Belonging and Global Citizenship in a STEM University

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Abstract: For the past two decades, there has been a resurgence in the actualization of civic missions in universities; these universities have continued to demonstrate commitment to educate for the purpose of global citizenship. Global citizenship is both a skillset and a mindset. As universities engage in efforts to increase students’ capabilities for living and working in a diverse society, research in this area has often focused on students of social science disciplines in the United States, presenting an opportunity for an investigation into students’ sense of belonging and global citizenship in the STEM university context in the United Kingdom. Building on prior civic scholarship, which defines citizenship in part as a sense of belonging, this paper presents interview data from a longitudinal, mixed-methods study at a STEM university in the United Kingdom to explore the meanings and experiences of students’ belonging in a multicultural institution, and their attitudes about current political issues before and during the COVID-19 pandemic. The study presents theoretical and practical implications for citizenship education research and practice.

Keywords: STEM education; higher education; global citizenship; global citizenship education; citizenship education; politics; sense of belonging; belonging; belonging as citizenship; youth civic engagement; youth political engagement; student experience

1. Introduction

Higher education is becoming increasingly internationalized, and institutional policies and curricula claim to prepare graduates to become global citizens [1], with democratic citizenship education becoming part of the higher education discourse around the world [2]. The aim of this Special Issue is to explore how contemporary issues in democratic education play out in the student experience within and across different national contexts. Citizens are created [3], in part by systems of democratic education, which aim to nurture social solidarity and democratic citizenship [4–6]. Given that citizen identity in the 21st century is transitioning from belonging to a territory or fixed nation-state to wider levels [7], in this study I explore global citizenship education through the experiences of STEM university students in the United Kingdom. This study is framed around the idea of citizenship as belonging. Citizens are ‘multi-layered’ [8], and are citizens simultaneously in more than one political and social community. This is especially true of university students, who, in their development take part in different social groups and develop their identity [9,10].

As universities engage in efforts to increase the capabilities of students undertaking postgraduate study for living and working in a diverse society [11], there is a need to better understand communities of people where diverse individuals feel they belong [12]. As higher education student bodies become more diverse [13], this paper considers the STEM university setting as this context of diversity. Imperial College London is an elite, highly-selective, research-intensive university in London, United Kingdom. Imperial prides itself on its diverse student body of 11,000 students, including 7000 undergraduates and 1600 taught postgraduates and 2500 research postgraduates, from more than 125 different countries [14].

The STEM university context is especially interesting because it can be quite exclusive. Some groups of people—particularly white men—are more likely to feel like they belong
in STEM disciplines and careers than others [15]. In this study I examine citizenship as belonging in this context to better understand how belonging impacts global citizenship and the kinds of global issues that are important to students. The core question guiding this study is: What is the relationship between students’ sense of belonging in their STEM university and their global citizenship practices?

The STEM university context warrants exploration because students in these disciplines have typically had less citizenship education than their peers who choose to study in the humanities and social sciences. For example, in England, Citizenship Studies is offered as a General Certificate of Secondary Education (GCSE) course. Students coming to Imperial will have had to complete maths, science, or engineering A-levels, which precludes them from this level of citizenship education. In the STEM university context, concepts of belonging and citizenship are not often discussed. By participating in this research, students are presented with an opportunity to consider and discuss issues pertaining to belonging and global citizenship that they might not have had otherwise. Research on university students’ global citizenship and activism activities focuses mostly on humanities and social sciences students [11], so this study offers new insight into the global citizenship activities of STEM university students. The STEM setting also raises issues of belonging around gender, as students who are not men tend to have a lower sense of belonging in the STEM discipline. This is important to explore as a way to understand whether and how gender identity plays out in the civic engagement activities of STEM students.

Civic engagement efforts by higher education institutions that have expanded significantly in recent years include intergroup dialogues [16], service learning initiatives [17,18], and leadership development experiences [19], which seek to engage students in a community to increase intercultural competence and civic engagement [11]. Imperial’s global citizenship education effort lies in its aim for its students to ‘become global leaders and valuable citizens of today and tomorrow’ and ‘be societally and ethically responsible, and to have a broad understanding of the world’ [20] p. 5.

This aim for students to become responsible citizens with global knowledge signals that Imperial College London cares for democratic education goals to be met. In order to develop an understanding of how this institutional aim for students plays out in reality, this paper examines how students’ sense of belonging is tied to their global citizenship. Through a series of interviews with 32 university students from diverse backgrounds, I sought to develop understanding in these areas.

Key findings of this research are divided into three sections: experiences of belonging, experiences of community, and experiences of global citizenship. Students at Imperial experience belonging through shared values and interests, a sense of feeling at home, and feeling valued by others. Clubs, societies, and sports play an important role for student communities. Midway through the first year of this study, the COVID-19 pandemic forced learning and teaching onto online platforms and while some participants felt that the Internet provided further opportunities to interact with others, many students felt disconnected from their peers and Imperial. Students at Imperial experience global citizenship by expression of interest—and experience of—gender issues and racism, not only at the institution, but more broadly in society. Findings related to the pandemic will be shared throughout these three sections.

