods has undoubtedly contributed to what several researchers have noted over the years; that many of the arguments in favour of mixing methods have centred on the purpose of triangulation (Greene, Caracelli and Graham, 1989; Mason, 2006; Mertens and Hesse-Biber, 2012). However, triangulation is not identical to MMR. It can ‘operate within and across research strategies’ and ‘represents just one way in which it may be useful to think about the integration of [quantitative and qualitative] research strategies’ (Bryman, 2012, p. 392).

Over the years several other reasons for performing MMR have been articulated (e.g. Greene, Caracelli and Graham, 1989; Creswell and Plano Clark, 2018). A study by Greene, Caracelli and Graham (1989) constituted one of the first systematic attempts in the field and summarised five purposes, including triangulation, for which MMR may be employed:

1. Triangulation: to converge findings that resulted from quantitative and qualitative methods.
2. Complementarity: to provide an expanded picture of the phenomenon by uncovering complementary information about it. Complementarity differs from triangulation which necessitates that the quantitative and qualitative methods assess the same thing.
3. Development: to develop a quantitative method based on findings from a previously implemented qualitative method or vice versa.
4. Initiation: to discover inconsistencies in findings yielded from different methods that may lead to new perspectives and new understandings.
5. Expansion: to extend the breadth and scope of the study by using different methods to assess different elements.

Given that the research questions warrant a combination of quantitative and qualitative approaches, there are different approaches to designing the study for the researcher to consider (Creswell and Plano Clark, 2018). For example, Tashakkori and Teddlie (2009) discuss the sequence of the qualitative and the quantitative data collection phase and the weight to be placed on either the qualitative or the quantitative data. Creswell and Plano Clark (2018) propose three basic designs

depending on the researcher's intentions for mixing data and methods; the convergent design, the explanatory sequential design and the exploratory sequential design.

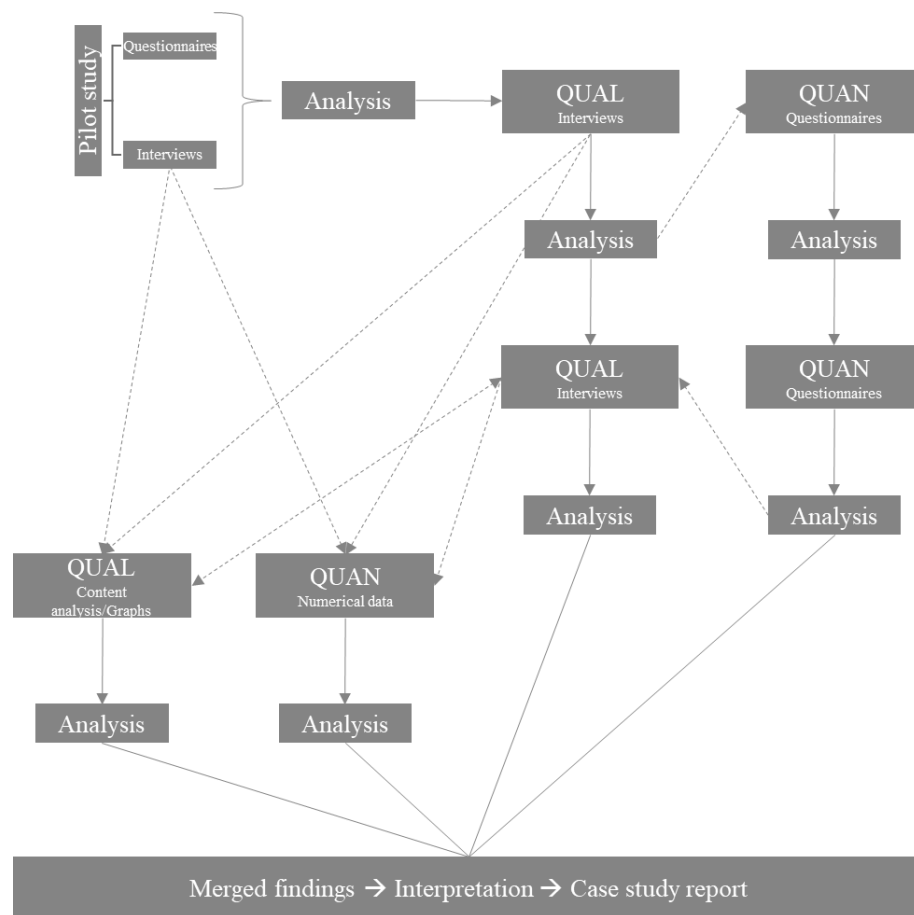
When implementing a convergent design, quantitative and qualitative data are analysed separately. The principal goal is to combine and compare data to reach a fuller understanding of the phenomenon being studied. The convergent design is the most commonly used though any of the other two core designs or even a combination of designs can also be used. When a convergent design is selected quantitative and qualitative findings are merged and compared to draw an advanced interpretation of the case(s). In an explanatory sequential design, quantitative data collection and analysis precedes the qualitative phase. The researcher's intent is to use the qualitative findings to better understand the quantitative findings. An exploratory sequential design follows the opposite direction, that is the qualitative exploration takes place first. The intent is to develop and implement a quantitative technique based on the qualitative findings.

Designs may be also characterised as fixed or emergent (Creswell and Plano Clark, 2018). The former refers to studies in which the integration of methods and the details of the procedure (e.g. the selection of methods, the sequence etc.) are decided at the outset of the research and executed as planned. The latter refers to studies in which the decision to undertake MMR occurs when the study is already underway, due to emerging needs or unexpected circumstances. Mason (2006, as cited in Robson and McCartan, 2016) indicates, too, that sometimes mixing methods and data can be a chance occurrence instead of a priori design.

The following section describes this study's design, the different ways I integrated quantitative and qualitative data and the purposes they served.

### 3.2.1 My study

This study could be best defined as a mixed methods single case study with a convergent design (see Figure 4). The qualitative approach refers to the 14 open-ended interviews with IGGY members and mentors as well as the content analysis and visualisation diagrams of specific debates. Interviews generated a significant volume of data and were a reference point throughout the research in several ways (more details are given later in this section). Quantitative data included data obtained from questionnaires and numerical data on participation in debates.



*Figure 4 Flowchart of the procedure in implementing a mixed methods case study design with a convergent approach.*

The idea of integrating quantitative and qualitative strategies emerged long after the beginning of the research, at a point when I realised that:

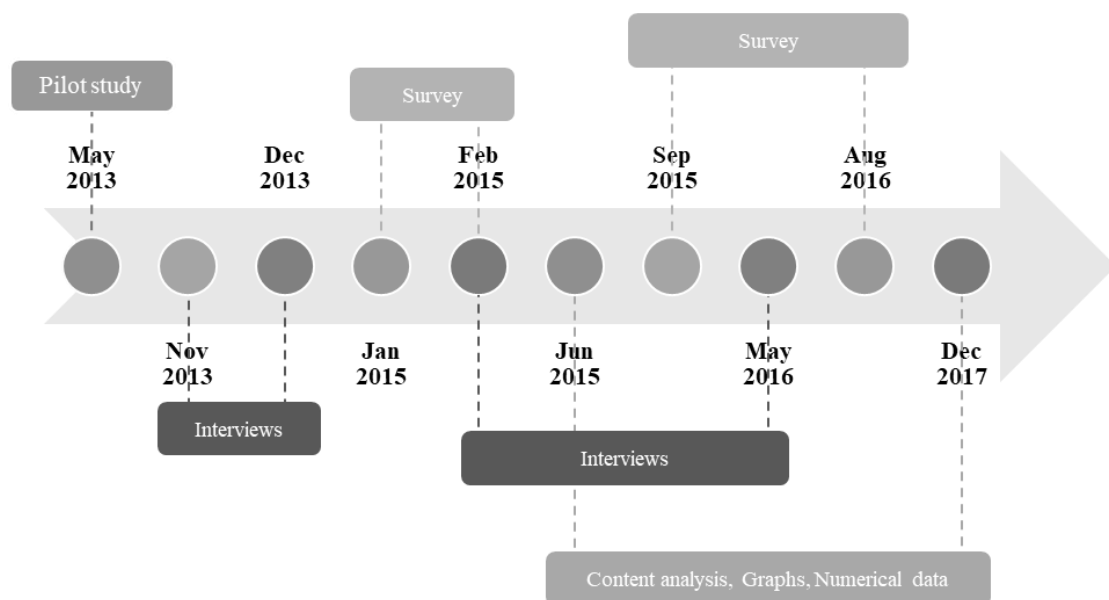


1. the evidence gathered until then through mostly qualitative methods did not tell the complete story thus I needed to complement my findings,
2. more and better explanations of my original observations were necessary,
3. I also needed to validate (or triangulate) my findings in more ways than the ones employed up until then,
4. I could access data sources that I had not considered in advance, that could potentially assist me with all the above.

Admittedly, at the time, the afore-mentioned thoughts were not as distinct as they might appear now. The decision to opt for MMR was more of an intuitive (i.e. it felt the right way forward) and opportunistic step, taken mainly on the account of practical considerations such as the demand for additional data and accompanying concerns about the rigour of the study, and the availability of data sources.

Figure 5 shows the timeline of the application of each data collection method. Data collection lasted for approximately four and a half years (from May 2013 to December 2017) and started with a pilot study during which I surveyed and interviewed five active IGGY members via phone. This was to get an initial sense of what was going on in the network and how members perceived their online experience. This initial exploration of participation in IGGY encompassed investigating the reasons and the ways in which these members used the network as well as the facilitators and barriers to participation. Upon completion of the interviews I analysed and interpreted all data collected. The findings pointed to the network's potential to cater for the participants' differing academic and affective interests and needs. At the same time it became evident that not all used the network in the same manner and that participation was affected by several factors and varied across time.

The pilot questionnaire alerted me to issues around the comprehensibility of the questions and the importance of clarity – see section 3.3.1. From the pilot interviews I appreciated the importance of listening, and giving participants time to think and reply, and not to be worried about silence (this is described further in 3.3.2). Interviewing was a lot easier if I had questions prepared beforehand and did not have to ‘think on my feet’. For this reason I developed a more elaborate interview guide that I used in the next phase – a qualitative phase during which five more interviews took place. This set of interviews was also analysed and findings were compared and contrasted with the findings from the pilot study. The pilot study confirmed that the overall framing of the study – an investigation into participants’ experiences – was valuable and worthwhile and the research questions of the main study did not change considerably. As I was interested in the experience of participation I decided to explore further the themes that emerged in the pilot study.



*Figure 5 Timeline of application of data collection methods.*

Next, I created an online survey that was distributed in January 2015 to 10 public schools in Madrid, Spain. The students were asked to complete it by the start of February 2015. I then analysed the completed questionnaires and generated a report. The analysis provided insight into this specific cohort of members but I also gained feedback on the questionnaire itself, which guided the formation of the subsequent and last version. The final questionnaire was uploaded on the website by members of the IGGY IT staff for approximately a year (end of September 2015 until end of August 2016). Subsequently, I carried out analysis of all replies and merged the findings with the ones obtained from the Madrid cohort.

From February 2015 till May 2016 I conducted four more interviews, two interviews with mentors (both conducted in May 2016) and two with students (the first conducted in February 2015 and the second in January 2016). I transcribed and analysed all the interviews shortly after their completion. I should also add that after the interview with the first student I asked her to complete the questionnaire sent to the Madrid cohort. The second student had already accessed the final questionnaire on her own and completed it prior to her interview. During her interview and during the mentors' interviews I was able to ask questions related to some of the debates they had taken part in as, by the time of the interviews, I had already commenced content analysis of debates.

I made the decision to carry out content analysis of selected debates in June 2015. As stated earlier, I decided this mainly because of concerns about the extent of data collected up until then. The analysis of the debates lasted around one and a half year. Data from content analysis were coded and analysed and findings were juxtaposed with the interview data. Concurrently to content analysis, I generated graphs that

showed interaction among contributors to the selected debates and analysed numerical data on participation in the *Debate* section.

Looking at data collection and analysis, it is difficult to say whether they followed each other or whether they were synchronous as at times they were both. In particular, analysis was carried out every time a planned data collection phase was completed. Sometimes, analysis of a dataset was performed whilst collection of another dataset was taking place. For example, content analysis was conducted while the survey was open for members to complete. Once the survey was concluded, I paused the analysis of debates and focused on analysing the questionnaires. I resumed content analysis when I finished working on the survey. It can be further stated that findings from the analysis of each dataset impacted on the succeeding data collection method. Likewise, as inferences were drawn from each dataset, returning to previous data to compare, contrast, search for clarifications or even to confirm an explanation was a common practice.

It should then be evident that the integration of quantitative and qualitative data in this study took place at different stages and in different ways. Development, for instance, took place when the initial interview findings informed the creation of the ensuing survey. Complementarity took place when interviewees elaborated upon or gave clarifications about certain survey replies. Expansion occurred with the use of a variety of methods that allowed me to explore various kinds of questions and get diverse types of information (e.g. content analysis provided a completely different type of data and answered questions that could not have been answered otherwise). Data triangulation was achieved when I checked for consistency in evidence that concerned the same matter and was gathered from different sources.

The primary argument for using a mixed methods approach is to counterbalance the flaws or the weaknesses of one method with the strengths of another (Creswell and Plano Clark, 2018). Table 2 shows how I combined a mix of methods to exploit the opportunities afforded by each and answer the RQs.

*Table 2 Contribution and limitations of each method.*

<b>Methods</b>	<b>Strengths</b>	<b>Limitations</b>
Interviews	Depth Participants' descriptions and explanations of their experience Answers to questions on what lied behind the actions Insight into activity away from the network	Sampling Time consuming Subjectivity in interpretation
Survey	Breadth General use of the network Personal information about members Data on behaviour, attitudes, preferences and perceptions	Response rate Need to be self-explanatory Self-reporting of activity – no control over its completion
Content analysis	Patterns of participation across different topics Varied levels of participation Varied forms of cognitive engagement	Time-consuming Subjectivity in generating and applying codes and sub codes
Visualisation diagrams	Shape of debates Patterns of interaction Key participants How discussions kept going	Data imported manually – not feasible for large sets of data
Quantitative data on posts	General use of online discussions Data on types of participation	Does not indicate the quality of participation A crude measure of level of participation

The different methods used had different strengths. In particular, interviews allowed an in-depth exploration of the participants' experiences and allowed them to convey their experience from their own perspective and in their own words. Interviews offered answers to questions on what lied behind the actions, such as 'why' questions that explored reasons and value of participation and questions on the factors that had an impact on participation. Interviews had the additional benefit of informing me about participation that was not visible. Alongside interviews, surveys enabled access to a wider sampling of the members and provided personal information about the respondents, as well as other additional quantitative and qualitative data. The quantitative data on posts helped me get a more general picture of participation in the online discussions. Content analysis and the visualisation diagrams informed me about the structure of debates and showed who triggered or contributed to debates and how. The analysis gave clues as to how discussions were sustained. Content analysis also gave me insight into the different sources of knowledge and claims to knowledge. Taken together, the different methods enabled me to capture both the participants' perspectives of their participation and their actual activity as it was borne out in online discussions.

Admittedly, each method had limitations too, notably issues of sampling, response rate and subjectivity and overall the mixed methods approach was intensely time-consuming.

The next section discusses each of these methods in more detail.

### **3.3 METHODS**

This section looks at the mixed methods I used to collect data. First I describe how I used questionnaire survey and interviews to collect data that reflect the research

participants' understanding of their experience. Next I describe how I collected data on actual participation in online discussions through analysis of posts and archives.

### **3.3.1 Questionnaire survey**

The questionnaire survey was carried out to get a broader picture of the participants' use of the network. This general aim had several objectives. Specifically, I wanted to:

1. collect data about the members and their use of the network,
2. collect data on online behaviour,
3. explore members' preferences within and perceptions of their use of the network.

I opted for an online self-completion survey due to several reasons: the cost to administer was low; it was easier to reach a greater audience as well as members who were geographically dispersed; it was more convenient for respondents since they could complete it at their own space and time; and it was also easier and quicker to fill out compared to a postal survey. In addition, it facilitated storage, organisation and analysis of data as I did not need to manually enter it in a spreadsheet program.

Prior studies have used existing instruments such as the Community of Inquiry survey to measure the extend of students' engagement in online collaborative learning (Stewart, 2019), the Technology Acceptance Model to analyse the factors influencing the intention to use an online learning community (Liu *et al.*, 2010), and the Online Learning Environment Survey to assess students' perceptions of their e-learning environments (Trinidad, Aldridge and Fraser, 2005). For this study I decided that it was best to create my own survey because I wanted to ask specific questions related to IGGY's hybrid character and unusual context. Moreover the TAM questionnaires seemed to be designed to uncover causal relationships at the expense of delving into participants' understandings and experiences, a major concern of my study.

The survey enabled me to reach out to a wider range of respondents than what was possible via the other data collection methods. Further, the survey explored ‘what’ questions as well as personal questions about the members, which eased the interview process and allowed me to focus on the ‘whys’.

As Cohen, Manion and Morrison (2007, p. 319) explain, to operationalise a questionnaire a researcher needs to ‘move from a generalized area of interest or purpose to a very specific set of features about which direct data can be gathered’.

Table 3 demonstrates how each section and set of items related to my research objectives.

*Table 3 Transformation of research objectives into survey items.*

<b>Objectives</b>	<b>Sections</b>	<b>Examples of questions</b>
Collect personal characteristics about the members and general information about their use of the network	About you	What is your age?
	About you and IGGY	How long have you been an IGGY member? Which device do you usually use to access IGGY?
Collect data on online behaviour	How you use IGGY	When you log on to IGGY, how often do you do the following activities? Which subject(s) do you usually explore?
Explore members’ preferences and perceptions related to their use of the network	What do you prefer to do	Choose your three most favourite activities.
	What you gain	What, if anything, do you improve by taking part in IGGY?
	Community, constraints and suggestions	How could your IGGY experience be improved?

The survey was carried out in three phases: the pilot study, the Madrid survey and the final survey (see Table 4).



*Table 4 The three phases of the data collection.*

<b>Phase</b>	<b>Period</b>
Pilot study	May 2013
Madrid survey	January 2015 – February 2015
Final survey	September 2015 – August 2016

The pilot study was carried out in a very early stage of the research. In this stage, a self-completion questionnaire was sent as an email attachment to five high engaging members. The participants were identified and recruited by the IGGY team and IGGY's Academic Principal who was also one of my supervisors.

The pilot questionnaire consisted of six questions, with the last question comprising four subsections. The survey asked about (a) the reasons for which participants joined IGGY, (b) which of the network's sections they used the most, (c) their most and least favourite activity of each section, (d) any perceived restrictions in the use of each section, (e) any perceived benefits they gained through the use of the network.

Though the sample was small, it still informed me about how participants used the network and of the members' feelings and thoughts about their experience.

Notwithstanding, I was able to follow up with in-depth interviews with the same participants who provided more extensive input and expanded upon their questionnaire replies. These initial interviews and data from the pilot survey influenced the generation of the closed questions included in the subsequent questionnaire. In addition, the pilot survey pointed to questions that I needed to put in a more precise or straightforward way, or that it was better to ask during the interviews as they required lengthy answers. Indeed, the pilot questionnaire included too many open questions, something I avoided later. Finally, I decided to change the

medium through which to distribute the survey as it appeared much easier for participants to fill out an online survey than an email attachment.

During the second phase, I created an online questionnaire for IGGY to send to 193 students attending 10 public schools in Madrid, Spain. As these were bilingual secondary schools (see section 3.5) and students had been using IGGY in English, I considered it reasonable to create the survey in English. Indeed the replies indicated that all the students were confident users of English and I do not believe that language was a factor in members' decision not to respond. In fact the response rate of 37 per cent was much higher than I had expected.

The construction of the questionnaire came after much thinking about the content and the wording, numerous discussions with my supervisors as well as the Operations Director of IGGY, the International Director and the Community Manager. The questionnaire contained 45 questions. The majority of them were closed questions ( $n = 42$ ). Two questions were open-ended and another one invited students to participate in the interviews. The closed questions included Likert scales ranging from totally agree to totally disagree, yes – no questions and questions with multiple choices.

As mentioned in section 3.2.1, the final questionnaire was an edited version of the Madrid one. The editing was painstaking and was finalised in July after I obtained feedback from members of the IGGY team and my supervisors. The questionnaire was uploaded on the website in September after the suggestion made by the IGGY team that the response rate would be limited during the summer months. A link was sent to IGGY members via email that directed them to take part if they wanted. In addition, IGGY posted three invitations to take part in the survey on the network's *News & Events* section. The invitation was also included in the network's newsletters

on September 2015, December 2015 and April 2016. Members were informed that the survey was short and that, as an incentive for participation, the completed submissions would be entered into three prize draws to win a £50 voucher. The survey received positive feedback by a few respondents who posted their comments online and a few others who contacted the Community Manager.

The final questionnaire was divided into six sections: about you; about you and IGGY; how you use IGGY; what do you prefer to do; what you gain; community, constraints and suggestions. The last section invited members to opt in for an interview by providing their email address.

Each section explored several themes and sub-themes (see Table 5). Specifically, the first two sections asked about the members' personal characteristics as well as basic background information on their use of the network. Next, I asked behavioural questions regarding the access frequency, the time spent in IGGY, the subjects and activities they followed and the frequency of engagement with each activity. The next two sections examined the members' preferences and attitudes towards interactive and non-interactive activities and their perceived gains. The ensuing section looked at the members' perceptions of IGGY as a community and asked about the main constraints and suggestions for improvement. The last question in this section (Q24) asked the members whether they would recommend IGGY to other students or not. The full questionnaire can be found in Appendix A.

*Table 5 Coverage of themes and subthemes against section headings.*

<b>Section</b>	<b>Questions</b>	<b>Themes</b>	<b>Sub-themes</b>
About you	1-7	Personal characteristics	gender, age, country, use of online platforms, school experience
About you and IGGY	8-13	Background information	how they found out about IGGY, membership duration, device(s) used to access IGGY, from where they accessed IGGY
How you use	14-16	Behaviour	access frequency, time spent in IGGY, what they did and how often
What do you prefer to do	17, 18	Attitudes and preferences	social/interactive vs individual/non-interactive activities, communication with people they knew vs communication with people they did not know, favourite activities
What you gain	19, 20	Perceptions	perceived gains, possible improvements in knowledge and skills
Community, constraints and suggestions	21-24	Perceptions	sense of community, constraints, suggestions for improvement, whether they would recommend IGGY to others

The bulk of questions were closed ( $n = 22$ ). This decision was made on the grounds of ease and brevity of completion in order to try to achieve a better response rate.

Nonetheless, two open-ended questions were also included. The first one asked respondents to expand on the previous question, a Likert scale question that examined the members' satisfaction or dissatisfaction with their school or home-schooling experience. This particular question was not included in the Madrid survey but as dissatisfaction with schooling was a common theme in the literature this question could have provided relevant data. The second open question asked members how their IGGY experience could be improved. I formulated this question as an open-ended one as there was not a way to predict a list of multiple choice responses.

The closed questions included multiple choice responses, Likert scales, a rank order question, yes – no questions, a question with dichotomous variables and two questions with opposing forced choice statements. The first format, namely multiple-choice questions, was the dominant structure. Though great effort was made to create a comprehensive list, in many questions the ‘Other’ option and the opportunity to expand on this were added to allow for unpredicted responses. When creating a Likert scale question two important points were borne in mind. First, the categories should not overlap and second, the scales should be measuring only one thing at a time. I used Likert scales for greater differentiation of responses in certain questions. Specifically, I replaced the question *What do you do within IGGY?* that was made to the Madrid cohort with a matrix containing the question *When you log on to IGGY, how often do you do the following activities?* and a 4-point scale ranging from never to always. The rank order question referred to the members’ top three favourite activities. In this question I grouped the activities in order to shorten the list and make the task more straightforward. The questionnaire contained one question with dichotomous variables, i.e. gender (male/female), and two dichotomous questions, that is questions that required a yes or no response. The first dichotomous question asked the respondents whether they communicated with members from other countries and the second whether they would recommend IGGY to other students. I also added two questions with opposing forced choice statements (e.g. *I feel I can trust IGGY members* vs. *I feel I cannot trust IGGY members*). The purpose of these questions was to restrict the respondents’ options and force them to choose the answer most closely resembling what they believed.

The choice of vocabulary was considered carefully. For example I made a careful selection of words related to the concept of learning (e.g. the phrase *knowledge of new subject areas* was preferred instead of the ambiguous term *learning*). In addition, precise terms were used wherever possible. Clear instructions preceding each question (e.g. whether it was acceptable to choose more than one answers or not) were given too. I also paid attention to the sequence of questions so that questions exploring the same theme were placed together.

The Madrid survey included a number of items with reverse wording and this puzzled me greatly. Simply put, reverse wording is the inclusion of the same question twice, one using positive wording and one using negative wording. Opinions vary in respect to the effectiveness of reversed items. Some claim that reverse worded items can lead to respondent inattention and confusion and are better avoided (e.g. Sonderen, Sanderman and Coyne, 2013), while others point to possible advantages such as reducing agreement bias, disrupting non-substantive responding and allowing for broader examination of the concepts under investigation (e.g. Weijters and Baumgartner, 2013). Instead of reverse wording the final questionnaire included six pairs of opposing forced choice statements as the language was clearer and analysis was more straightforward.

Despite the efforts put in designing the questionnaire and other steps I followed to tackle the issue of low response rate, a common problem with self-completion questionnaires (Robson and McCartan, 2016), I did not manage to achieve a high response rate. However, as this study used convenience sampling and generalisability was not a primary objective, a low response rate was not too disappointing (see also

Bryman, 2012, who makes the point that some information is better than none at all). The survey sample is discussed in detail in section 3.5.

### **3.3.2 Interviews**

Interviews were the primary source of qualitative data for my research and provided depth of response. To Seidman (2013, p. 8), interviewing is the principal way of examining human beings and human behaviour as ‘At the very heart of what it means to be a human is the ability of people to symbolize their experience through language.’. Interviewing is viewed as one of the most valuable instruments of case study (Simons, 2012). It enables the researcher to explore and understand how the interviewees interpret their lived world as they describe their experiences and share their thoughts and feelings about those experiences (Brinkmann and Kvale, 2018). The interactive and flexible nature of interviews allows the researcher to rephrase questions that might not be understood, to follow up responses, ask for clarifications and further explanations and thus reach more accurate interpretations of human experiences.

Difficulties arise, however, when implementing interviews. Interviews are time-consuming to perform, involving a long process from making contact with participants to conducting the interview, transcribing and analysing the data. Moreover, the interactive nature of interviews has been the cause for opposing views regarding their value, to the point that it has been suggested that ‘interview data can[not] serve as a source of evidence about anything beyond the interview context.’ (Hammersley, 2021, p. 393). There are indeed some inherent limitations of the method that arise for example from a level of subjective interpretation of interview data and the fact that interview accounts constitute one of many possible versions of

events. Nonetheless, we should not discard interviewing as a method of data collection but rather become ‘more sensitive to the circumstance of data collection and more flexible in our concept of what an interview is.’ (Hammond and Wellington, 2013, p. 93).

In this study interviews were used to gain access to the research participants’ understanding of what it was like to participate in the network and the meaning they made out of their online experience. In total, I carried out 14 interviews: 12 interviews with active members and two interviews with mentors. Of all interviewees, only two were male; a young participant and a mentor. The selection procedure is explained in detail in the Sampling section.

The duration of the interviews varied; the shortest interviews lasted approximately half an hour and the longest ones lasted about one and a half hours. All interviews were transcribed shortly after completion. In this study I employed the ‘semi-structured interview’ which is located somewhere in between highly controlled, strict interviews and loosely structured ones (Knox and Burkard, 2009; Turner, 2010; Robson and McCartan, 2016). This way, semi-structured interviews offer the researcher both stability and elasticity. In semi-structured interviews an interview guide is used

as a checklist of topics to be covered and a default wording and order for the questions, but the wording and order are often substantially modified based on the flow of the interview, and additional unplanned questions are asked to follow up on what the interviewee says. (Robson and McCartan, 2016, p. 285).

Drever (1995, p. 18) explains the benefits of an interview schedule as helping ‘to get through the interview without drying up, missing out questions, going off at a tangent, leading or confusing your respondent.’ I found the interview guide to be particularly



beneficial in engaging the young participants in extended conversation. Though most of them were satisfactorily talkative for the larger part of the interviews, the prompts and probes I had prepared in advance proved useful in the awkward moments when they did not go beyond monosyllabic responses.

I developed a first interview guide for the pilot study interviews, to which I made adjustments for the next ones (an example of a schedule is given in Appendix B). Notwithstanding the differences in the interview guides as they evolved, those with the young participants followed a more or less similar structure. They started with broad questions about their hobbies, their schooling/home-schooling experience, their family and friends. Then, I continued with questions concerning the idea of giftedness and the gifted label and their related experiences. The ensuing questions explored their use of technology in general and subsequently, their use of IGGY. The latter covered the biggest part of the interview guide. This explored issues such as the members' expectations, their reasons for joining and for using the network, their activities in IGGY, any perceived benefits and any constraints they might have faced, relationships among members and suggestions for improvement. Some interviewees had participated in a yearlong project on education and the internet, i.e. the IGGY Junior Commission (JC) project, thus I developed additional questions to explore that particular experience. Each main question was accompanied by prompts and probes that would help me in case I needed to remind the interviewees about something or in case I needed more details and information. During the interviews I also asked participants to elaborate on some of the replies they had given to the survey. During the last interview I was able to set a number of questions regarding specific debates

the interviewee had either initiated or participated in and to elucidate further aspects of participation (e.g. I asked about quiet participation) and of the learning experience.

Below is an example of questions taken from the interview guide that I used in the last interview:

Back in April you participated in a debate titled *Are the words 'geek' and 'nerd' really negative terms?*. You wrote that you were quite annoyed when people started calling you [...] and you stated that you really hated that word. In your post you were asking for an answer as to why people were calling you this as you were concerned about it.

- Could you tell me what made you post this please?
- What did you have in mind when you were writing this post?
- Did you feel IGGY was safe enough for you to post your personal experience or not?
- If yes, what makes IGGY safe enough for you to express yourself and share your personal experiences?

For the interviews with the mentors I designed another guide (see Appendix B) which included questions about: their role; their views regarding members' participation in IGGY and how the members might have benefited from it; debates in general as well as specific debates; their beliefs about the kind of online learning that may have taken place in IGGY; their suggestions for improvement of the network. Apart from the above questions I asked them to look at the codes I had used for content analysis and to give me feedback. To assist them with this task I selected specific debates with which they were familiar and asked them whether they agreed, disagreed or had anything in general to comment on how I applied the content analysis scheme.

When developing the interview guides, and indeed during the actual interviews, I was mindful of the wording of the questions. I paid attention to phrasing the questions with clarity and to making them meaningful and understandable, and to not posing leading questions. For example I gave alternatives like in the question: Was it *easy* or

*difficult* to suggest a topic?. I believe that in general I managed to phrase and negotiate the questions efficiently and facilitate understanding of what was asked.

I delivered the interviews through different modes: telephone, face-to-face and Skype call. The first medium I used to carry out interviews was the telephone. Five interviews were conducted by phone. They took place on the same day. I chose to be at the IGGY offices as I could use more sophisticated equipment both for calling and for recording the conversations. Following those interviews I carried out Skype call interviews with seven IGGY members. I decided to carry out these interviews from home, firstly because it was more convenient and secondly because it would be cheaper as I would not have had any travel expenses. I used Skype as I found it easier to record the interviews with a recording software which I installed on my laptop. Apart from the above, I carried out two face-to-face interviews with IGGY mentors. The two interviews were conducted on different days at the University to accommodate the interviewees' schedule.

All the above types of interviews have both pros and cons. In effect, the IGGY team had decided the medium I would use for the first five interviews and I had made further decisions for the following ones based on practicalities of accessibility, time and costs. Phone and Skype call interviews are thought to have additional benefits, for example it is believed that this particular type is suitable for the collection of sensitive data (Cohen, Manion and Morrison, 2007). Indeed, during the interviews and after I had established rapport with the interviewees it felt easier to ask questions about a delicate topic than if we were talking in person. Of course, my hesitation in touching sensitive matters was heightened by the fact that I was talking to teenagers, thus I had

to be particularly cautious and mindful with my questions. The physical distance between me and the interviewees helped in that respect.

On the other hand, telephone or Skype call interviewing is not as straightforward as it might sound. I believe that a productive phone/Skype interview requires great effort on the part of the researcher both during the preparation as well as during the delivery process. For example, a major issue is how to compensate for the lack of non-verbal signs, especially in the case of interviewers or interviewees whose English is not their mother tongue. The literature suggests that the absence of physical contact requires more effort from both parties to explicate their thoughts and in general, to maintain vigorous involvement (Drever, 1995; Bryman, 2012).

Drever's (1995) advice to the researcher is, in simple words, to talk less and listen more. It is admittedly important to provide enough time for the interviewee to think about the question, comprehend it and articulate their answer. Personally, I sometimes perceived silence as completion of the response and rushed to the ensuing question. This resulted in simultaneous talking with the participants, particularly during the first interview. I gradually moderated my tendency to fill in the silence gaps; in ensuing interviews I was more patient throughout the call and avoided either pressuring or unintentionally interrupting my interviewees.

Technical problems such as poor internet connection that caused dropped calls, delays and poor-quality audio also occurred in two interviews. This caused disruption in the flow of the conversations but also made the transcription of the interviews more difficult.

The above complications did not arise during the face-to-face interviews. The interviews evolved smoothly and it felt easier to make transitions from one topic to another. This could be attributed to the more natural context of the interview but also to the fact that the interviewees were adults (i.e. the mentors). The interviewees were also researchers hence they were familiar with the particular method and the concept of research in general.

Nonetheless, listening carefully was required in the interviews with the mentors too. Certainly, being a good listener is an aptitude necessary for every kind of interview, be it at a distance or face-to-face. In order to achieve mutual understanding of what was said and seize the opportunity to explore points arising I needed to remain alert, focused and perceptive. Listening felt like a demanding endeavour also because English is my second language. This did not prove to be an issue during the first interview but it became a small hindrance during the second interview; the interviewee was talking very fast and I was sometimes hesitant to ask him to repeat his sentences so as to not interrupt the flow of his thoughts. Even so, this did not prevent me from following his story. I was also able to hear what I missed during the transcription phase.

Finally, the transcription process can be troublesome too. Lapadat (2000) argues that there are no universal conventions or a 'checklist' for transforming speech into written text as different approaches serve different purposes. In this study I recall that at first, I spent endless hours having my laptop on one side and the recorder on the other, playing the same piece repeatedly until I fully comprehended and noted down every single word, including interjections and repetitions of phrases or words. This

was the most monotonous part of the research but, as it proved, verbatim transcription enabled me to become thoroughly involved with the data and facilitated later analysis.

### **3.3.3 Analysis of posts and archives**

Around two years after the data collection started I felt that I needed to gather additional data to understand better the members' experience of participation; by and large, interviewees and survey respondents were very positive about the idea of online participation but this was not always echoed in actual online behaviour. Thus, I decided to investigate directly members' online behaviour as reflected in the public messages they shared in the network. The analysis of posts seemed an obvious step to take and I hoped that a combined analysis of data related to the people participating and of data related to their contributions could generate a more complete picture of their experience.

Analysis of posts and archives consisted of an analysis of quantitative data on participation in debates obtained from the archive and the IGGY team and content analysis and visualisation diagrams of selected debates.

#### **3.3.3.1 Quantitative data on participation**

At the time of analysis IGGY had already been running for about two and a half years. Thus, several discussions had been created in the *Debate* section covering a wide range of topics. IGGY had designated 16 broad topics to organise the discussions: *Writing wrongs essay competition, Unitracks, Warwick offer holders, Homework help, IGGY community hub, Help and feedback, Student mentors, Careers and personal development, What's it like to be gifted, Education and the internet, Science, Maths, History, English and creative writing, Politics, Law.*

The 16 topics were further divided: for example *Science* was divided into *Computer science*, *Chemistry*, *Physics*, *Life sciences*, *Science debates*, *Engineering*, *Technology* and *Psychology*. Each of these forums contained various threads and in turn, each thread had a number of posts (i.e. replies) and views (see Figure 6 for an example taken from the forum on *Technology*). The number of replies (this did not include the original post) and views of each thread was visible and this gave me an indication of the most popular discussions (see section 4.2.1).

/debate/technology/page?

TECHNOLOGY	Posts	Views	Last Post Info
<b>TAKING THE RISK?</b> Author: Maddav3	2	5	Posted: 28/JAN/2016 10:08 Author: Anni
<b>DO SCREENS AFFECT OUR BRAIN</b> Author: MonkeyDoctor	4	18	Posted: 1/JAN/2016 20:16 Author: MonkeyDoctor
<b>DO YOU THINK THE NEW ERA OF TECHNOLOGY IS AFFECTING YOUNG CHILDREN</b> Author: Rohan1345	8	49	Posted: 7/JAN/2016 10:11 Author: emmamam
<b>IS SOCIAL MEDIAMAKING EARNING MONEY TOO EASY?</b> Author: summer21	3	8	Posted: 1/JAN/2016 23:48 Author: JamieY
<b>ANDROID VS. IOS</b> Author: Toaster	25	138	Posted: 13/DEC/2015 15:39 Author: summer21
<b>WOULD YOU UPLOAD YOUR BRAIN?</b> Author: SamDean	11	53	Posted: 4/DEC/2015 16:16 Author: Pi314
<b>WILL COMPUTERS EVER BE SELF-AWARE?</b> Author: SamDean	12	86	Posted: 23/NOV/2015 17:52 Author: s15cattin
<b>FUTURE</b> Author: CookieDough786	6	24	Posted: 23/NOV/2015 17:49 Author: s15cattin

Figure 6 Technology: threads, posts (i.e. replies) and views were visible.

Table 6 gives an example of data on posts and views I received from the IGGY team, specifically the top ten debates by reply count and their respective views.

Table 6 Example of quantitative data received by the IGGY team, i.e. top ten debates by number of replies.

Post title	Reply count	View count
First thought in mind	1570	8450
Word game	1403	8060
Community Manager Q&A	769	10103
Get to know your characters	624	4816
3 word story	612	3739
What have you written lately?	206	3030
Is homework a waste of time?	190	2344
Riddles	189	1838
Find your birthday twin	162	2437
3 words	157	1427

### 3.3.3.2 Content analysis

By and large, the main objective of using content analysis of online discussions is to assess the *quality* of learning taking place in networked media. The idea of examining content was introduced by Henri (1992) and since then there exist several content analysis schemes to analyse online conversations (e.g. De Wever *et al.*, 2006; Donnelly and Gardner, 2011).

Content analysis started by reading the forums and getting a feel for the discourse. I quickly realised that some of the debates required short, quick answers (such was the case for *3 word story*, *First thoughts in mind*), while others were discursive covering questions such as *Who believes in evolution and why/why not?*, *Should Britain leave the EU?*. There were also some debates that generated both short and long answers such as *Do you prefer kindles or books?*.

While reading the debates I also formed the impression that members' writing style differed from other social networks; it looked like many members wrote in full sentences, used extended vocabulary and were grammatically consistent, and



messages appeared to be fairly dense in terms of structure. However, compared to, say, essays, messages were briefer, some contained interactive markers such as referring to other people, setting questions and inviting response, and some offered unsubstantiated opinions.

In general, conversations struck me as being about or related to learning and I wanted to explore the way that members expressed and developed their ideas and opinions and the kinds of explorations and negotiations they engaged in. Above all, I had a special interest in how members justified their opinions. As a classroom teacher I spend a great deal of time asking students to express their views on a subject and to provide a rationale for the judgements they reach. In fact, asking students for justifications is felt by many teachers to be essential evidence of learning. Hence, I wanted to examine if the teaching and learning practice of justification taking place in an offline classroom was also evident online.

After the initial inspection of the *Debate* section I identified the debates I would analyse (for more details see section 3.5). It needed considerable trial and error to formulate a scheme that would be comprehensive and practical. Indeed, this task was among the most challenging in my research. I began with a top-down coding framework which derived from the literature review but ended up creating my own framework. Though there are studies that have examined online argumentation (e.g. Baker *et al.*, 2003; Lee, Chan and Aalst, 2006; Blake and Scanlon, 2014) I could not find a framework that captured what I wanted to do, i.e. analyse online discussions from a teaching perspective. Of course, the literature provided useful indicators which I used as a starting guide.

In particular, in first developing my coding schema I created a list with codes from various sources in the literature that seemed to be well used such as *Agreeing/Disagreeing, Referring explicitly or implicitly to others, Questioning* etc. I then carried out a trial analysis of two debates using small units of meaning as the unit of analysis. This way of analysis proved impractical and too perplexing because it led to excessive segmentation of the messages and the main meaning was lost. Below follows an example of such an early analysis. The codes I applied to the text are given in capitals and in square brackets.

However, I do agree [AGREEING] with the remarks you made [REFERRING EXPLICITLY TO OTHERS' POSTS] about nuclear power. You [REFERRING EXPLICITLY TO OTHERS' POSTS] make a very good point that France can generate a large proportion of its electrical power from nuclear sources in a safe manner. [SHARING INFORMATION] Furthermore, I do agree [AGREEING] that nuclear fusion is a realisable source of power within our lifetimes. [SHARING INFORMATION] I know that the UK government is investing into further research, particularly at Warwick University, in order to improve our understanding of exploiting the fusion process. [SHARING INFORMATION, DRAWING ON PERSONAL EXPERIENCE] Can you tell us what your ideal energy mix would be for the UK? [QUESTIONING, INVITING DIALOGUE]

Those preliminary codes were subsequently revised and redefined. First, to make it more functional and manageable, I grouped related codes into themes and assigned subcodes to each theme. For example, I placed *Sharing information such as readings or facts* and *Drawing on personal experience* into the more general practices of *Stating* or *Responding* (the codes are further explained below). However, the themes and subthemes were progressively modified and additional codes emerged from ensuing readings. Further, after discussing in length with my supervisors, I decided to focus on larger themes or 'units of meaning' to capture the substance of the meaning. The number of codes attributed to each post depended on the content. Sometimes one

code sufficed for the whole message, other times a code was ascribed to each paragraph, some paragraphs were associated with more than one codes etc.

The iterative procedure described above culminated in the formation of three key codes; Triggering discussion (T), Responding (R) and Stating (S). In simple words, the scheme examined interaction (the T and R codes) or absence of interaction (the S code), that is I looked at whether or not participants signalled that they had read each other's posts by expanding on the points raised rather than addressing the original post only or stating opinions. The T code included the following subcodes:

*Introducing a new topic, Maintaining the discussion, Asking questions to extend a topic, Acknowledging other participants or their views.* The R code contained four subcodes: *Disagreeing or Agreeing with an opinion/idea, Providing a resolution to a challenge and Expanding on previous comments.*

I further assessed the quality of debates by identifying warrants of knowledge in the posts. The search for knowledge claims and justification led to the S code and its subcategories, i.e. *Stating a view* and appealing to external sources e.g. something they read was coded as *Reading, General knowledge, accepted Facts* and on their *Own experience* and *Value judgements* to support their arguments. *No reason given* was the subcode used when an opinion was not backed up by evidence. The full list of codes and subcodes is illustrated in Table 7.

Table 7 The coding scheme used in content analysis.

Codes	How achieved (subcodes)	Examples
Triggering discussion – T	<i>Introducing, Maintaining, Asking, Acknowledging</i>	(T/Introducing and Asking) ‘There are a lot of stereotypes surrounding intelligent people. How true do you find them?’ (T/Maintaining) ‘Can anyone think of any other occasions where being able to make a poster might be a useful skill?’ (T/Acknowledging) ‘This is really nice. Thanks.’
Stating – S	Appeal to: <i>Reading, General knowledge, Facts, Value judgements (Aesthetic, Moral), Own experience, No reason given</i>	(S/Reading) ‘It reminds me of an article I recently read about the influence of genetics and environment on animal behaviour: <a href="http://www.nature.com/scitable/knowledge/library/both-environment-and-genetic-makeup-influence-behavior-13907840">http://www.nature.com/scitable/knowledge/library/both-environment-and-genetic-makeup-influence-behavior-13907840</a> ’ (S/General knowledge) ‘Driving less can have enormous benefits for the environment, while walking and bicycling can also improve your health.’ (S/Facts) ‘When I do buy food from the shops I try and buy the local products, this helps reduce the pollution from transport, which just adds to global warming’ (S/Value judgement) ‘I think academically gifted is showing ability in many academic subjects; talented is in one.’ (S/Own experience) ‘for example in my family we all do very well in English literature’ (S/No reason given) ‘I think that we should stay in the EU!’
Responding – R	<i>Disagreeing, Agreeing, Resolving, Expanding on previous comments</i> plus Appeal to: <i>Reading, General knowledge, Facts, Value judgements (Aesthetic,</i>	(R/Disagreeing – no reason given) ‘With reference to the points you made about climate change, I have to say that I believe you are wrong when you say that there is no evidence that climate change exists.’ (R/Agreeing by appeal to own experience) ‘I completely agree with you Cari. I’ve never thought myself particularly ‘gifted’, but I just push to do well in tests and work.’ (R/Expanding on previous comments by appealing to facts) ‘Following on from Dori 13. Usually in films Nerds and Geeks are portrayed as genuine and good people. While ‘Jocks’ and the popular people are shallow, self-absorbed and a little thick. I find that

	<i>Moral), Own experience, No reason given</i>	oddly comforting.’ (R/Resolving) ‘I think they were just trying to annoy you geniusgirl22. If it is really worrying you, I would suggest speaking to a close friend or family member :)’
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To test the applicability and consistency of the final coding scheme, I asked my supervisors to code parts of the discussion transcripts and, following that, we checked for discrepancies. Our analyses mostly agreed but where it did not, we reached consensus after extensive discussion. During the analysis, I was also recording any cases where I felt unsure about the codes I applied and assessed those cases with my supervisors. As mentioned earlier, during the interviews I also asked the mentors to review my analysis on excerpts from debates they had participated in. The final scheme was also published in a peer-reviewed academic journal (see Charalampidi and Hammond, 2016).

### 3.3.3.3 Visualisation diagrams

As mentioned above, I also recorded who sent messages to whom and visualised interaction with the help of a software (yEd) into which I imported data manually and created diagrams. This data analysis enabled me to obtain a better understanding of the role of the mentors and of student discussants who stood out, as well as the types of interaction taking place, i.e. many to one, one to many, one to one, or many to many. I provide an example of how I created the graphs in section 3.4.2.2.

## 3.4 DATA ANALYSIS PROCESS

Because data does not speak for itself analysis is a necessary step towards interpretation and conclusions. Data analysis involves breaking down an entity into its constituent parts and reassembling the parts in a way that will enable interpretation of the whole (Hammond and Wellington, 2013). I have defined this study as a mixed

methods single case study with a convergent design. Within this design, I analysed each dataset separately and then I merged the findings from the person-focused and message-focused analysis to answer the RQs. Section 3.4.1 presents how I analysed data from the survey and the interviews, namely the person-focused analysis process, and section 3.4.2 presents how I analysed data from the online discussions, namely the message-focused analysis process.

### **3.4.1 Person-focused analysis process**

#### **3.4.1.1 Questionnaire survey**

As explained in section 3.3.1 I conducted a survey during the pilot study, a survey administered to IGGY members from Madrid, Spain, and the final survey. The questionnaires collected in the pilot study ( $n = 5$ ) were excluded from final analysis as they differed considerably from the ensuing surveys. The Madrid survey returned 71 responses and the final survey yielded an additional 174 responses, raising the total number to 245.

Data from completed questionnaires were automatically entered into Excel spreadsheets and these files were sent to me by the IGGY team. I then prepared the data file for analysis by cleaning data errors such as double or blank entries. I also excluded questionnaires which had replies only to the first and/or second question about gender and age. As a result, out of the 245 questionnaires collected during the main study I ended up working with 161.

After the above procedure, I went through the questions separately and aggregated responses to each question. I did not carry out advanced statistical testing as I was not working in a deductive quantitative tradition. Rather, I concentrated on descriptive

statistics which would assist the reader in understanding the general patterns within the data. I used cross-tabulation to further explore the respondents' level of satisfaction with their school or home-schooling experience vis-à-vis the level of perceived academic challenge. For the open-ended questions I used thematic analysis (I explain thematic analysis in the next section) and counted the number of times a sub-theme appeared in the texts. Sub-themes were later grouped into broader themes.

### **3.4.1.2 Interviews**

As mentioned previously, in total I carried out 14 interviews which I analysed thematically. I began the analysis as soon as I completed the first five interviews with active members, after I had transcribed them. I analysed the first interviews on my own but then discussed this with one of my supervisors looking for consistency and discrepancy. Afterwards I modified my coding scheme, re-analysed those initial interviews and used the scheme with the rest. I used a different coding scheme for the interviews with the two mentors.

To analyse the transcripts, I first read through the texts without taking any notes to obtain an overview and to see if anything would strike me as important or interesting. Then, I read through the transcripts line by line for any potential codes, i.e. labels that 'exemplify the same theoretical or descriptive idea' (Gibbs, 2007, p. 38), as appeared in the data. I noted the codes on the side of the page using a different colour than the colour of the text.

The next step was to develop themes. A theme 'captures something important about the data in relation to the research question, and represents some level of *patterned* response or meaning within the data set.' (Braun and Clarke, 2006, p. 82, italics in original). Ryan and Bernard (2003) listed several techniques with which researchers

can identify themes. Using terminology from that list, I focused on repetitions (i.e. topics that occurred repeatedly), theory-related material (i.e. data related to my RQs or to questions of importance to my research field) and similarities and differences across pairs of expressions from the same interviewee or from different interviewees. In other words, I developed the themes inductively *and* by bearing in mind my RQs. In addition, though my approach was ‘data-driven’, due to my prior engagement with the literature I became mindful of potentially important themes (e.g. social presence). I should also add that I kept revising the initial codes and themes as the analysis progressed.

Principally, I determined the importance of a theme based on the frequency of codes. However, there were instances when I considered a less frequently coded theme to be significant if it shed light on the RQs. Braun and Clarke (2006, p. 82, italics in original) argue that

more instances do not *necessarily* mean the theme itself is more crucial. [...] Furthermore, the ‘keyness’ of a theme is not necessarily dependent on quantifiable measures – but rather on whether it captures something important in relation to the overall research question.

Previous research has also established that data that does not fit emerging themes may be equally important and may enhance our understanding of the case (e.g. Miles and Huberman, 1984).

To give an example of the above procedure, if a young participant referred to homework to explain why they took time off IGGY, I would note it down as ‘school work’. After analysing all interviews I congregated the barriers to participation mentioned by the participants under the more general theme of ‘Constraints’.



This example is a quote from a young participant who commented on her participation in debates: ‘Yeah, I’ve done quite a few [debates] online. I just pass through them sometimes and if anything interests me or I want to voice my opinion about something I just post it.’. When I read this I noted the codes ‘interesting topics’ and ‘sharing opinion’ on the side. These codes were then assigned to the theme of ‘Reasons for participating in debates’. I provide further examples of interview coding in Appendix C.

The themes and sub-themes that occurred from the above analysis were displayed in matrices with the themes in one column and the related sub-themes in the respective columns. A third column contained quotes that exemplified the sub-themes. I created similar matrices for the mentors’ interviews. Matrices such as the one shown in Table 8 below enabled me to further systematise and to simultaneously view the material, which in turn aided my interpretation of the data.

A final step in the analysis of the interviews was to group the themes into wider thematic categories. The analysis of the 12 interviews with active members resulted in the thematic categories of *About the interviewees*, *Use of IGGY*, *What encouraged and what discouraged participation*, *Gains from participation* and the analysis of the interviews with the mentors resulted in the thematic categories of *About the mentors’ role*, *Participation in the Debate section*, *IGGY as a distinct network*, *Suggestions for improvement*. I created ‘meta-matrices’ (Miles, Huberman and Saldaña, 2014) to present the final thematic categories, themes and sub-themes.

Table 8 Example of a matrix displaying themes, sub-themes and relevant quotes.

Theme	Sub-themes	Quotes
Becoming a member	Teacher recommendation	... they [the teachers] ‘ve told me to join IGGY.
	On their own	When I joined the John Hopkins CTY program I knew that there was a lot of research on the website and I think the way I found out about IGGY was a link on a page.
Social gains from participation	Communicating with other members	Some of them [other members] have actually had really similar experiences to me so it’s nice to talk to them about it.
Cognitive gains from participation	Improving communication (speaking, writing, vocabulary) and debating skills	By looking at what other people have written you kind of see what interests you in that and what interests other people in that and then incorporate that in your writing.

### 3.4.2 Message-focused analysis process

#### 3.4.2.1 Quantitative data on participation

In order to make sense of the data obtained from the archive of the discussion forum I grouped its 16 main topics (see section 3.3.3.1) into four categories; cognitive, social/moral/political, personal development and administrative (see Table 9). The cognitive category included topics that were explicitly related to disciplines such as science, maths, history etc. For example, the debate *Ancient languages* discussed whether Latin should be characterised as a ‘dead’ language and was included in this category. The social/moral/political category included topics such as what it is like to

be gifted, favourite books and songs and so on. For example, the debates *Are you ashamed of being smart?* and *Saving our future* were grouped in this category. The personal development category consisted of discussions around university life, studies and careers (e.g. *Studying law at university*) and matters of wellbeing (e.g. *Emotional support*), and the administrative category included the online area where members could ask for help or provide feedback on the network's usability.

Table 9 Categorisation of topics found in the Debate section.

Cognitive	Social/Moral/Political	Personal development	Administrative
Writing wrongs essay competition Homework help Education and the internet Science Maths History English and creative writing Politics Law	IGGY community hub Student mentors What's it like to be gifted	Unitracks Warwick offer holders Careers and personal development	Help and feedback

Next, I aggregated the number of threads and the number of replies contained in each of the 16 main topics. I was subsequently able to compare the extent of visible participation in each of the four categories I had assigned the topics to or, in other words, to see which type of topics (e.g. cognitive or social/moral/political) demonstrated the highest and lowest visible participation.

The data sent to me by the IGGY team allowed me to compare the total number of replies and the total number of views among the top ten debates. Being able to compare the number of views and replies was useful in terms of understanding how

members used the network, i.e. by actively engaging through replies or by quiet participation i.e. reading but not replying.

#### **3.4.2.2 Content analysis**

Table 10 below provides an example of how I applied the coding scheme presented in section 3.3.3.2. The excerpt is taken from a debate on what are gifted learners. The initiator of the debate was a mentor who set a question on the definition of gifted and talented learners (coded T/Introducing). The second participant was a student member who expressed their viewpoint by referring to their personal experience (coded S/Own experience) and thoughts and feelings on the topic (coded S/Value judgements). The third participant was another mentor who agreed with the student's post and shared his own similar view (coded R/Agreeing by appeal to value judgements) and an example from his personal experience (coded R/Agreeing by appeal to own experience).

Following the analysis of each debate, I congregated the frequency with which I applied the codes in each case to compare the level of activity and patterns of coding in respect to interaction or absence of interaction. I also searched for patterns around warrants of knowledge and whether they differed depending on the nature of the discussion.

Table 10 How I applied the content analysis scheme to the debate What are gifted learners?.

Discussant	Post	Codes
<u>emmapar</u>	<p>Do you agree on the following definition?</p> <ul style="list-style-type: none"> <li>• ‘Gifted and talented’ describes children who have the ability or potential to develop in areas ahead of the rest of their peer group.</li> <li>• ‘gifted’ learners are those with abilities in one or more academic subjects, such as maths or English</li> <li>• ‘talented’ learners are those who have practical skills in areas such as sport, music, design or creative and performing arts</li> </ul>	T/Introducing
<u>nebiyah</u>	<p>I think that being gifted and talented can be inherited knowledge on particular subjects, for example in my family we all do very well in English literature. But on the other hand, just because you aren’t born with the natural abilities to perform well in a particular subject it does not necessarily mean that you cannot work towards improve your skills in that aspect of your education whether it be maths, science or English. So I feel that no matter what race, gender or social class you are you have the ability to be the best at whatever you want to be, it is all about putting the effort in to get there.</p>	S/Own experience + S/Value judgements
davidlees	<p>I agree nebiyah! While the technical definitions of ‘gifted’ and ‘talented’ are slightly different, making a distinction between people with natural gifts and those people whose skills are based more on hard work and perseverance, I would say that ultimately this depends on effort. Hard work can make anyone good at anything, with enough practice (I’m not technically very skilled, but I can now assemble flat-pack furniture and can do basic DIY!).</p>	R/Agreeing by appeal to value judgements + R/Agreeing by appeal to own experience

### 3.4.2.3 Visualisation diagrams

To create the visualisation diagrams, I used square nodes to represent members of IGGY, circles to represent mentors or other members of IGGY staff and lines to

represent connections among the discussants. Whenever a participant was addressing another participant I created a connection (lines from or towards the node). If within the same post a participant addressed more than one discussant (e.g. they replied to a specific participant but also set a question for all participants), I created more than one connection. The software adjusted the size of the nodes so that it was proportional to the number of connections made; the more connections a participant had generated, the larger the node. A turquoise octagon signified those messages or parts of a message that did not address a particular discussant but rather all discussants in the debate.

To illustrate how I analysed visualisation diagrams, a representation of the interactions that took place in the debate *Is praise from teachers a bad thing?* is shown in Figure 7.

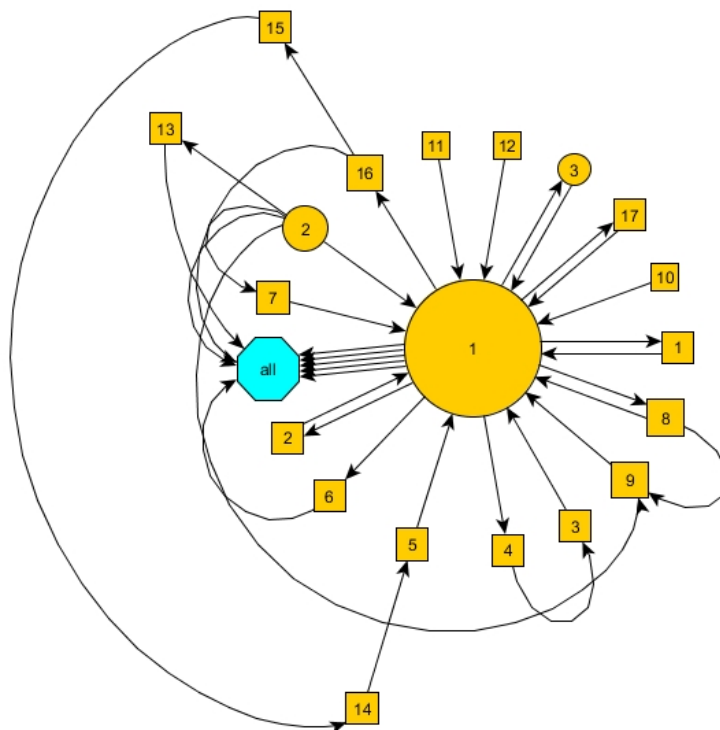


Figure 7 *Is praise from teachers a bad thing?* – Visualisation of interactions.

The diagram shows that the mentor who initiated the debate was the most active discussant. He replied to many participants and, throughout the debate, he also set further questions to all. It is also evident that the second mentor (circle numbered 2) asked additional questions. It can, thus, be suggested that the mentors were trying to keep the discussion flowing. The diagram also shows that most participants replied to the original post but there were also a few who addressed other discussants. This indicates that in this particular case there were varied types of interaction; ‘many to one’, ‘many to many’ and ‘one to one’. In addition, though most messages were exchanged between the mentor who began the debate and members, it can be seen that students exchanged messages too. This could mean that members wanted to reply to the original post but were also interested in their peers’ opinions and experiences.

After I generated graphs for the 20 debates I had selected for content analysis, I looked for the following patterns across the graphs: the most common shape of discussions, how members and how mentors participated and how discussions progressed.

### **3.5 SAMPLING**

Sampling in case studies takes place twice; when the researcher selects the case and when they select the sample within the case (Merriam, 2009). I have already discussed my case in the first section of the chapter. What follows is an account of how I selected the sample, or in other words, the interviewees, the survey respondents and the texts (i.e. the debates) to analyse.

The sampling procedure followed was a ‘sequential’ one (Teddlie and Yu, 2007) as opposed to a ‘fixed sampling strategy’ with which the sample is decided at the beginning of the study (Bryman, 2012). As the former term implies, sampling was an

evolving process in that I began with an initial sample and gradually added to it as the research progressed. This gradual selection of units was guided by the research questions as well as practicalities of the research.

The recruiting process was in general very time-consuming and challenging, partly because I had to establish a relationship with IGGY and work with the team in order to get access to the IGGY members. This meant that I had to find the appropriate individual in the organisation to talk to and then chase them up multiple times to remind them about the agreed actions. I had to find the right balance in this procedure as I did not want to be obtrusive but at the same time I needed the team to collaborate with me if I were to obtain data from the members themselves. To establish cooperation and rapport with IGGY I regularly shared any findings or publications with the team and carried out smaller projects for them.

The data collection started with the pilot study. At that stage, IGGY recruited five members whom I surveyed and interviewed. They were selected because they were high engaging members in that they had used the network a great deal and had stood out by acquiring some kind of achievement badge e.g. they were named *Member of the Month* or had won a competition or challenge. I did not include the questionnaires obtained in this phase into the final analysis as the format was significantly different from the final one. On the other hand, I included the interviews because they generated a considerable amount of meaningful data and the interviewees matched the main study sample. Since at that initial point I was interested in the experience of participation, the sample could be characterised as ‘purposive’. Purposive sampling is a non-probability sampling method by which the researcher chooses participants from whom they can learn the most (Bryman, 2012). In this case, the five interviewees



were considered good informants as they could provide data regarding participation in IGGY and help me answer such questions as for example how active members used IGGY and why.

Following that phase, five more interviews took place with high engaging members (one member had also taken part in the pilot study). This time, the members were part of a sub group of IGGY, namely 'Junior Commissioners' (JCs), who had collaboratively tackled writing a report on behalf of IGGY concerning the use of technology in education. IGGY asked me to produce a report about the JC and this gave me access to the interviewees. A sample that becomes available to the researcher and presents an opportunity for gathering data is called 'convenience sample'. These participants were highly informative and fitted the profile of the pilot study interviewees, that is they were active members in the sense that they had logged into IGGY at frequent intervals and had experienced debates and had tackled academic challenges. Thus, the interviews with the JCs was a chance for me to explore the same themes as in the pilot study interviews, but also explore additional themes that concerned the JC's initiative. For example, the JCs had been able to meet together while writing their report and this enabled me to ask questions which compared online to face-to-face interaction.

The young interviewees up to that point ranged from 13 to 17 and it happened that those who responded to the request for an interview were mostly female ( $n = 9$ ). The majority also lived in the UK ( $n = 4$ ). After the above interviews I liaised with the IGGY team with respect to identifying more research participants. I wanted to contact more high engaging members as well as members who did not use the network as much and investigate their reasons for not engaging. Additionally, given that IGGY's

content varied and that members were free to engage in any type of activity they wished, I wanted to explore further the members' preferences for particular kinds of participation, i.e. preference over social or educational activities and preference over individual or group orientation.

As it turned out, identifying members in this way was not straightforward. Members collected points via any interactive activity carried out within the network (e.g. contribution in debates, exchange of messages, blogging, participation in group challenges) but there was not a way to know whether a member engaged in the individual activities of e.g. reading debates or articles, or watching videos. Thus, it became apparent that the only method that might have given me access to members who engaged predominantly privately was the online survey.

In August 2014 IGGY's Operations Director informed me that they had identified 10 high engaging members and about 20 low engaging members. In the hope of getting a good response rate, the Operations Director suggested that the initial communication with the members came from the IGGY Community Manager as she knew many of the high engaging members well through their regular interaction within the network. To further encourage engagement with the research we also agreed to enter the interviewees into a prize draw for a voucher worth £20 and another one worth £10. The Community Manager asked me to draft a short text for her to use in the communication with the members. The text explained who I was, what the research was about, what was expected from the participants, that participation was voluntary and that they and their parents needed to sign the consent form prior to the interviews. The consent form is attached in Appendix D. The Community Manager then contacted the members on my behalf. After about a month I was informed that 5 high

engaging students were willing to participate but none of the low-engaging ones. The Community Manager made a second attempt to contact those members who had not replied to the initial invitation and an email was also sent to a new batch of members. These efforts resulted in having a total of six high engaging members expressing their interest in participating in the research. When I contacted those six members myself to arrange for the details (i.e. date and time of the interview, getting the signed consent form), to my disappointment, only one member came back to me.

Alongside taking further actions to recruit both high engaging and low engaging members, I developed the survey intended for the Madrid cohort. The survey was developed following a request by the International Director of IGGY. At that time IGGY was piloted for six months in 10 bilingual schools in Madrid, with a total of 193 students being involved in the pilot. IGGY wanted me to create a questionnaire and carry out a survey with these students to write a report that could be potentially used for a wider promotion of the network in Madrid. In the event the questionnaire was the same as I had designed for my study and I could use the data in my full study, with the permission of IGGY.

From this survey I received 50 valid questionnaires. I decided to include data gathered in this phase in the final analysis of survey data for several reasons. First, the questions asked were similar to the questions in the later survey that was made accessible to all IGGY members. In fact, the major modifications following the Madrid survey pertained to its layout and the wording of selected items (see section 3.3.1). Second, the number of questionnaires collected was substantial and data could not be overlooked. This was important because the Madrid sample consisted of different age groups and, perhaps more importantly, provided data from male

respondents; up to that point I had acquired data from one male interviewee only. The survey also shed light on different kinds of participation and preferences for particular activities (see section 4.1.1). An additional reason this data could not be omitted was that the Madrid respondents helped rebalance the survey by giving more overseas input as most of the survey respondents were from the UK and only a small percentage from abroad. This way, issues pertaining to this group (e.g. whether the language used in the network was perceived as a constraint or not) could be explored. Moreover, according to information provided by IGGY, Spanish members were the second largest national group, after UK members. This was reflected in the questionnaire too, i.e. most respondents lived in the UK, followed by Spain residents.

When I designed the Madrid survey, I added an item that invited students to participate in interviews. Ten respondents expressed an interest but when I emailed them directly, no one replied. I emailed them for a second time but again, I did not receive any replies.

After the above described unsuccessful efforts to recruit more interviewees, I set my hopes on the final survey. With this survey, I wanted to achieve a wider representation of members and to recruit interviewees who were not using the network a lot.

Unfortunately, it proved difficult to recruit interviewees who were not engaging very much. I could understand why members might have been unwilling to be interviewed in that some may have felt they had not done enough in IGGY and thus perceived their potential contribution to the research as insignificant. Others may have been self-conscious talking to an adult and sharing their experiences, thoughts and feelings. In any case, their decision not to participate was fully respected. On the positive side, by

using the final survey I was successful in collecting data from members of a different nationality, gender, age and preference for activities (see section 4.1.1). In this phase, 174 questionnaires were returned to me, out of which 63 were excluded.

The second round of the survey also led to one more interview with a high engaging member. This raised the total number of interviews with high engaging members to 12. It was clear by then that the focus of the study had shifted from a broader investigation of the use of the network to an investigation of high participation and the meaning it had for participants themselves.

At this point I decided that content analysis of the members' debates was the most obvious and suitable method for further data collection. For the purposes of content analysis I purposefully selected debates based on two criteria. First, I selected debates that were representative of the cognitive, social/moral/political and personal development categories shown in section 3.3.3.1. After analysing a few debates, I decided, second, to incorporate debates that included the participation of members and mentors who had been or would be interviewed. The reason for this decision was twofold: (a) I wanted to search in debates for tangible examples of claims made in interviews and (b) I wanted to refer back to examples of debates and of participation in subsequent interviews and examine aspects of these debates in more depth.

Interviewing mentors was deemed important because by then it had become evident that their role in the network was indispensable. For instance, participants referred positively to the mentors during their interviews and the visualisation diagrams often showed that mentors were particularly active in debates and their contribution was significant in encouraging further interaction. Mentors were deeply involved in several other ways in the network, e.g. by setting challenges, creating quizzes etc.,

hence I considered them to be highly appropriate informants. In order to link data I would acquire from mentors to the ones I had already gathered, I intentionally selected five specific mentors whose usernames appeared regularly during the content analysis of debates. IGGY contacted those five mentors and out of the five, two replied positively to my invitation, a male and a female. This was also the last round of interviews, bringing the total number to 14.

To sum up, I analysed 161 questionnaires in total, 50 questionnaires obtained during the first round of the survey with the Madrid cohort and 111 obtained during the second round of the survey, when it became available to all members of the network. In addition, I carried out 14 interviews, 12 interviews with members, only one of whom was male, and two interviews with a male and a female mentor. Moreover, I analysed 20 debates, five from the cognitive category, 11 from the social/moral/political category and four from the personal development category. I also created 20 visualisation diagrams to better represent the kinds of interaction that took place in debates. I employed a combination of sampling strategies, including purposive and convenience sampling. The approach was sequential in that it was flexible and evolved during the study according to the research focus, the restrictions and the realities of data collection. Specifically, though I made multiple attempts to access low engaging members and ‘silent’ navigators, this was not feasible. The study was thus adjusted accordingly and centred on the experience of high engaging members and particularly those who interacted socially with other members.

### **3.6 ETHICS**

The ethical guidelines provided by the University and BERA (2011) were followed. Specifically, an informed consent form was sent to the participants requiring their

own as well as their parents' signature. The purpose and the process of the research, and their right to withdraw for any or no reason and at any time, was explicitly explained to the members both via the consent form and orally before the interviews. They were also clearly informed that their online participation and interactions would have been examined for the purposes of the research. In addition, the information gathered for any participant was treated as confidential and anonymity was implemented in any publication of the research findings and in this thesis, i.e. pseudonyms have been used instead of the participants' real names. My ethical approval form is in Appendix E.

Moreover, though I was on many occasions tempted to contact members repeatedly about participation in the survey I did not do this as this would be against BERA guidelines. I was always aware that I was dealing with young people and respected their rights, and engaged respectfully with them.

### **3.7 SUMMARY**

To sum up, this study is considered a mixed methods single case study with a convergent design that aims to describe and understand the experience of members of an educational social network, with a particular research interest in the dimension of participation. The case can be described as uncommon or unusual due to its distinct features, and as local due to the researcher's accessibility to the network, the people and inside information.

The methods used in this study enabled me to access both the participants' perspectives of their participation and their actual activity as it was evident in online discussions. I collected data from the research participants themselves through questionnaire survey and interviews, and data related to their contributions in debates

through content analysis and visualisation diagrams. The IGGY team sent me additional data on participation in debates and I also gathered some from the online archive.

The data analysis process involved a separate analysis of each dataset. The questionnaire survey was analysed with descriptive statistics and the interviews were analysed with thematic analysis. To analyse the content of debates I used my own content analysis scheme and to create the visualisation diagrams I entered the data into a graph editor software. Following the separate analyses, I merged the findings to answer the RQs.

In total, I analysed 161 questionnaires, 14 interviews and 20 debates. The sampling approach was sequential and adjusted to the realities of the research. Although the initial intent was to investigate different experiences of participation, the focus of the study shifted to the more active members.

By using different methods to investigate participation in IGGY I was able to harness each methods strengths to offset their weaknesses. With the constant cross-checking of different data and through methods of development, complementarity, expansion and triangulation I reached a better understanding of the case and strengthening of the study's conclusions.



## **4 FINDINGS**

This chapter presents the findings from the analysis of the quantitative and qualitative data of the study. I have split the chapter into two parts; the first part presents the person-focus analysis, i.e. the findings concerning the research participants collected via the questionnaire survey and the semi-structured interviews. The second part presents the findings from the message-focused analysis of posts and archives.

### **4.1 PERSON-FOCUSED ANALYSIS**

#### **4.1.1 Questionnaire survey**

As discussed in Chapter 3, during the main study I conducted a questionnaire survey twice and received 161 valid responses out of 7274 registered IGGY members (overall response rate 2.2 per cent). Though the response rate was small, I considered the sample to be representative of the overall population in two ways; one, the majority of respondents were females as was the majority of members. Two, respondents were mostly based in the UK and Spain and these countries ranked first and second respectively as countries of residency in membership data obtained by IGGY. However, a divergence between the official data and the survey data concerned the age. IGGY data showed 17-18 years old to be the modal age group, whereas this was the smallest age group responding to the surveys. A possible explanation why members aged 17-18 were the minority could be that they were probably busier and more concerned with school work and exams preparation than taking part in the survey.

Below I present the findings for each of the themes covered by the survey: about you; about you and IGGY; how you use IGGY; what do you prefer to do; what you gain; community, constraints and suggestions.

#### **4.1.1.1 About you**

The respondents' age ranged from 13 to 18 years old. The 15-16 years old was the modal age group (approximately half of responses), followed by 13-14 year-olds. As already mentioned, the lowest number of returns came from the 17-18 age group. The majority of respondents were females (over two thirds), four tenths of respondents lived in the UK and over a third in Spain (36%). Other respondents lived in Chile (n = 13), Bahrain (n = 2), Northern Ireland (n = 1), USA (n = 1), South Africa (n = 1), India (n = 1) and Hungary (n = 1).

Almost all respondents used at least an online platform other than IGGY such as Instagram, Twitter, Facebook, YouTube, Snapchat, BBC Bitesize, Tumblr etc. This indicates that they were familiar with the idea of online spaces including social and/or educational networks prior to their IGGY enrolment.

*Table 11 Breakdown of the respondents according to gender.*

<b>Gender</b>	<b>n =</b>	<b>% *</b>
Male	42	26
Female	115	71
Prefer not to say	4	3
Total	161	100

\*in tables that follow all percentages rounded to nearest whole number

*Table 12 Breakdown of the respondents according to age group.*

<b>Age group</b>	<b>n =</b>	<b>%</b>
13-14	54	33
15-16	77	48
17-18	27	17
No reply	3	2
Total	161	100

*Table 13 Breakdown of the respondents according to their use of online platforms.*

<b>Use of online platforms</b>	<b>n =</b>	<b>%</b>
IGGY only	1	1
At least 1 (excluding IGGY)	145	90
None	9	6
No response	6	4
Total	161	100

Two questions about the participants' school or home schooling experience were included in the final questionnaire but were not included in the survey completed by the Madrid cohort. Of the 111 participants who replied, approximately over two thirds were either very satisfied or satisfied with their school or home-school experience.

Yet, even though the majority of respondents felt satisfied, they offered mixed views as to how far they were academically challenged. Just over half of those surveyed reported that they sometimes felt challenged, and around forty per cent were always or most of the time challenged. Very few felt they were never challenged.

The replies to these two questions seemed to present a tension and this led me to carry out a cross-tabulation of the level of satisfaction against the level of perceived academic challenge (see Table 14). The cross-tabulation showed that: (1) those who were always challenged were very likely to feel satisfied, (2) those not feeling challenged very likely to feel dissatisfied, and (3) those some of the time challenged

were likely to feel satisfied but not to the same degree as those challenged always.

Academic challenge seemed to be an important but not the only aspect of schooling that influenced how students felt.

*Table 14 Cross-tabulation of answers to Q5 and Q7. Academic challenge affected respondents' satisfaction with their school experience.*

	<b>Do you feel you are challenged academically at school (or home-schooling)?</b>			
<b>How satisfied are you with your school (or home-schooling) experience?</b>	Always	Most of the time	Some of the time	Never
Very Satisfied	13	9	7	0
Satisfied	2	14	32	2
Neutral	0	2	15	3
Dissatisfied	0	0	6	4
Very Dissatisfied	0	1	0	0
No reply	1	0	0	0
Total n =	16	26	60	9
Total %	14	23	54	8

The analysis of the open ended question (Q6) threw more light on their school experience. I analysed the replies thematically and grouped the sub-themes into the broader themes of satisfaction and dissatisfaction. The themes and sub-themes are presented in Table 15 below.

*Table 15 Themes and sub-themes from thematic analysis of Q6. The analysis confirmed that academic challenge (or lack of it) affected satisfaction with schooling but other aspects of school played a role too.*

<b>Themes</b>	<b>Sub-themes</b>	<b>Number of times appeared in texts</b>
Satisfaction	academic challenge/push to reach potential and opportunities for extension or extracurricular activities	30
	teachers and teaching approach	25
	support (e.g. emotional, support for future success such as entering university)	24
	learning and achieving good grades	20
	socialisation	6
	resources (e.g. small class size, facilities)	6
		Total n = 111
Dissatisfaction	lack of academic challenge and limited opportunities for extension or extracurricular activities	25
	dissatisfaction with teachers or teaching approach	25
	negative feelings (e.g. stress, loneliness, not fitting in)	13
	resources (e.g. funding, management)	11
		Total n = 74

As can be seen from the table, respondents made more references to aspects of school that satisfied them than dissatisfied them and confirmed that they felt satisfied when the school provided academic challenge or pushed them to reach their potential.

Opportunities for extension and extracurricular activities were also highly valued, as a student said: ‘My school supports me well and offers extra-curriculars, workshops and sessions, trips and additional things to further my education and my options for post-16 education.’. By the same token, lack of academic challenge or limited opportunities for extension or extracurricular activities were key reasons for feeling dissatisfaction with school. Teachers and the teaching approach played a major role too in how the respondents felt. For instance, a respondent felt that ‘[their]

educational provision is excellent and tailor-made to [their] needs and interests.’. Providing support (e.g. emotional or for future success such as entering a good university) ranked high in students’ comments as well. On the other hand, respondents who felt their emotional needs were not met, expressed dissatisfaction. Exams, tests and work overload appeared to be causing stress and anxiety, and some students referred to bullying or feeling lonely and distant from their peers. For example, a participant said:

I’ve nearly finished my secondary school education and over the past five years it has been a source of great stress and anxiety (to the point where I’ve been absent from school because of it). I love learning and reading but I am dissatisfied with my school experience.

Some respondents who referred to the issue of ‘not fitting in’ voiced strong feelings such as ‘social sadness’ or ‘counting down the days until [they] can leave and go to a separate college’. In contrast, a few participants described schools as being places for meeting people and socialising, and this was a reason for feeling satisfied. Last, respondents’ satisfaction was also influenced, positively or negatively, by matters not directly related to learning such as school management, funding, the facilities etc.

#### **4.1.1.2 About you and IGGY**

This section of the survey covered topics such as how members found out about IGGY, membership duration, frequency of access, time spent in IGGY during a typical week, device used and access location.

More than two thirds of respondents found about IGGY through their teachers and the others through other means such as PENTA UC (a centre for the study and development of talent in Chile). Membership duration was spread more or less evenly from less than a month to between one and three years (see Table 16).

*Table 16 Respondents' membership duration.*

<b>How long have you been an IGGY member?</b>	<b>n =</b>	<b>%</b>
1 – 3 years	26	23
6 months to a year	31	28
1 – 6 months	29	26
Less than a month	25	22
Total	111	100

Participants logged in IGGY primarily from home and less commonly from school, using mainly their laptops or desktop computer/pc. Table 17 and Table 18 show the frequency with which respondents accessed the network and the time spent online respectively. Bearing in mind respondents' age and school commitments, most of them appear to be frequent users of the network. Specifically, half the respondents visited IGGY at least once a week and ten per cent accessed the network daily. Non-frequent users and non-users accounted for about forty per cent of participants. When online, a third of those surveyed reported spending more than an hour in IGGY during a typical week and another third spent between half an hour to an hour. The rest did not spend a lot of time in IGGY.

*Table 17 Breakdown of the respondents according to the frequency with which they accessed IGGY.*

<b>How often do you access IGGY?</b>	<b>n =</b>	<b>%</b>
Daily	21	13
Two or more times per week	32	20
Once per week	50	31
Once per fortnight	13	8
Once a month	14	9
Once every few months	7	4
Very rarely	11	7
Never	12	7
No reply	1	1
Total	161	100

*Table 18 Breakdown of the respondents according to the time they spent online.*

<b>During a typical week, how much time do you spend visiting IGGY?</b>	<b>n =</b>	<b>%</b>
More than two hours	12	11
Between one and two hours	26	23
Half an hour to an hour	35	32
Less than half an hour	19	17
N/A	19	17
Total	111	100

#### **4.1.1.3 How you use IGGY**

Table 19 presents the frequency with which respondents engaged in the various activities offered in IGGY. As can be seen from the table, the activities can be categorised as individual or social.

This data shows us that some activities were more commonly used than others.

Reading articles or debates, quizzes, videos and updating their profile appeared to be regular activities for most respondents. Conversely, there was not routine



participation in group challenges and group competitions, live chats, private messaging and blogging.

When comparing activities which could be carried out by either an individual or a group, it becomes apparent that participants engaged more frequently in the former. Specifically, respondents opted more for individual challenges or competitions than group challenges or competitions. However, it should be noted that the group activities were provided periodically rather than on a regular basis. A final observation is that of the social activities the most usual was replying to debates, and of the individual activities, reading articles was more prevalent than the others.

This section of the survey also examined whether members communicated with people from other countries. More respondents ( $n = 102$ ) had than had not ( $n = 52$ ).

In addition, those surveyed were asked to choose the subjects they would usually explore. Science appeared to be the most popular ( $n = 72$ ), followed by creative writing ( $n = 60$ ). Maths and history/politics were equally explored ( $n = 51$  and  $n = 47$  respectively). Participants noted other subjects too, and these were: law ( $n = 2$ ), computer science ( $n = 2$ ), psychology ( $n = 2$ ) and economics ( $n = 1$ ).

*Table 19 Frequency of respondents' participation in activities offered in IGGY. Respondents engaged more often in individual than social activities.*

<b>When you log on to IGGY, how often do you do the following activities?</b>					
		Never	Some of the time	Most of the time	Always
Individual activities	Read articles	3	49	39	16
	Watch videos	11	47	32	18
	Do quizzes	12	39	39	18
	Read without replying to debates	19	49	33	6
	Update your profile	25	67	8	7
	Take up an individual challenge	39	48	15	6
	Play interactive games	41	33	22	12
	Participate in an individual competition	42	36	16	12
Social activities	Reply to debates	30	38	25	15
	Send private messages	56	35	11	5
	Blog	66	27	13	1
	Participate in a live chat	68	24	12	1
	Take up a group challenge	77	28	2	1
	Participate in a group competition	76	23	5	3

#### 4.1.1.4 What do you prefer to do?

This section contained two questions; one that examined participants' favourite activities and one which provided further details about their preferences. Table 20 below presents the participants' favourite activities. The table shows a clear preference for *Reading articles or watching videos*. A third of respondents indicated *Reading and/or replying to debates* as their preferred activity, and a very small number of respondents selected one of the remaining options. A possible explanation for the popularity of articles and videos could be that the cognitive load was lighter and the more active activities may also have been valued but required more time and more commitment. This shows the importance of time as a general constraint on using IGGY.