2. Literature Review

2.1. Global Citizenship and Global Citizenship Education

Global citizenship does not have a single agreed-upon definition [21], but scholars have suggested that it includes an awareness of global issues, a sense of social responsibility, and degree of civic engagement. In further depth, awareness of global issues means understanding and appreciating global issues and the ability to situate oneself within the global context, social responsibility includes concern for others, society, and the environment, and civic engagement refers to an active means of engagement at local levels that enhances global agendas [22,23]. For Stoner et al. [2], a global citizen is someone who is aware of
interconnections of one’s own behaviors and decisions in specific and global contexts, and to be civically engaged to drive social change. Furthermore, Killick [24] describes a global citizen as one who accepts rights and duties other than those in legal codes. For Haigh [25], this also includes learning to live ethically and responsibly.

It is a goal of universities to educate students to become global citizens and contribute to succeeding in a diverse, interconnected world [26,27]. Different theories of citizenship have led to different areas of focus for universities to concentrate the global citizenship skill development, including corporate and social skills [28,29], cosmopolitanism and advocacy [30]. Recently, university graduate attributes, including a ‘global outlook’ have become applied to the internationalization of university curriculum in the United Kingdom [31].

When university policies dictate these above goals, it is often left up to academics to develop curriculum based on these ideas that are, at times, more abstract than concrete, and can lead to challenges within global citizenship education [32]. Definitions of citizenship are changing rapidly over time, and have moved beyond the meaning of legal membership of a political community toward a more active definition of responsibilities and participation in society [33], which brings us to the concept of citizenship that includes membership and participation [34–36]. In particular, civic scholars Osler and Starkey [37] note that citizenship is a sense of belonging, and theorist Nordberg [38] suggests that belonging may be even more important than citizenship. Contemporary definitions of citizenship include legal and social components [39,40]: the rights, duties, and privileges within a political collective [41], and a sense of belonging [42] and the privilege connected with that belonging [43].

2.2. Belonging and Community

Since belonging is a kind of citizenship in and of itself, it is central to the study presented in this paper. The drive for a sense of belonging in humans has a longstanding history in philosophy, psychology, and the human sciences [44–47], and the need to belong underpins our understanding of human behaviour [46]. The concept of belonging is, for the most part, undefined [7,48] and complex: one can feel ‘at home’ and like they belong, but might not be recognized by others as belonging; or, the opposite could be true in that one may be recognized as belonging but not feel that they belong [49].

Scholars Baumeister and Leary [46] reviewed over 300 empirical studies within social and personality psychology, sociology, and anthropology and concluded that belonging is a human need, and that belonging can be experienced even without having things in common with the group. Following on this, other scholars have advocated for a definition of community that includes difference [12,50–54]. Essential attributes of a community that is welcoming of diversity include: flexible boundaries, full participation among the members, accountability for self and others, and accepting struggle and conflict [55]. Community is traditionally understood as relationships based on commonality [55], and as communities now transcend geographical boundaries, many scholars theorize community as a concept of interpersonal relationships [56]. Feelings of community membership come from shared goals, norms, and values [57].

In the education context, Goodenow’s [58] definition of belonging is often applied as: ‘students’ sense of being accepted, valued, included, and encouraged by others in the academic classroom setting and feeling oneself to be an important part of the life and activity of the class. More than simple perceived liking or warmth, it also involves support and respect for personal autonomy and for the student as an individual’ [58] (p. 25). In this paper, I use these definitions as a context for belonging, and examine belonging, community, and global citizenship as they are experienced by the participants in this study.

3. Materials and Methods

3.1. Participants and Recruitment

After gaining approval from the research ethics committee, I recruited students of all course levels, departments, and faculties for participation in our research across all Imperial
campuses in the wider study on belonging, community, and engagement, which involved multiple options for participation, including a questionnaire on sense of belonging, and an hour-long interview. Participants chose whether to participate in either the questionnaire, interview, or both. The study has been running since autumn 2019 (Year 1) and the primary method of participant recruitment has been through an invitation to students disseminated by department leadership. The data presented in this paper are from the interview data of this study only. Table 1 illustrates the interview participant demographic details based on gender distribution.

Table 1. Interview participant demographic information.

<table>
<thead>
<tr>
<th>Self-Identified Gender</th>
<th>Number of Participants</th>
<th>Percent of Total Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>15</td>
<td>47%</td>
</tr>
<tr>
<td>Men</td>
<td>16</td>
<td>50%</td>
</tr>
<tr>
<td>Nonbinary</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Total</td>
<td>32</td>
<td>100%</td>
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*The total number of participants was divided equally in each cohort, with 16 participating in Year 1 and 16 in year 2.

3.2. Method

3.2.1. Interviews

Participants were offered a choice of two interview types: a traditional semi-structured interview in a private meeting room; or a ‘walking interview’, in which the interviewee guides the interviewer on a walk on and around campus so the physical spaces that the student associates with their sense of belonging can inform the discussion. A total of 27 semi-structured interviews and five walking interviews were conducted. Interviews were conducted in person until March 2020, with subsequent semi-structured and follow-up interviews taking place via MS Teams due to the COVID-19 pandemic. Several Year 1 interviews and all of Year 2 and follow-up interviews were conducted online via Microsoft Teams due to the COVID-19 pandemic. Walking interviews were suspended in Year 2 and interviews took place via MS Teams.