Table 20 Breakdown of the respondents' favourite activities.

What is your favourite activity?	n =	%
Read articles or watch videos	91	57
Read and/or reply to debates	44	27
Do quizzes or play games	10	6
Take up challenges	8	5
Participate in competitions	3	2
Participate in live chats	0	0
Blog	0	0
No reply	5	3
Total	161	100

The second question asked participants to choose between opposing forced choice statements. First, it became evident that individual challenges and competitions were much more preferred than group challenges and competitions. Another finding was that more respondents favoured replying to debates (n = 62) than reading them (n =

54). It was typical for members to read more than to write (see Table 19 above), but it was interesting to see that participants' preference leant towards contributing content.

*Sending personal messages to people I know in person* and *sending personal messages to people I meet online* attracted an equal number of responses. This could mean that those surveyed felt they could trust other IGGY members or that they wished to get to know them better, even if they had not met them before.

Twice as many respondents preferred contributing to debates than sending personal messages. Interestingly, debating with people they met online was preferred more than debating with people they knew in person, and this suggests they felt confident or safe to share their views in IGGY. Respondents might have seen participation in IGGY as an opportunity to interact with people they did not know and, as presented in the previous section, communicate with people from other countries.

#### **4.1.1.5 What you gain from participating in IGGY**

Next, the reasons for which participants used IGGY were explored. In this question participants could select more than one option from a list and add a free text entry if they wanted. Table 21 shows that overall respondents used the network both for its educational content and its social character. However, the former appeared to be a greater attraction, i.e. to access learning resources and challenges. Interestingly, two fifths of those surveyed associated IGGY with enhancing career opportunity.

Learning about other cultures, communicating with other members and meeting other people were also common reasons for using the network, chosen by approximately forty per cent of the respondents. A quarter of respondents used IGGY to address lack of challenge at school. An unexpected finding was that very few respondents (about 5%) used the network to ask for help with homework from either the mentors or other

students. Four respondents added that a further reason for using IGGY was: to ‘practise [their] English’, ‘to learn about things [they] wouldn’t learn about at school’, ‘to learn new things and interact with news’ and to ‘look for inspiration’.

*Table 21 Respondents’ reasons for using IGGY. Responses reflected IGGY’s hybrid character. Very few used the network to ask for help with homework.*

<b>Why do you use IGGY? (Check all that apply)</b>	<b>n =</b>	<b>%</b>
Access learning resources	101	63
Access challenges that are relevant to me and my interests	77	48
Improve career opportunities	68	42
Learn about other cultures	65	40
Communicate with other members	56	35
Address lack of challenge at school	42	26
Meet new people	40	25
Ask for help with homework from other students	12	7
Ask for help with homework from the mentors	10	6
Other	4	2
No reply	3	2

When asked about perceived gains from participating in IGGY, six major improvements emerged (see Table 22). What is interesting is that participants believed they progressed in a range of areas: knowledge, skills, confidence and creativity. Knowledge of new subject areas was reported by more than two-thirds of the participants, thus it was the most frequently noted gain. Skills related to the respondents’ participation in debates ranked second. But again, the majority of respondents did not associate participation in IGGY with directly improving school performance.

*Table 22 Perceived improvements from participating in IGGY, showing that the majority did not perceive their participation as having an impact on school performance.*

<b>What, if anything, do you improve by taking part in IGGY? (Check all that apply)</b>	<b>n =</b>	<b>%</b>
Knowledge of new subject areas	109	68
Debating skills	67	42
Confidence in expressing your opinion	64	40
Creativity	56	35
Vocabulary	56	35
Knowledge of other cultures	52	32
Friendship groups	21	13
School performance	17	11
Nothing	3	2
Other	1	1

#### **4.1.1.6 Community, constraints and suggestions**

Notwithstanding that some were infrequent users the vast majority of respondents developed a sense of community within IGGY. To a large extent, their feelings about their own participation in the network, about their relationships with other members and about other members' contributions were positive. In particular, most of those who respondent felt they could trust other members, that there was empathy and a feeling of belonging to a group of people with similar experiences, that their ideas and opinions were acknowledged and that the role of the mentors was valuable. Though most respondents were also confident about participating in debates, about a fifth of them felt insecure. During the interviews I explored the reasons that could prevent someone from contributing to debates.

As for the main constraints in using IGGY shown in Table 23, lack of time appeared to be the most important, followed by lack of interest in the activities on offer. The ease of use of the network also prevented about a tenth of the respondents from using it. Further reasons were also provided, though by very few respondents.

*Table 23 Respondents' constraints in using IGGY. Lack of time was the main one.*

<b>What are the main constraints in using IGGY? (Check all that apply)</b>	<b>n =</b>	<b>%</b>
Lack of time	104	65
Lack of interest in the activities on offer	27	17
Difficulties in how to use IGGY	20	12
Different from the school curriculum	14	9
Nothing	9	6
The English language	4	2
The cost	4	2
Other	7	4

An open-ended question asked participants to make suggestions that would improve their online experience. As can be seen from Table 24, most of the suggestions referred to the content of the network. Specifically, some respondents said that IGGY could be offering more games, quizzes or competitions, or more ideas on career options. Others talked about the variety of subjects, for example a recommendation was to add a section on music. A few respondents asked for more challenging or interesting topics, while others asked for 'better links to [their] school life' or topics related to school exams (e.g. A levels). Last, a small number of participants suggested more frequent provision of articles.

Respondents referred to issues with the use of the network too. Easier navigation, clear instructions and more friendly user layout were the main suggestions made. There were also suggestions concerning features of the website. For example, a few participants proposed the addition of a search bar or asked for a multi-language website. Additionally, there were participants who made suggestions regarding communication within IGGY. Specifically, a number of them would have liked to communicate synchronously with other members. Others said that ‘more active debate sections’ or ‘more freedom to talk to other people’ would have improved their experience. A further idea proposed related to the mobile or tablet version of IGGY which, as it seemed, was not working properly. Four participants wanted: IGGY to provide support in making friends; the website to function without the need for internet connection; their school to unblock interactive content; IGGY membership to be cheaper.

Despite the above constraints and ideas for improvement, nearly all respondents (84%) would recommend IGGY to other students. This suggests that even those who did not use IGGY much viewed participation in the network as potentially beneficial.



*Table 24 Suggestions made by the respondents for the improvement of their IGGY experience. Most concerned IGGY's content.*

Themes	Sub-themes	Number of times appeared in texts
Content	Quantity Variety Challenge Links to school Quality Frequency	44
How to use it	Navigation Instructions Layout	17
Features	Search bar Multi-language Design Submit articles Recommendations Time-zones	12
Interaction	Synchronous communication (chat) Active debates More participation Moderation	10
Other	Mobile/Tablet version	3
	Support in making friends	1
	Offline use	1
	School blocking content	1
	Cost	1

#### **4.1.2 Interviews with members**

The participants in this study were 11 highly engaged members of IGGY. As reported in the Methodology and methods chapter, five had also taken part in the JC project.

One of the participants was interviewed twice, once during the initial stage of the research and once after the member joined the JC, bringing the number of interviews to a total of 12.

Analysis of the interviews resulted in the following key themes: about the participants; use of IGGY; what encouraged and what discouraged participation; gains from participation. Interviews with JCs further covered: the project, perceived benefits, challenges, their relationship with each other.

#### **4.1.2.1 About the participants**

The participants ranged from 13 to 17 years old and those who responded to the request for an interview were mostly female (n = 10). They lived in the UK (6), Australia (1), Pakistan (1), France (1), India (1) and Johannesburg, Africa (1).

They all had several interests and participated in extracurricular activities. Though most of them took up sports and music, some had interests not typical for people their age and these were poetry, doing volunteering work for a local orphanage, using architecture software to digitally design buildings and visiting art galleries.

All participants had friends either from school, outside school, or through online social networks, though these were people they had previously met in person. They placed value in friendship and they found it hard when friendships were affected by circumstances such as moving countries or cities. Indeed, relocation was a common challenge for three of them. Some participants shared personal information, for instance one talked about struggles in the family due to having divorced parents and another referred to her prosthetic limb.

Almost all participants were content with their education and they felt more challenged as they progressed through the educational stages. Two participants felt they had been occasionally mistreated by teachers in the sense that their abilities or work were undervalued. However, as they explained, this was not the norm. One

found school boring and another referred to the importance of teachers for her to feel satisfied with a particular lesson.

Most received some kind of additional educational provision from their schools. In some cases supplementary activities were available to all students in a class, such as extension material or harder work and extra-curricular activities. In other cases the schools made personalised arrangements for the participants. For instance, a few were fast-tracked in a subject, one participant was allowed to attend a partner school to take a subject not offered by her school, and another was nominated by her school to attend a Saturday school for gifted students.

Participants appreciated the additional work as it challenged them, and indeed felt disappointment or dissatisfaction when there was lack of it or when they found the tasks easy to complete. Talking about this issue a participant said:

Well sometimes the tasks set have extensions and I often do those and those challenge me, but when the tasks set have no extensions or anything I just, I don't really progress. I just wait until the teacher is done explaining to the rest of the class when I've finished the task, and then I ask them. And the extension they would give me wouldn't always be very challenging and wouldn't bring anything to my learning. (member1)

Another participant was given an option to take the GCSEs early (the General Certificate of Secondary Education is an exam taken by students in England at the age of 15-16), but a change in school management reversed the decision. She commented:

Back to beginning... I'm a bit annoyed that I started something and then they wouldn't let me do it. And I think next year when I got to do the same work and the same tests I'm just gonna be bored. (member2)

Participants also talked about being identified as gifted and their experiences in relation to the gifted label. Six of them were formally labelled as gifted students in

maths, science, history and/or English by their school which meant they were on the 'gifted and talented' register. These participants were identified as academically gifted. The rest were not formally identified, rather there was a shared acknowledgement of their abilities based on their achievements (e.g. test results), the effort and in some cases their eagerness to learn. As a participant put it 'It's not like an official title, it's more of 'you are good at this' so...' (member3). Two participants in the UK attended grammar schools, that is secondary schools that select their students by means of an examination taken at age 11, namely the '11 plus'. One of them explained that her school did not have a gifted and talented register 'because we are all considered above the average intelligence because we had to pass the '11 plus' to get in, so I guess it's more unofficial at the moment.' (member4).

Participants' perceptions of themselves in relation to 'giftedness' differed. In fact, two of them stated explicitly that they did not define themselves as gifted:

I don't really feel as gifted, maybe because, the label 'gifted'... I may don't understand this label because it can mean so many things so... I guess it's the others labelling you as 'gifted' more than labelling yourself as 'gifted'.  
(member5)

It doesn't really like affect me in a way cos I just get on with it at school but it doesn't really affect me, I don't really see myself as gifted. I just carry on as normal, just a normal person at school. (member3)

Five participants used the term to talk about themselves. For instance, one said:

The school chose me to participate in the essay competition that IGGY had held. They knew I was an intelligent kid, I was gifted, that is why they chose me to participate in writing the essay. (member6)

When asked why they had been identified as gifted, most talked about performing well in tests and earning high marks, either in specific subjects or across the board, as the below quotes illustrate:

I'm very good at mathematics. I was recently awarded first position from the government in mathematics. I'm also good in physics, I always excel, I always come the top and I think that's why I'm labelled. I'm called 'the gifted kid'.  
(member7)

I think, across the board someone can be good at everything really. They have a weakness but they can be good at everything. Like I said I don't like English but in GCSE I got an A\* in English, so... You can still be good at it, you just don't have to like it. (member3)

Being a high achiever was for some a matter of effort and commitment and for others an inherent ability.

Participants were also questioned about their feelings towards the gifted label and the majority did not find the label off-putting. A few of them talked about probable issues arising from the use of the label, yet these were not something they had experienced. Most either felt positive of the idea of giftedness or were not concerned about it, as illustrated in the following quotes:

I think that people sometimes label people and call them nerds and stuff cos they are jealous. I haven't really had a problem with that at my school. Most people are always really happy for me when I do well so it's pretty good for me. (member8)

Yeah, I'm now like gifted at my school but they really don't put that much of an emphasis on that. (member9)

For one participant, being identified as gifted meant setting high expectations for herself. As she explained, she felt the pressure of always doing well and of not letting

anyone down. The case of member2 differed considerably from the rest in that she talked about regular conflicts in her social interactions with other people:

I've been in a proper fight before cos someone goes 'Oh teachers speak to you as adult' and I just said 'Well maybe cos I speak to them as adults rather than teachers' and I don't try to be a student, I try to challenge myself. [...] Every few weeks I get a slight comment or I'll have an argument about it but you get used to it.

Still, she was not disheartened and felt proud about who she was: 'Well, I'm a nerd, but I'm proud of it, so, no problem!'.

Being social or being in a school that felt 'intellectual' in orientation facilitated participants' social life. For example, member10 said: 'I think because I'm at a grammar school everyone else is that kind as well so there's not really bullying about it because it'd kind of be fighting of yourself.'. Others talked about having friends that shared their interests and general beliefs about friendship, or other gifted friends: 'I also have a few other gifted friends so it's not really that hard.' (member9).

#### **4.1.2.2 Use of IGGY**

Use of IGGY was a major theme I explored during the interviews. The sub-themes that emerged from data analysis were: becoming a member; IGGY in respect to other online social networks and educational platforms; what did the participants do in IGGY.

##### ***Becoming a member***

The majority of participants were introduced to IGGY by their teachers or an IGGY mentor who visited their school. Three participants found about IGGY on their own; one of them found an external link to IGGY through the 'Johns Hopkins Center for Talented Youth' website and the other two found about IGGY while searching online

for writing competitions (since 2010 IGGY was running an annual creative writing competition in partnership with 'Litro' magazine, see University of Warwick, 2010).

Most of the participants joined the network to 'give it a go', as shown in the following quote:

I didn't really know what to think, I just thought I'll try it out, see how it goes. But it proved to be good. I just thought it was just a website where you sign up and then you don't really do much but yeah, it's pretty good. (member3)

Yet, some of them had expectations towards participation in the network.

Specifically, a participant said she had pictured IGGY as an open and interactive community which she wanted to be part of. Another expected to find interesting and challenging content that would stimulate her thinking: 'I expected not to be bored. I expected a stimulation of the brain and of something that it would give me something to do, to make me think.' (member2). For another expectations built up when she saw that IGGY was part of the University of Warwick.

Some participants decided to engage more in IGGY after exploring the network and familiarising themselves with the content. For instance, one of the two participants who took part in the *IGGY and Litro* writing competition explained how her interest expanded from the writing competition to the debates and the challenges:

It was kind of a dream to be short-listed [she refers to the writing competition] because... Well at first when I discovered IGGY it was only about the writing competition. So I just found that if I was short-listed I could be published on the internet and also in the subway undergrounds of London so for me it was a great opportunity. And then when I started exploring the site, I discovered the *Debate* section so I started to understand how it worked out and the challenges and if you win a challenge I think you have like vouchers so... (member5)

Interestingly, the second participant who entered the writing competition did not engage further in IGGY at the time ‘Cos I wasn’t actually sure what IGGY was, really.’ (member11). Instead, she became an active member after her teacher’s recommendation.

### ***IGGY in respect to other online social networks and educational platforms***

All but one participant were also members of other online social networks (i.e. Facebook, Twitter, Instagram, LinkedIn, Tumblr, Google+) and/or had used online educational platforms (i.e. BBC Bitesize and Khan Academy). When asked to compare IGGY with the above social networks and educational platforms the participants on the whole demonstrated a preference towards IGGY. As shown in Table 25 they referred to IGGY’s nature, the people in IGGY, the content and features of the network.

First, a general understanding of IGGY as simultaneously social and educational was embraced by most of the participants. The network’s mixed nature was mentioned as its most distinctive characteristic as illustrated in the quote below:

It’s not really the same as the BBC Bitesize. Is more, is kind of a cross between like Facebook and BBC-Bitesize I would say. Like it’s got, you can socialise and you learn things. (member11)

A few participants commented that being able to communicate with other members and to learn at the same time contributed to making IGGY fun and more interesting. Others talked about feeling safer in IGGY and that they could trust other members:

I think IGGY is a lot more kind of interesting. It’s easier to find the stuff that you want and everyone else, you know that you can trust them when you talk to them and it’s safer than social networking sites. (member10)



*Table 25 Participants' perceptions of IGGY in respect to other online social networks and educational platforms. Participants preferred IGGY mainly due to its hybrid nature.*

<b>IGGY in respect to other online social networks and educational platforms</b>	<b>Codes</b>	<b>Number of times mentioned</b>
Nature	social <i>and</i> educational	5
People	more opportunities for social networking	2
	more likely to find like-minded people	2
	members more willing to discuss	1
	higher level of discussion	1
Content	more educational (you learn things)	5
	more fun	3
	more interesting	2
	more serious topics	2
Features	safer	2
	more trust	1
	easier to find information and people to connect	1

Some participants explained that social interaction in IGGY differed to other networks because IGGY members were like-minded, more willing to discuss serious or academic topics, and did so at a high level:

Well people seem to be happier to discuss lots of different topics [in IGGY]. Like if I posted something on my Facebook page it would be very unlikely that anyone would want to take part, less likely to find the level of discussion that you find on IGGY or somewhere else. I'm not sure whether it's just the fact that there are more people on Facebook that may not agree with the same sort of, have the same sort of ideas that you do on what you want to discuss. Like half the girls that I'm friends with – my school is all girl school so I'm more friends with girls – so they are less likely to share the same sort of interest that I do than on IGGY, so that more people will be interested in the same sort of science I am or politics or something. (member4)

### ***What did the participants do in IGGY***

Overall, the participants engaged in the network in several ways. At some point all of them visited the *Knowledge* section to read articles, watch videos, or to undertake a challenge. All but one posted and viewed discussions in the *Debate* section and many participated in competitions. More than half the participants wrote blogs or read and commented on someone else's blog. A few also mentioned using the *News and Events* section for the latest updates and developments in the network.

When logging into IGGY, some participants would visit the *News and Events* first or would go straight to the activities they were more interested in. Member10 said she would look at what her IGGY friends had been doing as she would probably enjoy that too:

I normally go to the *Activity* page to look what other people have been doing, cos most of them I added as friends cos they have similar interests to me. So if they've done something, I know that I'll probably enjoy it too. So, I look at what they've done and then I look at debates posts and blog posts.

Participation was not static. For instance, a few participants found it difficult at first to become confident with the online content, the structure of the network and the online audience. This became easier over the course of time and in fact, participating itself gave them the confidence to take on more activity. The case of the participant I interviewed twice is an example of how participation fluctuated over time:

At first I didn't use it that much but then I got on there and looked at some of the debates and a few people's blog and I realised that it looked like a really big thing and it could be really good for me so I started using it a lot more.  
(member8)

In her second interview she explained that she stopped using the debates or the challenges as much as she used to due to the JC workload as well as school work. She

also commented that after the JC project she planned to use the network to the same or even greater extent than before:

I plan to use it the way I was before the JC but maybe even more so I hope to stay active on the whole website and in the debates. I hope to join a lot more challenges and finish them and enjoy them and hopefully I can, maybe make some pen-pals on the website and message so yeah, use everything it has to offer to the fullest extent.

Indeed, school work and exams preparation were one of the most common reasons why participation changed. A participant who was in his last year of school noted:

It's changed a bit cos when I first signed in I used to use it a lot for the challenges, the math challenges, the quizzes and stuff. Then, near exam time I just didn't have time to go on it and now as well cos I have lots of applications to do and A levels work to do so I don't use it much now. Now I don't use it at all. The only thing I use it for is the JC page. (member3)

Participants' interests shifted too, for example one of them noted that she used the *Debate* more than the *Knowledge* while at first it was the other way round. Others noted that at times, they would not use certain sections if they could not find something of interest.

### ***What did the participants do – Knowledge section***

Participants embarked on different educational tasks within the *Knowledge* section. As activity was not directed participants would find their own way into what the section had to offer. One described searching for material within the section:

At the beginning, I was reading a novel on the Himalaya mountain and the Yeti and I could not get a proper image of the Yetis and what they look like, where they live, and went into IGGY and I specifically searched about it. I actually found an article about those mountain spirits which were actually Yetis and they lived on the Himalaya. I gathered a lot of information from that. (member6)

Another participant commented that there was more content in the network than she had realised at first sight:

The IGGY team already asked me to give feedback about it so I had to explore the website inside and out and while exploring really in depth this site I realised how many things there are and not only because I am really interested in always history, politics and creative writing but then you have so many things on the maths part and on the scientific part... I mean the content on there is huge. (member5)

According to the interview data maths, creative writing, history and politics were the most visited categories. Other topics the participants explored were English, psychology and chemistry. In addition to these clearly identifiable subject topics, participants referred to more extracurricular categories in the *Knowledge* section including *GOBBY Academy*, *Beat the mentors* and *Career hub*. *GOBBY Academy* was an application developed by IGGY to teach members the academic vocabulary used when studying at university or working in academia. *Beat the mentors* were quizzes created by the mentors with questions on their field of study. *Career hub* is where members could get information on career choices. A participant explained how she used the *Career hub* to find information that would help her choose subjects for GCSEs:

This year was really important because I had to pick subjects for GCSE and stuff and I didn't really have a clear idea of what I wanted to do. I knew I wanted to do something like science and history related even though they aren't really a good blend. So when I went on the *Career hub* I've seen interviews with people with different jobs and the level of education they took and how they liked their job and what they thought was necessary for them to do their job well, so that kind of helped pick my subjects and make sure they were always towards one kind of thing, not just random. (member9)

As participants reported, when exploring a topic they would carry out a variety of activities such as to read articles, watch videos, do quizzes, play games, undertake a

challenge, or a combination of these. For example, a participant reported that every time she read an article on Romeo and Juliet she would also do the quiz that followed ‘cos I had read all the information needed’ (member1). The same participant provided an example of quizzes located in the *Maths* category, namely *Venn that tune*, which required members to figure out the song titles portrayed as Venn diagrams and other graphs. In this case, when doing the quiz she ‘would go straight to them because otherwise I’d felt like I was cheating because I will be searching the answers and then it wouldn’t be a quiz anymore, it would be an assessment.’. A challenge might have required members to get informed on the topic by reading articles or watching videos before submitting their answers:

Right now it’s the *Cryptography* [her favourite activity]. The challenges have been really interesting and they’ve added these online code breakers and stuff which can really help you apply what you’ve learnt in the videos. (member9)

Challenges could be short or long, stand-alone or part of a larger series of activities. Member10, for example, took part in challenges related to Mark Wood, an explorer who climbed Mount Everest. The challenges were set by the Warwick Medical School and explored the effect of extreme physical exercise on the human body. Apart from the challenges, IGGY members could communicate with the explorer during his expedition by submitting questions for him to answer via Skype, and enter a competition, namely *Design your way to the top flag*, to design a flag for the explorer to take to the top of the mountain.

Last, a few participants used the *Knowledge* section to practise what they were doing at school:

I actually use some of the programs for my revisions cos it was something that appeared at school so I was like ‘I’d rather use IGGY to learn than study the

normal traditional way' so I used IGGY for my maths studying and I also used it for my English notes cos there were some tips on English on writing essays and stuff. (member7)

### *What did the participants do – Competitions*

Most of the participants mentioned taking part in competitions. As five of them were JCs, they referred to the competition through which they were selected. The procedure included writing an essay on education and technology and having an interview with members of the IGGY team. Others participated in creative writing competitions such as the *IGGY and Litro* writing competition mentioned above or poetry competitions. Member10 won the artistic competition *Design your way to the top flag* mentioned in the previous section.

Member4 entered individual competitions but also group ones such as a science competition on green energy design for schools. As she explained, she formed teams for group competitions after communicating with other members through the IGGY's messaging system. The team members were not only people she knew in person (i.e. from her school) but also people with whom she had interacted with in debates:

[...] when I did one of the competitions I got a message from someone that I talked to on the *Debate* section who asked if we wanted to team up and then we made friends through that which is quite nice...

She further explained how the teams collaborated for group competitions through IGGY and in particular through a group message feature. Each member of the team was assigned certain parts of the end product. Upon completion of the individual tasks, members shared their work for the rest of the team to review and provide feedback on. The final step involved one member of the team putting everything together and uploading the final product on the competition's dedicated space. The

participant commented that collaboration was easier in smaller than larger groups because of the difficulty in synchronising and coordinating the discussions:

It was a little bit more difficult because there were more people, you had to rely on them being on the site a certain point each day so that the topic conversations kept on going rather than someone logging on say at 9 o'clock in the morning and then not logging on again until the next 9 o'clock and then other people being on it on different times throughout the day. So it was a lot easier in a small group in that respect.

The participants who entered competitions did so for varied reasons including prizes, an interest for the topic and for fun. Most of them viewed competitions as a unique opportunity, for instance member10 who won the *Design your way to the top flag* said: 'I just thought it's something that's never gonna happen again. It's kind of once in a lifetime thing. I was just going to enter and see what happens.'. The JCs felt that the competition offered them the opportunity to have unique experiences such as two trips to the UK and the USA, collaborating with other people their age from around the world, engaging in a year-long project, researching and producing a big final product (i.e. the report) that they could showcase as their own. Below is a participant's reply to what made her apply for the project:

Because it is an all-year-long project. Every other challenges are pretty short, well you have three, four months to do them but then I guess the output is not as big as the report we are going to use. It is normally pretty short like I did poetry challenges so it is usually like writing a poem or two poems or... they're pretty short things but the JC is something big, it is something that you do a lot of research and it includes trips and a weekly commitment so I think it is the biggest thing because it is something that requires much more work than all the other challenges on the IGGY website. (member5)

### ***What did the participants do – Blogs, Private messages, Live lounges***

Six participants regularly wrote a blog, however, five of them were JCs who would write in turn in a group blog, namely the *IGGY Junior Commission blog*. As one of

them explained, each JC would blog on a different topic and would include information about their project:

[...] we had to write a blog about the organisations [they had visited in the US], about who they are, what they do, why they are relevant to us. I did mine yesterday, I'm gonna post mine today after this. It was about [inaudible words] Elementary School which is a school in Washington DC. Everyone had a different organisation like some people had schools, some people had Google offices, some people had the Smithsonian museums in Washington, everyone had something different. (member3)

The JCs read each other's blog posts and two of them also read blogs from other IGGY members, mentors and the IGGY team. Some of them mentioned being inspired and motivated by the blogs they were reading and though they did not have their personal blog at that time, they planned to create one after the completion of the project:

I remember before committing myself to the JC, I wanted to blog on IGGY. It's a thing that I never did but now I have the JC blogs that I did. But you have kind of goals and targets on the IGGY website and I guess I will achieve them once the JC is off. (member5)

The participant who was not a JC, i.e. member10, had her own blog and read other people's blogs as she found them 'really really interesting' and 'that could help influence my blog.'. She would also comment on someone else's blog and perceived this as a way of communicating with other IGGY members.

Several participants used the messaging feature on IGGY too. They would message members who had similar interests to them or similar opinions on debate topics. Indeed, it was through the debates that they would identify members to befriend and to message:



Sometimes they [the other members] start communicating with me. So, I guess... if they put something interesting on a debate you just go on to their – well this is the way I do it – profile and then I just read their bio and look at their cover image... For example, today I saw that one of the members liked a show called ‘Once upon a time’ so I’ve sent them a message, five minutes before you called actually, about that series and well, I don’t know if he or she will answer or not but... (member1)

One participant explained that the topics they would talk about through messages were topics they could not discuss in a debate or include in a blog where the audience was bigger. As also explained earlier, a participant used the messaging system to team up for a group competition and to communicate with her team. Other topics the participants discussed through messages included ‘light’ topics such as the weather in their countries or new year’s resolutions and wishes, and more personal topics such as their experiences (e.g. a participant used to live in Spain and exchanged messages with a Spanish member), their interests and views on a topic, and school related matters such as tests and exams. However, participants would not share any personal information that would make their identification possible and this was also ensured through moderation.

The exchange of messages with another member could last for a specific time period (e.g. for competitions), evolve and continue for a long time, or simply stop as illustrated in the examples that follow:

I’m not entirely sure why, I’m not even sure who was the one that didn’t send a message but we talked a bit and then it sort of just stopped. I’d like to start up a conversation, like send a message to someone else on the website.  
(member8)

So I have quite a few friends on there [in IGGY] and I sent, every single one of them I sent them a ‘Happy New Year’ message – it took me a while – and they all started answering back. And with some of them I managed to get into conversations and with others it just died, it’s just the way they answered. [...]

but with a member we started talking about GCSEs and I've been talking to her ever since... Well since I sent her that message, I think it was on the 3rd of January, every day I have a new message from her in my inbox. So we went from 'Happy New Year' to GCSEs to music! (member1)

Another aspect of IGGY used by a small number of participants were the live lounges during which they communicated synchronously with other IGGY members, mentors and members of the IGGY team, or invited academics. Member1 described her experience in taking part in a live lounge on university life:

I've really really liked it. The first time I was a bit nervous but I actually really enjoyed it and everybody has like their bit to add. Before the debate starts everybody says 'Hi, how are you?' and it's very considerate and then once the debate actually gets started everybody gets really in to it and everybody asks questions, everybody notes things down.

#### ***What did the participants do – Debate section***

The *Debate* section was frequently used by all but one participant. Participants engaged mostly in discussions relevant to their interests, personal experiences, or school related topics. Some referred to specific debates in which they participated, for example *Should Britain leave the EU?*, *The overuse of antibiotics*, *The use of biofuels*, *Euthanasia*, *Size 0 models*, *Get to know your characters*, *First thought in mind*, *Five random facts about you*. Others referred to broad subject areas they debated and these were: giftedness/gifted label; books; movies; festivals; homework; exams; world news; countries; religion; career; politics; history; English literature; science; creative writing; university. It can be seen that topics varied and although some felt more social or extra-curricular in tone most debates were academically challenging.

Ten participants contributed to debates and almost all of them initiated a debate too. Reading debates was also perceived as participation; participants would not always post in a debate but might only read it instead, especially if their ideas had already

been posted. Further insight on this quiet participation was provided by member1 who started a debate on the Tudors (an English Royal dynasty) but did not comment on the replies she received. As she explained, she did not contribute further to her debate to allow members to think on their own. She also found the replies to be thorough and thoughtful and felt she had nothing to add to them:

I just wanted to push it as far as possible so that they thought of different ways, but the others were so thought through I didn't know what to answer because there was nothing I could say, it would have just made the whole thing they worked worse because it was just so well written and so well researched. I did look at them, I did come back to it.

Conversations participants had at school or in the family provided stimulation for starting a debate, as shown in the following quotes:

Well, I started another one [debate] the other day about, cos I remember that my dad had asked a couple of days ago, we were talking about money, and he asked me whether money would make me happy and I thought that it would. Because of the sort of things that you can buy. Someone that needs a house or give some money to charity, and that would make me happy. So I started a debate asking whether people think money would make them happy and I got a few replies to that. (member8)

Yes, I think I did something on GMO's because I was studying sustainable development in school and I was really eager to see what people in Africa thought about that because the problem right now with biotechnology is... the thing with the seeds and the plants it is kind of a challenge for Africa right now and I wanted to debate about this with African members. (member5)

Others started a debate on a topic they were also contemplating on:

Whenever I started a debate it was just something that I was wondering about and I thought that people would have a lot to say and a lot of responses about the subject, so I just started the debate. (member9)

A few participants used the *Debate* section to ask for help with homework. One of them explained that 'if in school I don't understand something and I really want to

understand it, I go at the *Debate* section, I ask the other members and just in seconds I get the answer I want.’ (member6).

Two participants never initiated a debate and others stopped doing so after some time mainly because many topics had already been covered: ‘I’ve started quite a few of them but I more respond to them now because there are so many topics up that is quite likely that a topic I’m going to create is already there.’ (member4). One of them said she did not know how to start a debate.

The majority of those who initiated debates said it was difficult to do so for three main reasons: a sufficient number of topics had already been posted and participants had to ‘check that no one else has done that topic before you’ (member10); topics needed to be appealing and to generate different opinions; participants needed to convey the topic in appropriate terms so that it would be clear and respectful.

Commenting on this matter member8 said:

It’s sort of hard cos sometimes I really want to put a debate up but I don’t know what to write about. And then it’s sort of hard sometimes to come up with things and to word it the right way so that it won’t come across as anything bad that people be offended by, or something that they need to be able to understand it. That’s the only difficult thing. Apart from that I really like seeing people replying to my debates.

Indeed, when writing, participants thought carefully about how to compose their post and how to present their opinion, especially in the early stages of their participation. Through participation over time they became more experienced and felt more competent and confident:

The first time when I searched on the *Debate* section I thought of for a long time whatever I was going to type in and how and I edited it a few times and made sure it was OK and then I posted it. But now I’ve become more confident about posting. Whenever I want to say something I write it right

away and I'm confident about what I want to say and it's easy to express my opinion online. (member9)

Participants commented on the more formal register used in debates:

Some of my friends they have very different vocabulary to mine, it's more of a slang, and they wouldn't bring as high level thinking and people might just get bored of that kind of thing and never come back on IGGY, if that makes sense. (member1)

Several reasons for starting, contributing or reading a debate were given (see Table 26). First, and most frequently cited, participants valued other members' opinions and wanted to know their thoughts. In the words of member11: 'I like to see how other people are thinking and people's views on things.'. Another participant stressed she was interested in deep conversations that would allow members to exchange viewpoints: 'It's not just to chat with others, it's mostly to get their opinions and what they think about some certain situations that are happening around the world.' (member6). Indeed, some participants seemed to have identified specific members to follow: 'There are some people that start really good debates or write really good opinions and I always try to look at their new debates because I like what they do.' (member8).

Table 26 Reasons for which the participants engaged with a debate, including cognitive, social and emotional purposes.

Why did participants start, read and/or write in a debate	Number of times mentioned	Number of participants mentioning it
To read the views and experiences of others	20	7
To discuss interesting/challenging topics	19	8
To discuss with like-minded people or people with common interests/experiences	13	4
To ask and give help/advice on school related matters	9	4
To debate with people from around the world	7	6
To receive and provide emotional support	6	2
To challenge others/to make them think	5	2
To share their opinion/experience	4	4
To make new members feel welcome/confident	4	1
For fun	2	1

Finding a challenging or interesting topic was the next most frequently cited reason for participation in debates. For example, elaborating on her participation in the debate *Homework is a waste of time* member1 said: ‘I thought that was a really good debate. I’ve always thought that homework was really important.’. Participants stated they would not opt to engage in debates if they did not like the topic or if they perceived the topic as repetitive or off-putting:

I only go in the ones I’m interested in. Like, I went on once at university and science, the creative writing one, books, but I wouldn’t go on things like politics cos I don’t like politics. (member11)

At the beginning I think they were more relevant to society today and I think a bit more open to everybody and not just specialised for you who can do that area. (member2)

Debating with like-minded people was also important. In particular, IGGY provided a space for participants to discuss with members ‘who have almost the same level of

discussion that you want to find.’ (member4). Interestingly, being in a network with like-minded people enabled member4 to discuss topics she would not discuss elsewhere, even with friends from school:

I think this [being in a network with like-minded people] is quite important to me because I find it a lot easier to discuss, like some of my friends are on the site as well and we had discussions through that that we wouldn’t normally have at school.

In addition, participants interacted with members who had common interests or common experiences and could thus understand each other, as one stated: ‘I think sometimes people get bullied for being gifted and IGGY is kind of the place where they can really be themselves with people like them.’ (member1). In fact, a small number of participants offered and sought support or advice from other members on matters related to the gifted label. Member9, for instance, reported:

It [IGGY] offers me lots of supporting information, like an online community that can help you if you have any problems. So if you are being bullied and gifted there are so many gifted ones and I’ve written to them the other day and people who have been bullied have posted stuff and other people have posted solutions and how to help with that situation which is like being really nice and touching.

Member1 posted about people name-calling her in the debate *Are the words ‘geek’ and ‘nerd’ really negative terms?*. When I asked her to expand on why she posted, she explained that writing about the issue was her way of coping with it. At the same time, she wanted to provide emotional support to other members and believed she could achieve this through sharing her personal experiences:

When I post things on *Debate* I try to make them as real life related as possible so people know that there are different issues going on but they can all be resolved and if that happens to them they are not alone, it’s already happened to somebody else.

Apart from the above, members used the *Debate* to ask and give help on school related matters such as homework or studying techniques.

Debating with members to get views from other countries was another reason mentioned by several participants:

The important thing about IGGY is that you can meet people from all over the world so with the debates... I mean in my school I only learn the French curriculum and it is always really interesting to debate on one subject that we saw at school with people from Singapore or from Botswana so it is really interesting to see their point of view, especially if it is a debate on one country. (member6)

Participants found a voice in the network and used it to share their experiences and opinions. A participant took a position on a debate on homework because ‘People who thought that it wasn’t important I just tried to make them see that it actually is really important.’ (member1). The following quote is from a participant who engaged in debates to clear misconceptions about her country:

I use it to get others’ opinion on what’s happening around the world, specifically about my country, what they think about my country and clear some of the misconceptions. They think that Pakistan is Afghanistan. [...] Sometimes if there is a conversation going on about that I might clear the misconception and go ‘They are two different countries and they have their own progress’. (member6)

A few participants wanted to challenge others, or in the words of one participant ‘to make them think’:

There weren’t that many replies but the replies that were there were really thorough and thought through so that is what I was trying to get people to do, to think about it and give me an honest answer. (member1)

I like knowing what other people think and at times, suppose at school I know a certain thing is wrong but then I would just like to provoke other learners and telling them ‘That is right’ although I know it’s wrong. Just hearing them



proving me wrong or hearing me proving them wrong or trying to change their mind on something that is already there. (member7)

Finally, member1 engaged in fun debates ‘because it’s just really nice to take some time out of serious things and just have fun.’. She also said that she tried to participate in debates initiated by new members to boost their confidence in participating and to make them feel as welcome as she felt when she joined IGGY.

A last theme that came up during the interviews was that different debates provoked different kinds of participation. A participant said that when engaging with long or fun debates she would choose what to read whereas with more serious debates she would read all the posts to see the different opinions:

It depends what kind of a debate it is. If I can pick out the debate *First thought in mind* there were so many posts in it, it was just one word, so I just read the last page to see what was there and then I just kept going and added my own but I’d say that’s kind of a debate that’s more kind of fun debate. But on the most serious debates I do tend to read every single one to see just the different opinions. I don’t always post in them but I just read other people’s experiences. (member1)

Talking about her participation, member2 described how engaged she was when debating arguable topics in contrast to more straightforward topics:

At the beginning, I can’t really remember them much but there were some good ones I could sit there for hours describing things and just making a point but now there are things like book recommendations and stuff, which is great [inaudible words] but it’s not really debating. It’s more like just telling something and then saying [inaudible words], it’s not debating, it’s not arguing, it’s just stating something and then going off.

#### **4.1.2.3 What encouraged and what discouraged participation**

This section presents findings concerning what encouraged and what discouraged participation in IGGY. Table 27 provides an overview of the encouragers and

discouragers divided broadly into three categories: encouragers and discouragers coming from the person; from within IGGY; beyond IGGY.

By looking at the table, the most immediate observation is that from the participants' perspective their sense of their own agency was the most important driving force for participation. To them, the context played an important part too but external factors were less obvious. Following is a detailed account of what influenced participation and how, according to the participants.

### *Encouragers and discouragers coming from the person*

#### *Self-motivation*

Participation was fundamentally internally driven. Specifically, participants embarked on activities because they found them interesting or enjoyable and were discouraged if they lacked an interest in the content:

Basically every time I go into IGGY I go straight to the debates. After that, depending on how long I take in a debate, I sometimes look at new challenges, to see if there's anything that suits my interests. (member8)

As previously illustrated, apart from topic and activity an interest in others' views was a key reason for participation. The words of member2 depict this: 'I kind of add people just because I'm interested in people. I like to know how people work, I like to know how the world works.'

On the other hand, disinterest in the content would limit participation: 'I've never done a blog, I've never participated in a debate either. It's not my thing, I just don't wanna debate.' (member3).