Interviews lasted approximately one hour. The topics covered included: participant’s own definition and experience of belonging generally, discussion of the communities that the participant felt part of (both at the College and externally), and participant’s thoughts on the key issues facing young people at Imperial and around the world. The semi-structured interview protocol emphasizes and explores students’ own way of defining and understanding belonging, engagement, and community within the context of their broader personal, educational, and professional trajectories and identities, including prompts such as:

- Can you tell me about a time when you felt at home? What was that like?
- What is important to you for creating a sense of belonging?
- Can you tell me about any other issues that are important to you, that you might want to do something about, either now or in the future, in a personal or a professional capacity?

A set of interview prompts was developed for the walking interviews setting, used in tandem with the semi-structured interview protocol. Follow-up interviews followed a broad outline, tailored to individual participants. All participants provided informed written and oral consent to participate.

3.2.2. Data Analysis

The results in this paper are from only the interview data collected in this study. The questionnaire responses were only used to facilitate purposive sampling out of the
questionnaire respondents who selected to be included in future research, to ensure that a wide range of student backgrounds would be captured in the interviews (e.g., discipline, gender, fees status, university bursary receipt, course level, campus, and average sense of belonging scale score). For example, in Year 2 initial invitations were sent to those students from the Faculty of Engineering and Faculty of Natural Sciences (accounting for 85% of the recruitment pool) who reported a lower-than-average sense of belonging score on the questionnaire. These students were prioritised in order to give voice to those who feel less included before opening the invitations to the remaining faculties.

Dey [60] notes that the core of qualitative data analysis is describing phenomena, classifying them, and seeing how the concepts interconnect. I employed an iterative data analysis process for this study, first by listening to and transcribing each interview, and subsequently coding each transcript according to emerging themes and patterns [61] using the qualitative data management and analysis software NVivo. Thematic analysis [62] was used. First, broad themes were identified in the data (belonging, community, issues of global citizenship), then codes were developed to better understand the sub-themes, which are described below.

Within the ‘belonging’ code I developed a number of sub-codes that emerged from the data, including ‘shared values/interests’, ‘at-home’, ‘connection’, ‘fitting in’, and other themes that emerged from the interviews. The development of themes in qualitative data analysis serves to present the knowledge generated from the data [63]. To better understand the key themes of ‘belonging’ for the participants, I sorted the codes by the number of times they had been referenced. The frequency distribution of the qualitative data gave me a sense of the most important themes and topics discussed by the participants. Given the number of times each theme or topic was raised by the participants, I developed an understanding that these themes and topics were at the forefront of participants’ minds, and ought be brought to the forefront of the analysis.

The most frequently referenced theme was ‘shared interests/values’ (with 122 references across 39 interviews, including follow-ups), followed by ‘at home’ (with 104 references), ‘not belonging’ (with 85 references), and ‘feeling cared for or about’ (77 references). Interestingly, ‘not belonging’ included things like ‘disconnection’ (43 references), ‘exclusion’ (29 references), ‘not valued’ (24 references). Based on these top references, I determined that these themes would be explored further in relation to the research question.

I followed a similar analysis process to understand the ways in which the participants are involved in their communities. The ‘community’ code had 25 sub-codes, with the most-referenced being: ‘societies, clubs, sports, and extracurriculars’ (248 references), ‘friends’ (159 references), and ‘Department’ (76 references). Evidently, the group memberships that students have outside of their coursework are incredibly important to them. But, beyond these communities, students are also interested in issues that affect the world, which I coded as ‘political issues and current events’. The COVID-19 pandemic affected many students and was the most-referenced issue (185 references). Most data coded as ‘coronavirus pandemic’ involved its relation to how daily life had changed for students. The next most referenced issues were ‘injustice and inequality’ (53 references, including ‘gender issues’ at 37 references, ‘LGBTQ+ issues’ at 9 references, ‘racism’ at 8 references and ‘poverty’ at 6 references), ‘environmental issues’ (29 references), ‘mental health’ (14 references), ‘education funding’ (13 references), and ‘healthcare’ (12 references). Several students also mentioned Trump, Brexit, and politics more generally. Seven out of the 32 students interviewed were interested or involved in protesting/campaigning about the issues they discussed during the interview.

After coding and finding the most frequently mentioned themes, I extracted the most salient quotes from participants to illustrate the experiences that demonstrate students’ sense of belonging at university is tied to the issues they care about. This systematic data analysis and theory development progressed throughout the data collection from 2019 through 2021 and continued through coding as a means of developing a cohesive conceptual framework from the data [64]. The results section focuses on the most frequently
referenced themes within each code, except the coronavirus pandemic, which was cited most often in relation to daily life and belonging, so that data will be presented in the ‘belonging’ section.

4. Results

The presented findings focus on responses that were coded broadly as how a student feels like they belong, which communities they feel they belong to, and the current political and/or social issues that are important to them. This section includes three subsections, detailing student’s experiences of belonging, community, and global citizenship. Sections 4.1 and 4.2 serve to illustrate the situations and experiences that foster students’ sense of belonging. Gender identity comes into play in Section 4.3 to provide a possible explanation for why the issues of importance discussed by the participants were often entangled with gender discrimination.

4.1. Experiences of Belonging at Imperial

As I discovered through interviews with 32 participants, belonging is both a personal and collective experience. While sense of belonging is often described as a personal feeling, social interactions matter to individuals’ sense that they belong to a community. This sense of belonging is also a motivating factor for individuals to become engaged in their local and global communities. Over 20 different themes emerged during the coding of answers regarding belonging. This section will focus on the most frequently mentioned themes of what it means to belong, including: shared values/interests, feeling ‘at home’, and feeling valued.

4.1.1. Shared Values/Interests

It is natural to feel a sense of belonging with others who share similar interests and values [57]. Unsurprisingly, this theme is one of the most frequently referenced among interview participants. Having something in common brings people together. For example, Participant 1 shared that ‘There’s a different kind of connection you have with a person when you’re excited about the same thing’. Shared interests are also important, as Participant 2 notes that there is a sense of being ‘supported. You feel like you have something in common. You feel like you’re all doing the same activity or going towards the same goal’. These shared interests often lead to a common sense of identity, facilitating the process of making friends at university, as Participant 3 shares, ‘It’s definitely easier to find people who are like you and share your interests and your values, because they are usually based around a common interest or a common identity’.

Belonging can mean that we bond with like-minded people and/or people who enjoy the same activities as we do [65]. This feeling of shared values and interests can be anything from having similar hobbies and enjoying the same kind of food, to being a fan of the same celebrity, and can also include online platforms, which supports prior research on virtual communities, wherein these communities are established for social connection [66,67]. For example, a nonbinary participant shared their experience in communities on social networking websites: ‘About 2 years ago, a friend of mine added me to a pansexual group on Facebook just for memes and fun and posting and stuff . . . I ended up joining . . . this [trans education] group . . . And it’s really good’. (Participant 4).

4.1.2. At Home

Often when exploring a sense of belonging, the theme of feeling ‘at home’ arises. For Imperial students, feeling ‘at home’ somewhere, or with certain people, can yield a sense of comfort, familiarity, and safety. Familiarity was especially important for international students, like Participant 5, whose level of comfort is derived from ‘staying[ing] with the people from your country or the people that could speak your mother tongue, it would give you a higher sense of home’. Other participants spoke about feeling ‘at home when you’re in an environment where you felt comfortable’ (Participant 6), including having a
'routine, a comfort in your day, knowing you feel at home and know your favorite spots to get coffee, or to get lunch, or who you’re going to grab those things with . . . having a support system, people that you can go to when you’re feeling overwhelmed or anxious or stressed’ (Participant 7). This comfort and recognition of friendly ‘faces and people you know, like nodding as you go past or stuff like that’ (Participant 8) is important to help students feel at home.

In particular, several participants discussed feeling free to live authentically, and the ability to live freely as ‘myself. And I don’t need to do anything to just be happy. I don’t need an activity, I just need people I’m comfortable with’ (Participant 9). Living authentically enables students to ‘able to express yourself as it is, without having kind any of, you know, barriers. Have the acceptance of others there. I believe these three, safety, acceptance and be yourself’ (Participant 10), which encourages a feeling of being at home.

Several international student participants mentioned feeling at home wherever there is familiar food and customs. For example, Participant 11 shared the connection they made to another student from southeast Asia:

‘Familiarity. For me I come from Malaysia so it’s quite a long way from here. And I have Singaporean flat mate . . . me and him cook together because we cook the same stuff from home and it tastes good. And we have the same comments and we talk about stuff so that’s something, familiarity.’

Interestingly, participants who had moved frequently, such as for a parent’s job or for boarding school, had difficulty describing what it meant to feel ‘at home’. Participant 12 described their home as ‘India, because we’re originally from there. I’m quite connected to the culture because we try to visit every year. We haven’t gone since lockdown. But it’s something that’s quite important to me to remember . . . that’s my roots in my culture, so that place has always been home’. Other participants described that it is difficult to feel at home anywhere, particularly for Participant 13, who since the age of four years old, has been ‘at boarding school. So “home” for me is a bit of a vague idea’. Furthermore, others felt most at home at their literal family home, like Participant 14, who describes ‘a distinct difference between being actually physically home and being emotionally at home’.

4.1.3. Feeling Valued

Expounding on the idea of ‘home’ brings the notion of feeling valued by others. In the Imperial College context, it was important for students to feel valued and welcomed by their peers and by staff members. Participant 6 shares that people you ‘interact with have to somehow make you feel as though . . . you’re kind of part of it, and you also have welcomed in that more positive way’. Similarly, Participant 2 described feeling ‘taken care of. Like you are loved. Like you are supported’ as essential to feeling valued. Participant 15 echoed this sentiment and stated that, ‘A sense of belonging is importantly, making sure that each and every member of the organization or members, that they feel valued’.

Students often appreciated when staff took special notice if their demeanor had shifted and provided pastoral support, even when not specifically assigned that duty. For example, Participant 1 shared an appreciation for the staff in the library café:

‘The central library is amazing . . . there were times when I was drained I was crying, calling my mother and saying ‘Mummy this is not working for me’ and I actually tried to book a service to see a mental health counselling service and they made me wait for four weeks . . . In that time [the library] staff were really helpful . . . This person called Daniel . . . he sat here . . . and he chatted with me and I was okay by the end of it. So all of this helps with the whole community spirit and I know there’s actually someone who will help me . . . And then there are people like my rugby team, my classmates.’

Having mental health support is something that many students discussed, particularly in the Year 2 cohort. This same student as above described a change in attitude toward Imperial once a wellbeing advisor joined the department, which helps students to feel
valued as people, not just as fee-paying students: ‘I never thought that the university cared about me as an individual. Like, for me, it was all about money, just trying to like squeeze money out of us’.