*Table 27 What encouraged and what discouraged participation. Participation was fundamentally internally driven. External encouragers were less obvious but lack of time was a major discourager.*

<b>Coming from:</b>	<b>Encouragers</b>	<b>Number of times mentioned</b>	<b>Number of participants mentioning it</b>	<b>Discouragers</b>	<b>Number of times mentioned</b>	<b>Number of participants mentioning it</b>
The person (Internally)	Self-motivation: interest enjoyment acquisition/enhancement of knowledge and skills	71	11	Lack of interest Lack of acquisition of knowledge and skills	23	7
	Sense of responsibility towards community	21	7			
	Becoming an experienced user: knowing how to use the network participation brings more participation	7	5			
Within the context	Community: relatability international membership relationships social presence targets/prizes/awards	44	10	'Online' friends	2	2
	Style of debate: what others said	28	9	What others said: opinion already expressed	5	2

	how others wrote how they approached others' opinion			topic saturation		
	Nature of the content: linked to curriculum not linked to curriculum	22	10	Nature of the content: not linked to curriculum specialised topics topics covered	11	4
	Mentors and moderators	19	6	Moderation	6	5
	Technology: modes of communication e.g. asynchronous, synchronous, private messages features/apps	7	6	Difficulties with using the network: ease of use how to use the network features not working lack of features/apps	17	8
Beyond the context	External motivation: improve career/study prospects access to extracurricular opportunities	9	8	Lack of time: school work out-of-school activities JC project	23	8

Participants referred to cognitive motives too, for example they perceived participation as enhancing their knowledge and skills or as an opportunity to acquire new knowledge and skills:

I think because I saw what was going on [in IGGY] and remembered how much we had tried to get extension in primary school and this [IGGY] was basically what I needed, standing right in front of me. It was a really big opportunity [to expand my knowledge] and I really needed to just get in there and make the most of it. (member8)

Likewise, if content was perceived as unchallenging or as not adding to their knowledge, participation was restricted. For instance, member7 did not use the *Career hub* as ‘I wasn’t quite interested in it cos the information that was given there you can get it anywhere.’ and another participant shared the view that content in IGGY suited younger members more than older ones:

They were especially [challenging] for me in Years 10 and 11. Now that I’ve progressed onto A levels some of them seem a bit easy but there is still the occasion when they will still make me think more, but it especially helped for Years 10, 11, it felt quite challenging. (member4)

Looking at the above quote it also becomes apparent that intrinsic motivation was not fixed but fluid. What was perceived as interesting, fun or challenging fluctuated from time to time and participants would engage in different or new content and disengage from other content:

I tend to favour more the *Politics*, *Maths* and *Sciences* than the *English* section because those are the topics I’m more interested although sometimes I will go straight into the *Creative writing* section and have a look at some of their prompts. (member4)

### *Growing into the community*

Through their active involvement participants gained experience of the content and the structure of the network, the online audience and the community's norms. As they gained confidence, they became more eager to participate. Growing into the community for some also meant giving back by helping others. Member1 in particular was characterised by a strong sense of commitment to help new members because 'I really enjoyed the year and a bit now I spent on IGGY and I want as many members to feel welcome to the community as I was.'

A sense of responsibility or loyalty towards the community was an important facilitator for participation. As also discussed in section 4.1.2.2, participants talked about receiving and giving help in return, on personal or academic matters: 'The IGGY members are really friendly and they always help you whenever you need them, whenever you ask them something, and I do the same when they ask me.' (member6). Member6 felt particularly attached to IGGY due to being a JC and this stimulated her regular participation:

It [IGGY] is also my home you could say you know, I've been to the office, I've been a JC so it's kind of my [inaudible words] and I love to go there all the time and research and see stuff and debate with the IGGY members and think like it's not over yet so yeah.

For member1, quiet participation in debates was also driven by a sense of responsibility towards the community:

Other people have different experiences and they feel that they can share them with us. I think that if they share them with us they should be read by someone and I just want to participate towards that.

All in all, what instigated participation rested first and foremost in the participants' minds. One of them put it aptly:

It [IGGY] could still stimulate them [the members] if they are eager to learn. Then, if they are not eager to learn they will not like IGGY but if they want to learn and if they like learning on a particular subject, yes it is always stimulating. (member5)

### ***Encouragers and discouragers coming from within the context***

#### ***Community***

Participants referred to additional encouragers coming from within the network, with the most often cited theme being the community itself. Participants explained the value of meeting up with people they could relate to as well as being connected to people from other countries. Relatability allowed participants to feel a sense of belonging and to talk openly and encouraged communication: 'IGGY offered a basis to talk to other people of the same intellectual level as me and explore topics further.' (member10). International membership gave participants access to cultural diversity, or in a participant's words 'you can see what they are learning as well and how that is different from how your culture is like' (member11), and access to 'different opinions based on experiences that vary so much around the world.' (member2).

Interaction needed members who felt connected. Participants explained that most of their IGGY friends were ones they met in debates or with whom they took up challenges or competitions together. The depth of these relationships was variable and for many IGGY was a loosely bound network rather than the close knit community developed from day to day interaction. The majority of participants viewed other members as 'online' friends rather than 'real life' friends, but nonetheless people who

they valued. Some had created stronger relationships via the online environment and interacted more often both in ‘public’ but also in private:

Well, I have quite a lot of friends. Like whenever someone sends me a friend request and I’ve seen them, I’ve posted in [inaudible words] and I’ve seen the new debates that they started, or something that they’ve written, or a challenge that we are doing together then I accept their friend request. But I must say, a few of them we have started conversations and we write messages regularly but most of them are just acquaintances. A few of them are friends. (member9)

Meeting other IGGY members in person would strengthen relationships and would in turn facilitate online interaction:

I’ve noticed that some of the people [in IGGY] know each other so I would also like to recommend it to my friends so that I could also have people that I could talk to frequently, cos the learners chosen [by her school] to be IGGY members are not so interested about it. From the Saturday school most of them are not really active members like I. (member7)

I went to the University [of Warwick] a couple of weeks ago where I met with a few IGGY members and then we did a maths and English session. [...] I think I talk more often with them. (member10)

The JCs felt particularly close to each other after their face-to-face meetings, as member5 said: ‘Before the UK trip we weren’t friends. We were ‘the other JCs’ because it’s so different to be on internet and talking on the website than being in person and talking face-to-face.’. When I asked them to compare their relationship to relationships with other IGGY members they were unanimous in that their relationship was deeper and more personal:

Well, with other IGGY members I don’t know them on that personal level. We associate a bit, talk a bit here and there on the website but with the JCs I know more about them, I know more about their personalities, they know more about me and it’s a better relationship than the one I have with other IGGY members and it’s more personal. (member8)



Face-to-face interaction would not only result in *more* participation, but also in *different* participation. Specifically, some participants explained that discussions in IGGY were not as intimate as in other social media they used, partly because they had not met other members but also because of moderation. For instance, member11 disclosed more on Facebook than IGGY as she used the former to talk to her offline friends on a personal level, while she kept conversations in IGGY on a general level. Similarly, another participant said:

I would prefer keeping my anonymity because then it can't be traced back to me. [...] Most of my personal experiences aren't the worst I ever had, I don't post my really really personal ones, so it's not the end of the world if people find out who I really really am. (member1)

To compensate for the lack of closeness developed in face-to-face interaction, a sense of online social presence was necessary. The concept of social presence has a specific focus on the degree to which a person is perceived as present in the online interaction. Within IGGY, social presence rested on communication and the participants' efforts to display themselves online or to acknowledge the presence of others. When social presence was felt, participation was encouraged. For instance, two participants said:

I was really happy that somebody had actually noticed that I had a problem and taken the time to answer back. I thought that was really really nice of them and I just felt like somebody was listening to me. Even though they don't know who I am they still took the time to help me solve my issue. So I was really happy with those comments and I did like both of them I think. (member1)

If you go back to debates and someone said something about what you said, it's nice to see that people have actually read it and taken the time to look at your opinion. It makes me feel really good that I am able to get my opinions out there and know that someone is reading them. (member8)

A sense of social presence was supported by the mentors. The following quote from member1 illuminates how a mentor addressed members to acknowledge their presence:

I think they [the mentors] bring a high level of sophistication and a lot of intelligence to IGGY and their posts are really interesting and they always, one of the usernames – [mentions the mentor] – I think that’s her name, and I don’t know if she is still part of the IGGY community cos I haven’t seen her post in a while, but when she did she always wrote specifically to someone. For example she put a username and answered, and there could be five messages for different members on one debate and I think that was really good that she took the time to answer.

Addressing someone directly was a practice applied by the participants too, to let others know they had read their post. However, acknowledging others could also take the form of indirect replies, that is replying to the original post without addressing a specific individual.

IGGY would reward members with digital badges or titles for accomplishing certain targets or tasks and these rewards constituted an encourager for participation from within the network. For example, the *Member of the month* title could be earned if someone had ‘the highest contribution to the site in quantity and more importantly, in quality.’ (IGGY, News and Events, 2016). Entering challenges and competitions was also an opportunity to win prizes or awards such as a certificate, a gift voucher or something bigger as in the case of the JCs. However, participants did not perceive these rewards as reason enough for taking part but rather as an added advantage to other motivations. The quote below is from member5 who explained why she would do a challenge:

It can stimulate your intellect and it is always fun doing a challenge like actually someone saying ‘Oh, you have to do this’ and then submit it at some kind of due date and then you can win something.

### *Style of debate*

A second encourager from within the network was the style of debate, containing the following three sub-themes: what others said; how others wrote; how discussants approached others’ opinion. The first sub-theme refers to the ideas and opinions expressed in a debate. According to participants, IGGY members had interesting and varied opinions and this stimulated participation. For example, member1 commented that her participation in debates ‘depends on what other people have said on it [the topic] so if it’s a topic that’s really thought through I try to add my spark.’. Member8 explained that debating was her favourite activity because ‘I think it’s really interesting that like sort of bunch of five people you could get five different opinions! I just think it’s really interesting!’. What others said would sometimes act as a discourager, specifically when an opinion or idea had already been expressed by someone else or when topic saturation was reached. The second sub-theme, i.e. how others wrote, refers to the register in which debates were conducted. As was mentioned in section 4.1.2.2, participants commented that the register within IGGY was more formal than that of speech:

I mean the way I talk on IGGY wouldn’t always be the way I talk in real life because of the high level of talking. [...] If I use that kind of vocabulary my peers don’t often understand what I’m talking about. (member1)

Well, face-to-face is more personal and online to me it seems more formal. When I’m talking online I don’t talk, I don’t type something as I would if I was saying it to them so it’s less informal. Well, not completely but not as informal as when it’s face-to-face. (member8)

Participants described how they would justify their opinions. As illustrated in the following quotes, discussants would often provide a rationale for their views rather than merely making a statement:

I am [comfortable in sharing her opinion] because I know that it's less likely that people will just try and shoot me down but they are more likely to debate and ask why I think this and offer an opinion that's backed up rather than saying 'No, you are wrong' which will happen in some debates offline and such. (member4)

You know that the people that are going to debate with you they are open minded so they will always respect your opinion but they would probably try to convince you the other way. But you can always defend your opinions and ideas and they will always be respected. (member5)

The quotes above also demonstrate how discussants approached others' opinion.

There was a shared sense amongst participants that their views were valued and that replies from other members were respectful and non-judgemental. Discussants were also open to different opinions and this encouraged participation as participants felt comfortable in sharing their opinions.

### *Nature of the content*

An inherent component of the network that influenced participation was the nature of the content. For some, having access to subjects not taught in school encouraged participation: 'I think I just log in when I've got free time and I want to learn things I don't learn at school.' (member11).

At the same time, links with the curriculum would also encourage participation. As previously stated, some participants used IGGY either to deepen knowledge of school subjects in the *Knowledge* section or to further discuss curriculum topics in the

*Debate* section. Participants noted however that even when content in the *Knowledge* section related to school work IGGY would approach the subject differently:

Usually [I study] sitting next to the book and opening the test book so I sometimes lose concentration but in IGGY there was a math game so I kept on answering questions, doing subs and stuff so I noticed where I had weaknesses and for me it was much more interesting than using a book to study.  
(member7)

Similarly, debates were perceived as of higher level:

Because people on IGGY are high level thinkers they just challenge everything I think about and some of the debates relate to the things I've been doing in class but do so on a higher level so they challenge me. (member1)

Four participants suggested that having more content related to the school curriculum or exams was needed for them to participate more. For example, member11 thought that content in IGGY 'is more like general knowledge' whereas the school curriculum was narrower. Links with the curriculum was especially important for older participants who were getting prepared for their school leaving qualification (e.g. A levels): 'I'll say make it more relevant to studies instead of just fun, facts and stuff. Actually help, I'll say with my A levels, assist me in learning and stuff.' (member3).

The nature of the content could also discourage participation if, for example, topics had been covered before or if the topic was too specialised and made it difficult for those who did not have the subject knowledge to participate. Member2 commented on this:

Well it's kind of the same subjects now or the subjects are a bit [far-fetched?] as they are very specialised, so they are not a wide range, they are very specialised to certain things. So for someone who don't know what that is, can't really join in.

### *Mentors and moderators*

Mentors and moderators encouraged participation too in several ways. Messages and posts were monitored and this was generally perceived by participants as necessary or even desirable for feelings of safety and trust among members. For instance, one participant said that without moderation 'I think it [IGGY] would just be less open. You wouldn't be able to talk about stuff without knowing that someone was possibly not who they were saying they were.' (member10). An opposite view was expressed by another a participant:

I think maybe if they just made things easier and they were a bit more open with what people said. It's like freedom of expression really and a lot of it is moderated and I have no idea why. (member2)

Most participants talked about the value of moderation while also acknowledging constraints that come with it. For instance, member9 commented that moderation was necessary but could confine ideas:

I think that they can constrain people's ideas at certain times but I understand why they are necessary. Keep them all feel safety and good environment throughout the community.

Member4 explained it could slow communication:

I think it's quite good in a way because it's nice, it's a good thing not to be able to not share your personal information whereas you might in other places, although it does mean there is also less scope to be able to talk in some senses because the messaging system isn't the most, well isn't the fastest way of talking to people as such, so it kind of constricts conversation a little bit more.

Moderation also necessitated that members communicated in English:

We have to talk in English because IGGY doesn't allow you to speak in different languages because you could be communicating any different information, which I think is a bit of a pity really, but I guess it's just one of

the security aspects. [...] I wish we could have talked in Spanish because even though it might not be secure it would have, you know, allowed me to keep talking in Spanish because I barely do anymore and it would have, again, challenged me but I know it's one of the security aspects. (member1)

Moderation affected the depth of relationships too:

Well, it's impossible to be close friends with IGGY members because of the moderation system. You don't know their real names, you don't know their age. There are a lot of things you can't know about these people. [...] Sometimes it can be pretty annoying but on the other hand I think IGGY should continue moderating everything because when you see how unsafe internet can be, you definitely want to keep IGGY safe. (member5)

Participants described further the facilitating role of the mentors, which seemed to be multifaceted. First, participants considered them as people to look up to for advice on matters related to university or school. Commenting on the mentors' involvement in IGGY a participant said:

I think they are quite important because when you got a question you need to ask about a specific topic they are always happy to help. And their contribution could be really interesting. [...] You can look at what they've done and look at what degree they are doing and ask them questions about that. (member10)

Second, as member2 stated, 'they help regulate the site'. Another participant provided more details:

Whenever a debate is going slow or nobody is really replying they help post more questions and help you start thinking and if you are unsure about something they answer in one or two days straight away. (member9)

Third, they supported new members to find their way in the network and to feel welcome, either online or during their visits to schools: 'He [a mentor] came to our school and one of my teachers picked a handful of gifted and talented students and he just explained IGGY to us and he just made us feel really welcome.' (member1).

## *Technology*

Issues related to the technology aspect of the network also influenced participation. Specifically, participants enjoyed using interactive applications e.g. the *GOBBY Academy* described in section 4.1.2.2. In addition, the availability of different modes of communication (i.e. asynchronous and ‘public’ through the written debates and blogs, synchronous and oral through live lounges, and private through the messaging system) offered participants the capability to use the one they preferred or suited their needs at a certain time. For instance, the fact that debates were not oral but written allowed member11 to get involved as ‘I don’t like speaking debates but I like typing though.’. Member1 reflected on the difference between asynchronous and synchronous communication and explained why she started ‘following avidly the university live lounges’:

Well because you are talking to people at the same time so it’s not like you send an email and you wait for them to see it and they reply, you might not be on the same time. Everybody is on at the same time so everybody is talking at the same time and a lot of information is passed through it. I mean if I wouldn’t take part in them there’d always be the transcript I can look at after, but by being in the live lounge I can ask my own questions which I wouldn’t be able to do.

Others preferred asynchronous communication as it enabled them to think about their response before posting it:

I guess that the fact that is something on the internet it makes you even more comfortable in sharing your ideas because I guess you can take time to formulate stuff and to write everything down. (member5)

Having said that, difficulties with using the network was at the same time one of the main constraints in using IGGY. Participants provided several examples that indicated that their participation was sometimes discouraged or hindered due to issues with the



usability of the network. One example concerned blogs which were located in each member's profile, and that may have made it difficult for others to find. As member10 suggested, including the blogs as a separate section in the navigation bar could make blogging easier:

You know how along the top IGGY has *Activity*, *Profile*, *Members*, that stuff, I think maybe a *Blog* one so that you could look at lots of people's blog cos that would mean you don't have to go to their profiles and know that they have a blog. So I think one where everyone's blog is kind of collected together and then put in the section, similar to the *Knowledge* page.

Another participant found it difficult to know whether members had replied to specific debates:

I think the *Activity* page where there is attached what everyone is doing I think that should be more clear, more specific. Sometimes I want to see what people have been doing, like where it says they've replied the *Debate* page but it's hard, like you have to scroll through them all. (member11)

Member6 found it complicated to add friends:

At first when I joined IGGY I thought it was a bit confusing when you had to add friends, you know to send friend requests. When you have more than one friend requests it takes a lot of time to accept one and then go to the others. So maybe IGGY could enhance that section. Like just click on the boxes on which you want to add as friends.

Others experienced problems of a technical nature such as features or applications not working (e.g. they could not post a blog or submit work for a challenge or competition). As member2 put it: 'A lot of it doesn't make sense, technical bits. It isn't easy enough technology and it just doesn't make sense.'. Member2 elaborated on her comment and explained that this type of issues required time or effort and as a result participation was inhibited:

It wasn't really the navigating. Well, it was but some of the software and stuff they use, like Blackboard, I can't use it on my laptop even though I've got updated Java and everything. It's just little things that just make it 'Do I have the time to go and work half an hour tests on my laptop just to be able to do the maths?'.

Last, some participants recommended the addition of features like one that would show who was online 'cos sometimes you are talking to someone but you don't know whether they can talk back or not.' (member10).

### ***Encouragers and discouragers beyond the context***

External motives were also mentioned by participants and these were extracurricular opportunities and opportunities to improve career or study prospects. Extracurricular opportunities included for example the JC project or visits to the University of Warwick. A JC stated:

I feel that it's got a lot of opportunities on there [in IGGY], it provided me with a lot of opportunities. Like the JCs, a huge opportunity. I'm working with people from all over the world which are my age and without IGGY I would never have done that before. Like to go to New York and Washington just last week, I probably not done that either so... amazing. (member3)

The quote below illustrates how participation in IGGY could additionally enable participants to improve their career or study prospects:

As well as being quite a good thing to put it on something like a UCAS form it's given me a chance to talk to academics at Warwick and I think one of them, I'm quite sure one of them does either law or politics at the University, or several of the student mentors do, so I get the chance to talk to them as well and see what is like studying these subjects. (member4)

Though factors beyond the context were not often mentioned explicitly, participation was considerably affected by what was happening in the participants' lives and the available time they had. For example, the majority of participants drifted away from

IGGY as their school lives became focused on exam preparation or when their out-of-school activities demanded more of their time. A particular issue for participants taking part in the JC project was that the work was so demanding of their time that their involvement in the online part of IGGY fell away. Following is a quote that demonstrates that lack of time was a major participation constraint:

Yeah, not [using it] as much at the moment cos I'm kind of under a lot of work and pressure from school but I have used it quite a bit in the past year and a bit I've been on IGGY. (member4)

Committing to a task was more difficult when the activity was quite advanced:

I tried to look at the *Knowledge* section but some of the challenges are very time consuming and there was one that I started which I'm really hopeful that I'll be able to finish over the holidays, probably I'll even start this weekend, but it took a few weeks to do. And I didn't really have enough time to do it at the time I started it. (member8)

#### **4.1.2.4 Gains from participation**

This section is dealing with participants' perceived gains from participation in the network. The five JCs reported on additional gains from their project and these are also included here. As can be seen from Table 28 below, perceived gains reflected the network's hybrid character. Participants developed personally and had social and cognitive benefits, with the latter being the most widely understood benefit.

##### ***Personal development***

###### ***Improving confidence and determination***

Personal development was achieved through a boost to confidence and determination.

The following quotes demonstrate that confidence derived (a) from shared experiences or shared identity which contributed to developing a positive sense of self and (b) by broadening knowledge and understanding of different subjects:

Table 28 Perceived gains from participation reflecting IGGY's hybrid character. Cognitive gains were the most cited.

	<b>Gains from online participation</b>	<b>Number of times mentioned</b>	<b>Number of participants mentioning it</b>	<b>Gains from the JC project</b>	<b>Number of times mentioned</b>	<b>Number of participants mentioning it</b>
Personal	Improving confidence and determination	9	5	Improving confidence, determination and open-mindedness	17	5
	Obtaining help with studies/career	7	5	Broadening life experiences	15	5
	Experiencing fun	7	4	Experiencing fun	8	5
	Experiencing sense of belonging	7	3	Gaining popularity, appreciation/admiration from others	4	2
				Obtaining help with studies/career	4	2
Social	Communicating with other members	12	4	Creating deep friendships	12	5
	Creating online friendships	5	3			
	Improving offline friendships	4	3			
Cognitive (knowledge and skills)	Gaining extracurricular knowledge and opportunities for extracurricular activities	35	11	Gaining extracurricular knowledge and skills: subject specific knowledge cultural knowledge	35	5

				research skills digital skills		
	Learning through discussion (from others' views and experiences)	21	10	Learning to collaborate	10	5
	Experiencing cognitive challenge	15	6	Improving communication skills	5	4
	Improving communication (speaking, writing, vocabulary) and debating skills	12	8	Experiencing cognitive challenge	3	3
	Improving school performance	10	7			
	Extending curricular knowledge	6	6			
	Improving creativity and imagination	4	4			
	Learning to collaborate	3	1			
	Improving time management skills	1	1			

Well, it improved my confidence a lot because I realised there was someone to talk to that had the same issues as me or the same positive things, that I wasn't alone. And I found out that most of my friends were really accepting of who I was but I hadn't had the confidence before to talk to them about it. (member1)

Usually when someone saying something I feel opposed to I don't speak up about it or I usually don't put forward my opinion, but then when I started going to the debates and know some things I think I started feeling opinionated about the *Size 0 models* debate and I just said what I thought. I think it's good! (member8)

The JCs in particular felt that confidence and raised self-esteem was of the most noticeable improvements on themselves:

You feel like you are an important person. You feel like you've been given a magic wand and you can use it to change the world. That's how I feel about being a JC. I have the full power to change and convince anyone. (member7)

I think that personally I've developed my confidence. I think I'm more confident now than I was before we did the JC cos we've done a lot of work, speaking, presenting and just being able to talk to people we don't even know so I've become more confident. (member3)

### ***Experiencing sense of belonging***

Participants identified themselves as belonging to a community. This was important for three reasons: first, participants felt comfortable in initiating or responding to interaction; second, they felt they could turn to the network for emotional support as people would empathise with them; third, membership seemed to have an intrinsic value. The examples that follow are illustrative:

Whenever they have like started a new debate or something, they send a message saying 'look at my debate' and it's just nice to know that you are part of a larger community and others who are with you. (member9)

Most of the people who are on IGGY are gifted and talented so I think the way that we can talk about the label given to us with total freedom and to discuss our experiences with this [...] I think it's really important that there's

somebody out there who's had the same experiences with us and can give us some points. (member1)

### ***Obtaining help with studies/career***

In IGGY participants obtained support on studies and career planning. Member10 explained they could receive guidance in two ways:

First of, looking at the mentors, the stuff that they are doing and then the other way is the *Career hub* in the *Knowledge* section. That has lots of different careers, you can put in what you want and then see what comes up. I think that's really helpful.

For some, participation itself was viewed as an asset for their university applications.

Involvement in the JC project was perceived as providing career opportunities too:

I'm probably gonna study in the UK after my baccalaureate and I wish to go to a university in England and I know this project is going to help me get a good university because I think it's also influencing me in my choices of courses. (member5)

### ***Experiencing fun***

As also stated in section 4.1.2.3, participants engaged in activities because they enjoyed them. It was interesting to hear that fun content was simultaneously perceived as educational and conversely, more explicitly educational content could also be fun:

Every month it comes out I do the *Beat the mentors* and I just learn, I actually learn so much because even when I get the answers wrong I read the little bit where it says, where it explains the answer and I learn a lot and I think it's really good because it's a fun way of learning. Every now and then I check the *Venn that tune* because I think it's really fun, it's really hard as well though! (member1)

All JCs had fun during their project too, and especially during the trips. Indeed, the project had enriched their life through experiences such as travelling on their own, socialising and interacting with people from different countries, spending time at the

University of Warwick and working with professionals. For two JCs, participation in the project also meant gaining reputation and appreciation from others. This was critical for one participant as it shaped her school life: ‘Fortunately I was selected as a JC that year and my school had posters of me all around the building and I was popular at that school.’ (member6).

### ***Social gains***

#### ***Communicating with other members***

Communicating with people in IGGY was perceived as a gain in its own right. Participants placed great value in the opportunity to discuss and socialise with IGGY members as it was not easy for them to interact with like-minded people elsewhere. In conjunction with this, and as illustrated earlier, participants perceived interaction in IGGY as distinct compared to other networks or even offline and considered this advantageous.

#### ***Creating online friendships and improving offline friendships***

Communication in IGGY resulted in the creation of online friendships but also in the strengthening of offline relationships. Participants valued their online friends and felt connected to them, even though they placed a limit to how deep online friendships could be. This was expressed vividly by the JCs who had experienced meeting each other in person and could thus compare their relationship to their online friendships:

It [online friendships] won’t have that good factor as in meeting a person and spending time with the person when they are with you. Otherwise, online you can express your feelings with that person, chat with the person, but at some point you really want to meet that person who understands you, you know. (member6)



I don't really think I have created a relationship with other IGGY members except for the ones I already know, like my close friends, I mean the people I know face-to-face. But other than that, I don't feel I've created a relationship with people in the IGGY community. (member7)

Three participants explained that being in IGGY enabled them to come closer to friends they had offline. Specifically, member4 found it easier to discuss with them in IGGY rather than at school and participating online enabled member1 to be more herself offline. Member8 befriended one of her classmates who was also an IGGY member and she felt 'it's really good cos now we are pretty good friends and I don't think it would have happened as much if it weren't for IGGY cos it's something that we talk about a lot.'.

### *Cognitive gains*

#### *Gaining extracurricular knowledge and opportunities for extracurricular activities*

Apart from personal and social gains, participants frequently referred to how they benefited cognitively. The network offered participants learning resources on extracurricular topics as well as opportunities for extracurricular activities.

Extracurricular content was found in different places in the network. For example, participants mentioned acquiring knowledge through debates, challenges, competitions, quizzes and live lounges:

I've been on the science debate. And learnt like stuff about nuclear power. I've learnt like stuff about different foods that are good for you and bad for you. (member11)

The JC project provided participants additional extracurricular learning specific to their research topic (i.e. education and technology) but also in relation to research methods (e.g. about interviewing, questionnaire survey, searching online for academic

resources, presenting in conferences) and to digital or social media tools (e.g. creating videos and Vlogs). They also had the opportunity to learn about and understand different cultures first-hand, both through their meetings and their trips:

I gained a lot of cultural knowledge cos [inaudible words] from different countries so I learned about their lives and their culture and stuff but also by the school visits on how they use technology and things like that, subject specific stuff. (member3)

Other participants gained cultural knowledge too, through the online interaction with members from around the world:

Definitely an opportunity not only to get to know people from other parts of the world but also to get to know their culture and their feelings and their opinions about different global issues and what they want to change about that. (member9)

Extracurricular content motivated a participant to learn more on her own:

I think I just learnt a lot about many different things. When I first started looking at the *Debate* section there was a whole bunch of stuff that I've never heard of before so that basically gave me the incentive to go and look it up and find out more about newer things. (member8)

Though IGGY content in general was perceived as educational, most participants commented on how they learnt from discussions and specifically from others' views and experiences. Member7, for instance, said: 'I like meeting new people, I like learning about new people, I tend to learn a lot from people, I tend to see other people's point of view.'. Similarly, member8 said that she regarded other IGGY members 'as people that I can learn from. And people that I would like to get to know and see more about.'.

The fact that IGGY membership ranged from 13 to 18 years old enabled younger members to benefit from the experience of older ones:

Obviously we are all in different years but we are still part of like one label, the gifted, so obviously an experience that's happening to a year 11 right now and they've decided to talk to us about it, that experience might happen to me later and I could go back to that debate and see what other people posted.  
(member1)

Participants also learnt from accessing mentors' views. As shown in the previous section, the contribution of mentors was valued not only because they facilitated discussions but also because they were supportive, sympathetic and offered useful insight into different topics such as university or school life, topics related to their academic discipline etc.

### *Learning through discussion*

A recurring theme in discussing cognitive gains was the idea that accessing others' views would broaden members' understanding. Member1 expanded on this matter providing an insider's perspective:

From other people's experiences and other people's views it just brings on a whole other way of your thoughts and maybe you thought one way but somebody else thought another way and it just makes you think, so it is challenging your brain which is what my definition is of learning. And just some debates do relate a lot to learning but other debates are slightly more like fun and I think they are also important because [...] it's just funny to see what people write. But others like... the one about geeks and nerds, they just really make you think, make you learn and share experiences.

When asked to comment on a particular debate she had started and whether members' replies had any effect on her views, member1 explained that

even though their ideas brought a whole new way of looking on to it, because there were also negative points to their arguments, I just tried to balance it out, I did stay with my idea but their ideas did make me think a lot.

This shows that members would offer new perspectives on thinking about a topic but how they justified their opinions was taken into consideration by those reading the messages.

### ***Experiencing cognitive challenge***

Participants commented on how debates challenged their thinking: ‘My favourite activity on IGGY is actually debating cos when you can find an interesting question it can make you think.’ (member2). In fact, for member2, the purpose of debating ‘should [be to] make you think, it should give you ideas, it should stimulate you.’.

Participants perceived individual activities as a cognitive challenge too: ‘It [IGGY] was new and in the *Knowledge* pages I was learning things, it was good for the brain. It was worthwhile.’ (member2).

Several aspects of the JC project felt cognitively challenging for participants, for example presenting at an academic conference that took place at the University of Warwick or writing reports: ‘I mean there were a lot of challenges, but they’re fun challenges. Like to produce the first little report on my country and to prepare for a conference. These are healthy challenges.’ (member5).

### ***Improving communication and debating skills***

Participants further explained how online activity enhanced their communication skills, both in writing and orally. Member9, for instance, explained that by mastering how to write her opinion online she also became more confident in expressing her opinion offline. The JCs felt particularly skilful in communication, though for some this was not attributable only to their participation in the project:

I think I've worked out how to express my opinions and communicate to other people my ideas better than I would have done before I joined IGGY. So I think I gained communications skills also from interviews with you and for the JC and that was also because of the website as well. And I have to, like on the debates, having to think about what you say to communicate to other people what you mean. (member8)

What is also evident from the above quote is that participants developed communication skills by thinking about how to express themselves online. The following examples show two additional ways this was achieved: one, by adopting elements of other members' writing style and two, by expanding their vocabulary through content such as the *GOBBY Academy*:

I think by looking at what other people have written you kind of see what interests you in that and what interests other people in that and then incorporate that in your writing. (member10)

It [IGGY] has enhanced my personality, enhanced my knowledge. There are so much like the *GOBBY Academy*, it has really improved my vocabulary, the different words and in different ways. There is an idiom of the day, a word of the day, different categories or different types of words. Whatever you want to learn, easy or hard words. That has really helped me as a gifted student because as I said before communication is really important and the words the *GOBBY Academy* has provided me with have improved my communication skills. (member6)

A related benefit from participation was the improvement in debating skills:

Well, it's made me think about how to debate a lot more because debating at school it wasn't really common so I didn't know fully how to develop an argument and back up my points. (member4)

Communication or debating skills was one of the gains more readily associated with offline or school performance. For instance, member8 said that 'if I ask people they would say I have become a bit more forthcoming with my opinions' and two others explained how they incorporated what they learnt in their school essays.

### ***Improving school performance***

Extra curriculum content was valued but other content was perceived as helpful as it was, in one way or another, related to the curriculum:

The maths I found quite useful, some of the things I look at the maths we've looked at either previously or had a refresh on it or is new and then come up in school, and same with the chemistry as well so yeah, it's kind of almost like a follow up in some cases. (member4)

It [IGGY] is about general knowledge, it's about different things, it's not just about one specific thing. It's about maths, science, about history, about geography. There are many things and I think it's really helpful and it's amazing, it was really helpful whenever I needed it. And for general information even if you just randomly go there and just look you get a lot of information. (member6)

Apart from engaging with the content, participants could be directly supported with school performance by asking for help from the mentors or other IGGY members:

They opened this new debate, it's called *Homework help* and I recently asked a question about it and one of the mentors replied a really really long, helpful, detailed explanation and he also gave me links to several good resources which I used. (member9)

### ***Extending curricular content***

Having said the above, it should be pointed out again that IGGY was better understood as extending curricular content rather than reproducing it:

It offers more in-depth knowledge than what we can do in school. IGGY is kind of a stimulator. When you learn something at school, it is usually not in depth and if you want to learn more about it, you got to do research. Well, at some point I was studying Greek tragedy and we weren't covering that much about tragedy so I just kind went on the IGGY website and there were a lot of things about the tragedy and so it was much more stimulating than what we learnt at school. (member5)

### ***Improving creativity and imagination***

In addition, activities in IGGY would usually require participants to ‘think outside the box’ and demonstrate creativeness. Member9 put it eloquently: ‘All of the stuff that are on IGGY it’s not just how you should learn it, it’s teaching you how to be creative with it and how to apply it.’. Member8 said:

There were some debates and some challenges that were asking you to be creative and come up with the best as you could and that really challenges my creativeness because personally when it comes to thinking outside the box I don’t think of myself as a very creative person and that’s something that I’d really like to strengthen and get better at.

### ***Learning to collaborate***

A participant referred to gaining collaboration skills by taking part in group competitions and learning how to work online with people she never met:

We were each assigned a different task and I learnt quite a lot about my section which I’ve never actually looked into before. [...] We worked with someone who was very history orientated and history isn’t my strong point but I learnt quite a lot doing it, going through it that way and just the organisation and the management of a project and coordinating it online when you’ve never met the other person. (member4)

All JCs improved in this area too as they had to work together, online and offline, to accomplish certain tasks such as coproducing their final report.

### ***Improving time management skills***

Last, member8 explained how she tried to manage her time effectively in order to combine school work, online participation in IGGY and the JC project:

I’m trying to look at how much time I’ve been spending on IGGY and thinking ‘I’m gonna spend this time on IGGY and then gonna do some

homework or go to some assignment or JC research’. So, that’s probably a skill I’m gonna use for the rest of my life!

#### **4.1.3 Interviews with mentors**

Apart from the 12 interviews with young participants in the study, I conducted two interviews with student mentors, one male and one female. At the time of the interview the female mentor, mentor1, had been a mentor for three years, and the male mentor, mentor2, had been a mentor for slightly more than a year. In both of these interviews I used stimulated recall and invited participants to recall their thinking during their participation in certain debates.

The key themes from the analysis of the mentors’ interviews were: about the mentors’ role; participation in the *Debate* section; IGGY as a distinct network; suggestions for improvement. What follows is a more detailed account of the above themes.

##### **4.1.3.1 About the mentors’ role**

The mentors’ role was diverse. It included several things with the first being to produce complementary material to that produced by the IGGY team or obtained from external providers. This included articles, creating series and quizzes. In general, there was flexibility regarding the kind of content they produced and how often they would produce it. Nonetheless, they had to make sure all key IGGY subjects (i.e. English, maths, science, history, creative writing) were covered and in practice they tended to focus on topics which they had observed were generating member interest. For instance, they produced content like *Top ten tips for this or that* (e.g. *Top ten tips for managing your time*) to support members with school work and studying. They also introduced seasonal topics like *Halloween* or *The international pirate day* to



which they provided subject knowledge perspective. The idea was to do something that was fun while academically purposeful:

It was the international pirate day and so we wanted to do something for that. So I wrote an article on the science behind being a pirate, so talking about, you know, when pirates throw people off the boat and talking about the physics of it. Like here's a balance of how you'd actually be able to throw someone off the side of a boat so putting a bit of science but also a bit of fun to celebrate that it was international pirate day. (mentor1)

Mentors would also create content based on their expertise, interests and preferences.

For example, both mentors contributed to *Beat the mentors* by creating quizzes in their field of studies. Mentor1 had a biology background and produced short articles and quizzes in the *Knowledge* section on different hot science topics like Ebola and Zika virus, but also career-based content on life sciences, e.g. explaining this field of study, describing the life of a scientist, sharing interviews with academics and providing examples of research carried out at the University etc. Mentor1 found it easier to contribute to debates and create short content for the *Knowledge* section as this suited her busy schedule more. Mentor2 on the other hand participated more in the *Knowledge* section as he combined his studies on biochemistry and his personal passion for films to create a year-long series, namely *Silver screen science*, which explained the science behind popular films. The series asked members to read articles and then proceed to a challenge. Mentor2 explained that the challenge would require knowledge included in the articles 'but with an extra edge where they would have to go and look into some additional information'. Content in the *Knowledge* section was not always accompanied by tasks for members. According to mentor1, 'if everything has a task they probably wouldn't be as inclined to look at them, or they'd feel if they've read it they'd have to do the task and then they wouldn't want to read it'. On

the other hand, mentors would sometimes link content in different parts of the network, for instance, *Silver screen science* invited members to further discuss the topics in a dedicated debate.

Another way of introducing content was to contribute to the *Debate* section and mentors contributed by either initiating a debate or responding to posts. Both mentors stated that their contributions were intended to be supportive and advisory. As they were older and more knowledgeable they felt able to provide guidance on school-related issues. For example if members were stressed about exams they would suggest effective studying techniques, or if worried about personal issues, say, they were struggling with peer relationships or faced issues in relation to the gifted label, mentors would share their own experiences and how they had overcome challenges themselves. Mentor2 in particular felt he could identify himself with the members and wanted to support them by sharing his experience and advice. When discussing the debate *Are you ashamed of being smart?* he said:

With the post that we have here I said 'It's cool to be dumb and the intelligent feel penalised', that is something which was true when I was a kid and it's still going to be true now [...] But what I wanted to get across is that the way I see things, it's down to where the life peaks. So the people in school that seem to be doing really well, they are popular, they get all the boyfriends, the girlfriends, they are going out, their life is peaking at that point and then they are going to stay there whereas they have to be patient, that's what I really wanted to get across from that.

A central aspect of the mentors' role in debates was to stimulate participation and facilitate discussions. Overall mentors invited members to voice their opinion and to exchange views and experiences and supported them in doing so (more details on their facilitating role are given later). Mentor2 believed that mentors made a

significant contribution to debates and that their facilitating role was crucial in achieving meaningful conversations:

The debates could potentially go on without mentors but I don't think it would be nearly as effective. I mean, questions like 'Are you ashamed of being smart?' they would say 'yes' or 'no'. But we were them. We have experience. [...] Although the debate could go on, I don't think it could be as meaningful without the mentors.

An additional and important responsibility was to monitor debates and safeguard members. This included 'to make sure that it stays a debate and not an argument with each one' (mentor2). Mentor1 said:

They [the members] do seem that sometimes they are really engaged, they are really involved in it so it's just, it's interesting to watch and it's enjoyable that they are doing that but at the same time you are trying to read it and you are trying to keep track of that everyone is still happy in the debate and to make sure that everyone is OK. You can discuss whatever but just do it the right kind of way.

Mentors' participation worked within a safety framework for which they had training. In general they did not need to step in to keep the debates running smoothly, but there was a particularly heated debate on science and religion that called for continuous monitoring and intervention. Both mentors talked about this debate:

Moderators and mentors had an eye on that. No one told me to do this but you take one look on that title, you know what your role is as a mentor and you know as a scientist what the issues with that are. [...] I kept a very close eye on it to keep the debate in check and the point where I stepped in was when that person was going too far. (mentor2)

Yeah, that [debate] is a painful one. When I was talking earlier about watching debates and trying to make sure that it stays on an even keel I think that's one that would stand back for that. I think it's quite an evoking subject because with religion it also relates to culture and it relates to family, so sometimes people are happy being over religion and talking about religion but if people

aren't religious then it can be easier for them I feel to slip into a situation where they're being offensive without realising it. (mentor1)

Last, the mentors' role involved attending IGGY events such as visits to schools to promote IGGY, open days at the University or TED talks where they would escort IGGY members.

#### **4.1.3.2 Participation in the *Debate* section**

The longest section of the interviews concerned participation in debates and covered the following sub-themes: how they encouraged members' participation and facilitated discussions; the kind of provision they offered members; the style of debate in IGGY and what constituted a successful debate; learning through discussion.

##### ***How they encouraged members' participation and facilitated discussions***

###### ***Promoting social presence***

As mentioned above, a significant part of the mentors' role was to encourage members' participation in debates and they did this first by acknowledging members' online presence and establishing a strong presence themselves (see Table 29).

Mentors acknowledged members' presence by addressing specific discussants or by inviting others to contribute to discussions. Mentor2, for example, usually tried to address all members when writing a post as he felt this was a more inclusive way to encourage participation. However, in cases when members talked to him or shared something personal, he would reply directly to them:

If someone actually said something to me quite personal then I needed to recognise that and that's why I would be directed back to them, but every post I had I would try to do it as inclusive as I could to encourage a wider debate.

*Table 29 How mentors encouraged members' participation and facilitated discussions. A strong online social presence was deemed necessary.*

<b>Participation was encouraged through:</b>	<b>Number of times mentioned</b>	<b>Number of participants mentioning it</b>
Promoting social presence: addressing specific discussants addressing all discussants inviting others to participate mentors talking to each other	10	2
Introducing engaging topics	6	1
Asking questions	5	2
Respecting opinions, not being judgemental or offensive	4	2
Adding new perspectives or repeating important points	3	1

Mentor1 on the other hand would usually do both, i.e. reply to specific members and also invite others to join the conversation and add their opinions and experiences on the matter under discussion:

If there are things that they are concerned or worried about, once you encourage them to talk on the site and to share those things, try to then provide some advice and support for them to feel comfortable on the site and to continue to use it as well. And then you'll also find that other members will start to offer advice so often when I come and ask 'What does everyone else think?' or 'Does anyone have suggestions?' or 'This is what I did but did this work well for anyone else?' to get other members to join in and then I can kind of leave the discussions.