In order to belong, people ought to feel recognized as an important part of the community where they live, feel valued, and listened to [48]. These experiences of having shared values and interests, feeling at home, and feeling valued all contribute to students’ community membership at Imperial.

4.2. Experiences of Community at Imperial

Sense of community is ‘the personal knowing that one has about belonging to a collectivity’ [68] p. 335. This section explores the most frequently mentioned type of community, or a feeling of community, that was discussed by the participants, which is the membership in clubs, societies, and sports. The overall community at Imperial is thought to be diverse from participant perspectives, and students are keen to continue making their university more inclusive through connections and interactions with others. While these themes were shared across participant cohorts, the coronavirus pandemic did have an impact on these aspects of community, which will be detailed at the end of the section.

4.2.1. Clubs and Societies

Most referenced among interview participants was their membership in clubs, societies, and sports teams. This reflects a typical part of university social life [69]. Key components of belonging are met in these communities: participants described joining the club/society/sports team because of an interest in the activity and in meeting others with similar interest, and often shared feelings of being at home and feeling valued among the members.

Participant 1, an avid member of the women’s rugby team, shares that joining the club ‘has been the best decision of my life . . . It’s one place where I can feel like I can be myself and that’s probably the closest I feel to being in a community. When I’m with my rugby team, it’s like a family and it’s amazing and that’s because we care about each other but also we’re not afraid that someone will judge us’. Other societies where participants felt they belonged included the dance society ‘at Imperial and the wider dance community in London is definitely a place I consider to be a kind of home, because all of these people that all have the same interest as me and love dancing as much as me and we all just want to learn and want to have a good time’.

Clubs and societies may be linked to an academic discipline. It was not uncommon for students to share their experiences of societies either directly or indirectly linked to their academic and/or professional field, for example, ‘Some of these societies are linked to medicine, like surgery or medical code, like specific medical student stuff, but they’re not like sports or something additional. And then there are other societies . . . outside in the broader union but they’re more recreational things, like music, things like that’ (Participant 16).

Societies are a place to feel comfortable and at home, and make participants feel grounded in the university, particularly because of the social aspect. Participant 17 feels that one society, the SciFi Library, is like ‘a living room. I’d just go down for lunch. See a bunch of people. That’s probably my main hub of where I see people . . . I don’t really feel like I’m at home anywhere on campus . . . whereas the societies are like, ‘okay, you can relax now’.

The sense of belonging theme of feeling ‘at home’ within a society also comes into focus for many international students, who spoke about belonging to a society pertaining to a particular nationality. Participant 18 details their experience in the Malaysian society, which ‘brings a little bit of familiarity back, because you’re here it’s entirely different, my first time overseas too, that brings a bit of familiarity back into your life’. Participant 19, who is very active in the Czech and Slovak Society, describes spending time with this group to feel more connected to his cultural heritage:
‘I choose to spend a lot of time with my Czech and Slovak Society friends because it feels good to just reconnect about our culture from back home . . . I went rafting with a big group of Czech people, and we all took our beers on the raft and then we were just drifting along the river, past castles and villages . . . I just sat there, looking at everyone talking Czech, drinking Czech things, eating Czech food, and debating Czech stuff like politics. And I felt in that moment “This is where I belong. This is what I love doing”.

With 125 different countries represented in the undergraduate student population, several students mentioned the joy of diversity, and embraced being at Imperial for the ability to connect with people from different cultural backgrounds. Participant 13 especially found that they feel ‘more welcome to get to know other people’s culture. Whether it’s Muslim, Indian, whether it’s African, I have met friends from all these cultures. And I think it’s really amazing that I can do that in UK, whereas in China is nobody other than Chinese people usually’.

Not all students take advantage of this widespread diversity within the university. Several students discussed that their closest friends are from the same country, because ‘You tend to congregate towards people you feel comfortable with, but I think one of the things that is so awesome about Imperial is that it is super diverse’ (Participant 7). Even so, it is evident that students embrace the diversity at Imperial, and want to be inclusive and welcoming, particularly within their societies. Participant 20 describes being secretary of their club,

‘thinking about how to integrate or at least reach the student body, what’s the best way to make people feel like they’re part of a community and I found that actually you can’t do anything at an institutional level apart from a sort of greeting card that says Happy Eid or Happy Diwali or whatever and the most you can do is at a personal level just talk to people from different backgrounds and make it more personal rather than just a blanket email.’

These insights offer valuable feedback to universities. Inclusion is important for creating students’ sense of belonging, and membership to the wider university community. Actions toward inclusivity must be genuine and not performative, which will be discussed later in this paper.

4.2.2. COVID-19 Pandemic Effects on Student Belonging

Geography has less of a binding role for belonging in the 21st century [7], and this was exemplified in the last year during the COVID-19 pandemic, when most interactions were mediated through technology and the Internet. During the pandemic, participants felt that the inability to gather in person hindered their sense of belonging to the clubs, societies, and sports teams they were normally a part of.

Students in their second year and beyond tended to maintain a rapport and friendship with members of their clubs and societies through online video platforms, whereas students in their first year expressed difficulty joining these groups because of the lack of in person interactions. One student even feared that by not being involved with the women’s football team in her first year would preclude her from becoming a member of the team in future years, when in-person gatherings can resume.

Participants mentioned that some clubs/societies have an easier time of shifting to online social gatherings than others. Participant 1, active with women’s rugby, laments that there were no in-person activities during the pandemic, but fortunately social media messaging has helped their team stay connected: ‘We’re keeping on touch on like the WhatsApp groups . . . The community has been very strong. And the committee has been really responsive, and they are taking efforts to like conduct different kinds of activities that keeps us connected, even online’. Similarly, Participant 17 helped their clubs begin meeting and socializing online through ‘a Discord, we’re trying to get people into it through that and a lot of quizzes and such. But that one is quite slow-moving . . . Compare that
to SciFi, where it’s full of people who are used to spending time online’. This lack of in-person meeting and socializing has also cast doubt in some students’ minds about their ability to participate more actively in clubs and societies when in-person activities resume. Participant 9 shared concern that ‘Because [football is] just through emails, I don’t really go to the online events . . . I’m scared that in second year if I’m like, “I want to do football”, they’ll be like, “well you didn’t do it first year, so” . . . I’m hoping for like everyone in the club to realize that the second years are pretty much mentally first years when it comes to involvement. And I hope we get treated like freshers again, with the clubs’.

Overall, participants described feelings of disconnection, primarily related to relationships with Imperial, such as peers in the cohort. For some, ‘The relationships [with the cohort] got really distant’ (Participant 2). For others, they felt a complete disconnection from ‘the Imperial culture, I’ve stayed connected to the things that I care about—rugby—and like my few friends, but as a whole, I’ve just sort of removed myself from it. I make friends elsewhere, and I do other things’ (Participant 3).

Belonging can include a place component (feeling ‘at home’ somewhere) [70] and a social component of feeling included [71]. The importance of place identity to citizenship is well documented [72–75]. Notably, several participants described feeling disconnected from Imperial because they were not able to set foot in the physical space of the university. One student expressed the difficulty of assessing who is who in their cohort, because ‘most people still don’t know who anyone is’ (Participant 21). While another participant shared that not being able to see people—because of the need to wear masks to protect themselves and others from coronavirus, or keep interactions to Microsoft Teams chats without video—hinders the ability to make connections with peers:

‘Being at university, you have that chance to walk around, and you might see something somewhere, and I feel like you would connect to a lot of people, even just looking at the same object or something. And you guys just start talking, and you’re like, ‘Oh, cool. You’re into this too’. And it’s a lot easier to connect with others when you can see who they are . . . Because even though we can see people, everyone’s behind masks.’ (Participant 12)

Many students did not have the opportunity to set foot on campus, which had its own effects on a sense of disconnection:

‘I feel disconnected to the Institution itself. I’ve been a couple of times, but . . . I don’t belong in the building, yet. I don’t see myself in the building, I don’t have that routine. I feel connected to the people I’ve been talking to: my lecturers, staff in my department. But I think there’s more than that. There’s a big, big community, there are many different departments and different things. And that part of it, I just don’t feel linked to it.’ (Participant 22)

4.3. Experiences of Global Citizenship

In the context of this study, global citizenship is students’ global knowledge and experiences and discussions of the political and social issues that are important to them. This section will explore these issues, which are all related to belonging, particularly among groups that have been marginalized. Imperial students care deeply about ‘injustice and inequality’ (53 references), which includes ‘gender issues’, ‘LGBTQ+ issues’, ‘racism’, and ‘poverty’. Participants are also aware of climate change, citing ‘environmental issues’ as another important issue affecting the world. Participants mentioned ‘mental health’ and ‘tuition/education funding’ as top issues affecting students. The STEM context did not have as much importance to the kinds of issues that students cared about as was expected. For example, I expected that students would be more interested in climate justice. However, it turned out that the issue of not belonging in STEM as a woman or non-binary person led to gender equality being an issue at the forefront of students’ minds. It is clear through the data presented in this section that students’ sense of belonging does impact the kinds of issues they care about as global citizens.
Seven out of the 32 students interviewed were interested or involved in protesting/campaigning about the issues they discussed during the interview. Three students mentioned voting. Unsurprisingly, focus on studies was the key factor inhibiting students from partaking in protests in person. Participant 3 discussed the Black Lives Matter protests in summer 2020, but ‘didn’t manage to go to any of the protests. I wanted to but because of exams, and because of Coronavirus. I wouldn’t want to be friends with people who aren’t politically engaged like that. It’s important for me to be in a community of people who are politically engaged, not just on a surface level, but who enjoyed reading and learning things from people’. This student noted the importance of being amongst peers who are active and engaged. At Imperial, students were most interested in discussing issues of inequality, particularly pertaining to gender and racism.

4.3.1. Gender Equality

The most common issues within gender equality that several women participants discussed were directly related to their position as women in STEM. Notably, only women and nonbinary students recognized gender equality as a pressing issue. These participants highlighted the pressures that women in STEM face: balancing family and career, dealing with sexism and harassment, and how to be a role model for future generations of women in STEM.