Mentors would show their presence by participating regularly and by talking to each other. Mentor1 explained that a strong presence would enable members to recognise her and feel comfortable to interact with her:

I think the more present you are on the site the more effective you can be at doing that [making members feel comfortable] and getting members to respond because they are going to recognise you and know you are there

whereas if you don't respond very often or don't make very many posts they might be less inclined to respond because... even if they don't know you as a person they might feel like they don't know you as well because you are not as visible on the site.

She would keep track of debates she had either initiated or participated in because she was conscious of not missing any replies to her posts as this might have disengaged members:

Always, whenever I start a debate or I reply, I always click the notifications so that when someone else replies I get a notification so that I can keep track of what I contributed to. And if I get a response, sometimes it might be just carrying on the debate but sometimes it might be that one of the members is asking something about the debate that I started, you know, asking me, so I wanna make sure that if they ask me something that I'd respond, I haven't just started a debate and disappear and then they ask 'Oh, have you seen this?' or 'Did you see this article, I found this one.' that there is a response as well cos I think they are not gonna feel like engaging if they feel like whenever they respond you never respond back.

Mentors interacted with each other too, and talked to each other at the beginning of a debate to trigger discussion. However, they would try not to do this excessively as they did not want to dominate discussions:

So you'd find that us mentors were actually very supportive of each other regarding participating in the beginning of a certain debate. You have two mentors talking to each other to start with and then the students get involved. [...] If I saw two mentors doing this I wouldn't want to get too involved because that's the perception that would come across. (mentor2)

### *Asking questions*

Apart from showing their presence the two mentors invited participation by asking members questions. Mentor1 believed that if her posts contained her opinion only, members with an opposite view might have felt discouraged to share it. By adding questions at the end the posts she wanted to show she was open to different views:

There are things about asking your thoughts and opinions cos if you just say what your opinion is sometimes that's not always as engaging as adding on the end 'Does anyone think differently?' or 'Does anyone agree?' or 'Does anyone disagree?', 'Why do you agree, disagree?'. To then make sure there is something on the end of your post that can kind of lead to you inviting people to comment. Cos sometimes I suppose if you just make a comment and it's your opinion then they might feel less confident then voicing their opinion behind, especially if it's different to yours, so if you're encouraging them to speak and encouraging them to speak regardless of whether they agree with you or not I think that helps to keep them engaged and make them feel comfortable in responding.

Mentors also used questions as a way of supporting members to elaborate on their answers, especially if their answer was short or did not provide any justification in support of their views:

You read through and you see someone said something but they just said 'yes' or 'no' or 'I agree' or 'I strongly disagree' but haven't said anything else then you can kind of pick up and say 'Oh, why do you strongly disagree?' or 'What is it that...' so those kind of questions, cos sometimes you pick those people out because you think there's more that they can contribute to the discussion and it might just be the case of just trying to encourage them to get more involved than just making a post of two words, so... So yes, one technique is picking out people that seem like they are engaging but not really participating that much and see if you can draw those people in. (mentor1)

### ***Introducing engaging topics***

Mentor1 also discussed the importance of the topic and how certain topics could facilitate participation. Specifically, she found that members were more likely to write a response to a topic if there were different ways to look at it and if they could relate to it. For example, when I asked her what she had in mind when she started the debate

*Is praise from teachers a bad thing?* she answered:

It's more to encourage members to try and discuss their views and to try and share some of their own experiences cos I think if they are talking about things

that happened to them they engage much more, it's much more value to them when they are talking about their own experiences.

Likewise, according to mentor1, the debate *Homework is a waste of time* in which she participated generated a lot of responses because it was a topic everyone had experience of and different opinions about. For the same reason some of the lighter topics such as the ones about holidays or films could last long:

I think it's just because it's something that's very universal which is sometimes why some of the funnier topics can go on for ages cos talking about holidays or talking about films that are released across the world it's something that's very universal to all the members, so it's something they can all relate to, it's something they can all engage with, so it's something they can respond to.

Debates on current news or about an ongoing topic would also provide grounds for keeping the discussion going as mentor1 could add updates to them and keep members engaged:

I try to pick topics that are developing so there's always something new you can go back to so if you created a topic about something like the Zika virus or something about a plane crash and then that will keep developing in the news, it's something you can add updates to keep members updated and what's happening and then they'll want to talk about it again.

Sometimes she would do the same in debates initiated by others, that is she would add links from external sources about the latest events and ask members to find similarities or differences to what they had discussed before and to add their views on how things evolved.

### ***Respecting opinions, not being judgemental or offensive***

As also mentioned earlier, mentors wanted members to feel comfortable in raising their opinions and for this to happen discussants needed to be respectful towards



others. This could be challenging for mentors and moderators when members discussed more sensitive topics, as in the debate on religion presented above. Talking about this mentor1 said:

I think the whole point is to let them discuss what they want to discuss but to do it in a manner that works for everyone, that everyone is comfortable with, where people can add their opinions and feel comfortable doing that. Also, they have to respect the fact that they need to respect other people's opinions and add their arguments against their opinions in a way that it's not going to be offensive. I know that still sometimes if someone disagrees with you, you can still be offended even if it's not personal but there's a difference between offending someone and being personal about it and just offending them by having a different opinion.

Mentors themselves were mindful of the way they would address members. Mentor2 for example refrained from expressing his personal opinion on the topic of science and religion:

I never mentioned my opinion on the matter cos I didn't want to influence it. Faith is a gift I've not received. My viewpoint is so different that could potentially fundamentally contradict all the stuff they are being told at church or mosque or synagogue or whatever.

### ***Adding new perspectives or repeating important points***

Finally, mentors encouraged further discussion by approaching the topic from new perspectives and sparking conversations from different angles:

Basically it's just trying to bring something new to the conversation but if I'm the last person who posted and no one replied then it's not much you can do about it. But the mentors would also do this with each other, we'd look where others posted and try our best to stimulate a debate from another point of view. (mentor2)

With a debate which had been running for some time mentors would repeat important points as members might have missed them and in order to allow for new members to

participate. Mentor2 explained that prior to posting in a debate he would try to understand what had been said by going as far back as possible:

I tried to read as much as I could but with some of them that have been going on since IGGY started, I tried to go back at least 6 months if I could. It was minimum professionalism to understand the content. Sometimes you are aware you are rehashing all debates and sometimes it's good to re-have the conversations because students won't go that far back. It's about having informed conversations, see what other students posted before, also that will give you clues on safeguarding, best practice, so it's a lot of reasons for doing it.

### ***The kind of provision they offered members***

Mentors tried to provide for members in several ways and these were: extend members' knowledge; provide peer support; contribute to members' sense of belonging; provide opportunities for discussion.

#### ***Extending members' knowledge***

Taking the above in turn, mentors created debates on extracurricular topics that extended members' knowledge. For example, mentor1 described how she would start a debate on current news to help IGGY members view it from a scientific angle:

You read something on the news and then you're thinking about 'That's a really interesting science topic and I'm a scientist so I wanna tell IGGY members about it and help them understand the science that goes on behind it.'. Things where the link to science may not be as obvious and then you can try to draw that out and show actually it's all quite interlinked and these are the ways that it's linked together.

When discussing a specific debate she initiated, i.e. *What happened to flight MH370?*, she explained that in this debate members discussed about the science behind flights and were also directed to different resources:

In this topic members have been to three different websites since the BBC, they watched a film about it, they learnt about, you know, tracking devices, GPS on planes, they've learnt about the science behind flights and what they think happened to the flight and the trajectories of the flights.

### ***Providing peer support***

As previously stated, mentors provided peer support by giving members emotional, social or practical help. If members asked for help with school work mentors would give an answer based on their own knowledge, direct members to resources within IGGY, or provide external resources to assist them with their queries. When members were concerned or stressed about something mentors would try to address those issues for them by offering solutions that had worked for them:

If they ask about a particular topic they are studying or a project or things like that then you can direct them to the site, you can direct them to resources so they get kind of practical level of support. [...] Then I think there is a little bit of peer support in terms of, if they are worried about exams or they're very stressed or they are finding it difficult to manage their timetable then you can say 'Have you thought about using this app?' or 'Have you thought about doing it this way?' or 'I found this was really easy' or 'This worked really well for me' or 'Maybe you should try this' so kind of a support in that sense. (mentor1)

Practical advice was sometimes directed at members who felt dissatisfied with school or felt they were not challenged enough. Discussing this with mentor1, she explained how she urged members to reach their full potential by taking simple steps:

A lot of students mention helping other students in class or they mention 'Oh I never got anything to do cos I finish the work really quickly' and so it's good from that perspective cos you can push them in [inaudible words] 'If you've finished the work why don't you just ask for some more work?'. I do know that seems obvious to me, to them sometimes they'll just do what they are told to do and then not push themselves to do more so you say 'Why don't you ask for more work?' or 'Why don't you ask another teacher?' or 'Why don't you do an after-school club?' or 'Why don't you find someone in your area who does this?' to try to encourage those students that feel like they have the

ability but aren't maximising, they aren't reaching their potential because they are not pushing themselves, they are just flowing along.

Mentor2 believed that it was also possible for members to gain practical exposure by looking at how mentors handled unfit behaviour within the network. By referring to the debate on religion again, he explained that members could potentially 'see in practice that it is possible to deal with people who disrespect your opinion and how to do that'.

### *Contributing to members' sense of belonging*

Mentors also sought to contribute to members' sense of belonging. Both mentors stressed how important it was for IGGY members to feel they had people they could relate to and rely on. That is why mentors referred a lot to their personal experiences, i.e. to connect with members, make them feel supported and that they were not alone. In fact, mentor1 thought that a sense of belonging to a community was what kept the most active members engaged:

If they say 'Oh I'm really stressed about this' I can come in and say 'I can remember when I was in that situation, I was really panicking about it and I found the more I panicked about it the worse it got and the panicking didn't help me, just made it worst. Why don't you try writing a plan of what you are going to do down.' you know, something like that, which is probably what keeps the most engaged members coming back I think, they feel like it is a community and they do have friends on it and there are people there to talk to whether it's just to talk about what was on tv last night or to talk about something they are really worried about. They can kind of do all of that on the site.

Mentor2, talking from his experience, felt that IGGY provided a space for members to be themselves and to interact with like-minded people including the mentors:

It's only when I came here [at the University] that I started dealing with like-minded people and it's only then that I felt really free to be myself and I think

that's why this forum is so invaluable. I wish there was something like that when I was much much younger. And I think these people who might be more interested in [inaudible words] things and usually find the same sort of interests that I've got, that IGGY mentors are more scientifically minded, more intellectually orientated [...] there's a lot other students that have a similar background to myself. I kind of feel that the forum is... essential.

### ***Providing opportunities for discussion***

Related to the above is that mentors created opportunities for members to discuss a variety of extracurricular topics and supported members to raise their opinion. Both mentors perceived value in discussions and in sharing views and experiences, on both a practical and a personal level:

So it's practical encouraging them to voice their opinion, to speak out, to get some help and also then to feel they are not the only students they might have experienced this so it's kind of like a problem sharing and a problem-resolving kind of discussion. (mentor1)

Providing opportunities for discussions felt particularly important for more introvert members or members who lacked the opportunity or the right set of circumstances to discuss these topics at school or elsewhere:

It might be something they don't feel comfortable discussing in person or they don't feel comfortable discussing at school so it's something that they want to discuss but they don't know how and this offers them a more barriered way to be able to discuss something that they are interested in or that's quite personal to them or something that they feel it's quite an emotive topic amongst maybe their friends [...] especially if they are quieter or they struggle more to air their opinions. It's easy for them to read the debates, have a think about it, have a think about what their opinion is and then be able to structure their opinion whereas in person they might not be able to do all that processing and say it to the other person. (mentor1)

### *The style of debate in IGGY and what constituted a successful debate*

In regard to the style of debate in IGGY mentors believed that IGGY members discussed in an adult manner and exhibited a level of engagement advanced for their age.

The mentors commented on several aspects of the discussions: what members said; how they wrote; how members approached others' opinion. Regarding the first, mentors found the content of posts to be elaborate, providing details and covering several points of the topic under discussion. Many members would write long and thoughtful replies, giving an articulate account of their experiences and ideas:

I do think responses are quite mature and sometimes the topic that they talk about, there's a huge variety of topics and some of them are really in-depth and they give really massive in-depth responses, all these reasons and stuff so I do think that they engage much more than you'd expect for the age range of the forum. Sometimes they start a debate and I have no idea what they are going on about and I go 'Oh! I don't know! I don't know what my opinion is on this! I didn't even know there was an opinion to have!'. (mentor1)

Mentors were impressed by the register used in debates. They thought it was sophisticated and more appropriate than what can be seen in other mainstream media. Members used language skilfully, their posts were eloquently written and resembled formal communication. When sharing their opinion they would also defend it with a set of reasons and evidence such as links to external resources:

The students actually put their arguments forward eloquently. So if you want to see a counterpoint go in the BBC website, find a similar story and go on the comment section. And what the IGGY members were doing was so better articulated, so better reasoned than anything the general public was doing. [...] In fact the level of language I find it hard to believe that these students are under 18. It's less text-speak, more reasoned, less negative. (mentor2)

If you ask them ‘Why have you got that opinion?’ they’ll give you five articles, you know, that they’ve read, the evidence behind it, and I think stuff like that is really good because it’s getting them to be able to communicate without having to shout at someone or use of the appropriate language and respecting someone else’s opinion and actually finding evidence to support their points and actually having mature reasoning for all of their opinion rather than having an opinion based on nothing sort of thing. (mentor1)

In terms of how members approached others’ opinion, mentors believed that most of the time there was openness, acceptance and respect, as mentor2 said: ‘While there were a number of opinions and while they may be strong they were found more tolerant and phrased far better.’. Mentor1 also talked about this:

I do think the responses are very mature cos often they’ll say ‘I disagree with that’ and then explain why they disagree or they might say ‘I disagree but I understand where you’re coming from but this is my point of view’ and give reasons for it. [...] Some of them can be really opinionated as well so it’s quite interesting to watch them debate and see what their opinions are and see how they respond to each of these opinions and most of the time they do do the job of keeping on debating without going into the wrong rounds of upsetting people or something like that.

While discussing the style of debate in IGGY, the theme of what constituted a successful debate emerged. A debate in which participants put their arguments forward adeptly while respecting different views was considered successful. The number of posts was not as important as the quality of their content and a deep level of engagement:

Sometimes you get threads that are very popular but it’s just members going ‘yes’, ‘no’, ‘I agree’, ‘I disagree’, just because the school probably told them to use the site so they tried to do five posts a week so they clicked ‘yes’ to five different things which isn’t really participating in it. They are not really discussing or engaging or contributing so it’s probably the ones that are more successful are the ones that the responses are more in-depth and the members are developing more opinions on things. (mentor1)

The two mentors also shared the view that a successful debate would benefit discussants: it could be that they enjoyed participating in it, gained knowledge, or developed personally. Mentor2 referred to the debate on religion as an example and stated that ‘while people’s mindsets wouldn’t change you clearly see they are becoming more tolerant from doing so [debating].’ He also added that talking about this topic could potentially enable some members to come to terms with personal conflicts:

You’ve got people who are having conflicts, personal conflicts as result and they were grappling with that in that forum. So if, I’m assuming that if the student from debating this has achieved some [measured?] resolution with that then it’s a success.

Mentor1 also considered a debate successful if members led the discussion because the topic alone was interesting enough to generate discussion and keep it going:

They [members] are kind of leading the discussion, you don’t have to keep prompting, it’s just the topic that over time it just keeps on going by itself because it’s something that the members are interested in, it’s something that they are engaged with so they keep going back to it themselves.

### ***Learning through discussion***

Part of the interviews explored the theme of learning through discussion. The mentors shared their views on whether participation in debates could have supported learning and what kind of learning members might have experienced. Though mentors could not speak on behalf of members, they made assumptions based on how themselves experienced participation in debates.

Both felt it was possible for members to experience learning from participating in online discussions. The most obvious form of learning was the acquisition of subject



knowledge as debates contained facts or directed participants to educational resources:

Well there are facts... there are facts that are stated and that is a way of learning. There is also... Well, I gave an example of myself. There was a student that recommended on the Khan Academy. I went to check it out and other students will have done the same. So, it is also pointing to resources to [throw?] their own learning in their own time. (mentor2)

Apart from knowledge, mentors thought it was possible for members to improve their communication skills through their online interaction: 'It's also learning how to communicate with other people as well as [inaudible words] a team. It's learning how to interact with people from different backgrounds.' (mentor2).

A less obvious form of learning mentors talked about was a change in or refining of members' views. This could mean that members developed an opinion on something they had not considered before, reinforced or reshaped an existing opinion. However, mentor1 pointed that a change of opinion could only occur if discussants argued in a persuasive way, that is by explaining their reasoning and providing logical arguments:

Maybe they read a topic and see they have an opinion and then they start reading all the responses, you know, they can see things from a different perspective and they can read about things that they hadn't thought about when they formed their opinion on the topic. And members will give explanations and they'll give links to articles so they can read, so I think it is possible for them to change their opinion. Sometimes I've read a thread that they've been debating on and I thought I had an opinion and then when I read it and I had a look through and saw I hadn't thought of that perspective or I hadn't thought of that argument or I've never looked at it in that way and now you said that and it's actually a good point so I think it's possible, as long as the members that are in that debate are debating in a way that they are giving some logic, they are giving some reasoning behind their view.

A change in opinion seemed more unlikely when the topic of discussion was more personal or emotional or held with stronger convictions: 'With those kind of topics

like science and religion sometimes the people that contribute are people that are most opinionated about it and have the most strong opinions.’ (mentor1). Still, as previously pointed, mentor2 remarked that whilst discussants’ beliefs might have stayed unaltered, they seemed to have become more open-minded and sympathetic towards a different idea.

When I asked whether they considered academic topics more beneficial than others in terms of learning, opinions differed slightly. Mentor2 stated that there was value in discussing all subjects and in fact ‘funny topics are the ones with the most merit in my mind because they always have the element of something educational and delight.’. He also believed that topics of a less explicit educational character would additionally benefit members in that they enabled social interaction:

The level of articulation stays the same, whichever conduct matter there is. [...] I think even the bits that have no educational slant, have just as much arena for... IGGY is much an arena for like-minded students to network with each other and meet people like themselves... so generic interest is what tie them into that. So, recommending books to each other is a great example of this, something like the *World book day* stuff. I thought that was fantastic.

Mentor1 perceived a mixture of topics to be necessary albeit benefiting discussants in distinct ways since they ‘encourage different types of responses’. She agreed with the other mentor’s view that interaction in non-academic debates supported members’ sense of belonging. When talking about the debate *Did the movie do the book justice?* she said:

I think they benefit from it as well because if members have similar opinions to them, that kind of concept of being in the community and not being alone and having other people think the same thing. It can sometimes create more of that sense of community in those types of topics. And sometimes as well they don’t always need to benefit from the topic cos sometimes they just enjoy

talking and sharing their opinion and... if you make them learn something from everything we wrote I think they'll get bored of us quite quickly.

However, she regarded the serious topics as being more thought-provoking as they required a deeper level of engagement and thus as having more of an educational significance. Indeed, she compared participation in this kind of debates to an academic process as it entailed: (a) collecting information, (b) reviewing and interpreting other people's viewpoints, (c) distinguishing opinions from facts, (d) reaching conclusions and developing a personal opinion, (e) presenting your opinion along with arguments that support it:

I think part of learning is to look at different sources of information and different viewpoints and then come to your own conclusions from doing that. [...] If you look at it from an all learning perspective they're still doing research, they're still interpreting different people's ideas and thoughts and separating opinion from facts and that is a part of learning and that's a key skill of, you know, in any sort of careers, to be able to debate with other people, to understand different viewpoints, to have counterarguments, to be able to look at lots of different information and draw out the key points and make the conclusions from that. So I do think that they learn from being able to do that.

#### **4.1.3.3 IGGY as a distinct network**

The two mentors talked about IGGY as a distinct case of a network due to its membership, i.e. a network for students identified as gifted, and its content.

Regarding the former, mentor2 strongly believed that IGGY should have maintained a network for high achieving students as he felt that the needs of IGGY members were undermined by today's popular culture: 'I think it should remain a network for gifted students. What I feel is that intelligence is something that students are penalised for by society.'. Mentor1 acknowledged, on one hand, that there were pragmatic reasons for IGGY to be a closed network:

If you want to engage young people and you want them to learn and you want them to feel part of a community it's a balance between making it both challenging and inclusive. It doesn't necessarily mean just because the students are academically high achievers they are going to engage the most with the service but I suppose you have to start somewhere and the whole idea is that a lot of the content is pushing and stretching students so if they are not on a level where, you know, if they are not on that level to be pushed and stretched, then they may not engage more so you try to target people that will engage more.

On the other hand, she was mindful about the use of the term 'gifted' and its connotation of exclusiveness. In fact, she avoided using the term often 'cos I don't want members to be put off by the concept of 'I've logged onto this thing, it says is for gifted people, I'm not gifted therefore I'm not going to use it.'.

Regardless of their views on giftedness, both members contended that IGGY was not as exclusive as it might have sounded because of its flexible policy on membership: members could join independently; IGGY did not single out schools; IGGY did not interfere with schools' selection procedures; IGGY waived its membership fee for UK members. Mentor1 provided a comprehensive view of the matter:

The fact that I think it's free for any student who is in the UK is a big barrier that has gone over cos before it had subscription service and then it felt like it was being more exclusive in that sense, but since the members can independently join I don't feel like it is necessarily that exclusive. And because we do rely a lot, particularly in the UK, even in other countries, we work a lot with the school networks, we rely on how schools are defining who they want and who they might select might be people that they think might respond more to that type of learning and socialising might benefit them the most and that doesn't necessarily mean that they are always the most academically high achievers.

In terms of how IGGY's content differed to what could be found in other platforms, this can be summed up to:

1. content was not limited to the school curriculum:

Part of it is that the stuff in the *Knowledge* section would not only expand on what they do in school and link in to that but it will also push it beyond that because it will be a PhD student talking about a topic in politics versus the paragraph in BBC Bitesize about that particular topic so it expands it much more. (mentor1)

2. educational content was presented in alternative ways:

So what I did with *Silver screen science* was rip apart science fiction films based on a passion of mine [...] That's kind of what IGGY really brought is, it's something different. What I wanted to get across with this content is that it's very popular films and some of them are right and I highlight those as well, but some of them are really wrong, the essential tenets of the films, filled with inaccuracies, that's building knowledge in the longer run with a very shaky foundation. (mentor2)

3. people behind the content were 'present' and members could 'see' them:

You don't get that level on other learning platforms and the kind of personalisation of it, you know, every week there's a newsletter and there's the live webchats and the mentors, so the things that make it feel like there are people there behind the site and they are regularly checking the site and they are responding all the time, so they don't feel that it's something that stands still which I think it's one of the draws of it for the members that do stuff and participate. (mentor1)

#### **4.1.3.4 Suggestions for improvement**

The mentors had four suggestions for improving the network: better support new members; build more on members' interests; improve the design; increase the age range of members. Though instructions for new members on how to use the network did exist, mentor1 thought they were not clearly visible as members had to scroll to the bottom of the page to find them. In addition to featuring instructions more clearly, more support for prospective members could have been given during school launches. Mentor1 proposed providing more information and tours of the site during their school visits to achieve a better understanding of how the network was structured and

how it worked. Another recommendation she made was to continue tailoring the content and the activities to members' interests by monitoring debates:

Keeping an eye on how members respond, what they are interested in, try to build those interests into new debates and keeping all the sections of the *Debate* active and the inactive maybe monitoring them and removing them and replacing them with things that they think members might respond better to.

Mentor1 also talked about making small changes to the network's design, for example changing the names of the sections, merging categories or creating new ones in an attempt to make the network more user friendly.

Despite the potential effectiveness of the above measures in making members engage more, mentor1 believed that participation was also a matter of individual traits, preferences and self-motivation:

I think sometimes it will just be down to personalities of the members cos sometimes, you know, some younger people would prefer things face to face or they prefer things at school and they are not in the habit of using the website in this way. [...] Others will just take it up and don't need any sort of extra push, just be a part of it, they just take it on and they enjoy it and they keep using it so yeah...

A final suggestion for improving the network was made by mentor2 who found that the age range of membership should have expanded to include 12 year-olds as they might have been attending the same class with a 13 year-old:

So, if they were 12 years old they couldn't do it but their classmates are 13 so they could. This is because of safeguarding rules in America but I think IGGY really needs to readdress that and realise that you need to do this for all ages in the host nation ready to start with because from our school's perspective, it's a nightmare.

## 4.2 MESSAGE-FOCUSED ANALYSIS

### 4.2.1 Quantitative data on participation

As explained in the Methodology and methods chapter I obtained quantitative data on participation from archives in the *Debate* section. Table 30 shows the number of threads and replies to the 16 main topics as these were defined by the network.

Having further arranged the main topics into the four categories shown in the first column, I discerned which type of topics generated the most visible participation. For instance, replies to the social/moral/political debates were almost twice as many as to the cognitive ones. Replies to the debates related to member's personal development and the administrative aspect of the network were significantly fewer.

The *IGGY community hub* was the topic that generated the most replies. This debate area included threads on a variety of non-academic topics such as personal hobbies and interests (e.g. members discussed about films, books, theatre, music, dance, museums, sports etc.), world issues and the news, philosophical and moral issues (e.g. *Do you think people should have the right to die?*, *Gender Equality*, *Is homosexuality wrong?*) and so on. Debates on giftedness were not included in the community hub but had a separate dedicated space. These debates generated slightly less than 120 threads and approximately 1600 replies.

Table 30 Number of threads and replies to the main topics of the Debate section.  
Social/moral/political debates generated the most visible participation.

Category	Main topics as defined by IGGY	Number of threads in each main topic	Number of replies in each main topic
Social/Moral/Political	IGGY community hub	3026	26842
	What's it like to be gifted	118	1626
	Student mentors	144	763
	Total n =	3288	29231
Cognitive	English and creative writing	283	4080
	Science	501	3253
	Homework help	324	1776
	Politics	171	1367
	Education and the internet	92	1214
	History	153	1078
	Maths	147	1068
	Law	81	828
	Writing wrongs essay competition	2	1
	Total n =	1754	14665
Personal development	Careers and personal development	141	1114
	Warwick offer holders	99	691
	Total n =	240	1805
Administrative	Help and feedback	107	1303

From the cognitive subjects *English and creative writing* and *Science* had approximately triple the replies compared to *Politics*, *History*, *Maths* and *Law*. Discussions around members' homework were also popular in this category, generating around 300 threads and slightly fewer than 1800 replies. Unsurprisingly, career and personal development matters were more widely discussed than matters pertinent to *Warwick offer holders* as the latter targeted a specific audience. Last,



slightly more than a hundred threads with around 1300 replies in total asked or provided help and feedback on the network.

Apart from the above data, I acquired data from the IGGY team on the top ten debates based on replies and the top ten debates based on views (see Table 31 below). It is apparent from the table that the number of views was consistently higher than the number of replies which meant that quiet participation was a more widespread practice. Nevertheless, there was broad agreement on the top ten debates based on either of the two numbers. Specifically, eight out of ten debates were included in both lists, in a slightly different order.

*Table 31 Top ten debates based on the number of replies and ten top debates based on the number of views. The number of views was consistently higher than the number of replies.*

<b>Top ten debates based on replies</b>	<b>Replies</b>	<b>Views</b>	<b>Top ten debates based on views</b>	<b>Views</b>	<b>Replies</b>
First thought in mind	1570	8450	Community Manager Q&A	10103	769
Word game	1403	8060	First thought in mind	8450	1570
Community Manager Q&A	769	10103	Word game	8060	1403
Get to know your characters	624	4816	Get to know your characters	4816	624
3 word story	612	3739	3 word story	3739	612
What have you written lately?	206	3030	What have you written lately?	3030	206
Is homework a waste of time?	190	2344	Find your birthday twin	2437	162
Riddles	189	1838	Maths and Stats at Warwick	2394	82
Find your birthday twin	162	2437	Is homework a waste of time?	2344	190
3 words	157	1427	Hobbies and fun	2157	135

#### 4.2.2 Content analysis

Content analysis was carried out in 20 debates (see Table 32); six from the cognitive category, 11 from the social/moral/political category and three from the personal development category.

*Table 32 Debates analysed with content analysis.*

Category	Debates
Cognitive	Ancient languages Is homework a waste of time? Train your brain In 20 years time... What happened to flight MH370? The skeleton
Social/Moral/Political	Saving our future What is the best place you've ever been to on holiday? Is praise from teachers a bad thing? Are you ashamed of being smart? Do gifted people have social problems? How do you tell if someone is gifted? What are gifted learners? Everybody is gifted Are the words 'geek' and 'nerd' really negative terms? 'Nerd' stereotypes Should gifted learners go to schools for the gifted or normal schools?
Personal development	Studying law at university What GCSE's do people do? Emotional support

The coding scheme and its application have been presented in the Methodology and methods chapter. However, it is worth pointing out again that analysis was carried out at two levels: first, I examined the content of posts to determine interaction (the T and R codes) or absence of it (the S code); second, I examined the content of posts to determine the warrants of knowledge they contained, if any. In the following pages I present data concerning the frequency with which I applied each code and the

conclusions reached, along with exemplary posts from the debates. Wherever possible, I selected posts written by the interview participants.

Table 33 summarises the total number of T (Triggering discussion), R (Responding) and S (Stating) codes for the debates analysed. The table shows that debates generated different levels of activity. For example, the debate *Is homework a waste of time?* generated more than double the number of coded units compared to *What GCSE's do people do?* and 30 times the number of coded units compared to *Studying law at university*.

Each debate further had a different pattern of coding. For instance, in the debate *What GCSE's do people do?* nearly half the coded units were R/Responding and one third were T/Triggering further discussion. In this debate discussants expressed an interest in the subjects others chose for their GCSEs and asked information about them, as in this example: '[username] you're doing Latin?! That's really cool, unfortunately not many people have the opportunity to do it anymore. Do you like it? What set texts are you doing?'. On the other hand, two thirds of the coded units in the debate *What is the best place you've ever been to on holiday?* were non-interactive ones as discussants mostly shared their views without commenting on others' posts.

By looking at the above data alone, it is difficult to ascertain why a debate resulted in more or less interaction among discussants. Though the topic seems to have played a role in this, it was not the sole or defining factor and this is evident in the debates on similar topics, e.g. *Are the words 'geek' and 'nerd' really negative terms?* generated more interactive coded units as opposed to the debate *'Nerd' stereotypes*.

*Table 33 Frequency with which I applied the codes to the debates. Debates generated different levels of activity, different degrees of interaction and different warrants of knowledge.*

<b>Debate</b>	<b>T (n =)</b>	<b>R (n=)</b>	<b>S (n=)</b>	<b>Total n =</b>
Is homework a waste of time?	36	123	133	292
What GCSE's do people do?	30	48	58	136
Ancient languages	20	37	71	128
Are you ashamed of being smart?	21	52	34	107
Are the words 'geek' and 'nerd' really negative terms?	4	21	41	66
Do gifted people have social problems?	11	23	29	63
Is praise from teachers a bad thing?	13	26	14	53
Emotional support	20	27	1	48
Saving our future	7	24	14	45
What happened to flight MH370?	15	10	14	39
The skeleton	4	2	9	15
Should gifted learners go to schools for the gifted or normal schools?	3	13	19	35
What is the best place you've ever been to on holiday?	4	4	23	31
In 20 years time...	4	5	12	21
How do you tell if someone is gifted?	6	6	8	20
Everybody is gifted	5	13	1	19
'Nerd' stereotypes	1	4	12	17
Train your brain	4	4	7	15
What are gifted learners?	3	5	7	15
Studying law at university	3	5	3	11

Let us now turn at the second level of analysis which concerned the warrants of knowledge identified in the posts. From this perspective, the type of justification provided was considerably linked to the nature of the topic.

For example, the debate *What is the best place you've ever been to on holiday?* was dominated by a sharing of personal experiences (nearly 70 per cent of the coded units). The following post from member1 is a typical example of replies in this debate:

Definitely Spain as the beaches are so nice and relaxing when it gets so warm and they have a wide range of activities, such as theme parks, high ropes, etc... It's also really nice as I lived there for a couple of years and love coming back every single year to find that it has developed even more.

The debate *What happened to flight MH370?* contained several links to external sources and discussants largely backed up their opinion with what they had heard in the news, thus coded *Reading*. Mentor1, who had initiated this debate, shared updates to the story:

Hey guys,

Check out this recent BBC news article for an update on the search for flight MH370: <http://bbc.in/1DIBnwi>

It looks like so far, a search area of 1000km south west of Perth in Australia is being searched as deep water surveys suggest this is where the plane ended its flight. To date, 30% of the search area has been searched with no success. Do you think we'll ever find flight MH370? If we do, will there be enough evidence left to work out what happened?

In *Ancient languages* discussants shared their views on whether Latin should be considered a dead language. In this debate there was a more or less equal blend of appeals to *Reading*, *General knowledge*, *Facts*, *Own experience* and *Value judgements*. Member4 participated four times in this debate; in one of her posts she replied to a question about the Latin textbook she had been using and the usefulness of coding language compared to the usefulness of an ancient language:

Yes, we are using the Cambridge Latin course – currently accompanied by Quintus, Salvius and Modestus at the moment (book 3 almost book 4). [...] Coding languages could be, in a way, more useful than Latin (for instance) especially if computers continue to develop and are integrated into our daily living. Website programmers and designers obviously need to have a better grasp and knowledge of it, where as I don't think it would be as appropriate for someone in a different situation, if that makes sense.

Debates on giftedness included a significant number of value judgements, e.g. half the coded units in the debate *How do you tell if someone is gifted?* and 40 per cent of the coded units in the debate *Everybody is gifted*.

Two further general patterns occurred from this second-level analysis, the first being that *Agreeing* and *Expanding on previous comments* were more frequently applied than *Resolving* and *Disagreeing*. Indeed, the only debate that generated some considerable disagreement was the one related to the value of homework. *Resolving* was generally less evident too, apart from the debate *Are you ashamed of being smart?*. This debate contained several units (nearly 20%) that provided resolutions to issues raised by members. For example, a member explained how they used to conceal high test scores to lower expectations from others. Mentor2 replied to this post saying:

Just be proud of your scores if they are high. [referring to a mentor] is right, what they think and their expectations don't matter. You earned them, not the people around you. They are yours and yours alone. You don't need to share them with anyone if you don't want to, but please don't feel like you have to hide them.

The second general pattern observed is that discussants would usually provide justification for their opinion. In other words, the code *No reason given* was, in most cases, less applied compared to the rest. A case that differed was the debate *In 20 years time...* which asked about the technological advances of the future. In this

debate I identified one fifth of the coded units as lacking justification. This could be attributed to the fact that a number of discussants were making assumptions for the future without linking them to evidence from the present. For instance, a discussant said: ‘Renewable energy as common place and most houses having a 3D printer of some sort.’.

#### **4.2.3 Visualisation diagrams**

Visualisation diagrams helped in giving shape to the discussions. They showed that most of the times members replied to the individual who started the discussion, a pattern that could be described as ‘many to one’. ‘May to many’ and ‘one to one’ discussions would also develop within a debate as for example in *What GCSE’s do people do?* (see Figure 8). The diagram shows that member 28 and member 29 replied to the original post but also interacted with each other. Similarly, member 22 exchanged several messages with member 26 and member 31 had considerable interaction with mentor 3 (mentor 3 was one of the study’s participants, i.e. mentor1).

The diagrams also enabled me to identify the key participants around whom discussions evolved. In particular it was clear that the mentors were active in sending messages and were frequently addressed when members replied and this suggests that their contribution was significant in encouraging further interaction.



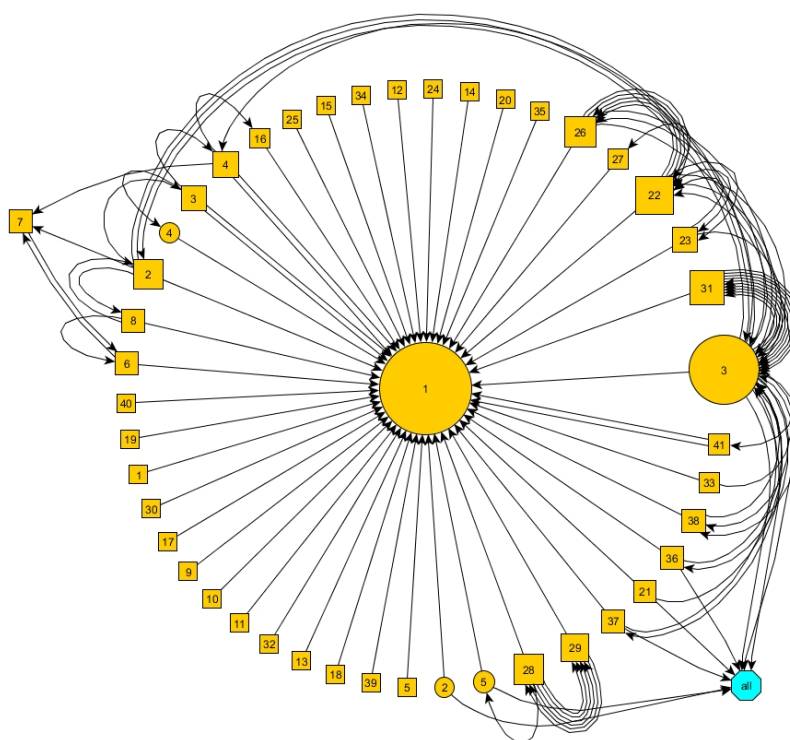
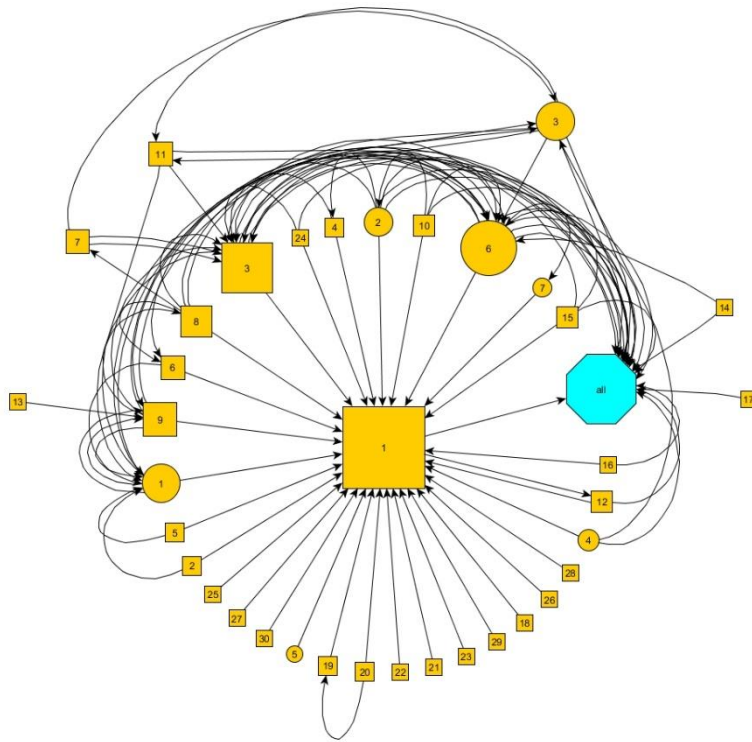


Figure 8 What GCSE's do people do? – Representation of interactions.

If we take *Ancient languages* (see Figure 9) as an example, we can see that mentors 1, 2, 3, 4 and especially mentor 6 replied to several specific discussants and, at the same time, expanded the discussion by setting new questions to all the participants in the debate. While the main discussion examined whether Latin was considered a dead language, questions set by the mentors enabled the evolvement of a number of sub-discussions on related matters such as, for example, which Latin text books discussants had been using or where they had been studying Latin e.g. at school, university or clubs. Interestingly, in this debate, member 3 (one of the study's participants, i.e. member4) made numerous posts to which others replied, also allowing for the discussion to continue and to expand. Many messages were also directed to the group as a whole, which suggested that numerous discussants in this debate were interested in other members' opinions.



*Figure 9 Ancient languages – Representation of interactions.*

A further observation made by looking at the diagrams is that even though most messages in the debates revolved around an initial post, the member who triggered the discussion would often not contribute further to it. This is evident in the debate *Is homework a waste of time?* (see Figure 10) which was one of the most popular in IGGY, with 122 members and 9 mentors taking part.