Sexism is more prevalent in some departments than others. One student related her feelings of exclusion to her gender, and called out the sexist culture in her department, where the men do not see women class mates as equal:

‘The kind of guys that you get in this degree . . . tend to feel [women] only got there because they were either trying to fill a quota . . . These ideas make you feel less wanted and respected and appreciated in a department . . . I felt like I really needed to fight back against it. Obviously I’m not here to fill some quota . . . I have achieved a lot at Imperial so far, and I’ve achieved more than some of these guys . . . I spend a lot of time trying to prove my worth to everyone around me.’ (Participant 14)

While this student detailed experiences of sexism and having to work harder to prove herself to her peers, she was among several students who experienced or feared sexual harassment and assault. One woman described that she was harassed on just the second day of university, by a security officer in her halls. She said that this experience brought her closer to other women who lived in her halls, and that they continue to look out for each other and protect each other against harassment from men, particularly when socializing:

‘There were loads of boys there . . . they were just like, ‘come back to my place’ and ‘only girls can come, don’t bring any of your friends if they’re guys’. I talked to one of my friends who was like ‘leave me alone’, . . . . And I think that’s the biggest issue that all of have, in terms of bad mental health, it is stemming from men, probably. It brings us together, we almost prove to each other that we have each other’s back.’ (Participant 9)

This student formed a community with other women for safety, which is essential to building a sense of belonging. Yet, even when their sense of belonging is tempered by sexism and harassment, these students focused on their careers as women in STEM. Several women participants have taken that negative feeling of not belonging and turned it around to become role models and engage in outreach so that upcoming generations know that women belong in STEM fields. In particular, several participants expressed their passion for gender equality, and the actions they are taking to make sure that women know that STEM fields are available to them, and serve as role models.

Participant 10 is ‘very passionate about women rights, and all these kinds of situations and inequality’ and ‘one thing that motivates me to get involved in this is that there are a lot of opportunities to kind of try to show other people that they have role model’. Similarly, Participant 12 wants to make sure that the women who do choose to enter the same field
aren’t discouraged from continuing on this career path, and wishes to ‘help empower them and make them understand that “you’re not alone, other people are feeling the same thing as you” . . . that gives people a chance to say that, “Oh, there is a role model, and there’s a chance for me to become like them one day”’.

The findings from this study support previous research on women in STEM. Women and people of color have been largely underrepresented in and excluded from most STEM fields [76]. In a study of over 200 final year undergraduates, primarily women or people of color who either majored in STEM or started and dropped a STEM major, found that white men were most likely to report a sense of belonging whereas women of color were least likely to feel like they belonged [15]. The persistence in underrepresentation of women and people of color in STEM may be due to cultural norms, organizational structures, difference in access to secondary school preparation, discrimination, and harassment [15]. White men in STEM benefit from the privileges of being in a field in which there are many others similar to them and where they frequently fit stereotypes about who pursues STEM. The findings from this study support the suggestion that the underlying problem is systemic and based on the cultures and organization of STEM, and will therefore require a systemic solution that supports all students, not just those in privileged groups [15].

4.3.2. Racism

The second most-referenced issue of importance to Imperial students is the issue of racism, particularly in the global context. The students who discussed racism primarily focused on the Black Lives Matter movement and protests that gained momentum in 2020, and touched on the role of Imperial in this time of a racial reckoning. While for one student this issue hit close to home, for others the global issue of racism was important, no matter their background.

Participant 7 is from the midwestern United States, and ‘was definitely trying to get involved politically . . . I was busy with the MBA, I was in a different time zone, but I was signing petitions, donating to causes, to support from afar. I did re-Share a few things and sign a few petitions after the situation in Kenosha, Wisconsin. I am from about an hour north of Kenosha. So that one hit particularly close to home’. In addition to the Black Lives Matter protests, Participant 13 discussed the worldwide anti-Asian hate that has become prevalent during the time of the pandemic, as well as their unfamiliar experience of racism:

‘Recent events in America, where minorities being bullied, and you have the Black Lives Matter, but for the Asian population, if you know what I mean. And these sort of things, again, does not happen back home because, obviously, in China, it’s still a monocultural country, although, yes, there are foreigners, but it’s quite hard, it’s not like in Britain.’

One component of global citizenship is global knowledge. When global knowledge is rooted in concepts of citizenship, it can help students to turn knowledge into action [77]. Key to developing global knowledge is the support of educators. One student suggested that anti-racist education is the best way to move forward:

‘People say things because we are all raised in a society where that’s the norm. And it takes active work to un-learn those rules. Which is why you need groups like that transgender education group. And there are similar ones for racism, which really I should join because I need to try to do the work to unlearn racist biases that I’ve been taught my whole life . . . Education . . . It starts from what your parents teach you. What you learn at school. What you learn from wider society, including the media, TV shows, newspapers, the news, books.’ (Participant 4)

Participant 10 suggested that the university can play an important role in acting against racism, particularly ‘in terms of our kind of personal identities, I believe that for some common traits, like, for example, gender identity and stuff like this, or race . . . institutions can help us understand the struggles that other people face’. While Participant 17 recognized that some actions on part of the university can be performative, and ‘didn’t
even know what BAME [Black and Minority Ethnic] was, but it’s becoming much more prominent, especially within Imperial. I feel that Imperial needs to stop using students as tokens, though’.

It is important that we recognize that university students identified these issues as important issues facing students and the world, as these issues affect students’ sense of belonging at university, and within society.