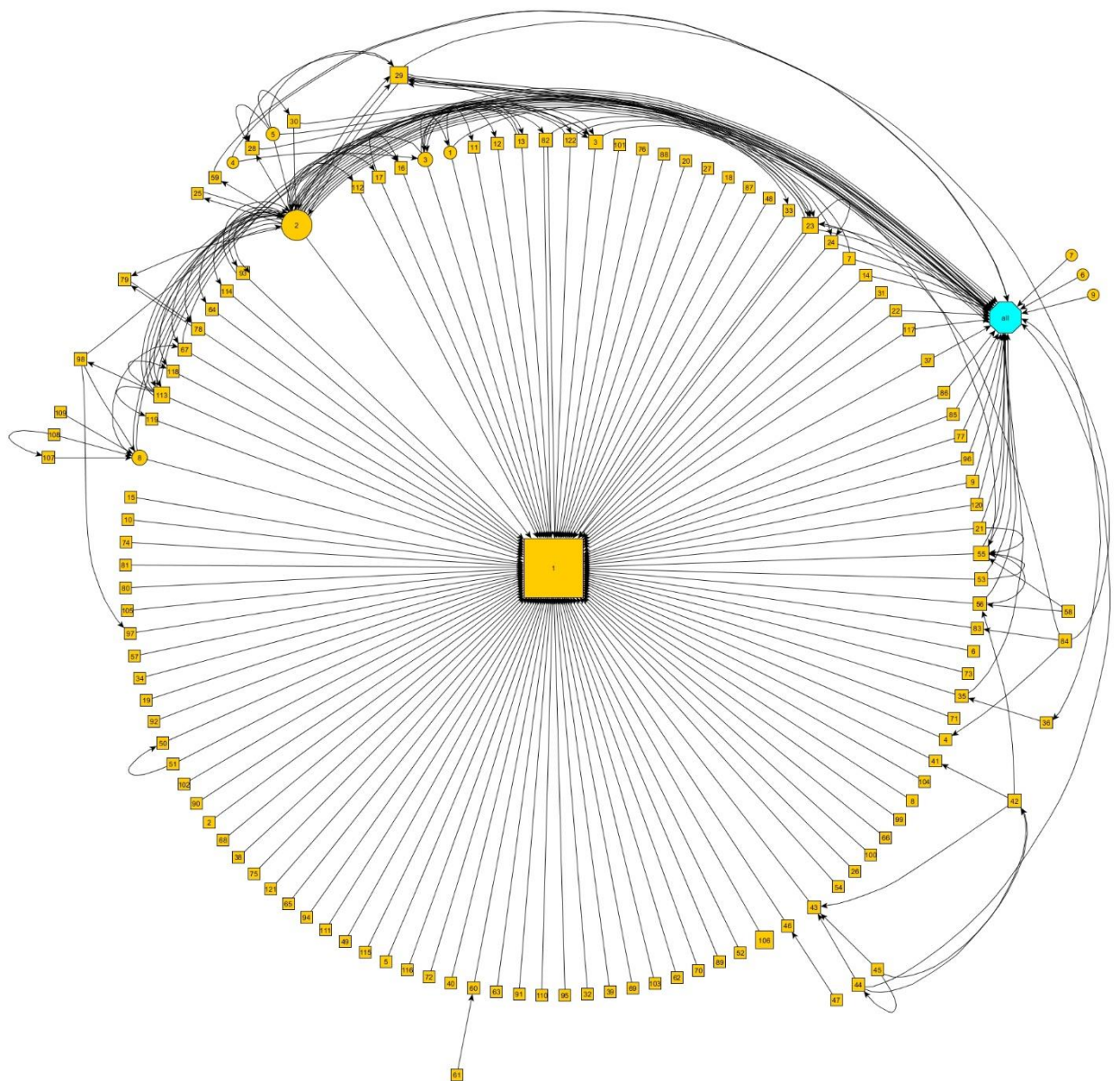
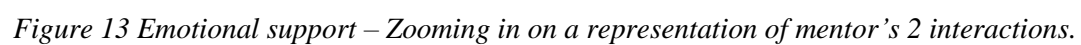
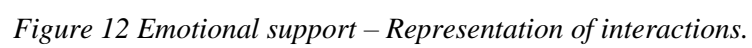


Figure 10 *Is homework a waste of time?* – Representation of interactions.

Though this was a common pattern, there were also a few cases in which the initiator posted more than once. For instance, the creator of the debate on *Ancient languages* presented above participated twice, the second time commenting on member's 12 post and setting a further question to all discussants. In the case of the debate *Is praise from teachers a bad thing?* (see Figure 11) the mentor (i.e. mentor1) who initiated the





The second debate that differed is the one presented in Figure 14, i.e. *Studying law at university*. As can be seen in the figure, member 5 was particularly active in answering other members' questions even though these were addressed to the initiator of the debate. Specifically, as the title suggested, the original post invited members to post questions regarding studying law at university level, and member 5 replied to the ones related to university entry requirements. This suggests that members would sometimes take an active role and lead the discussions, especially if they possessed relevant information or knowledge useful to share.

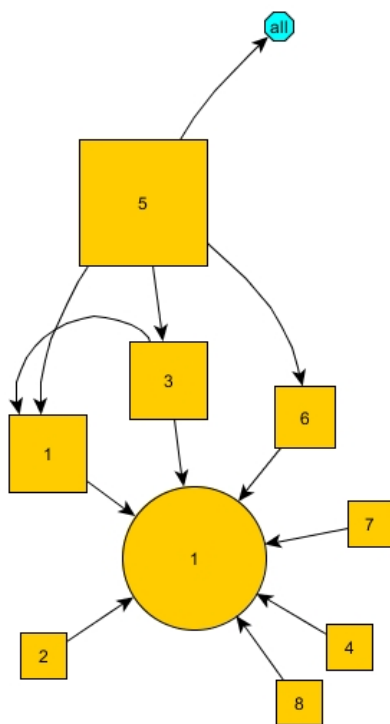


Figure 14 *Studying law at university* – Representation of interactions.

### 4.3 SUMMARY

This chapter presented the findings derived from the analysis of the data collected through different methods and from different sources. In the first part I provided a

person-focused analysis, i.e. of data regarding the research participants, while in the second part I focused on the analysis of the debate posts.

The questionnaire survey showed that:

- The majority of those surveyed were: 15-16 years old; females; living in the UK; experienced users of online spaces. Membership ranged from a month to three years. Most were frequent users of the network, visiting IGGY at least once a week, but some were non-frequent users.
- They reported that academic challenge was important in order for them to feel a sense of satisfaction with school.
- They saw IGGY as both an educational and social network. They mainly used it for reading articles, watching videos and doing quizzes. Of the social activities the most frequently used was replying to debates. Very few respondents used the network to ask for help with homework.
- Participants felt they had benefited in several ways by using IGGY and felt they enhanced their knowledge, skills, confidence and creativity. Knowledge of new subject areas was a commonly perceived gain. They did not think that their use of IGGY had a direct impact on their school performance.
- A sense of community evolved in IGGY. Participants reported feelings of trust, safety, shared understanding and shared experiences. They appreciated the contribution of other members and the mentors and felt acknowledged and valued.
- Lack of time and lack of interest in the activities appeared to be the most important constraints in using the network.
- Most of the suggestions for improvement made by the respondents related to the content of the network.

Interviews with the young participants showed that:

- The participants ranged from 13 to 17 years old, were mostly female (n = 10), living in the UK (6), Australia (1), Pakistan (1), France (1), India (1) and Africa (1). Participants' perceptions of themselves in relation to giftedness differed e.g. some did not define themselves as gifted and others did. The majority either felt positive about the idea of giftedness or were not concerned about being described as gifted.
- Almost all felt satisfied with their schools. Most received some kind of additional educational provision from their schools and this challenged them. When they found school work unchallenging they felt disappointment or dissatisfaction.
- Participants had experience of other online social networks and/or online educational platforms. They valued IGGY mainly because of its hybrid nature and content and its membership (i.e. like-minded people, more willing to discuss serious or academic topics at a high level).
- Participants engaged in the network in several ways which fluctuated over time. At some point all of them visited the *Knowledge* section to read articles, watch videos or to undertake a challenge. All but one posted and viewed discussions in the *Debate* section and many participated in competitions. Some wrote or read blogs, communicated with other members through the messaging feature on IGGY and participated in the live lounges.
- In the *Knowledge* section participants engaged in clearly identifiable subject topics such as maths, creative writing, history and politics, but also in more extracurricular themes (e.g. the *GOBBY Academy*). IGGY extended curricular



content rather than reproduced it. Fun content was perceived as educational and more explicitly educational content could also be fun.

- Those who used the *Debate* section did so frequently. They would not always contribute to debates but might only read them instead. Contributing to debates felt time-demanding and needed thinking about, though this became easier over time. The register used in debates felt formal.
- Debate topics varied; some were more social, fun or extra-curricular in tone and others were more academic or serious. Different topics provoked different kinds of participation. Participants engaged mostly in discussions relevant to their interests, personal experiences or school related topics.
- Participants engaged in debates for cognitive, social and emotional reasons.
- Participants took part in IGGY as they had an intrinsic interest in the activities, the topics and in others' views. They were self-motivated to advance their knowledge and skills.
- The community itself played an important part in facilitating participation, as did the style of interaction in the debates, the diverse content (i.e. having access to both subjects not taught in school and links with the curriculum) and the mentors.
- External factors were less obvious. Nevertheless, lack of time due to what was happening in the participants' lives (including school workload) constrained participation.
- IGGY was perceived as a loosely bound network rather than a close knit community within which friendships were understood as 'online' rather than 'real life', but they were nonetheless valued. Participants suggested that meeting other IGGY members in person would strengthen relationships and increase participation.

- Participants reported personal, social and cognitive gains through membership and these were linked to the network's hybrid character.
- Personal gains included a developing confidence and determination, experiencing a sense of belonging, receiving support on studies and career planning and enjoying the use of the network.
- An opportunity to communicate with others within IGGY was the most frequently cited social gain, as it was not easy for participants to interact with like-minded people elsewhere.
- Communication in IGGY resulted in the creation of online friendships but also in the strengthening of offline relationships.
- Cognitive development was the most widely understood benefit and this was achieved through engagement with the content but also in social interaction.
- Participants gained extracurricular knowledge, learned through discussing with others and exchanging views and experiences. They felt cognitively challenged and improved skills such as communication, debating, collaboration and creativity. Many also felt that participation in IGGY helped them perform better in school.

Interviews with the mentors showed that:

- They had a role to play in different sections and activities, for example, producing content in the *Knowledge* and safeguarding and facilitating debates.
- They employed different methods to encourage participation in debates, mainly through fostering social presence for themselves and for members.
- Mentors' contributions in discussions were intended to be encouraging and advisory. Their posts had a personal angle, that is referred a lot to their personal

experiences and knowledge, to connect with members and make them feel supported and belonging.

- Mentors provided for members' cognitive and emotional development. They created debates on extracurricular topics to extend members' knowledge and offered members emotional, social and practical help.
- They perceived discussions and the exchange of views and experiences to be of value for members on a personal and practical level. Through participation in discussions members enhanced their subject knowledge, improved their communication skills, developed new opinions or contemplated on existing ones.
- They perceived all topics, academic and non-academic, to be of value. Topics of a less explicit educational character were thought to enable social interaction and support members' sense of belonging. More serious topics required a deeper level of engagement and were more thought-provoking.
- Mentors found members' posts in *Debate* to be thoughtful and well-articulated. The register resembled formal communication and was more appropriate than what was seen in mainstream media. Members provided reasons and evidence to support their views and approached others' opinion with openness, acceptance and respect.
- They perceived IGGY as a distinct network due to its membership, i.e. a network for students identified as gifted, and its content. The content was not limited to the school curriculum, it was presented in alternative ways, and the people behind it could be 'seen'.
- The mentors made four suggestions for improving the network: better support for new members; build more on members' interests; improve the design; increase the age range of members.

Analysis of posts and archives showed that:

- Social/moral/political debates generated the most visible participation. Replies to this category were almost twice as many as to the cognitive category.
- From the cognitive subjects *English and creative writing* and *Science* had the most replies. *Homework help* was also a popular topic.
- Reading debates was a more widespread practice than contributing.
- Different debates generated a different level of activity, different degrees of interaction and different warrants of knowledge.
- The level of interaction and the warrants of knowledge appeared to be influenced by the topic of discussion.
- Discussants would usually provide justification for their opinion, even though they would more often agree than disagree with others' views.
- 'Many to one', 'many to many' and 'one to one' discussions evolved within debates.
- Though most messages in a debate typically revolved around the initial post, the initiator of the debate would often not contribute further to it.
- Mentors were key participants sending and receiving messages, though in some cases members would take on a key role too.

## **5 DISCUSSION**

This chapter addresses the three RQs drawing on the four sets of data in the Findings and the Literature review. The use of mixed methods allowed me to look for consistency, contrast and complementarity to gain a fuller and more accurate picture of participation in IGGY. The interviews with members focused more on active members; this was valuable as it gave deep and wide insight into what it meant to participate. Despite this particular interest in more active members I did not lose sight of the more general picture given to me through the analysis of the survey, the mentors' interviews and of forums.

The three RQs introduced in Chapter 1 are as follows:

RQ1. What did participants do in the network?

RQ2. What facilitated or constrained participation?

RQ3. What did participants gain from participation?

I now answer these in turn.

### **5.1 RQ1. WHAT DID PARTICIPANTS DO IN THE NETWORK?**

The first question in this study posed the practical issue of what participants did in the network. This is important as much research has been carried out on perspectives on participation but this is of limited value without understanding what participants actually did. The four sets of data all point to the conclusion that participation varied. Very active participants might access the network at least once a week, watch a video or read an article, take a quiz and message others. However, many members dipped in

and out and many did nothing much at all (i.e. some joined but never got started or joined but did not do very much at all) (see section 4.1.1).

Diversity was evident in the way participants used the network (i.e. for social networking and for individual engagement with content), how they perceived and engaged with curricular and extracurricular content and activities, and the types of relationships they developed with other IGGY members. Below I elaborate on these points.

### **5.1.1 Social networking and individual participation**

Analysis of the four datasets indicated that a major type of participation was social interaction. Social networking was carried out by sending personal messages, entering group competitions, participating in live lounges and importantly through conversations held in the *Debate*. Interviews with active members (see section 4.1.2.2) and mentors (see section 4.1.3.2) and message analysis (see section 4.2.1) showed that discussions were described as social and fun, and this was consistent with previous studies that found young people liked to socialise or ‘hang out’ in online spaces (e.g. boyd, 2008; Ito *et al.*, 2008). Nevertheless, a distinctive feature of IGGY as an educational network was that participants also discussed more serious, academic or cognitive topics. Content analysis (see section 4.2.2) showed that members debated these topics by sharing views which they backed up with reasons and evidence, they exchanged experiences and provided solutions to problems faced by other members. This picture of online discussion was also reflected in the interviews with young participants (see section 4.1.2.3) and mentors (see section 4.1.3.2) who felt that IGGY members supported their positions with arguments and debated in a constructive, thoughtful and respectful way.

Participants carried out individual activities too. They tried out challenges, quizzes, watched videos, read articles, entered competitions, read or wrote a blog and read debates. In their interviews, for example, participants explained how they would navigate the network and find content that interested them or that would help them with school or their future career and university studies (see section 4.1.2.2). The questionnaire survey confirmed that respondents accessed educational content individually and it was in fact found that they engaged more regularly with content (e.g. articles, videos and quizzes) than with people (see section 4.1.1.3). Mentors also talked about how they created activities that members could carry out on their own or with others (see section 4.1.3.1).

Participants' online presence in debates was at times visible and at times quiet. Through the visualisation diagrams (see section 4.2.3) it was found that the prevalent pattern of interacting in debates was 'many to one', though 'one to one' and 'many to many' discussions also took place. The literature on online learning accepts that varied patterns of interaction can take place but there is a particular value in 'many to many' for creating routes of learning together and funds of new knowledge (e.g. Garrison, Anderson and Archer, 2010; Salmon, Nie and Edirisingha, 2010). This same principle extends to those working with school-aged learners; this strand of research has shown that online spaces that facilitate 'many to many' interactions enable children and adolescents to collectively create and share new knowledge with peers and adults (e.g. Kafai and Peppler, 2011; Chen, Scardamalia and Bereiter, 2015; Gee, 2018).

Through the interviews we know that participants had their own reasons for not always making their presence noticeable and that quiet participation did not mean that

participants failed to read or consider the messages (see section 4.1.2.2). Quiet participation was helpful in enhancing understanding. This finding supports the idea that quiet participation (sometimes dismissed as lurking) is of value and indeed an essential part of online discussion participation (see for example Pena-Shaff and Nicholls, 2004; Wise, Hausknecht and Zhao, 2014) and other literature is wrong to disparage learners who do not want to take part or choose to vary their style of participation at different times.

### **5.1.2 Engagement with curricular and extracurricular content**

The survey (see sections 4.1.1.3 and 4.1.1.5), interviews (see sections 4.1.2.2 and 4.1.3.1) and message analysis (see sections 4.2.1. and 4.2.2) indicated that participants used IGGY as an educational resource and engaged with formal learning content and tasks. Explicit school-related uses of IGGY were: accessing content and activities in the *Knowledge* that related to a school assignment or a school subject; debating a topic they had been covering in school; asking for help with homework in the *Debate*. Message analysis showed that asking for homework help was a popular topic in the section. For instance, one such debate that I also analysed with content analysis, namely ‘The skeleton’, asked for tips on memorising the skeleton for an upcoming science test. Asking for homework help was not, however, a common practice among the survey respondents (see section 4.1.1.5). This could be because most of them viewed content to be about new subject areas rather than school work and thus did not associate IGGY with studying. Older participants interviewed also felt that content in IGGY was not directly supporting them with exams at advanced levels (see section 4.1.2.3).



Indeed, putting aside homework help, curriculum content in IGGY was presented differently than schools. Participants broadly agreed that IGGY covered school subjects in more depth and in interdisciplinary ways and perceived this approach to be stimulating and fun (see sections 4.1.2.3 and 4.1.2.4). IGGY's distinctive approach to curriculum content was also described by the mentors who explained that their intention when developing content was for it to be 'fun and educational' (see sections 4.1.3.1 and 4.1.3.3).

At the same time members accessed educational content that was not covered in the school curriculum. In fact, the majority of the survey respondents noted that the topics addressed in IGGY were not related to their prior knowledge (see section 4.1.1.5). During the interviews young participants (for example see section 4.1.2.2) and mentors (see section 4.1.3.1) provided several examples of content not included in national curriculums that differed in form or style. Fun and social debates and debates that asked for short answers generated considerable participation, as shown by the analysis of posts and archives (see Table 31 in section 4.2.1), but interviews with active members (see sections 4.1.2.3 and 4.1.2.4) and mentors (see section 4.1.3.2) revealed that serious and academic debates generated a more thoughtful participation. Nonetheless, participation in fun and social debates was perceived by participants and mentors to have its own advantages, importantly it supported a sense of community (see section 4.1.3.2).

### **5.1.3 Different types of relationships**

Active members' interviews (see section 4.1.2.2) and the survey (see section 4.1.1.3) showed that communication was not restricted among members who knew each other in person. IGGY was a network in which different sorts of interpersonal ties

developed, e.g. strong connections among people who met face-to-face (e.g. the JCs), weak connections among members attending the same school, but also among strangers who got to know each other through their online participation (e.g. in debates, competitions and so on).

Notwithstanding the varying strength of relationships, a sense of community developed within IGGY. From the analysis of the survey (see section 4.1.1.6) and the active members' interviews (see section 4.1.2.3) it emerged that participants felt connected and belonging to a community of people they could relate to, trust, speak openly to and whom they valued. Participants who interacted with other members regularly either through messages or debates also felt a sense of community and this facilitated participation. However, there were perceived limitations on the extent and quality of their online friendships, i.e. these were understood as different to their 'real-life' ones, and though their online discussions were friendly and open, participants were mindful of self-disclosure. For these reasons IGGY may be described and indeed felt as a community for some but communication within IGGY is better represented as displaying 'community mindedness' (Santos and Hammond, 2007).

These strong and weak ties come with pros and cons. For example, the literature suggests that emotional support is usually offered by individuals who share a strong tie, whereas weak ties enable the exchange of useful information, new ideas and new ways of thinking and acting on different matters (Greenhow and Burton, 2011). This study found that both loose and strong connections have educational and psychosocial implications for students (more details are given later in the chapter) and that participants gained emotional support through both bonding and bridging capital.

## **5.2 RQ2. WHAT FACILITATED AND WHAT CONSTRAINED PARTICIPATION?**

A key challenge noted in the literature has been how to encourage participation in online learning networks and communities, and third spaces in particular have their own possibilities and limitations. The second research question focused on the encouragers as well as the discouragers of participation in IGGY. The terms encouragers and discouragers are preferred to the more common term ‘factors’ as they are much looser and suggest something in the mind of the learner or teacher rather than an objective cause.

To answer this RQ I compared the data obtained through the interviews with active members with data from mentors and from the survey. There has been again a great deal of consistency between the different sources and this led me to identify three broad categories of encouragers and discouragers, that is internal, contextual and external. This section is organised accordingly.

### **5.2.1 Internal encouragers and discouragers**

Studies on learning in out-of-school contexts highlight the importance of self-motivation in order for people to pursue and commit to education focused activities (e.g. Artino Jr and Stephens, 2009; Wong *et al.*, 2019; Carter Jr *et al.*, 2020 and others). In line with this, interviews with active members showed that participation was first and foremost driven by their sense of agency (see section 4.1.2.3). These members derived enjoyment, had personal interest in the topics being discussed and in hearing others’ views. They were self-directed in wanting to advance their knowledge and skills through interaction with the content and other people in the network. The data here came from the most committed in the network but the significance of self-motivation on participation was also noted by a mentor (see section 4.1.3.4) who

believed that in general motivated individuals had committed to IGGY, but for others motivation needed to be engendered through support and external incentives. Indeed, the survey illustrated that while many respondents were internally motivated and used IGGY because they had an interest in the educational resources and challenges and in other cultures, motivators from within the network as well as external motivation were important too (see section 4.1.1.5).

In like manner, participation was restricted when participants lacked intrinsic interest in certain activities or topics or when they did not perceive value in them. Interviews indicated that participants favoured some activities or topics over others and, in fact, their interests or preferences would change over time and would also be influenced by things happening in their everyday life (see section 4.1.2.3). This was also reflected in the survey (see section 4.1.1.4). Respondents might have had preferences for certain activities but in reality these did not always translate into participation.

Discussion on self-motivation brings up the literature on SRL and the idea of gifted learners as being proactive and self-regulated learners (e.g. Wan and Howard, 2007; Thomson, 2010; Fung, Yuen and Yuen, 2014). The literature might suggest that if an informal educational network was going to succeed then it should be with gifted learners because of the compatibility between the capabilities of online learning and gifted students' characteristics such as their academic competence, task commitment and persistency, and ability to learn independently (Wan and Howard, 2007), and their learning needs e.g. for advanced content and challenge (e.g. Thomson, 2010). This view is, however, based on a rather stereotypical or unhelpful view of the gifted learner; social visions of giftedness that shift focus from the person to support structures that enable them to progress (see section 1.2.2) is a more meaningful lens to

look at participation. In point of fact, this study does not demonstrate that participation in IGGY differed to participation in other online interest-communities. Instead, the participants' motivation and experience of constraint mirrored other groups. Though there was a lively and committed membership such as the one exhibited by the interview participants of the study who showed personal initiative to log in, navigate and use the network, overall there were identifiable limitations to online participation and levels of use varied extensively (see also RQ1).

A complicating factor in the conceptualisation of 'giftedness' and 'gifted learners' is the difficulty in identifying who is (or is not) gifted, in what way and to what extent. Further, though researchers have identified 'the gifted' as bearing certain mutual attributes such as motivation, they are not a homogeneous group (Freeman, 2004; Reis and Renzulli, 2009). For instance, some authors make a distinction between different degrees of intellectual giftedness such as moderate, high, exceptional and profound (e.g. Roedell, 1984; Lovecky, 1994; Gross, 2000). IGGY's flexible membership criteria allowed for an even more diverse body of membership.

An additional consideration is that the literature on giftedness postulates that often gifted learners do not fit in at school and/or are not challenged at school (e.g. Reis and Renzulli, 2010; Eyre, 2011; Casey and Koshy, 2013). The majority of participants in this study did not fit this portrait and their need for additional challenge was not established in the data. Though during the interviews some referred to being bored while at school or were at times dissatisfied with their education, this was not how they typically felt (see section 4.1.2.1). Analysis of the survey pointed to the same finding; most respondents were satisfied with and challenged at school, even though to them academic challenge was not the only decisive factor for how they felt about

their schooling experience (see section 4.1.1.1). This could partly explain why the majority did not use IGGY to address lack of challenge at school (see Table 21 in section 4.1.1.5) and the relatively low take up of IGGY, i.e. members did not need to be further academically challenged hence did not become involved in the online activities. However, it is necessary to add that the low survey response rate and the interviews with high engaging members only do not allow for conclusive statements to be made.

## **5.2.2 Contextual encouragers and discouragers**

While internal motivation was an important part of the explanation for participation there were encouragers and discouragers coming from within IGGY itself. I have grouped contextual elements in three broad categories, namely the character of IGGY; people in IGGY; technology and features.

### **5.2.2.1 The character of IGGY**

For the participants I interviewed, IGGY's hybrid identity, i.e. simultaneously social and educational, was its defining and most appealing characteristic compared to other social networks and educational platforms (see section 4.1.2.2). The survey substantiated that respondents used the network for both educational and social reasons, though the majority appeared to be more interested in the educational aspect (see section 4.1.1.5). The literature, and particularly research on CSCL and knowledge building communities (e.g. Salmon, 2004; Garrison, Anderson and Archer, 2010; Salmon, Nie and Edirisingha, 2010; Bereiter and Scardamalia, 2014), posits that social interaction is a necessary condition for members of online networks to commit to the community and embark on educational activities. This was the case with IGGY too. Social networking in IGGY constituted a big part of what members

used the network for (see RQ1) and the interviews with the young participants (for example see section 4.1.2.2) and the mentors (see section 4.1.3.2) suggested that fun and social exchanges had indeed bolstered a sense of community and enabled sustained engagement. However, for many IGGY members light socialising did not transform into involvement with cognitive or more time-consuming activities or the emotional type of commitment depicted by the active members. This resonates with an earlier study by Robinson and Campbell (2010) who investigated an online reading group for gifted secondary students set up as part of the NAGTY initiative (NAGTY was IGGY's forerunner at the University). This suggests that social participation is not sufficient in itself to lead to expanding the cognitive effort and the dedication of time required to engage with the educational content. Further, as others have shown (e.g. Madge *et al.*, 2009; Selwyn, 2009; Jones *et al.*, 2010), young people do not always welcome the use of social networks for academic purposes. It is, then, possible that members might have had preconceived expectations of IGGY as mainly fun and social rather than educational.

Participants had varied views of the wide-ranging topics found in IGGY (i.e. curricular and extra-curricular) and the deviation from what or how subjects are taught in school (see section 4.1.2.3). Many valued the opportunity to access content they could not find elsewhere and enjoyed how IGGY approached topics. At the same time, it appeared to be equally important to some to be able to find content that would assist them with school work. The latter seemed to be required more by older participants who, due to exams or more demanding study, lacked time to get involved with extra curriculum content. The survey, on the other hand, indicated that the divergence from the curriculum was not perceived as a key constraint in using the network, though a few respondents did suggest that more explicit links to school life

would improve their online experience (see section 4.1.1.6). This could be explained by the fact that 17-18 year-olds represented the smallest number of replies to the survey (see section 4.1.1.1). From the mentors' perspective providing content with which members could relate, such as school work or school life, facilitated participation (see section 4.1.3.2). Yet, as explained in RQ1, they also endeavoured to expand rather than merely replicate the school experience.

The above show that a loose relationship between online content and national curricula could be both an opportunity and constraint. An alternative approach to IGGY could have been to tie its content more to the school curriculum as was the case with the distance education programmes offered by the Johns Hopkins University Center for Talented Youth (Wallace, 2009). However, this would have proved challenging or even impractical for IGGY given that it tried to appeal globally and national curricula differ. It also seems likely that if it had been more school-tied this might have triggered more engagement with certain tasks but other experiences (e.g. cultural conversations) would have been lost. Whatever the case it was a deliberate policy to use IGGY to explore a different kind of content.

#### **5.2.2.2 People in IGGY**

The literature on networked learning stresses how participation increases when members of online networks feel connected, when they feel social presence (e.g. Tu and McIsaac, 2002; Garrison, Anderson and Archer, 2010) and when a sense of community develops. A common view among participants expressed in interviews was that IGGY members were like-minded and shared common interests, experiences and characteristics (see sections 4.1.2.2 and 4.1.2.3). This enabled them to feel trust and safety in communicating with others and allowed the development of



relationships (see also RQ1). Many developed a sense of responsibility towards the community and wanted to support others in participating (for example they wanted to accommodate new members' induction to the network) (see section 4.1.2.3).

Relatability and connectedness made it easier for participants to make their presence visible and feel that they got to know each other through their online interaction.

When others acknowledged their presence they felt appreciated and participation was further encouraged (see section 4.1.2.3). Indeed, a main strategy the mentors adopted to increase members' engagement with debates was to show social presence and encourage members to do likewise (see section 4.1.3.2). Participants also valued the different cultural backgrounds found in IGGY and interacted with other members to gain access to their experiences and opinions (see section 4.1.2.3). Communicating with other IGGY members and learning about their cultures was a motive for some of the survey respondents too (see section 4.1.1.5). The mentors also tried to foster a sense of community as they believed that members needed to feel understood and supported to become involved in IGGY (see section 4.1.3.2).

Apart from the above, participants appeared to regard highly other members' debating style (see section 4.1.2.3). There was general agreement among them that discussants' ideas and opinions; the register they used and the arguments they put forward; and, importantly, their respectful, open and non-judgmental approach to the opinion of others made them feel comfortable in contributing to discussions. Mentors also considered the style of debate in IGGY to be 'successful' for the same reasons (see section 4.1.3.2). Contrary to concerns about the low quality discussions taking place in mainstream social networks or the uncivil and disrespectful comments in online newspapers (e.g. Coe, Kenski and Rains, 2014) this finding fits into a more positive view of online communication.

In accordance with previous studies that emphasised the facilitative role of online mentors, tutors or teachers (e.g. Salmon, 2004; Wallace, 2009; Garrison, Anderson and Archer, 2010), mentors in IGGY acted as important enablers of participation. Mentors themselves viewed this as a key part of their role (see section 4.1.3.1) and employed a number of strategies to encourage members' involvement with the content and the activities (see for example section 4.1.3.2 on how they encouraged participation in debates). The survey respondents valued their contributions (see section 4.1.1.6) and the interviews with active members showed how instrumental the mentors' presence in the community was (see section 4.1.2.3). Their helpful interventions were also evident in the visualisation diagrams (see section 4.2.3). Interestingly, visualisation diagrams also indicated that facilitation of debates was sometimes carried out by active members who returned to discussions to make further interventions, allowing for their continuation (see section 4.2.3).

### **5.2.2.3 Technology and features**

Technology at times is underdiscussed and undertheorised when discussing learning with technology or when it does the early literature often shows a romanticism ( i.e. a revolution in learning – for example see Buckingham, 2013; Selwyn, 2016) or else becomes focused on technology acceptance. In IGGY technology was treated matter-of-factly by members in that they were used to social networks and had few acceptance issues. Furthermore, they were not overly impressed by its interface or general design either.

It is worth emphasising, however, that the network would not have been possible without technology and this gave learners in different parts of the world access to social and academic opportunities beyond the ones available in their school or local

community (see for example sections 4.1.2.2 and 4.1.2.3). It meant that learners were not constrained by place and time and could access like-minded people they would not otherwise have met, neither offline nor in their other online networks. Section 5.3 provides a more comprehensive picture of perceived gains from participation but what is also of relevance here is that there were further gains with text based discussion in that it provided a rehearsal for writing and debating (see section 4.1.2.4).

Communicating in writing made some of the participants I interviewed feel more comfortable in expressing themselves and enabled collaboration across time zones, for example among the JCs or those who entered group competitions and challenges (see sections 4.1.2.2 and 4.1.2.3). On the other hand, asynchronous interaction and the delay between a message and a response was sometimes inconvenient, and communicating a message with clarity and consideration for others required time and thinking. The interviews showed that participants appreciated the synchronous communication modes available in IGGY too, and enjoyed using the interactive applications and games (see section 4.1.2.3).

Technology both encouraged and discouraged participation, however, issues with how to use the network emerged as a key constraint for participants, especially when they first joined the community (see section 4.1.2.3). During the interviews they reported several issues with the design of the network or the functioning of features and apps which prevented participation. Learning how to use the network appeared to be more difficult at the beginning but became easier as participants spent more time using and exploring IGGY. This was acknowledged by the mentors too who suggested that more support for new members along with a more user-friendly design was needed to improve the members' experience (see section 4.1.3.4). The survey also showed that IGGY could be improved with changes in its usability and features but difficulties in

using the network impeded participation for only a small percentage of respondents (see section 4.1.1.6). This might be because most respondents had been members for more than a month at the time they took the survey, hence they had familiarised themselves with how to use the network.

Another feature in IGGY was the need for moderation of user-generated content. Content was moderated automatically but also by mentors and moderators. In general, mentors did not need to intervene to prevent the derailment of discussion threads. However, they found monitoring posts to be necessary, especially when sensitive topics were under discussion. In their view, moderation kept things in place and made IGGY a safe environment, enhanced trust and respect among members and thus made them feel comfortable in participating (see sections 4.1.3.1 and 4.1.3.2). Participants, on the other hand, regarded moderation as necessary and helpful yet somehow restricting (see section 4.1.2.3). This was further evidence of IGGY being an unusual case as it needed to have an increased concern for safety.

### **5.2.3 External encouragers and discouragers**

Extrinsic motives such as an expectation to improve career opportunities drove participation, though these were reported more in the survey (see section 4.1.1.5) than the interviews with participants (see section 4.1.2.3). Both datasets, however, revealed that the major barrier in using IGGY was lack of time (see Table 23 in section 4.1.1.6 and Table 27 in section 4.1.2.3). The degree to which participants find time to take part in online forums has long been shown to affect participation (see for example Hammond, 1999). As participants in this study were attending school they would prioritise studying over participation in IGGY. This could also explain why less time-demanding activities or topics that were more fun or social generated more

participation (see RQ1). In fact, when participants took part in more demanding tasks, engagement might have been on and off over a period of time. Time, however, was always perceived subjectively and it may be that those who participated more did not necessarily have more time but perhaps more motivation (see section 4.1.2.4).

The JC competition and its awards was a notable motivation for those involved (see sections 4.1.2.2 and 4.1.2.3). In addition to providing extracurricular opportunities such as the trip to the University of Warwick and the trip to the USA, the JCs perceived their participation in the project as helping them achieve their study/career goals (see section 4.1.2.4). On the other hand, the JC project set further time restrictions to those involved and limited their participation in the online part of IGGY.

Besides school work, participants had family and social commitments too (see section 4.1.2.1). They took up interests and hobbies, had a social circle and spent time with friends and family. Even though some participants turned to IGGY for support on issues related to the gifted label or their academic achievements (see section 4.1.2.2) it is important not to exaggerate the degree of isolation they felt – most described quite full social lives and feelings of vulnerability are not confined to the gifted during adolescence. As quantitative data on participation indicated, debates on giftedness did not generate the most participation but, in fact, significantly less than other social and cognitive subjects (see section 4.2.1). This finding suggests that on the whole participants in this study did not face the kind of social challenges some of the literature on gifted students describes (e.g. Coleman and Cross, 2005). Rather, it supports research that shows academic gifted adolescents to experience positive

interpersonal relationships (e.g. Lee, Olszewski-Kubilius and Thomson, 2012) and suggests how we conceptualise giftedness needs to be reconsidered.

### **5.3 RQ3. WHAT DID PARTICIPANTS GAIN FROM PARTICIPATION?**

An extensive literature has developed on the educational and other potential of social networks and a number of authors have described online resources and communication technologies as a particularly viable means to address the needs of gifted students. In light of this, the third research question sought to determine if and how participation in IGGY benefited participants. Reflecting the network's hybrid character, the person-focused analysis and the message-focused analysis indicated that participants in this study benefited in various ways by using IGGY, which for reasons of clarity I divide into personal, social and cognitive gains. Personal gains relate to the participants' perceptions of themselves and their academic and career development, while social gains refer to perceived improvements in their social relationships. Cognitive gains encompass perceived benefits associated with the formal and informal conceptions of learning, i.e. in terms of developing knowledge and skills and learning-as-participation.

#### **5.3.1 Personal gains**

The literature suggests that 'networked' publics (boyd, 2008) provide new opportunities for young people to create peer networks within which they can explore and formulate their identity. Online groups connecting members of shared interests in particular can provide a supportive network and can be a safe place for them to engage in identity work (e.g. Cole *et al.*, 2011). Consistent with this, participants in this study developed a more positive self-image and increased their confidence and self-esteem through their participation in IGGY (see section 4.1.2.4). They felt more

confident as they engaged with the educational content in IGGY and became more knowledgeable of different topics and subjects. Interacting with people of like mind and similar experiences also enabled them to feel more secure about themselves. Besides online participation, the interviews with the JCs showed that the project gave those participants a strong boost in self-confidence and for a few of them it also meant earning the respect of others. A raised confidence in expressing personal opinions was a benefit noted by many survey respondents too (see section 4.1.1.5). The interviews with mentors confirmed that one of their main intentions was to support members in voicing their opinions (see section 4.1.3.2). They also shared the view that the network's membership enabled members to feel related to others and thus enhance their perception of themselves. Besides a reinforcement of identity, prior studies have noted that a benefit associated with online social networking is the access to emotional support (e.g. Greenhow and Burton, 2011). Indeed, for some of the interview participants, relatedness grew into a feeling of belonging that made them feel they had people to rely upon and that it was safe to give and receive support (see sections 4.1.2.2 and 4.1.2.4). The mentors believed that a sense of belongingness to a group was a valuable benefit deriving from participation in IGGY as it would lead to positive emotions such as feeling accepted and fitting in (see section 4.1.3.2).

Apart from the above, participants gained help with future studies and career planning either through accessing relevant information in the network, looking at what the mentors had been studying or directly asking them for information and guidance (see sections 4.1.2.2, 4.1.2.3 and 4.1.2.4). The mentors confirmed that part of the content they produced for IGGY related to their field of study but also more general information about university studies and university life (see section 4.1.3.1).

Quantitative data on participation showed that topics related to careers were not

among the most popular debates, however, contributions were nearly as many as in some of the cognitive subjects (e.g. politics, history, maths) (see Table 30 in section 4.2.1). Debating about careers may have attracted less participation than other topics because members could access the same or similar information in other places in the network or in other ways e.g. through live lounges, the *Career hub* or quizzes (see section 4.1.2.2). This finding corroborates previous research (e.g. Tomai *et al.*, 2010) which showed that participation in online SNSs increases bridging capital.

Participation in IGGY offered opportunities for bridging capital as it allowed members to access resources otherwise unavailable and to interact with individuals outside their close circle who could provide insight into matters of personal development and to useful information that could support them in reaching their career goals.

A further personal gain for participants was the experience of fun and enjoyment while engaging in social but also educational activities, and the JC project (see sections 4.1.2.2, 4.1.2.3 and 4.1.2.4).

### **5.3.2 Social gains**

Communicating with new or existing friends has been regarded as a key reason why people join SNSs (e.g. Ellison and boyd, 2013) even if engagement in discussions is not always obvious (i.e. they do not always post but only read messages). In this study, the opportunity to communicate with other IGGY members was the major social benefit from participation in IGGY for both the participants (see section 4.1.2.4) and the survey respondents (see section 4.1.1.5). Participants valued social interaction for several reasons (see section 4.1.2.2) but what is of relevance here is that (a) it gave them access to the views and experiences of peers from all over the world and (b) it



was among peers with whom they could identify. Being in a network of like-minded people bore additional importance for participants considering that it was difficult for them to find other people their age who shared their interests or the kind of discussions found in IGGY. As some of them explained, IGGY was the place for them to ‘really be themselves with people like them’ and for giving and receiving peer-to-peer support in the form of encouragement, advice or companionship. Indeed, this was the kind of emotional, social or practical provision the mentors offered members (see section 4.1.3.2). The experience of IGGY lends weight to the idea that networked media can be an avenue for gifted students to connect to others of similar interests and abilities and benefit from the interaction with each other (Wan and Howard, 2007; Housand and Housand, 2012).

One of the key benefits of using networked communications technologies is that they allow people to expand their social networks by creating, cultivating and continuing social relationships. Consistent with this, communication within IGGY, as noted in RQ1, provoked the formation of relationships albeit of varying depths. Most of the relationships participants created in the network were new and for many these relationships remained online. Participants perceived most their relationships in IGGY as acquaintances (see section 4.1.2.3) but some relationships turned from acquaintances to online friends and some (e.g. the JCs) to strong friendships (see also RQ1). Identifying other IGGY members as acquaintances instead of friends might explain why the majority of the survey respondents did not feel they had improved their friendship groups (see Table 22 in section 4.1.1.5). For a few participants, participation in IGGY fostered their offline relationships for example by allowing for more frequent or wide-ranging communication (see section 4.1.2.4). This echoes the

idea of SNSs as contributing to new forms of interaction and reinforcing connections rather than replacing them (Wellman, Boase and Chen, 2002).

### **5.3.3 Cognitive gains**

*Participants' perceived learning gains in cognitive development (e.g. in knowledge, skills, thinking, understanding)*

A strand in the research on social networking is focused on whether the use of technology can make learning outcomes as traditionally measured better (see for example Salomon and Ben-David Kolikant, 2016). In contrast, other research is arguing to look at learning in a different way and that from the point of view of CoP we should look at learning 'as participation' (see for example Bereiter and Scardamalia, 2014). In my study there was no outside assessment which I could access to show that participation in IGGY caused an advance in test scores. Rather, most data came from participants' self-reporting and what materialised were perceptions of gains in knowledge and skills and gains from the experience of challenge and participation. Below I elaborate on improvements in extracurricular and curricular knowledge, the development of communication skills, the experience of cognitive challenge and the experience of participation.