5. Discussion

The link between global citizenship and belonging highlighted in this study offers conceptual and practical implications for citizenship education research and practice. The key contribution of this research is conceptual, and emphasizes that not only is sense of belonging a critical component of citizenship, but it impacts how students develop into global citizens. This paper presented findings on belonging, community, and global citizenship from interviews with 32 students across departments and course levels at Imperial College London from 2019 to 2021. Students’ experiences of belonging are consistent with previous research on belonging and community in higher education. Scholars Haggerty et al. [78] discuss similar themes in their research, with ‘fitting in’ as the feeling that one’s values or characteristics are congruent with others, and ‘valued involvement’ as the sense that one is valued by others in the group, similar to the themes of belonging experienced by Imperial students. The theoretical framework upon which the study is based is that belonging is both a component of and type of citizenship. In this regard, students’ lack of belonging—specifically, feelings of exclusion or marginalization—are reflected in the kinds of issues that they engage with inside and outside of the university. For example, students like Participant 13, who experienced anti-Asian racism for the first time, became more interested in issues of racism elsewhere and the Black Lives Matter movement. Furthermore, women and nonbinary students felt a lower sense of belonging because they constantly have to prove themselves to their male peers and teaching staff, and are more passionate about issues of gender equality.

It is especially important for universities to nurture students’ sense of belonging by listening to student voice, taking these issues into consideration, and implementing policies and curricula that support all students to feel welcomed. This is paramount because enabling sense of belonging can promote tolerance and understanding [7], academic achievement, retention, and persistence at university, with effects being more pronounced for students from marginalised groups [79]. This rings especially true for the women and nonbinary participants who experienced gender equality as an issue, particularly in the Imperial context. Prior research on the effect of gender on belonging in STEM fields demonstrates that women and students of color have consistently reported less sense of belonging than men and white students in STEM fields [80–82].

Across sectors, equality, diversity, and inclusion (EDI) are increasingly woven into institutional missions and codes of practice, alongside the Athena Swan scheme which recognizes and celebrates research institutions in their efforts towards the advancement of gender equality [83]. Student diversity provides an important pool of lived experiences that ‘can be harnessed as a resource for developing graduates as global citizens’ [84] (p. 100). Teaching and university staff can make students feel more ‘at home’ by offering an accepting environment where students—especially women, nonbinary, and trans students—can feel free to be themselves. As this study demonstrated, students who are women feel like they must prove themselves to their peers and teaching staff in their STEM disciplines, but also must look after each other’s safety. If these students must focus their efforts in these areas, they are at further risk of feeling like they do not belong. Limiting the barriers that these students face in STEM subjects would foster a greater sense of belonging among these students within their departments and wider university community.

Across higher education, a sense of belonging is often found within residence halls, sports teams, or other clubs or societies [69]. Similarly, in this study, students feel they belong within communities such as clubs, societies, and sports. Students’ sense of social
acceptance is an important factor in their overall sense of belonging [85], and participants shared that their clubs, societies, and sports were most often places where they felt they could be themselves. Students are also involved in academic societies, which creates a greater sense of belonging within the department and STEM discipline. One of the greatest challenges for students during the COVID-19 pandemic was the transition to mostly online interactions with their peers, friends, and teaching staff. Community is affected by interactions that occur both inside and outside of the classroom [55], and for most participants, it was affected by the lack of interaction due to the pandemic. This led participants to feel distanced and disconnected from their communities, especially for first year students who arrived at university with the hope to make new friends and join clubs and societies based on their interests. To enhance student sense of belonging and community within the classroom setting—whether virtual or in person—teaching staff can facilitate connections between students based on shared interests. For example, for group assignments, teachers could facilitate students’ sense of belonging within the groups if students are able to self-select into groups based on a prompt. For example, groups could be assigned based on which genre of film or type of music they enjoy. Students could then complete group work with peers who have similar interests. Other educational researchers have found improved relationships among students and teachers when there is perceived similarity, which improved student outcomes [86].

6. Conclusions

This paper encourages scholars to investigate student belonging in STEM through a citizenship lens. As universities aim for students to become responsible citizens with global knowledge and engage as global citizens before and after graduation, universities must continue to engage with students on the issues that matter to them. These issues are closely related to students’ experiences of belonging at the institution, and in wider society. Peer interactions have significant impacts on sense of belonging [81] and a great influence on civic behaviors among university students [87]. Despite the COVID-19 pandemic having necessitated a different style of peer interaction—and in many cases, limited in-person peer interaction—a number of students have been actively engaged in issues like the Black Lives Matter movement and gender equality issues. Yet, while Imperial College aims to educate global citizens, only a few exhibited global knowledge, which is enhanced when students learn how global issues affect their lives and how they can address global challenges [77]. To bring global citizenship into the STEM context, and embrace global citizenship education within the College’s mission, teaching staff could include discussions of global citizenship activities, such as current events, as related to their subject. Some disciplines may find this easier than others (e.g., postgraduate students in Imperial’s Centre for Environmental Policy will have used these citizenship ‘muscles’ before to engage with policy related to their studies). Further opportunities could be provided to students of STEM subjects to encourage their participation in political causes that are not necessarily related to their discipline.

While each interview included a discussion about pressing political and social issues, only a few students engaged deeply in these questions and exhibited these skills. That is not to discount the finding that students were interested primarily in issues that affected them on a personal level, whether it was gender issues, racism, mental health, or climate change. Prior studies have found democratic outcomes, such as the concern for the public good, correlated with positive informal interactions with diverse peers [11]. Students at Imperial often appreciate the university’s diversity, but in many cases students are drawn to other students who are like them, creating a self-segregated student body. Fostering interactions within a diverse student body will become an important focus for Imperial and other higher education institutions as they moves back toward in-person teaching to help students feel more connected to their university. This will have knock-on effects on civic outcomes, which will be even greater if the university is intentional about fostering global citizenship.
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