#### **5.3.3.1 Improving extracurricular and curricular knowledge**

According to the mentors, participation in IGGY could benefit members by advancing their knowledge of curricular and extracurricular subjects (see for example section 4.1.3.2). Arguably, the most obvious ways they supported members in achieving this improvement was to help them with homework, to share study techniques with them such as on how to memorise the skeletal system (see RQ1 for more details), and to provide facts and information on a broad spectrum of topics. Moreover, the mentors

hoped to develop members' knowledge by guiding them to additional resources either within or outside IGGY, exposing them to different viewpoints and engaging them in conversations.

Analysis of the participants' interviews (see Table 28 in section 4.1.2.4) and the survey (see Table 22 in section 4.1.1.5) showed that the educational opportunity to access and develop extracurricular knowledge was the main perceived benefit.

Participants described extracurricular knowledge as coming to know about: academic subjects and topics not (deeply) taught in schools; different cultures around the world; different opinions and experiences of people living in other countries; how to try and address the challenges of identity and adolescence; information and facts about careers and studies (see section 4.1.2.4). The JCs stated additional extracurricular knowledge related to their project.

At the same time, many participants felt that participation in IGGY supported their learning of curricular subjects and led to better academic achievements in school (see sections 4.1.2.2 and 4.1.2.4). This was made possible through their engagement with content on maths, English, creative writing and other school related subjects as well as through asking for homework help from other members or the mentors.

Participants would often start or contribute to a debate related to what they had been studying at school. As IGGY gave them access to people from all over the world, they would seek to discuss topics concerning global issues with them. At the same time, they would also discuss topics more relevant to their country to get a wider array of views than the ones heard in their schools. In contrast, the survey respondents did not associate their use of IGGY with improvements in school performance (see section 4.1.1.5). This could be because the survey respondents did not use the network to ask

for help on school assignments (see RQ1) or because they might have seen little connection between the content within IGGY and what they learnt in school. For example, even though more than a third of the respondents to the survey noted growth in their vocabulary (see Table 22 in section 4.1.1.5) they might have considered the vocabulary as irrelevant or not applicable to school, and this could be particularly true for those who did not speak English at school. Similarly, in previous studies (e.g. Greenhow and Robelia, 2009) students did not realise the links between their out-of-school participation in SNSs and learning in classrooms.

The findings of this section reflect the argument that it is possible to design an out-of-school online environment for young people -even if it is not the majority- to accomplish conventional educational goals *and* access social-academic resources not usually afforded by formal education (Pratt and Back, 2013; Greenhow and Lewin, 2016).

### **5.3.3.2 Developing communication skills**

The development of communication competencies is a commonly reported benefit of participation in social networks (e.g. Black, 2009; Lantz-Andersson, Vigmo and Bowen, 2013). Effective communication was the principal skill participants acquired (see Table 28 in section 4.1.2.4) and an important perceived improvement for the survey respondents too (see Table 22 in section 4.1.1.5). The mentors also identified potential links between the members' online interaction and their ability to communicate effectively (see section 4.1.3.2). Interviews with active members illuminated that participants' regular engagement in conversations; exposure to different writing styles and expressions; expansion of vocabulary; realisation of different perspectives and opinions led to better communication skills, both verbal

and non-verbal (see section 4.1.2.4). The JCs had been involved in further activities such as presenting and interviewing which supported their progression in this area. Participants also viewed communication and debating as transferable skills to offline contexts, importantly to school.

Those participants who worked with others to create a shared end product (e.g. the JCs and those who entered group competitions) further referred to improvements in collaboration skills (see section 4.1.2.4). Enhanced creativity emerged in the survey analysis as a significant gain (see Table 22 in section 4.1.1.5) but was not as widely acknowledged by the participants.

### **5.3.3.3 Experiencing cognitive challenge**

The imperative to provide adequate intellectual challenge to gifted students has been repeatedly stressed in relevant literature (e.g. Eyre, 2011; Kitsantas, Bland and Chirinos, 2017) and a few studies have shown that online programmes can potentially cater for this need (e.g. Wallace, 2009).

Some participants joined IGGY with the expectation of finding content and activities that would stimulate their thinking, even more so if they felt unchallenged in the classroom (see sections 4.1.2.2 and 4.1.2.3). Similarly, participation was sustained when they experienced cognitive challenge (see section 4.1.2.3). Participants felt they were ‘learning things’ when they got involved with stimulating content or activities either on their own (e.g. in the *Knowledge*) or with others (e.g. in the *Debate*) (see section 4.1.2.4). The content they engaged with did not have to relate to the curriculum to feel challenging; it needed to present new knowledge that triggered their thinking, to offer them new perspectives on looking at things, and necessitated mental effort for them to comprehend and evaluate the new information. Participation

in the JC project encompassed distinct content and activities that felt intellectually intriguing.

Participants felt particularly challenged when they got involved in more debatable topics (e.g. the one on the value of homework) or when they felt the need to take a stand on matters concerning their countries (see section 4.1.2.2). As a number of participants explained, the purpose of communicating with other IGGY members was not merely to ‘chat’ but to engage in deep and meaningful discussions that would allow them to grow intellectually (see section 4.1.2.2). Nonetheless, it was not necessary for them to manifest their own views on a topic to feel challenged after reading what others had said (see section 4.1.2.2).

Presenting appropriate challenge to IGGY members was deemed by the mentors important and valuable (see section 4.1.3.3). Apart from providing advanced content to members, they would often advise those who found school tasks easy or unchallenging on what they could do to reach their full potential in class (see section 4.1.3.2). Mentors believed that it was possible for members to be challenged through the conversations held in IGGY and although their opinion may have stayed unaltered, they could have gained intersubjective understanding (see section 4.1.3.2). Cognitive engagement was easier to achieve with topics that necessitated deeper thinking or invited different viewpoints (see section 4.1.3.2).

#### **5.3.3.4 Learning as participation**

Much of the current literature on the use of social technologies for learning pays particular attention to a newer understanding of what learning means, one that views participation not as a means to an end but as the end itself. In other words, to learn is to become a participant in a community (Sfard, 1998). Notwithstanding the value of

such a perception of learning, researchers (e.g. Hammond, 2015) have urged for a critical approach to claims to learning as these cannot be made without considering the context and the nature of the knowledge gained. For example, the fact that discussion took place might be enough in itself to suggest that learning took place but it is important, as discussed in section 3.3.3.2, to establish what kind of discussion and the quality of the discussion. Take for instance a community that promotes antisocial behaviour; if participation is learning then one may ask themselves what is the value of participating in such a community.

Drawing thus attention to the context of this study, it is relevant to highlight that IGGY was a community that operated according to scholarly behaviours (I elaborate on this later). The educational orientation of IGGY is important because it suggests that participants entered a community in which *they learnt to act as educated people*. Irrespective of whether the knowledge or skills they gained related to what they did in school or who they were, entering an educational CoP empowered them to *behave educationally*.

From a CoP perspective, learning equals understanding how a community works and learning to communicate with other members using the language of the community. To the participants it was clear that IGGY was a community in which an intellectual culture was nurtured and a congruent language was used (see for example *IGGY in respect to other online social networks and educational platforms* in section 4.1.2.2). To this end, participants self-directed their learning by setting goals for themselves and completing them, identifying content and activities that were stimulating and meaningful to them, engaging in conversations with their peers to broaden their understanding and to contribute towards a constructive debate (see section 4.1.2.2).

The mentors' input was instrumental in cultivating this educational culture and in preserving it. Not only did they embrace their tutoring role and offer advice and guidance discreetly and compassionately (see section 4.1.3.1), but also provided a model of educational behaviour through their contributions (see section 4.1.3.2). All this was evident in the content analysis of debates (see section 4.2.2). This analysis showed that the discussions taking place in IGGY can be regarded as highly academic because, first, more often than not, members offered justifications and explained the reasoning behind their views. Second, they were able to construct arguments that were *relevant* and *appropriate* for the topic under discussion. Third, as the interviews demonstrated (see sections 4.1.2.3 and 4.1.3.2), while members defended their views and presented their arguments, they did so respectfully and empathetically towards the views of others. Crucially, as the mentors noted, when members expressed disagreement this was phrased kindly and while also acknowledging the other person's perspective. Even in the more provocative topic of religion mentors found members to be courteous and receptive of the different beliefs put forward by members.

Analysis of the content of conversations further revealed that members would often respond to what others had said or ask questions that triggered further discussion (see section 4.2.2). This suggests that discussants 'listened' to others and were interested in what they had to share. Indeed, participants verified that they were genuinely interested in other members' thoughts and experiences, valued the existence of diverse voices, and in fact sought to challenge and push others to think of different ways to approach a topic (see section 4.1.2.2).



At this point I should again clarify that the above do not represent universal participation in IGGY – not everybody acted like this. It is rather more accurate to say that the above portrays participation from the more engaged members. Nevertheless, taken together, IGGY offers a vision of what it means to engage in authentic and constructive dialogues, which is *education in its own right*. As explained earlier, the mentors and the young participants themselves saw cognitive gains in their discussions but there is a wider picture. Being or becoming able to communicate personal opinions, to give support for those opinions, to take into consideration the ideas of others and try to understand them, and subsequently challenge or accept them, are practices that educators hold in high esteem, look for in students and strive to achieve in classrooms. This is because argumentation involves deep engagement with ideas, thinking rationally about a topic and the relationship between claims and their grounds, defending your ideas and thinking about the ideas of other, all of which promote higher order thinking which is, in itself, an important cognitive achievement.

As the mentors astutely recognised (see section 4.1.3.2), the commitment to argumentation and the civility with which IGGY members debated contravened discussions in other online public forums (e.g. public news discussions) which often exhibit impoliteness, negativism and stubbornness.

#### **5.4 WHAT IS AN EDUCATIONAL NETWORK AND HOW IS IT ACHIEVED?**

The sub questions have been answered in the first part of the chapter but the wider question posed at the start of the thesis is what does this research project tell us about the meaning, viability and value of an educational network. This is an important question as we have in IGGY a unique kind of network and a possible prototype for networks in the future. In fact, drawing on the data it is possible to answer this more

theoretical question by identifying elements of the network's composition (i.e. outcomes, content and activities, community) and of the building blocks needed for its construction. To do so is to create an ideal type of educational network drawing on the findings reported here but recognising that not all members will experience the network in the same way.

#### **5.4.1 What is an educational network?**

From the findings of this study an educational network can be defined in respect to outcomes from participation; the type of content and activities it should offer members; and the characteristics of the online community.

##### **5.4.1.1 Outcomes from participation**

In terms of outcomes, an educational network provides the means for members to bridge individual and social learning. The first and perhaps most widespread type of bridging relates to the consequences or *products* of learning. On the one hand, the conventional goal of education has been the acquisition of knowledge and skills by individual learners. On the other hand, an alternative conception of learning invites us to acknowledge 'learning to participate' as the end in itself. The former often corresponds to what is commonly described in the literature as formal learning whereas the latter to what is described as informal learning. This study proposes that in an educational network the two can co-exist and that both are valuable in their own right. RQ3 illustrates that in IGGY this type of bridging can be seen in the forum discussions through which members gained subject knowledge and communication skills while also learning to interact with others using the language of the community. Looking at RQ1, the bridging might also be regarded as permeating the network since members could utilise resources throughout the network to practise or learn more

about school subjects or engage in more informal social media practices such as messaging, blogging and so on.

From a *process* perspective, individual learning is often quiet, though there may be a level of interactivity (for example mentors would sometimes comment on a quiz or challenge, or give feedback to those who entered competitions) and social learning is interactive, members communicate with each other and with mentors. An educational network should accommodate these different forms of participation and recognise that members may be quiet and interactive at different times and in different contexts.

Indeed, it is often the case that being quiet is taken to signify lack of participation or passive participation, and often frowned on in the technology literature as lurking, but this is not a view shared by the participants themselves. It is not always necessary to use online presence to show members' constructing understanding of new material.

Further, it might be more accurate to talk about styles of participation rather than types of members; the latter connotes a definite behaviour or characteristic of the person (e.g. extravert or introvert) but more often people will change behaviour at different times (e.g. slip from being very active to inactive during exams). Indeed one could argue that interactive participation cannot take place without quiet participation and vice versa, akin to the acts of speaking and listening in acquiring literacy.

The second key outcome from participation in an educational network is the fostering of social capital. As seen in answering RQ2 IGGY was seen as a place for people with a sense of shared identity to come together, and a place that connected people who had not previously met each other. Through their online interactions in such a space members can form different relationships (or ties) that are beneficial in various ways. For instance, creating links between people from different backgrounds (e.g. cultural

or professional backgrounds), ages or countries bestows members with access to new information, resources and perspectives, also known as bridging social capital. At the same time, bonding social capital exists in stronger ties among members who feel closely connected or members who feel trust, safety and a sense of belonging, yielding psychosocial gains such as provision of emotional support and improvements in their self-image and self-confidence. These different types of ties can lead to the formation of a community or at least a community-minded network and are important for its maintenance.

#### **5.4.1.2 The type of content and activities it should offer members**

This element considers the physical entity itself, the community network. The network should contain instructor-generated content and activities ('instructor' here is used for the official providers of the network's content) and user-generated content. Examples of instructor-generated content are such things as articles, videos, quizzes, games etc. and examples of user-generated content are discussion posts, blogs, personal profiles etc.

Moreover, as can be seen in answering RQ2, the content one can find in an educational network blends curricular and extracurricular topics, allowing members both to practise what they do in school and to expand their knowledge beyond that. The existence of curriculum-related content is important as engagement with it could contribute to better academic achievement in school, a key expectation from technology use held not only by many members but also by many outside the network (e.g. educators, parents, politicians). At the same time, it is equally important for members to be able to dive into areas of personal interest, find information that is personally meaningful and discover opportunities not available in the school context

or even in their communities. In this second category we could include discussions on topics that members themselves identify as cognitively challenging but also on topics that are perhaps more social and fun which, nevertheless, constitute significant facilitators of peer-to-peer communication, socialisation and identity construction.

#### **5.4.1.3 The characteristics of the online community**

Before anything else, an educational network is a network, i.e. a group of interconnected people. With this in mind, it comes as no surprise that the culture and the norms that develop in the network determine its character and how newcomers understand the network's enterprise. When talking about an educational network, as discussed in RQ3, a culture that promotes a commitment to becoming educated is key. This goes hand in hand with a culture of mutual trust, respect and empathy. Together, these elements encourage healthy and constructive conversations in which diverse voices can be heard and different opinions can be raised and discussed. Significantly, opinions are not merely stated but justified with appropriate arguments and explanations of the reasoning that underpinned the statements. In such a community, though agreement might not be reached on many topics members can develop their understanding and accept that there are different approaches and perspectives to a topic; a realisation that broadens their minds and makes them more benevolent towards others. For a network to be educational it also needs to be welcoming and supportive to new members to help them find their way through the network and ensure they feel comfortable participating and forming relationships with other people in the community. In time, the support the new members receive might turn into commitment and responsibility towards the community, a mechanism that acts as a gatekeeper in preserving the community's character.

### **5.4.2 How is it achieved?**

Having answered what an educational network is we now turn to the second part of the question: How is it achieved?. Given the voluntary nature of participation in the network, to make it work is about placing all the right pieces together with each piece forming a part of the bigger picture. For many members, some of the pieces were missing and for others, some of the pieces that used to fit at some point did not. Below I discuss an optimum scenario that narrates how people, technology and external conditions can come together to bring an educational community to life.

#### **5.4.2.1 What do people need to do?**

As RQ2 highlights, first, members need to be self-motivated to participate. Without self-motivation it can prove very difficult for members to engage fully and especially in the more cognitively demanding tasks. Essentially, the network depends on members' self-directed and self-regulated participation which is in turn tied to an internal interest in what the network has to offer.

Second, members need to participate in order to progress from inexperienced to experienced users, from receiving support to providing support, from reluctantly exploring the network to participating confidently and feeling part of it. To experience feelings of belonging and identify with others, members need to show their presence and acknowledge the presence of others so that a sense of connectedness, relatability and mutual appreciation evolves. Simply put, they need to enter into a virtuous cycle in which participation brings more participation.

Third, members need to 'find time' to participate. Of course, for members to find time they first need to be motivated and perceive value in participation; the less motivated

they are, the less willing they will be to allocate time to the network at the expense of other activities.

Based on the above, one of the most important tasks of the mentors in the network is to provide motives for participation, especially to members who lack self-motivation. As seen in RQ2 it is essential that mentors introduce topics that are driven by the members' interests and are relevant to them and their experiences, and present them in engaging and meaningful ways. Apart from prompting members to participate, mentors should also articulate their own ideas, share their expertise, views and experiences (importantly past struggles that they have successfully worked through) and provide supportive feedback. When mentors are easy to communicate with, accessible, approachable and friendly, they can more easily serve as an example for the young members who can identify similarities between them. Last but not least, mentors have a significant role to play in safeguarding the network. They need to make judgements about the appropriateness of members' generated content and if needed take action to ensure the safety of members. All in all, mentors are vital as they monitor, facilitate and preserve participation.

#### **5.4.2.2 How should technology work?**

As discussed in RQ2, technology is often not touched upon in the educational technology literature. Be that as it may, technology is the element without which the network cannot exist. Here I discuss how should technology be used, i.e. how should the platform be constructed to accommodate the community.

First, the platform should provide a social environment for members to interact. As seen in RQ2, communication and social interaction are not only main drivers for participation but also necessary for deeper involvement with the educational content.

Ideally, social interaction should be enabled in different ways or means, for example in ‘public’ forums, private messages, and if possible linked to opportunities for members to meet offline. Further, interaction should be encouraged to take different forms, e.g. ‘chat’ about light topics and participate in discussions on more academically challenging topics. Technology can support this by creating opportunities and ‘spaces’ for both, for instance IGGY set up different spaces for different kinds of discussions, e.g. members could visit the *IGGY community hub* for social/fun discussions or one of the spaces dedicated to more academic subjects.

Additionally, the network should make academic resources (including human resources such as mentors and materials) available to members. Competitions, challenges, quizzes and interactive games are pertinent examples of activities that young people embrace.

The platform should also allow both asynchronous and synchronous discussions. The former enables anytime anywhere access (which is especially important for an international network) and might be more suited to, say, newcomers with lower levels of confidence or members who wish to take time to gather their thoughts and frame their replies. The latter can be provided in the form of live events (such as the live lounges in IGGY) during which members can pose questions and receive responses instantly, collaborate more easily on a project (e.g. a group competition) and even build rapport with other members as they get to see them and feel they know them better.

The role of technology is perhaps more evident in the ease of use and functionality of the network. While issues with the use of the network might be overlooked by more active members, they can be pivotal for new members. Specifically, members might



be discouraged if they find learning what they can do in the network is complex and time-demanding and if the software has technical limitations. Thus, new members need to be sufficiently supported and guided either through clear signposting and/or by more experienced users (mentors or members who can adopt this role), and technical difficulties must be minimised. Otherwise, crossing the threshold of competence with the system and becoming participants might not be achieved.

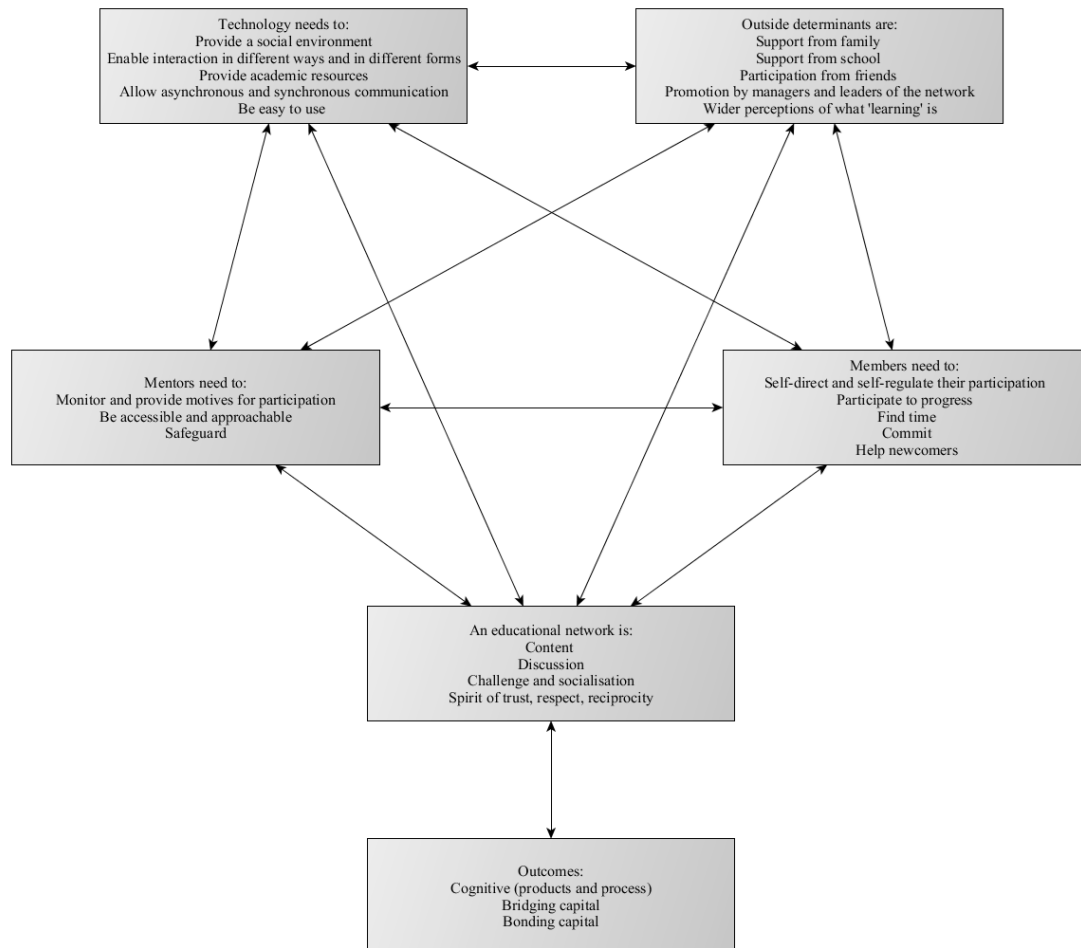
Finally, technology can alert moderators to unsuitable content, though this cannot replace human moderation that understands context and other subtle meanings in text.

#### **5.4.2.3 What external conditions might help?**

Beyond the immediate context of the network, as RQ2 demonstrated, external conditions need to be in place. A supportive attitude towards the network from parents and schools is helpful. Given the time constraints students face, parents can encourage and help members fit the network into their schedules, especially when they believe there are benefits from participation. Another key thing to remember is that young people live busy lives with competing priorities including school, study, hobbies, friends and so on. Therefore, they may find it easier to commit to an educational network if the links between their participation and their formal education are clearer or if their friends use the network.

A further point to raise here is that it is difficult for students, parents and schools to value the same things that educational reformists believe. An educational network is up against a schooling network i.e. the socialisation of children into achievement as individual and discrete chunking of knowledge. Moreover, the prescriptive nature of the curriculum means that school learning is defined by internal schemes of work and use of approved resources which might not map onto those used in an educational

network. Thus, it might be overly optimistic and romantic to expect a strong uptake of an educational network by institutions or learners if it does not, to some degree, embed elements of the curriculum.

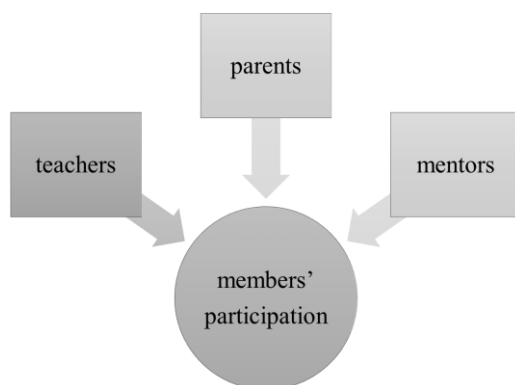


*Figure 15 Visualisation of what an educational network is and how it is achieved.*

The above diagram illustrates the links between people (members and mentors), technology and external conditions. Each box has a title and a short list of characteristics derived from the above discussion of the wider question of the thesis. Each box is connected with a double headed arrow illustrating the relationship works both ways. Each is joined to the four other boxes and taken together this illustrates that all the conditions need to be in place for the educational network to take shape.

The network is defined in a fifth box as consisting of content and discussion, cognitive challenge and socialisation, and a spirit of trust, respect and reciprocity. This is joined with a double headed arrow to the outcomes that flow from participation in the network because the outcomes feed back into the network reinforcing its components. The diagram provides an easy way of understanding an educational network. It shows what needs to be in place in planning to develop one in other contexts.

In many of these models it is easy to see the responsibility as belonging to the learner to make the model work. The model presented here is a dynamic one that stresses the joint responsibility at different levels and from different people. Learners do carry responsibility for the learning but they are merely one part of the system. Children's and young people's participation fits into an ecology of how mentors, parents and teachers can support them (see Figure 16). In fact, one could argue that given the challenges that adolescents experience during their transition from childhood to adulthood, their participation in an educational network should first and foremost be founded on adults' mediation.



*Figure 16 Illustration of adults' responsibility in supporting young members' participation.*

Having drawn on the data to construct the idea of an educational network, we need to give thought to how IGGY measured up. IGGY *was just such a network for some* but not for everyone, as was clear by the fact that IGGY was wound up. The decision to close down the network though was largely a financial one rather than an educational one. On its own terms IGGY could have continued into the long term and achieved important educational goals but a key challenge in terms of viability was to get a substantial membership to be self-financing. Even if membership was free to those who could not afford it and low-cost for others, with enough people signing up for it, sustainability could have been achieved.

That not enough people signed up could be explained by reference to the rationale upon which the network was built, i.e. that gifted and talented students were not served by school. As shown in RQ2, this idea did not bear out in the findings; in general participants had positive attitudes towards school and their descriptions of teen life were not atypical for other people their age. The picture is complicated by the fact that the flexible membership criteria meant that IGGY's population did not consist of gifted and talented students only. In these circumstances the gifted and talented label attached to IGGY offered no advantage as it created the impression of a network with which many people could not identify. Another matter that led to the low take up of IGGY was the distant (or at most implicit) links with the national curricula. In contrast to platforms that provide content close to the curriculum and which many young people access, IGGY made the principled decision to provide innovative content. This, however, meant that members needed not only to have high levels of motivation but also time to engage with content that diverged from what they were taught at school.

Against this background, how the managers and leaders of the network promoted it could have had an impact on its performance. For instance, from a marketing perspective it would have made sense to stress connections between the network and formal learning, including careers and further education support. However, this was not done as the goals of the network were not so instrumental. Perhaps it would have made more pragmatic and educational sense to have advertised the network from the start as open to anyone who wanted to learn; a place for people who share an interest in learning, inclusive of diversity. Ideally, membership should be low-cost or, if possible, free.

## **5.5 SUMMARY**

In this chapter I answered the three sub-questions and the wider question of the thesis. The three sub-questions concerned participants' online behaviour, facilitators and barriers to participation and perceived gains. In sum, RQ1 showed that uses of the network ranged from individual to social or a mixture of both, participants accessed a wide selection of content and activities ranging from curriculum to non-curriculum related, and formed peer relationships of different depths and types. In RQ2 I presented three categories of encouragers and discouragers, namely internal (i.e. coming from the people), contextual (i.e. coming from within the environment) and external (coming from outside the environment). Many determinants both facilitated and inhibited participation (notably the relationship between content and school work). Self-agency emerged as the primary driver for participation and lack of time as the primary constraint. RQ3 explained how participants benefitted personally, socially and cognitively from participation. Cognitive gains in particular reflected the two metaphors of learning (Sfard, 1998), i.e. the acquisition metaphor and the participation metaphor. From the former perspective, participants developed

knowledge and skills, and from the latter perspective, they learnt to participate in an educational community. Following the three sub-questions, I answered the overarching question of what an educational network is and how it is achieved, and presented this diagrammatically to easier illustrate the relationships between the ‘what’ and the ‘how’. I constructed the picture of an ideal type of educational network by establishing its key outcomes (i.e. bridging social and individual learning, development of bridging and bonding capital) and its constituent parts (i.e. the diverse material and the educational community). The success of the network depends on the interplay of three agents: people in the network; technology; external conditions. In the case of IGGY all three agents were in place and led to the creation of a successful educational network but which, sadly, was not viable.

## **6 CONCLUSION**

This chapter presents the conclusions of the thesis. It starts with a description of how the thesis was organised and then reminds the reader of the RQs and the main findings. Following from this is the contribution of the thesis to knowledge alongside a discussion of its limitations. The chapter also makes recommendations for future studies and ends with a self-reflection of my research journey.

### **6.1 HOW THE THESIS WAS ORGANISED**

The thesis consists of six chapters: Introduction; Literature review; Methodology and methods; Findings; Discussion; Conclusion. Below I provide a summarised account of each chapter.

The Introduction started with a description of the personal and professional motivation that led me to conduct this research. Next, it set the context of the study by describing IGGY and touching upon the concept of giftedness and its position in the study. Then, it presented the background to the main theme of the study, that is how social media use by young people relates to learning in the traditional and the contemporary meaning of the word. The need to know more about the aforementioned relationship was highlighted, followed by the RQs which contributed towards addressing this need. Along with the RQs I set out how I was going to answer the questions and commented on the significance of the study. Before completing the chapter I provided a guide to the chapters ahead.

The Literature review began with a discussion of two frequently contrasted conceptions of learning, namely formal and informal learning, and a depiction of IGGY as a hybrid network that bridged the two. It then offered a rationale for the

construction of IGGY as a network for gifted learners by presenting the debates surrounding their educational provision. Next, I outlined the literature on social networks with regards to their educational potential. Following this more general account, I reviewed how networked learning had been researched in two settings: in and out of school. Then, I focused on studies of hybrid environments such as IGGY that bridged elements of formal and informal learning. Finally, the chapter finished with a discussion of counter perspectives and challenges that may arise when incorporating in-class and out-of-class learning.

The third chapter dealt with the methodology and methods of the study. I defined and diagrammatically represented this study as a mixed methods single case study with a convergent design. Having described the case, I reported on the strengths and limitations of case study and of mixed methods as found in the literature and pointed out how these played out in my own study. A timeline led the reader through the application of each data collection method, allowing them to understand when and how I integrated quantitative and qualitative data. Next, I expanded on each of the methods used in the study, i.e. interviews, questionnaire survey, analysis of posts and archives, and explained how I analysed the different datasets. The ensuing section described in detail the sampling procedure and the sample of the study, and the final section concerned the ethical guidelines for the research.

The Findings chapter was structured into two sections that covered the analysis of data concerning the research participants and of data concerning posts and archives, namely person-focused analysis and message-focused analysis. Person-focused analysis included the analysis of data obtained through the interviews and the survey, and message-focused analysis included analysis of data obtained from the online



archive and the IGGY team and content analysis of selected debates. Findings from the person-focused analysis were organised around key themes that emerged from each dataset. Apart from a description of the research participants (interview participants and survey respondents) common key themes were: how participants used the network; what encouraged and what discouraged participation; gains from participation. The interviews with active members and mentors provided further insight into the network's educational culture and hybrid character.

In chapter 5 I answered the three research sub-questions drawing on the findings and the literature review. The questions asked: What did participants do in the network?; What facilitated or constrained participation?; What did participants gain from participation?. When discussing the sub-questions I integrated the different sets of findings looking for consistency, contrast and complementarity. The three sub-questions were subsequently brought together to answer the wider question of the thesis, that is 'What is an educational network and how is it achieved?'. The answer to the question was also given in the form of a diagram that illustrated the components and outcomes of an educational network and the conditions that determined its success.

The Conclusion is the final chapter of the thesis in which I provide a brief account of how I organise the thesis; give a summary of the study and its main findings; point out the strengths of the study and how it contributes to the existing literature; acknowledge its limitations; make recommendations for further research work, practice and policy; refer to the study's personal significance.

## **6.2 SUMMARY OF THE THESIS AND MAIN FINDINGS**

When talking about ‘learning’ people tend to think of formal education provided by schools and universities. The process of learning in this context is comprehended as a transfer of knowledge from the outside (e.g. teachers, books) to the inside (or mind) of individual learners, and the outcome is comprehended as the acquisition of subject matter knowledge (which is defined by a formal syllabus) and learning skills.

A contemporary conception of learning that is often juxtaposed to the conventional understanding of the term is one that views learning ‘as participation’ in a community of practitioners. Learning-as-participation has also been described as ‘informal learning’ in contrast to formal learning. This notion of learning-as-participation is more difficult to grasp as there is not a clear division between the process of learning and the outcome. In terms of process, to learn necessitates ‘taking part’, which in turn means to engage with the practice of the community and, importantly, with the people in the community. The process here foregrounds action and interaction; learners construct knowledge through a dialogical approach in which they learn from each other. The learning that emerges from this interaction does not merely transform the learners’ minds but also the wider entity within which they act. On the level of the individual learner, the upshot is to ‘become a participant’ or, put it otherwise, to learn the practice of the community, its particular language and the norms that guide members’ behaviour in the community. On the community level, when members learn to participate they reinforce the continuation and strengthening of the community itself and the betterment of its practice.

Each of the two conceptions of learning described above has often been attached to a particular setting; formal learning is thought to occur mainly in school while informal

learning out of school. However, with the advent of internet and social media educational technologists, all too often romantically, envisioned that a transformation of education was possible if technology was used to import informal learning practices into the school setting. Research on learning in online contexts has been extensive, yet focused on two areas: informal learning in out-of-school social environments; attempts to combine in-class and out-of-class learning within formal institutions. Less investigated are environments such as IGGY which do not fall into either of the above categories. IGGY was an alternative site of learning as it was ‘something in between Facebook and BBC Bitesize’ (IGGY member) – an out-of-school social network with an explicit educational character. In this sense, IGGY had the potential to merge traditional and new forms of learning. This study set out to explore participation in IGGY with the wider aim of describing how an educational network could look and how it could be built. The RQs are given earlier and the main findings for each are summarised below.

### **6.2.1 RQ1: What did participants do in the network?**

The first question investigated what participants did in the network. Though their use of IGGY varied, all of them took part in both individual activities and social networking. In respect to the first, participants watched videos, read articles, played games, solved quizzes and other types of challenges. In respect to the second, participants interacted through private messages, in the network’s forums for discussion and debate, in live events and when collaborating for competitions or other group challenges. The topics they discussed ranged from social and fun to more serious, academic or cognitive. In the more argumentative discussions, by and large, participants would present their ideas and justify them while also respecting opposing

ideas. Participants would sometimes only read discussions without posting a reply. The dominant type of communication in debates was many-to-one but one-to-one or many-to-many discussions would also unfold.

Participants accessed diverse content: educational content explicitly related to school work (e.g. homework help); educational content implicitly related to school work; non-school-related content. IGGY was more realised as providing the second and third type of content rather than the first one. Participants developed strong and weak ties with other IGGY members. Those who met in person felt strongly about their friendship whereas those who interacted only online felt less connected. Nevertheless, they all valued highly their relationships with other members and considered IGGY to be a community (or community-minded network) of people they identified with and trusted.

### **6.2.2 RQ2: What facilitated and what constrained participation?**

The second question asked what encouraged and discouraged participation in IGGY. Contrary to the depiction of online learning environments as particularly conducive to gifted learners, participation in IGGY did not occur automatically, and findings were similar to other online interest-communities. Several determinants fostered and restricted participation and these were categorised as internal, contextual and external.

Internal motivation accounted strongly for members' involvement in the network.

What drove high engaging members to participate was primarily their self-motivation and an intrinsic interest in the network's content and activities. Contrary to suggestions in the literature, participation was not driven by addressing a lack of challenge or a sense of not fitting in at school.

Apart from intrinsic motivation, incentives from within the network and from outside the network were also important, even more so for members who were less committed to IGGY. A contextual encourager was that IGGY was not only an educational network but also a space for social interaction. However, social interaction alone did not easily move into engagement with cognitively complex ideas. Many members were also drawn to IGGY to access its distinctive content, but many others needed more content related to school work. The community itself (i.e. the people in IGGY) acted as an important facilitator of participation. Specifically, this was a community made up of members from different cultural backgrounds but with shared characteristics, interests and experiences, and who interacted with respect, trust and compassion. Showing and acknowledging social presence enabled feelings of relatability and connectedness to develop and vice versa. The mentors' role was invaluable in motivating members to participate by monitoring participation, promoting social and cognitive presence and safeguarding the network. Apart from the people in the network, participation was also influenced by the network's technology and features such as moderation and the synchronous and asynchronous modes of communication. Technology enabled anytime, anywhere access to IGGY and to exclusive opportunities, but difficulties with the use of the network was a key constraint for participation, especially for new members.

Participants further referred to a number of external motives that encouraged participation and these were the network's links with the University and the expectation that participation in IGGY would benefit their future studies or career; taking part in competitions and awards; and the opportunity to access extracurricular events. Even though participants did not perceive external drivers as primary enablers of participation they considered lack of time to be the key barrier. Participants'

available time was restricted by school work or social activities and personal demands of their lives, and in the case of the JCs by the requirements of their project.

These encouragers and discouragers of online participation are not distinct to encouragers and discouragers of participation in a non-digital setting, say an afternoon interest club. Nonetheless, different strategies are employed in online environments, e.g. online mentors in IGGY used text rather than voice, but could be effective as seen in outcomes.

### **6.2.3 RQ3: What did participants gain from participation?**

The third question examined the benefits gained from participation in the network. It was found that participants experienced personal, social and cognitive gains. Personal gains included a positive reinforcement of participants' identity, a boost in self-confidence and in communicating their views both in the online environment and offline. IGGY was a community where they felt they 'belonged', where they were free to express themselves and where they could reach out to receive support.

Participation in IGGY also gave them access to people (e.g. University students, academics or other invited experts), resources and information that provided guidance to university studies and career planning.

Social gains included opportunities to interact with peers around the world who shared their interests and to discuss the more scholarly topics found in IGGY.

Participants enjoyed the online communication through which they made new friendships or strengthened their relationships with members they had known in person (e.g. from school). The wide and diverse social relationships enabled bridging and bonding capital to develop with emotional, social and practical advantages for participants.

Cognitive gains were described through the lens of the traditional approach to learning and the alternative conception of learning-as-participation. In terms of the former, by taking part in IGGY participants improved their curricular knowledge and school performance. IGGY was, however, more perceived as enabling improvements in extracurricular knowledge such as knowledge of topics not covered in national curricula, knowledge related to other cultures and life in different countries, knowledge of how to overcome struggles of adolescence or identity issues etc. Participants also developed their communication and debating competencies and viewed this skill as transferable to offline contexts such as the school.

From a CoP approach, participants learnt to participate in an educational community and behave educationally. In practice this translated into two things. First, participants felt responsible for expanding their minds and self-directed their participation towards achieving this goal. Participants set personally meaningful learning goals and identified for themselves content and activities that were cognitively challenging and allowed them to develop their intellect. Second, participants committed to and subsequently strengthened the community's culture of constructive and civil conversations. Participation in debates was not focused on winning an argument but on learning from diverse perspectives. Participants listened to what others said and when they put their points across it would be in a way that allowed for people with opposing ideas to feel comfortable in raising them.

#### **6.2.4 Wider RQ: What is an educational network and how is it achieved?**

The study's wider aim was to describe what an educational network can look like and how it can be achieved. Taken together, the three sub-questions lead to the definition of an ideal type of educational network in terms of the outcomes stemming from

participation, the type of content and activities it should offer members and the characteristics of the online community.

A key outcome from participation in an educational network is the bridging of individual and social learning. Here, 'bridging' is used in two senses. First, it denotes a bridging of more older and newer perceptions of the products of learning. An educational network allows participants to advance their formal knowledge and skills while also learning how to be members of the community. Second, it denotes a bridging of personal and interpersonal processes of learning since an educational network accommodates different styles of participation. Silent and vocal participation are both legitimate ways to engage with the content and members may employ one or the other, or indeed both, on different occasions. A further outcome from participation is the increase of social capital and in particular of bridging and bonding capital. In an educational network, members can form relationships of various sorts from which they derive different benefits, for example new information can be found in weak ties and emotional support in strong ties.

For these outcomes to be experienced, the network needs to provide members with appropriate content and activities and should also allow members to generate their own content. Ideally, the network should contain a combination of curricular and extracurricular material, and of social and educational activities. Apart from content, of outmost importance is the educational character of the online community. In an educational network members become educated by becoming more knowledgeable and skilful but also by practising the values of respect, tolerance and reciprocity. To this extent, the individuals' betterment has a larger impact on the community itself as they allow for it to grow and become stronger.



The above can only be achieved under the right conditions. These concern the people in the network, the technology and external conditions that affect participation. First, members need to self-direct and regulate their participation over a period of time to allow themselves to gain experience and connect with others. A commitment to the community and to helping others is necessary for the preservation of the network. All this cannot be made possible without members finding time to participate. The mentors in the network can play an invaluable role by monitoring participation and providing motives to members, in a friendly and approachable way. It is also essential to safeguard the network and make sure members remain safe. Technology is also an integral element of a successful educational network. The platform should have space for discussion of different topics and through different avenues. Technology should support the educational nature of the community by making educational resources available to members and by enabling both synchronous and asynchronous communication. Last, the platform should be easy to understand and to use and participation should not be hindered by technical issues. Factors outside the immediate network impact its performance too. A positive effect can be achieved when family and school support students' participation or when their friends join the network. A big challenge arises from the mismatch between the societal perception of learning and the philosophy underpinning an educational network. This might be partially addressed if the network has explicit links with the national curriculum. Finally, the leaders and managers of the network need to boost its reputation and profile in ways that align with the target audience.

For the participants, IGGY had all the right pieces in place and succeeded as an educational network. For many others, however, one or more pieces were missing and this led to the unsustainability of the network.

### **6.3 CONTRIBUTION TO KNOWLEDGE AND STRENGTHS OF THE STUDY**

The findings from this study make several contributions to the current literature. First, they help us understand educational networks. This study explains what an education network is and how it can be sustained. Prior studies examined either social networks with a non-academic orientation or the institutional use of social media. These studies have been very useful in highlighting the potential of SNSs beyond their leisure uses and in expanding our understanding of what learning is. Studies of third spaces created with an educational purpose outside of school are rare and even more so when participation is voluntary. Therefore, the current study differs from previous ones as it reports on such a network.

The originality of the study is further important as it provides a suggestion to how to solve the challenge of linking everyday practices with social media up to knowledge and learning opportunities valued in formal education. The potential of social media for integrating formal and informal learning has been covered in the literature.

However, questions remain as to how this integration can be achieved in practice and efforts have focused on importing online practices into the school setting. The present study gives an example of how bridging can be accomplished the other way round, i.e. by incorporating aspects of the curriculum and other socially valued knowledge in an out-of-school SNS, and importantly, it contributes to an understanding and conceptualisation of what might go on within hybrid networks and the kinds of learning that might take place. The model presented in this study provides a practical way of thinking about how we can design and manage such networks. The thesis includes examples of content and activities an educational social network can offer members, notably a combination of curricular and extracurricular material, of social interaction and academic pursuits. It also explains how the platform could look like to

allow for different learning experiences to occur in different online spaces and through different modes. Moreover, the thesis demonstrates good practices to enable the community to function in a spirit of trust, respect and reciprocity. The mentors involved in this study constitute exemplar cases of how to set desirable norms of behaviour in an online community. The model further shows how members themselves have a significant role to play if the online experience is to be rewarding while concurrently acknowledging that people outside the network have a responsibility in supporting them.

Significantly, the study is neither romantic nor pessimistic about technology use for learning. Though it culminates in a discussion of an ideal type of educational network, it is conscious of constraints to participation and the synergistic effect of a number of conditions on its realisation. Third spaces have both unique potentials *and* challenges and these are brought up and discussed in length in the thesis. This could be useful for those wanting to design educational environments or researchers that look at reasons that limit or encourage online participation. Nonetheless, this study presents a picture that contradicts public fears about the negative impact social media can have on young people's health and safety and their ability to learn. Participation in an educational network is not only safe but also produces outcomes that benefit young people personally, socially and cognitively. This is an approach which would work in the context of Covid-19 and could, in some countries, be an alternative to the didactic approaches which featured in online learning. It is an approach that is non-threatening but friendly to conventional education while also being innovative.

A final strong point of the study lies in the methodology it employed. The process of data collection and analysis was rigorous, dynamic and of substantial duration. While

the use of mixed methods in social research in general has long been suggested, its adoption in the field of online learning is yet to be widely established. Much research of online participation and learning has been either message-focused (e.g. analysis of archives or posts) or person-focused (e.g. analysis of participants' self-reporting). The study makes a significant methodological contribution in that it employed an approach in which both message-focused and person-focused data were compared and contrasted. The mix of data showing the perceptions of the research participants and of data showing actual participation generated a comprehensive and more accurate picture of the use of the network and the experience of online participation. The design of the study evidences a way to converge quantitative and qualitative approaches exploiting the advantages of each with due regard to the limitations. It also illustrates how researchers can move flexibly between approaches to achieve a fit between questions and methods.

#### **6.4 LIMITATIONS OF THE STUDY**

Notwithstanding the strengths of the study presented above, a number of limitations need to be addressed. One limitation is the small survey population size ( $n = 161$ ), despite recurring efforts to reach more members. Even so, the sample was representative of the overall population and combined with data collected from other sources it allowed me to develop a broader perspective of participation in the network.

Another limitation is the representativeness of interviewees as it was not possible to gain access to non-participants and low frequency members or members who used the network covertly. This is a common impediment when doing social science research as people who do not use or feel connected to a program are less willing or interested

in talking about it. This study adjusted to the restriction by shifting its focus to the more active members. Although this meant that I did not manage to explore why some chose not to engage in IGGY or to engage only in private, it enabled me to gain deeper insight into the experience of participation. Moreover, the survey and the interviews with active members also shed light on intermittent or quiet participation and this aspect of their experience might echo, at least partly, the experience of those 'hard-to-reach' members.

Related to the above is that despite using different tools I did not obtain a deep understanding of how IGGY fitted participants' lives. This would have been possible if I had employed an ethnographic approach and followed participants in school or at home to see how they integrated IGGY into their world. However, this kind of methodology was very difficult to achieve in the time and spatial framework of the study and, admittedly, this as well as the aforementioned limitations of the study was not something I could easily realise prior to finishing the study.

A further limitation is that the uniqueness of the network might set questions about the transferability of findings. This is of course an inherent challenge of case study research and one that I have addressed in the Methodology and methods chapter. Added to that, the study can be relatable to practitioners or researchers interested in online communities that offer academic content and facilitate interaction among peers and experts (see for example 'Zooniverse', <https://www.zooniverse.org/about>, or 'Oxplora', <https://oxplora.org/>) or online communities of e.g. professional development. For example an online educational network for nurses (see for example the 'Digital Nurse Network', <https://www.england.nhs.uk/our-nhs-people/people-stories/digital-nurse-network-supporting-nurses-across-the-nhs-to-use-and-promote->

digital-services/) or a network for museum educators (see for example ‘GEM’, <https://gem.org.uk/>). More research is of course needed to explore and refine the concept of ‘educational network’ but this study lays the foundations for this.

A final limitation of the study is that I was unable to explore the network during the Covid-19 pandemic as it had already shut down by then. This was very unfortunate both for me and the participants of the study as engagement in IGGY would have most probably been very different during this time of isolation and home-schooling. Staying connected and learning online has never been more salient than now and IGGY could have definitely provided a substantial service during this period. Moreover, as both parents and students became more positive about the idea of engaging in after school online educational activities, IGGY could have perhaps tackled the issue of sustainability by opening up to all students.

## **6.5 RECOMMENDATIONS FOR FURTHER RESEARCH AND PRACTICE**

The implications and recommendations for this research are addressed and presented below. They are directed at 1) members of educational networks or similar online communities, 2) mentors, 3) managers and people who want to set up such networks, 4) researchers in this area.

### **1. For members of educational networks**

When you join an educational network take time to understand how the network works. Navigate the network to identify what interests you or, if possible, experiment with everything it has to offer. If you struggle with learning to use it, reach out to other members or the mentors. Get to know the network’s culture and rules and respect them. Start at the periphery of the community if you are new, but do not hold back. Share your ideas with others and be interested in others. Listen to what they

have to say and be empathetic. You can disagree but do it in a way that does not offend others.

Have an open mind on what you are learning – employ a wider view of how participation in the network benefits you. It is not only about improving academic performance but also about learning to interact with others who share your interests and through that interaction fulfil needs that cannot be met elsewhere. By being part of the community you can benefit on a personal level but it is important to not treat it as a one direction funnel. When you gain experience and feel competent you can reciprocate by supporting others. Showing presence in discussions enables the community to continue operating but if you feel this is not something you can or want to do, you might find other ways to give back (e.g. by attending offline events or promoting the community to others).

Manage your time though. Participation in the network is additional to whatever else you are doing in life and can be time-consuming. It is important to find a balance between using the network and your other obligations. You need to prioritise your time to cope with the many daily demands and ensure you are not missing out on important happenings either offline or online.

## 2. For mentors

You are essential to the community. Model good practice for younger members through your participation. Monitor their participation and support them albeit discreetly, without invading their space. If necessary, take action to keep them safe but stand back when you are not needed. Trust them or at least hold back from judgment until you have seen them participating. They will often surprise you and behave in a much more mature and responsible manner than how the media portrays

them. Allow them to build their presence and grow into the community. The community is about them – create educational content tailored to their needs and interests but also let them be teenagers who want to socialise. Interact with them and share your experiences and expertise. Members will look up to you and learn from you. Be friendly and approachable.

3. For managers and people who want to set up a network like this

- Make it easy for members to get started. Do not create a complicated platform – you can keep it simple yet rich in content and features e.g. by organising the content thematically and providing a detailed sitemap. Assign people (e.g. mentors) to support and guide new members too. Clear what you can do with the network.
- Employ mentors. Choose them wisely as they need to be able to meet the diverse needs and responsibilities of their role. University students are an excellent choice as they are not much older than the young members of the network but can be a source of advice and sympathy for the struggles of teenagers. You can also capitalise on their passions and expertise and give them opportunities to develop content based on these. Train them to safeguard members and reward them for their contribution in keeping the network running.
- Design content that is geared to your audience in terms of topics and language level. Offer ‘low threshold, high ceiling’ content so that it is easy for everyone to get started but not limiting for advanced users. Have quick and fun activities such as quizzes and longer-lasting challenges and competitions, and provide rewards to keep members motivated.



- An educational network needs content that is not solely related to formal knowledge. It needs to be a mixture of both but mainly extra-curricular to allow members to experience wider educational opportunities. There are many websites that provide content and activities mapped against the national curricula but an educational network is not simply an online resource for traditional school-based subjects.
- Sustainability requires a wider audience and for this to be achieved you should avoid labels such as ‘gifted’ that carry connotations that are not welcomed in the same way by all people. Instead, open the network to anyone interested in joining but monitor and support participation so that the network’s educational conduct is not lost.
- It should be evident by now that creating an educational network is not cheap. It needs to be sustained by mentors, offer top quality safeguarding and it is resource intensive. Beware of the high cost and ask yourselves if you can afford it. Ideally, partner with a university to tap into its resources (e.g. university students, academics, links to careers and studies, access to interdisciplinary projects) and for the network to reflect a university’s culture of learning.

#### 4. For researchers

Find a balance between overly romantic and pessimistic accounts of online learning. Having a critical awareness of both the merits and challenges of educational technology will allow you to conduct a well-rounded research. Revisit learning in the literature but see theories as offering a lens on what is happening, not as giving you the literal answer to what learning is. In the Literature review I discussed the distinction of formal and informal learning and I acknowledged that such a distinction

simplifies its complexity. However, and even though we might never understand learning in its entity, these theories suggest a way at looking at it and at trying to understand it. Use creative iterative mixed methods in the exploration of your questions. A mixed methods approach is intensely time-consuming but consider its benefits. In the case of online learning, relying on only one source of data runs the risk of making misleading claims. Try and address specific questions but be flexible and adjust them as you go along. There is also a need for further research on educational networks. For instance, you might be interested in:

- conducting a comparative research and investigate international contexts and how culture impacts the members' experience;
- investigating how gender might play a role in online participation. Most of the present study's participants were girls – you might want to look at how boys use an educational network and identify any similarities or differences;
- conducting a longitudinal study and following members through the process of adolescence;
- going in more depth on how an educational network is incorporated into young people's daily practices and understanding in more detail the world of the young person;
- focusing more on online discussions and argumentation in an educational network as these differ considerably to discussions taking place in mainstream SNSs. A comparative study of such a kind could result in useful recommendations for those interested in online discussion forums.

## **6.6 PERSONAL SIGNIFICANCE OF THE STUDY**

This has been a very long journey. One that started without having fully realised the demands of a PhD, especially when working full-time. I have always wanted to do one, maybe because I grew up in a family that installed in me the value of education. The journey has not always been smooth and at times I did feel I would not manage to reach the end.

In the first year of my PhD I was very excited and dedicated. I had just moved in the UK and I was under a cultural shock, desperately looking for something to give meaning and purpose to my relocation. As strange as it might sound, the PhD was my escape and comfort. I kept making good progress and felt empowered to continue during the next years. Then some ‘misfortunes’ happened in my life that held me back. And being a perfectionist who sets the bar high for herself, I was very disheartened. I did not give up but moving forward was slow. Until something magical and inexplicable happened. Petros, my little boy, came to my life. With the news of my pregnancy everyone in my family (including me) was afraid this would mean the cease of my studies. On the contrary. I found new strength in myself and regained my motivation to finish. And here we are.

This extraordinary journey has a significance that goes beyond becoming more knowledgeable and skilful. Of course that also carries a lot of weight and it was one of the reasons I decided to embark on a PhD. I advanced the knowledge I had gained with my Master’s degree and I have reflected on and improved my professional practice. Apart from this, however, it has changed who I am by stretching my thinking in ways I could never have imagined. It has reformed my assumptions about many things but especially about this mysterious thing we call ‘learning’. I identify

‘learning’ happening around me in different forms and shapes and, almost instinctively, cast a critical eye on what I see. On a metacognitive level, I perceive what I am describing here as fitting perfectly with the two metaphors of learning used in this thesis: I have learnt things in the traditional sense and have become a member of the academic community.

Before closing this personal narrative, I would like to acknowledge the person I feel most grateful to, my supervisor, Dr Michael Hammond. I could not have carried out this journey without his kind and insightful presence. Dr Hammond supported and guided me and believed in me more than I did. I will be forever thankful.

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## **8 APPENDIX A: QUESTIONNAIRE**

### **IGGY experience**

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#### **About you**

##### **1) What is your gender?**

- ☐ Male
- ☐ Female
- ☐ Prefer not to say

##### **2) What is your age?**

- ☐ 13 - 14
- ☐ 15 - 16
- ☐ 17 - 18

##### **3) In what country do you live?**

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##### **4) Which of the following online platforms do you use? (Check all that apply)**

- ☐ Facebook
- ☐ Twitter
- ☐ Instagram
- ☐ Khan Academy
- ☐ BBC Bitesize
- ☐ Other: \_\_\_\_\_
- ☐ None



**5) How satisfied are you with your school (or home-schooling) experience?**

- ☐ Very Dissatisfied      ☐ Dissatisfied      ☐ Neutral      ☐ Satisfied      ☐ Very Satisfied

**6) Please tell us why you feel this way.**

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**7) Do you feel you are challenged academically at school (or home-schooling)?**

- ☐ Never      ☐ Some of the times      ☐ Most of the times      ☐ Always

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**About you and IGGY**

**8) How did you find out about IGGY?**

- ☐ Teacher recommendation  
☐ Friend recommendation  
☐ Family recommendation  
☐ Google or other internet search  
☐ Other: \_\_\_\_\_

**9) How long have you been an IGGY member?**

- ☐ 1 - 3 years  
☐ 6 months to a year  
☐ 1 - 6 months  
☐ Less than a month

**10) How often do you access IGGY?**

- ☐ Daily
- ☐ Two or more times per week
- ☐ Once per week
- ☐ Once per fortnight
- ☐ Once a month
- ☐ Once every few months
- ☐ Very rarely
- ☐ Never

**11) During a typical week, how much time do you spend visiting IGGY?**

- ☐ More than two hours
- ☐ Between one and two hours
- ☐ Half an hour to an hour
- ☐ Less than half an hour
- ☐ N/A

**12) Which device do you usually use to access IGGY?**

- ☐ Desktop computer/PC
- ☐ Laptop
- ☐ Mobile
- ☐ Tablet
- ☐ Other: \_\_\_\_\_

**13) From where do you usually access IGGY?**

- ☐ Home
- ☐ School
- ☐ Both
- ☐ Other: \_\_\_\_\_

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## How you use IGGY

**14) When you log on to IGGY, how often do you do the following activities?**

	Never	Some of the time	Most of the time	Always
Read articles	( )	( )	( )	( )
Read without replying to debates	( )	( )	( )	( )
Reply to debates	( )	( )	( )	( )
Take up an individual challenge	( )	( )	( )	( )
Take up a group challenge	( )	( )	( )	( )
Do quizzes	( )	( )	( )	( )
Play interactive games	( )	( )	( )	( )
Watch videos	( )	( )	( )	( )
Participate in an individual competition	( )	( )	( )	( )
Participate in a group competition	( )	( )	( )	( )
Send private messages	( )	( )	( )	( )

Update your profile	( )	( )	( )	( )
Blog	( )	( )	( )	( )
Participate in a live chat	( )	( )	( )	( )

**15) Which subject or subjects do you usually explore? (Check all that apply)**

☐ Science

☐ Maths

☐ History and Politics

☐ Creative Writing

☐ Other: \_\_\_\_\_

**16) Do you communicate with members from other countries?**

☐ Yes

☐ No

**What do you prefer to do**

**17) Which statement suits you better?**

**I would rather do ...**

	<b>this</b>	<b>this</b>	
a group competition			an individual competition
a group challenge			an individual challenge
read (without replying to) debates			reply to debates

send personal messages			contribute to debates
send personal messages to people I know in person			send personal messages to people I meet online
debate with people I know in person			debate with people I meet online

**18) Choose your three most favourite activities.**

Your favourite	Read articles or watch videos Read and/or reply to debates Take up challenges Do quizzes or play games Participate in competitions Blog Participate in live chats
Second favourite	Read articles or watch videos Read and/or reply to debates Take up challenges Do quizzes or play games Participate in competitions Blog Participate in live chats
Third favourite	Read articles or watch videos Read and/or reply to debates Take up challenges Do quizzes or play games Participate in competitions Blog Participate in live chats

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**What you gain**

**19) Why do you use IGGY? (Check all that apply)**

- ☐ Address lack of challenge at school
- ☐ Access learning resources

- ☐ Access challenges that are relevant to me and my interests
- ☐ Ask for help with homework from other students
- ☐ Ask for help with homework from the mentors
- ☐ Improve career opportunities
- ☐ Meet new people
- ☐ Communicate with other members
- ☐ Learn about other cultures
- ☐ Other: \_\_\_\_\_

**20) What, if anything, do you improve by taking part in IGGY? (Check all that apply)**

- ☐ Knowledge of new subject areas
- ☐ Knowledge of other cultures
- ☐ Debating skills
- ☐ Confidence in expressing your opinion
- ☐ School performance
- ☐ Creativity
- ☐ Vocabulary
- ☐ Friendship groups
- ☐ Nothing
- ☐ Other: \_\_\_\_\_

---

### **Community, constraints and suggestions**

**21) Which statement suits you better?**

**I feel ...**

	<b>this</b>	<b>this</b>	
I can trust IGGY members			I cannot trust IGGY members

other IGGY members understand me			other IGGY members do not understand me
IGGY members share similar experiences to me			IGGY members do not share similar experiences to me
other members respond to my ideas			other members do not respond to my ideas
confident about participating in debates			insecure about participating in debates
the mentors' role is important			the mentors' role is not important

**22) What are the main constraints in using IGGY? (Check all that apply)**

- ☐ Lack of time
- ☐ Difficulties in how to use IGGY
- ☐ Lack of interest in the activities on offer
- ☐ Different from the school curriculum
- ☐ The English language
- ☐ The cost
- ☐ Nothing
- ☐ Other: \_\_\_\_\_

**23) How could your IGGY experience be improved?**

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**24) Would you recommend IGGY to other students?**

- ☐ Yes
- ☐ No

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### **Opt in for an interview**

If you want to share more and help us improve our understanding about your experience as an IGGY member you can opt in for an interview. Just enter your email below.

Email

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**Thank You!**



## 9 APPENDIX B: EXAMPLES OF INTERVIEW SCHEDULES

<b>Interview guide: Young participants</b>	
General information	<p>Tell me about yourself.</p> <p>(e.g. school, hobbies, interests, friends, membership in other social networks)</p>
<p>Giftedness</p> <p>Gifted label</p> <p>Educational provision</p>	<ol style="list-style-type: none"> <li>1. Have you been formally labelled as gifted or not?</li> <li>2. If yes, do you know why you've been labelled?</li> <li>3. How do you feel about the label?</li> <li>4. Do you experience any difficulties related to the 'gifted' label or not? Explain. (e.g. conflicts at school, lack of challenge, peer relationships, teacher-student relationships)</li> <li>5. Are you offered some kind of provision as a gifted student?</li> </ol>
Why join IGGY	<ol style="list-style-type: none"> <li>1. How did your interest in IGGY begin?</li> <li>2. Is this social network typical of others you have signed in (e.g. Facebook)?</li> <li>3. Did you have any expectations from IGGY or not? If yes, what expectations did you have? Are these fulfilled or not?</li> <li>4. Have your views about IGGY changed over the course of time? How?</li> </ol>
Use of IGGY	<p>*Refer to survey replies whenever possible.</p> <ol style="list-style-type: none"> <li>1. Do you use IGGY mostly from home/school/...? Why?</li> <li>2. How much time do you spend on IGGY? What influences the time you spend in the network?</li> <li>3. What do you do or look at in IGGY? -Do you always look at the same things? -What makes you look at different things (e.g. an announcement/a post from another member)?</li> <li>4. What are your favourite activities? Why?</li> <li>5. What are your least favourite activities? Why?</li> <li>6. Within IGGY do you prefer joining a group for a challenge or working individually?</li> <li>7. Why do you use IGGY?</li> </ol> <p>If not mentioned:</p> <ul style="list-style-type: none"> <li>-Is your use of IGGY related to what you do at school? In what way? If not, does IGGY provide resources not available at school?</li> <li>-Is what's provided (e.g. learning material/debates) challenging or not?</li> <li>-Do you use IGGY to:</li> </ul>

	<p>address lack of challenge at school or not?</p> <p>ask for help with homework from other students?</p> <p>ask for help with homework from the mentors?</p> <p>improve career opportunities?</p> <p>communicate with others?</p> <p>8. What does IGGY offer you?</p> <p>-Does it help you overcome any problems related to you being gifted or not? If yes, in what way? If not, do you think it could help? How?</p> <p>-Have you developed your knowledge/skills or not? (ask for examples)</p> <p>-Have you developed anything else?</p> <p>9. How do you feel about friends/acquaintances through IGGY? Are they of any value to you? Could you compare your friendships in IGGY with the friendships you have outside IGGY?</p> <p>10. IGGY has members from all over the world. Does this matter to you? Why/Why not?</p> <p>11. Have you participated in any debates? Do you think this is learning or not?</p> <p>12. How do you feel when you participate in debates? Are you comfortable in saying your opinion?</p> <p>13. Do you find the debates to be interesting/meaningful?</p> <p>14. Have you suggested any topics? Is it easy or difficult to suggest a topic? Would you like to discuss any other topics?</p> <p>15. What do you think about the contribution of the mentors?</p>
Constraints	What prohibits you from getting more involved with IGGY?
Suggestions	Can you suggest ways in which IGGY can be improved?
Questions	Do you have any questions you would like to ask?

Interview guide: mentor1	
About you	<ol style="list-style-type: none"> <li>1. What did you study/are you studying?</li> <li>2. What is your current occupation?</li> </ol>
About your role as a mentor	<ol style="list-style-type: none"> <li>1. How long have you been a mentor?</li> <li>2. How did you find out about IGGY?</li> <li>3. Why did you become an IGGY mentor? (What was your motivation?)</li> <li>4. What does the role of the mentor involve (responsibilities)?</li> <li>5. What were the general guidelines given to you? Have you been trained for this role?</li> <li>6. Do you believe IGGY should remain a network for gifted students or not and why?</li> </ol>
About participation in IGGY	<ol style="list-style-type: none"> <li>1. What do you think are the benefits IGGY members experience in general?</li> <li>2. What do you think are the benefits IGGY members experience by participating in debates/challenges/live chats etc.?</li> <li>3. Do you think students experience learning when they participate in debates or not?</li> <li>4. What do you think of the subjects debated e.g. academic versus social subjects?</li> <li>5. Do you think members are anyhow influenced after reading other people's opinions or not?</li> </ol>
About debates	<ol style="list-style-type: none"> <li>1. I have noticed that you reply to members using their usernames. Why do you do that?</li> <li>2. How do you come up with topics? I've seen that you sometimes use a news report like in the debate <i>Is praise from teachers a bad thing?</i></li> <li>3. To you, what is a successful debate?</li> <li>4. Have you identified successful debates? Why do you think these were successful?</li> <li>5. Do you believe debates on giftedness are important or not and why?</li> <li>6. How do you think the debates in IGGY differ from the debates in other networks/forums?</li> <li>7. What do you think about the way the members express themselves?</li> </ol>
Specific debates	<ol style="list-style-type: none"> <li>1. You initiated a debate on <i>What happened to flight MH370?</i>. Why?</li> <li>2. Do you consider <i>What happened to flight MH370?</i> a successful debate? Why?</li> <li>3. Why did you come back to it (<i>What happened to flight</i></li> </ol>

	<p><i>MH370?</i>) two years later? How do you keep track of the debates?</p> <p>4. Why do you think the debates <i>What films do you think really didn't do justice to the book?</i>, <i>What GCSE's do people do?</i> and <i>What makes a good book?</i> generated more replies than <i>What happened to flight MH370??</i></p> <p>5. What do you think of the debate <i>Who is in charge??</i> Why do you think it didn't generate responses from students?</p> <p>6. Why do you think the debate <i>Is homework a waste of time?</i> generated so many responses?</p>
Suggestions	Do you think IGGY could be improved in any way?
Feedback on content analysis	<p>Use the debates:</p> <p><i>What is the best place you've ever been to on holiday?</i></p> <p><i>Are you ashamed of being smart?</i></p> <p><i>Is praise from teachers a bad thing?</i></p>

## 10 APPENDIX C: EXEMPLAR INTERVIEW CODING

<b>Theme: Why did participants start, read and/or write in a debate</b> <b>Code: To read the views and experiences of others</b>	
Participants mentioning it (n = 7)	Extracts (n = 20)
member1	<p><i>-on the most serious debates I do tend to read every single one to see just the different opinions</i></p> <p><i>-I don't always post in them but I just read other people's experiences</i></p> <p><i>-just to see that other people have different experiences</i></p> <p><i>-I thought maybe see what other people's views were</i></p> <p><i>-from other people's experiences and other people's views it just brings on a whole other way of your thoughts</i></p> <p><i>-what they wrote was very really really interesting and it just made me want to write back instantly</i></p> <p><i>-I like the ones that really challenge my way of thinking, people who try to convince me that their way of thinking is better because I can argue with them</i></p>
member5	<p><i>-it is really interesting to see their point of view</i></p> <p><i>-I was really eager to see what people in Africa thought</i></p>
member6	<p><i>-I use it to get others' opinion on what's happening around the world, specifically about my country, what they think about my country and clear some of the misconceptions</i></p> <p><i>-It's not just to chat with others, it's mostly to get their opinions and what they think about some certain situations that are happening around the world</i></p>
member7	<p><i>-I like learning about new people</i></p> <p><i>-I tend to learn a lot from people</i></p> <p><i>-I tend to see other people's point of view</i></p> <p><i>-I like knowing what other people think</i></p>
member8	<p><i>-I think it's really interesting that like sort of bunch of five people you could get five different opinions</i></p>

	<i>-There are some people that start really good debates or write really good opinions and I always try to look at their new debates because I like what they do</i>
member9	<i>-I've written to them the other day and people who have been bullied have posted stuff and other people have posted solutions and how to help with that situation</i>
member11	<i>-I like to see how other people are thinking and people's views on things -Because you can see their opinions</i>

<b>Theme: How mentors encouraged members' participation and facilitated discussions</b> <b>Code: Through promoting social presence (addressing specific discussants, addressing all discussants, inviting others to participate, mentors talking to each other)</b>	
Participants mentioning it (n = 2)	Extracts (n = 10)
mentor1	<p><i>-often when I come and ask 'What does everyone else think?' or 'Does anyone have suggestions?' or 'This is what I did but did this work well for anyone else?' to get other members to join in</i></p> <p><i>-you pick those people out because you think there's more that they can contribute to the discussion</i></p> <p><i>-make sure there is something on the end of your post that can kind of lead to you inviting people to comment</i></p> <p><i>-the more present you are on the site the more effective you can be</i></p> <p><i>-it might be that one of them, the members is asking something about the debate that I started, you know, asking me, so I wanna make sure that if they ask me something that I'd respond</i></p>
mentor2	<p><i>-Usually I replied to all to be more inclusive</i></p> <p><i>-If someone actually said something to me quite personal then I needed to recognise that and that's why I would be directed back to them</i></p> <p><i>-every post I had I would try to do it as inclusive as I could to encourage a wider debate</i></p> <p><i>-you'd find that us mentors were actually very supportive of each other regarding the participating in the beginning of a certain debate, you have two mentors talking to each other to start with and then the students get involved</i></p> <p><i>-I wouldn't actually respond to one person but everyone at the same time to keep the debate going</i></p>

## 11 APPENDIX D: CONSENT FORM



**Connecting and  
challenging the world's  
brightest young minds**

### **INFORMED CONSENT FORM FOR IGGY MEMBERS**

This informed consent form is for parents of past or present IGGY members participating in the 'IGGY Case Study Research Project'. This form has two parts:

- Information sheet (to share information about the study with you)
- Certificate of consent (for signatures if you agree for your child to participate)

**Lead Researchers:** Ms Marina Charalampidi (PhD Researcher, IGGY / Warwick Institute of Education)  
Dr Adam Boddison (Academic Principal, IGGY)  
Dr Michael Hammond (Centre for Education Studies, University of Warwick)

#### **PART I: Information**

##### **Introduction**

On behalf of IGGY, Ms Marina Charalampidi, Dr Adam Boddison and Dr Michael Hammond would like to find out more about the experiences of IGGY members. In particular, we would like to explore whether participation in IGGY meets members' quests and if yes, how this is achieved. In order to answer this we need to investigate why and how IGGY members make use of the network in different ways and what benefits they perceive to acquire. We hope that through looking at the usage of IGGY both at an individual level and at a broader level will allow us to identify what might a typical IGGY membership look like. Much of this research is likely to inform the ongoing development of IGGY as it moves forward to ensure it meets the needs of members.

Whenever researchers conduct a study involving children, they inform the parents about the study and seek their permission for their child to be involved. Your child has already expressed an interest in participating in this study and we have had an initial conversation to explain what is involved. Before we can continue further, we would like



to ask for your consent. Only when we have both your consent and your child's consent will your child be fully enrolled in the study.

Should there be anything in this form that you do not understand or that would like further information about, then please do not hesitate to contact Ms Charalampidi at [m.charalampidi@warwick.ac.uk](mailto:m.charalampidi@warwick.ac.uk). Please be aware that you can contact Ms Charalampidi at any time throughout the study using these details should you need to.

### **Voluntary Participation and Right to Withdraw**

Participation in this study is optional and is not a requirement of IGGY membership. You do not have to agree for your child to participate and your child will still be entitled to all of the usual benefits and services of IGGY irrespective of whether or not they participate in this study.

We are confident that your child's experience in this study will be a positive one. Nevertheless you and your child have the right to withdraw your consent at any time and you do not need to give a reason.

### **Research Process and Duration of Study**

This study will focus on data collected through interviews with IGGY members, including your child. Given the global geographical spread of IGGY members, the interviews will be conducted by telephone or Skype and will generally last no more than 1 hour. The interviews will be led by Ms Charalampidi and will be recorded for the purposes of the research. Copies are available to participants on request. The questions asked will be focused on your child's use of the network and if your child would not like to answer a particular question, then this is fine; they must just let the interviewer know at the time. Generally, the interviews will be conducted on an individual basis (i.e. only your child and the researcher will be present). However, your child is very welcome to have you or another adult accompany them should they so wish.

In addition to the interviews, students may be asked to complete an online questionnaire and further quantitative and qualitative data will be collected directly from your child's IGGY account (e.g. number of points scored, number of badges collected, debates posts, comments etc.). We do not expect that participation in this study will be time consuming or onerous.

### **Benefits and Risks**

As a gesture of good will for participating in this study, your child will enter a draw for the chance to win a £50.00 Amazon voucher. Please note that this voucher will be issued regardless of any positive or negative views of IGGY expressed during interviews.

Other than what has been described above, there are no immediate benefits to your child from taking part in this study. However, we hope that the feedback we get will help us to improve the online experience of all members, including your child. Please also note that you and your child may request a copy of any published research findings.

We have judged that there are no significant risks to your child from taking part in this study, but should you become concerned, you can contact the researchers at any time.

**Anonymity and Confidentiality**

Participants in this study are not anonymous since they have been selected by the researchers. However, the identity of your child will remain confidential for the purposes of the publication of any research findings. Pseudonyms will be used to protect the identity of your child from other IGGY members and the wider research audience. Any personal information that might be used to identify your child will not be made available in the public domain.

**PART II: Consent Form**

I have been asked to give consent for my child to participate in the 'IGGY Case Study Research Project'. I have read the information provided and have been given the option to ask any questions that I might have. I consent voluntarily for my child to participate in this study.

Printed name of parent/guardian

.....

Printed name of participant

.....

Signature of parent/guardian

.....

Signature of participant

.....

Date .....

Date .....

## 12 APPENDIX E: ETHICAL APPROVAL

### **MPhil, PhD, EdD Research Students and Masters by Research: Ethical Approval**



All research undertaken by the students and staff within CES must conform to the University's ethical guidelines. There are separate procedures for staff and students. This guidance addresses the latter.

All students receive training in research ethics and are required to complete the appropriate form before undertaking research, including small projects, dissertations and theses as appropriate. The completion of the form is an opportunity to discuss ethical issues with your supervisor/tutor and is intended as a learning exercise as much as an administrative process to ensure compliance with CES policy.

The amount and type of training in research ethics is proportionate to both the qualification and the research project; the content of the forms varies accordingly. In general, undergraduates will be expected to undertake research projects which give relatively common and straightforward ethical issues while doctoral studies may raise complex, challenging ethical issues. As most studies involve children and young people, research ethics pertaining to vulnerable participants is a common issue.

You should complete the ethical approval form for the research project appropriate to your programme. These may be obtained from the CES website.

For *EdD* students, separate forms are required for each specialist study (8000 words) and the thesis.

You should complete the form, which should then be signed by yourself and countersigned by your tutor/supervisor. Completion of the form will be guided by your tutor/supervisor and is intended to help you consider the ethical issues concerned, so you must provide full details. The

The form will then be reviewed by the relevant member of staff. The proposal may be approved subject to minor amendments, or declined. The form will then be returned to the Research Office for recording and then returned to your course secretary who will report the outcome to yourself and your tutor/supervisor. If any changes are required you should undertake these **in consultation** with your tutor/supervisor. The form should then be resubmitted to the Research Office, when it will be reviewed.

### **Further Guidance**

Further guidance and support is available from the University's website:

<http://www2.warwick.ac.uk/services/rss/services/ethics/statement/guidance/>

<http://www2.warwick.ac.uk/services/rss/services/ethics/governance/codeofconduct/>

<http://www2.warwick.ac.uk/services/rss/services/ethics/statement/guidance/#>

and from the ethical codes of appropriate organisations including the British Educational Research Association, British Psychological Society and the British Sociological Association:

[www.warwick.ac.uk/services/rss](http://www.warwick.ac.uk/services/rss)

[www.bera.org.uk](http://www.bera.org.uk)

[www.bps.org.uk](http://www.bps.org.uk)

[www.britisoc.org.uk](http://www.britisoc.org.uk)

### **NB: doctoral Students**

Doctoral students are initially registered for an MPhil/PhD and transfer to the PhD subject the completion of a successful Upgrade. Ethical approval should first be sought early in the MPhil and certainly before any fieldwork. The Upgrade provides a second opportunity to review the ethical issues of your research. A completed ethical approval form should therefore accompany your Upgrade paper.

# Application for Ethical Approval for Research Degrees

(MA by research, MPhil/PhD, EdD)

Student number: 1290034

Student name: Marina Charalampidi

PhD ☒ EdD ☐ MA by research ☐

Project title: Exploring the use of an online social educational network

Supervisor: Dr Adam Boddison

Funding body (if relevant): Funded by IGGY

Please ensure you have read the Guidance for the Ethical Conduct of Research available in the handbook.

## Methodology

Please outline the methodology, e.g. observation, individual interviews, focus groups, group testing etc.

I intend to carry out about 20 individual Skype or telephone interviews, to administer an online questionnaire and to examine online artifacts (students' profiles, comments and posts).

## Participants

Please specify all participants in the research including ages of children and young people where appropriate. Also specify if any participants are vulnerable e.g. children; as a result of learning disability.

About 20 members of an online network, aged 13 to 18 years old.

### **Respect for participants' rights and dignity**

How will the fundamental rights and dignity of participants be respected, e.g. confidentiality, respect of cultural and religious values?

Participants will be treated with respect, regardless of their age, gender, race, ethnicity, nationality, cultural or religious identity or any other significant difference.

An informed consent form will also be sent to the participants requiring their own as well as their parents' signature. The purpose and the process of the research, and their right to withdraw for any or no reason, and at any time, will be explicitly explained to the students both via the consent form and orally before the interviews. In addition, the participants will be clearly informed that

their online participation and interactions will be examined for the purposes of the research.

The information gathered for any participant will be treated as confidential and anonymity will be implemented in any publication of the research findings, unless they explicitly express their wish for the opposite.

### **Privacy and confidentiality**

How will confidentiality be assured? Please address all aspects of research including protection of data records, thesis, reports/papers that might arise from the study.

All interview or online data will be kept securely and will be shared with my supervisors only for the sake of the research. During the data analysis phase, participants will be given codes rather than names and the coding guide will be kept in a separate place. In writing any report, paper or the thesis, pseudonyms will be used. Additionally, when writing, attention will be paid so that information does not lead in any way to the participants.

### **Consent**

How will prior informed consent be obtained from the following?

From participants:

I will contact all participants via IGGY. Specifically, IGGY's community manager will initially email members of the network, briefly informing them about the research. Those interested in participating, will let the community manager know. A list of these members will then be given to me so that I inform them in more detail about the research and send them the consent form. In all email communication with the members, the community manager and/or my supervisors will be added as recipients. The consent form can be returned to me either via post or scanned.

From others:

The consent form will require the signature of both the member and his/her parent or guardian.

If prior informed consent is not to be obtained, give reason:

Will participants be explicitly informed of the student's status? Yes, my status as a PhD student will be explained to the members at first by the community manager, then by me and it will also be clearly stated on the consent form.

### **Competence**

How will you ensure that all methods used are undertaken with the necessary competence?

I will discuss them with my supervisors, undertake a pilot study and if possible be supervised while carrying out my first interviews. When analysing the data coding schemes will be applied in conjunction with my supervisors too.

### **Protection of participants**

How will participants' safety and well-being be safeguarded?

There will be no physical contact as most, if not all, of the interviews will be carried out by Skype or telephone. Parents or any other person the participant wishes to have close by during the interview will be welcomed.

### **Child protection**

Will a CRB check be needed? Yes ☐ No ☐ (If yes, please attach a copy.)

A CRB check might be needed in the rare case I have the opportunity to interview a participant in person (perhaps when visiting the University). In any case, I have already been CRB checked (please find it attached). My professional work as a primary school teacher in London and the head teacher of the Greek Supplementary School of Leicester enabled me to get informed of the issues raised by working with young people.

### **Addressing dilemmas**

Even well planned research can produce ethical dilemmas. How will you address any ethical dilemmas that may arise in your research?

I will inform my supervisors and discuss any dilemmas with them. In the case of having to take an immediate decision I will use my professional background and skills. For instance, if during an interview the issue of bullying comes up, I will let the interviewee express him/herself for as long as he/she wants. I will try to make questions to clarify this experience further as it might be related to the research. However, I will not pressure the participant neither will I comment on what he/she says. To loosen up the interviewee I will probably use humour or move on to an uncomplicated question or theme. I will react in a similar way if for example an interviewee expresses criticisms of IGGY. In both cases, I will let the interviewee know that what he/she says is important hence respected and taken into consideration.

### **Misuse of research**

How will you seek to ensure that the research and the evidence resulting from it are not misused?



I will undertake research work for which I feel competent. I will also assure anonymity and confidentiality. The report of the findings will be honest, undistorted and non-judgemental. But, there is an overarching need to provide evidence for findings hence I will make the data and methods amenable to reasonable external scrutiny.

### **Support for research participants**

What action is proposed if sensitive issues are raised or a participant becomes upset?

I will try to make the participants feel comfortable and to reduce the sense of intrusion. Any questions that might make them feel awkward or distressed will be skipped and the participants will have the right even to cease the interview. As stated before, I will draw on my professional experience to overcome any difficult situations.

### **Integrity**

How will you ensure that your research and its reporting are honest, fair and respectful to others?

I will be non judgmental and measured in talking about the research and when writing up my findings, I will provide evidence for findings and discuss the evidence with my supervisors.

What agreement has been made for the attribution of authorship by yourself and your supervisor(s) of any reports or publications?

I am following departmental practice.

### **Other issues**

Please specify other issues not discussed above, if any, and how you will address them.

<b>Signed:</b>		
Student:	Marina Charalampidi	Date: 23 October 2014
Supervisor:	Adam Boddison	Date: 25 October 2014

Please submit this form to the Research Office (Andy Brierley, room WE133)

<b>Office use only</b>
<b>Action taken:</b>
<input type="checkbox"/> Approved
Name: Michael Hammond (Head of Research Degree Students)
Signature:

Date: 2 November 2014
Stamped:

Notes of Action: