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Special Educational Needs/Disability: Innovations and Innovative Practices in Music Education and Music Teacher Education

Introduction
I began teaching in London in 1982 as a music/special needs teacher (teaching music, and also supporting students who had varying special educational needs, across a number of school subjects). After seventeen years as a secondary music teacher I moved to the University of Bristol, England, where I have worked ever since, leading a one-year secondary music teacher education1 course, and also researching music education, particularly music technologies. My earliest research – a three-year longitudinal project which focussed on children’s use of computer music software for creative purposes, in naturalistic (mainstream classroom) settings – showed clearly how technologies benefitted many students in their composition work (Gall & Breeze 2007, 2008), including those with special needs (Gall & Breeze 2005). However, it was only in 2010 that I became fully aware of the amazing new opportunities that were being offered to children with more profound special educational needs and/or physical disabilities (SEN/D) in order to support their music-making.

In this chapter, I present innovations – in thinking, in musical ‘tools’ and in macro and micro educational approaches – by a range of institutions, groups and individuals – in relation to the use assistive technologies to support the music education of young people with SEN/D. This is focussed on work, in which I am involved, within my home city of Bristol in South-West England.2 I begin by outlining the educational context to this work. I then present findings from a recent research project I carried out in a local special school for secondary age students (aged eleven to eighteen), which illustrates some of the affordances of new assistive music technologies. There follows an account of a research study in which I explored trainee teachers’ responses to Music and SEN/D work within my own music initial teacher education course. The chapter ends with a discussion of the national and international implications of my findings.

Special Educational Needs/Disabilities Legislation
For more than twenty years, there has been recognition of the need for focussed, worldwide discussion and policy making on inclusivity in education (UNESCO & Ministry of Education and Science Spain 1994; UNESCO 2009). In England, the first government policy on special educational needs came into effect in 1994: The Code of Practice on the Identification and Assessment of Special Educational Needs presented an approach to the assessment of individual’s needs and how these should be met at each stage of the process (DfE 1994). Over the years, new versions have been created (DfES 2001), the most recent focussing on young people with disabilities, as well as those with special educational needs (DfE & DoH 2015).3 In 2017, in England some young people with SEN/D of school age are educated in mainstream school; others attend what is known as a special school, which is only for students with SEN/D (Terzi 2010).

In 2011, the first ever national plan for music education in England stated that provision must be made for all children (DfE 2011) and government officials continue to highlight this principle (House of Lords/Hansard 2014; Sellgren 2014). An innovative element of the national plan for music education was the creation of music hubs whose function was, and still is, to support and enhance music teaching, both within and outside the school walls, drawing on “the expertise of a range of education and arts partners, such as local orchestras, ensembles, charities and other music groups” (DfE 2011, p. 10). As such, there is an expectation that hubs play a key role in ensuring inclusivity in music education. The national plan also recognised that

1 I am aware that the term “teacher training” is used in many countries. However, I will use “teacher education” within this article, since this is more clearly indicative of the fact that there should be reflection upon work, and not only an attempt at acquiring “procedural” knowledge.

2 Such an approach provides only a partial picture of what is happening in the UK in relation to music education for young people with SEN/D: there are many other individuals and institutions carrying out exciting work in the same field.

3 In this government document, the terminology is as follows: “A child or young person has SEN if they have a learning difficulty or disability which calls for special educational provision to be made for him or her. […] A child of compulsory school age or a young person has a learning difficulty or disability if he or she (1) has a significantly greater difficulty in learning than the majority of others of the same age, or (2) has a disability which prevents or hinders him or her from making use of facilities of a kind generally provided for others of the same age in mainstream schools or mainstream post-16 institutions” (DfE & DoH 2015, pp. 15–16).
technologies afford opportunities for students whose special needs or disabilities preclude their use of “traditional” musical instruments (ibid.).

![Image](https://example.com/image.png)

Fig. 1: Work within Open School Orchestras (Photo by Sarah Bentley)

**OpenUp Music Research Project in a Secondary Special School for Students with Profound and Multiple Learning Difficulties (PMLD)**

**Background to the Project**

OpenUp Music (2016a) is a Bristol-based charity focussed on providing opportunities for young people with SEN/D to play in ensembles and to perform. Their work includes the development of new accessible musical instruments, schemes of work, adapted music repertoire, training for a range of staff, and technical support. Prior to setting up the charity, the two directors – Barry Farrimond and Doug Bott – having been involved in music and SEN/D for many years, were very aware of the wide range of technologies and approaches that could be drawn upon to enable young people with SEN/D to engage in music-making. The document *Engagement with Technology in Special Educational and Disabled Music Settings*, which they produced with two others, provided extensive information on varied types of musical instruments, and computer and other technologies available at the time (Farrimond et al. 2011). It also identified barriers to participation. However, concerned to create a musical instrument that could adjust to meet the needs of each individual in a total sense, they spent years developing what is now known as the Clarion.

As Barry explains:

“What makes the Clarion unique is that it allows the musician or music leader to easily alter every conceivable element of the instrument. This includes the sound the instrument makes; the number of notes that are available to play; the shape, position and colour of the notes; and crucially the way in which you play them. [...] It is also possible to play it with any other part of the body, including your feet or even with your eyes.” (Farrimond 2016)

The Clarion also forms part of another main focus of OpenUp Music. Recognising the lack of opportunities for SEN/D young people to play and perform in ensembles (NFER 2016; Sound Sense 2015), OpenUp Music began establishing Open School Orchestras in special schools in the south west of England (Bott 2015). In these, through the use of the Clarion and other assistive technologies, OpenUp Music have supported school staff to provide opportunities for groups of young people with SEN/D not only to engage in musical activities at a personal level, but also to come together to play in ensembles (OpenUp Music 2016a). Since September

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4 With financial support from the Nominet Trust and the Bristol Music Trust.

5 Farrimond (2016) is an excellent website to explore further, since it not only provides an account of the development of this new assistive technology but also includes videos of young people using the Clarion, important when, oftentimes, it is difficult to fully understand the affordances of the technology unless one sees it in use.

6 Footage of work can be seen in the video *The Open School Orchestras* on this webpage.
2016 the initiative has expanded such that the charity now works in partnership with six music educations hubs and sixteen schools (Farrimond 2016).

Furthermore, in September 2015, the charity, with support from other partners, launched the first disabled-led regional youth orchestra: the South-West Open Youth Orchestra, which provides a progression route for young musicians with SEN/D. As part of an event organised by the Bristol music education hub, the orchestra performed within a BBC Radio 3 broadcast, during a BBC Music Day event (BBC 2016, which includes a video), playing a piece especially created for the ensemble by a local composer, Liz Lane.

![Image of orchestra performing](image.jpg)

**Fig. 2:** The South-West Open Youth Orchestra performs at Bristol Cathedral, April 2016 (Photo by Paul Blakemore)

**Research Methods**

In the summer of 2016, I carried out a small research project in a local Bristol special school for secondary school students (aged eleven to eighteen). The main objective was to explore Open School Orchestras work and to gain insight into how new technologies, including the Clarion, support young people with special needs/disabilities (SEN/D) to make music. I was also keen to research the impact that this ensemble work had on the young people as a whole group, and as individuals.

Open School Orchestras work in school X was videoed in a period of just over a month, during sessions that were timetabled on a weekly basis. Students were working on an arrangement of Pachelbel’s Canon, created by OpenUp Music; video also captured a performance to parents. Members of staff, including the school music teacher, two “music leaders”, school general teaching assistants, and a member of the senior leadership team, completed questionnaires and/or were interviewed. Parents were also interviewed. The school caters for students with Profound and Multiple Learning Difficulties (PMLD); as such, the majority of students are unable to speak, even with the use of assistive technologies. However, I was able to acquire some feedback from two students via their use of a touch-screen voice output communication aid (VOCA).

**Findings**

There is insufficient space in this chapter to discuss the many findings from this project. As such, I will present some key points, which relate to two over-arching themes: the affordances of the Clarion, and the impact of Open School Orchestras on the young people involved.

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7 Some examples of the orchestral work are shown in two videos at OpenUp Music 2016b.

8 A journal article that focuses entirely on this project, with comprehensive findings, is in preparation.
Varied modes of the Clarion were used by different students and data exposed the flexibility of the instrument. Aside from offering choice in timbre, video footage showed that, when used on a tablet or laptop computer screen, modifications to the interface were possible, including those to the shape and size of the representations of each sound. This meant that sophisticated changes could be made to suit each young person’s physical needs, thus enabling all the students to work independently on an instrument.

Following the performance to parents, one father noted, with delight, the autonomy that the Clarion provided his daughter:

*I was expecting […] someone to be aiding her arm to play an instrument so it was quite a shock to see what you had set up and the performance itself. If you were to listen to that on a CD without visually seeing who was playing the music you wouldn’t have put the two together.*

He continued by highlighting the importance of interactivity for his daughter: *And how [my daughter] was cued when to play and what to play and she acted on those cues […] I thought it was amazing. At the end of the performance I was so proud of her.*

The importance of engaging actively in music, and particularly in group music-making, was also noted by another parent: 9

*MUSIC IS MY DAUGHTER’S “CUP OF TEA” […] WHEN SHE GETS TO ACCESS MUSIC SHE REALLY COMES ALIVE BECAUSE LOTS OF THE TIME […] SHE’S IN A CHAIR UNDER SOMEONE ELSE’S CONTROL. […] LOCATED, TO DO AN ACTIVITY THAT THEY THINK SHE MIGHT LIKE […] AND SO LOTS OF THE TIME IT’S NOT WHAT SHE WANTS TO DO AND SHE DISENGAGES FROM THE WORLD […] BUT MUSIC MAKES HER REALLY ENGAGED AND FULLY SWITCHES HER ON. AND IT’S VERY IMPORTANT FOR HER TO BE ENGAGED WITH THE WORLD […] AND INTERACTING BECAUSE THAT WILL REALLY HELP HER TO COMMUNICATE, AND EMOTE, AND MAKE HERSELF HEARD.*

A member of the senior leadership team within the school echoed the importance of the interactive aspect of the musical activity: *working with people: you can’t overstate how special that is, and how much we see students coming alive, and really expressing their humanity and personalities.*

One student, able to communicate using a touch-screen voice output communication aid, articulated his love of Open School Orchestras work: *I think Orchestra is brilliant and I am also excited to go to Orchestra [Open School Orchestras work]. I feel proud of the work I have achieved.*

In this project, the young man sounded six different pitches according to which square he focussed his eyes upon (Figure 1). Using the latest version of the Clarion, with its velocity-sensitive interface, by looking at the bottom of any square he was able to produce a quiet sound, and as his eyes move upwards, in any one square, so did the volume of that note. His class music teacher explained that the student’s interest in mastering changes in volume appeared to be key to the young man’s motivated approach to work. Video data bore this out: at one point, the young man worked on his musical part (an eight-note bass line using six pitches), also with attention to the volume, for at least 4 minutes, 45 seconds, 10 with no support and without a break. (Subsequently, he was able to perform his part fluently, and in time, within a whole class ensemble performance).

The same student also commented: *I enjoy practising at home so that my family can listen to me play […]*. 

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9 He described his daughter thus: *She has cerebral palsy, full body involvement (can’t use any of her body purposefully), can’t speak, is doubly incontinent, has epilepsy and visual impairments. She’s fed through a peg.*

10 It may have been much longer: the camera person stopped collecting data at 4 minutes, 45 seconds.
Highlighting another positive affordance of the Clarion: its portability and accessibility outside of school. The quote also suggests the young man’s positive self-image as a musician. Indeed, the class music teacher suggested that success in music-making experienced by many of the young people during Open School Orchestras sessions was important in developing self-esteem and a positive attitude to other types of learning: “So this develops into ‘I managed to do that in Orchestra – some problem solving skills I’d never used before [working out how to play the instrument/the music] – and I did really well, so I’ll try this in a different area of my life’.”

**Teacher Education Work/Research**

**The Context**
In this chapter I have chosen to write about my classroom research first, so as to provide some detail about assistive technologies and music-making in schools, yet my work within initial teacher education began much earlier when, in 2009, I met with Jonathan Westrup, who raised my awareness of the charity for which he worked. *Drake Music Scotland* also specialises in the use of assistive music technology to make music accessible to people with disabilities (Drake Music Scotland 2017). Its work encompasses school and community projects with children, and with adults with SEN/D; it is involved in training and consultancy and also supports the development of new assistive technologies. Current initiatives are *Think2020*, which aims to increase musical opportunities for disabled children and young people through partnership work in the music education sector (Drake Music 2017a) and a framework for defining essential criteria for high quality music-making for young people with SEN/D (BLadmin 2015).

Prior to discussions with Jonathan, having worked largely in mainstream education, I had not had first-hand experience of working with students with physical disabilities. Furthermore, given the three plus one structure of teacher education in England and the consequent dearth of time for many aspects of learning and teaching, until 2011, student teachers on my course considered provision for children with disabilities only if the need arose within a school placement. Concerned to remedy what I realised was a less-inclusive approach

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11 It has offices in Bristol, and also in London and Manchester; its website includes a wide range of helpful information, including blogs and discussions.
12 See Drake Music 2016 for examples of new instruments designed at an event in September 2016.
13 Trainees focus on their subject for three years, and may have no involvement in pedagogy during this time; they then spend ten months (one academic year) on a teacher education course.
to initial teacher education than I had intended, Jonathan and I agreed to jointly plan and run a university-based session on technologies to support pupils with SEN/D. This has become an annual event.

The Teacher Education Workshops
The earliest of these sessions revolved around a presentation by a young person with disabilities (Bradley, now a key member of the South-West Open Youth Orchestra\textsuperscript{14}) who answered questions posed by the novice teachers, and explained his involvement in an accredited music course\textsuperscript{15} especially designed by Drake Music Scotland.\textsuperscript{16} In 2012 a similar presentation by a female teenager took place. This session also included practical music-making giving the student teachers first-hand experience of some of the instruments: Jelly Bean Twist Switches (Inclusive Technology 2017; see Figure 4) and Soundbeam (2017). Since then, the format of the session has remained similar except that we have also included video footage of projects/individuals playing, thus providing a broader view of work in this field. Later sessions also included reference to tablets and apps and, since 2013, an additional summer term discussion focussed more broadly on apps – within mainstream as well as SEN/D education – has been included in the course. Although students are only at university for two days in the period January to April – because this is the main school practice period – we have tried to run the session on one of these days so that individuals who are inspired can spend time at a special school, or view the work of Drake Music/OpenUp Music during their summer school placement period.

Research: Student Teachers’ Perceptions on the Drake Music Workshop
In order to gain a deeper awareness of the student teachers’ perceptions of all aspects of their university work, the trainees completed a questionnaire in which they rated the Drake Music sessions on Likert scale of “Very Good”, “Good”, “Satisfactory”, and “Of Little Use”. They were also asked to identify the two sessions they

\textsuperscript{14} See the video at OpenUp Music 2016b.
\textsuperscript{15} See Drake Music 2017b.
\textsuperscript{16} A video of the presentation can be viewed at Drake Music Scotland 2011.
found the most useful in the spring/summer term and the three best sessions from the whole academic year. Space was made available to add comments to provide detail to their answers.

Fig. 5: Drake Music working with University of Bristol trainee music teachers (2016)

Findings
No participant gave a rating of “Satisfactory” or “Of Little Use”; there is no data for the 2014/15 session, since this had to be cancelled.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number in Cohort</th>
<th>Very Good</th>
<th>Good</th>
<th>Absent</th>
<th>1 of 2 best sessions of the summer term</th>
<th>1 of 3 best sessions of entire course</th>
<th>Attended more sessions on SEN/D</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010/11</td>
<td>16</td>
<td>10</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>Not offered</td>
</tr>
<tr>
<td>2011/12</td>
<td>11</td>
<td>8</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>2012/13</td>
<td>12</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2013/14</td>
<td>12</td>
<td>9</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>2014/15</td>
<td>10</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>2</td>
</tr>
<tr>
<td>2015/16</td>
<td>8</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>47</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>

Tab. 1: Student teachers’ perceptions of the Drake Music workshop on SEN/D

From the above data it is clear that all the student teachers found this work useful, and some were highly stimulated by it: This was a really eye-opening session. I’d already become more aware this year of how music technology can help all students in music, but this was amazing (2012). It was interesting to see how this also inspired a number of them to take up additional opportunities to explore music and SEN/D during their training year. Notably, the only year in which this did not happen was 2015/16 when the Drake Music workshop had to be scheduled for the penultimate week of the course, instead of during the second of three terms. Of those who did carry out further exploration, two chose to spend a full week within a special school. In 2012, one trainee, who had experience in a school for students with

17 As noted previously in relation to the school research, the chapter does not provide space for a full exploration of this project; this will be presented in a future journal article.
18 Although not explored fully in this current empirical research, it is also significant that the novice teachers linked later university discussions and technology tasks to this SEN/D work, as did I.
19 The maximum the course permitted, owing to requirements within their mainstream school practice.
profound and multiple learning difficulties (PMLD), commented on how interesting it was to see ways in which equipment that she had viewed in the university workshop – including Soundbeam 2017 – was actually used in the school setting. Furthermore, in 2014, a male who spent a week in a special school was so enthused that he was permitted to lead a short drama/music activity at the end of his placement; the whole experience motivated him so much that he changed his vocational focus from mainstream to special education.

A different trainee teacher recognised that there were learning and teaching ideas that were transferable to mainstream classrooms: *It was really interesting and informative, and helpful to teaching in my new [mainstream] school* (2013).

Her peer explained that it was not only a case of knowing about methods. Discussing her concern about the lack of time available in schools, generally, to listen to pupils’ opinions, she explained:

*I really appreciated the opportunity to hear from a young person – first hand – about what they wanted from music and, from the rest of their school life, to help me think about how teachers in mainstream education can cater for students with physical disabilities* (2012).

A male novice teacher echoed the worth of exploring music and SEN/D at university because in his school placement music lessons he had had few opportunities to view ICT being used by young people with physical disabilities: *All I saw was one student with special needs, in my class, make some advance in a project using GarageBand, whereas in the reggae unit of work he struggled a lot without ICT. I feel that there is huge scope with technology* (2014).

All the trainees noted that, as a result of the session, they were more aware of how to approach music-making for students with SEN/D. However, another was concerned that finances might impede schools – especially mainstream – in obtaining the technologies so vital to music-making for these young people: *Money may be an issue: I hope that more schools will be able to acquire the equipment that will enable more pupils to access music technology* (2015).

Others were more positive, citing the relatively low cost of tablets. They recognised the benefits of tablet usage – in mainstream as well as special schools – not only because of the ease of access for pupils with SEN/D owing to the touch screen, but also because of their size and potential for use in a range of teaching spaces: *I think iPads will be a huge benefit and support to musical learning, not only for the apps that they possess but also because of the portable recording opportunities they possess* (2016).

All the novice teachers who included additional comments to their grading of the *Drake Music* session stated how enlightening this was, and how it made them think differently about a range of issues surrounding the education of young people with SEN/D, including the concept of inclusivity. One student teacher, concluding her reflection, commented: *I now firmly see how ICT is key in making musical learning as inclusive as possible* (2013).
Further Thoughts

In this chapter I have presented information and research which highlight innovations in relation to the music education of young people with SEN/D, particularly noting the strong work of two charities in the city of Bristol, UK. What has not yet been explained, and which is of significance, is the support that has been provided for their work by the local music education hub, *Bristol Plays Music* (BPM 2017a). Indeed, the hub had funded two extra music support staff to aid the school music teacher in the special school work discussed earlier in this chapter. One of these “music leaders”, herself a musician with SEN/D who performs with the British (adult) Paraorchestra (2013a), was especially insightful about the needs of the young people. Within its annual *Fast Forward Festival* (BPM 2016) the Bristol music education hub has also enabled ensemble groups of young people with SEN/D to present their work alongside the British Paraorchestra (2013b) – recently relocated to Bristol – thus providing opportunities for the children to see and hear the work of strong role models.

It has been said that “inclusion may be understood not just as adding on to existing structures, but as a process of transforming societies, communities and institutions […] to become diversity-sensitive” (Arnesen et al. 2009, p. 46). *Bristol Plays Music* has already travelled a considerable way along this transformative pathway, through its vision and work underpinned by *A New Ambition for Inclusive Excellence* (BPM 2017b). Having already established a certificated course in inclusive practice, to support the existing workforce (music leaders from all sectors, working in mainstream and SEN/D-focussed settings, and in formal and non-formal music education) and to provide a route into teaching for adults with disabilities (BPM 2017c), it now aims to establish a national centre for advanced training for talented young musicians with special education needs/disabilities.

It is axiomatic that those involved in the initial teacher education have a significant part to play in helping music teachers about to enter the profession to become cognisant of diversity in its broadest sense. Findings from my research into the perceptions of my own student teachers indicate that early engagement with pupils with SEN/D – even within only a short workshop – can result in a deepening awareness not only of good practice within classrooms, but also of broader issues of social justice. As such, I believe that engagement in music and SEN/D should be an essential element of every music initial teacher education course, even within the ten-month courses in the UK. Unlike the UK, most countries require trainee teachers to develop both subject and pedagogical knowledge/skills alongside each other. Since courses in these countries are, typically, at least three years in duration (Institut für Musikpädagogik Wien 2017) there is ample time for SEN/D work not only to be included, but also to be embedded into them, thus ensuring that all teachers enter the profession with knowledge about, and skills in working with young people with special needs and/or disabilities.
As has been illustrated by my research into the use of the Clarion in a special school, new instruments offer opportunities to students who otherwise, would have very limited or no ways at all of engaging in music-making. However, music educators across the globe recognise that effective learning only comes about when appropriate, well-developed pedagogies surrounding the use of new technologies are adopted (Gall, Sammer, & de Vugt 2012). Therefore, whilst I believe the acquisition of technological music-making equipment in schools to be essential to education in the twenty-first century, as important is the infrastructure which enables it to be used effectively. Training programmes led by music educators who specialise in using adaptive technologies, such as those provided by the charities discussed in this chapter, are required not only to aid the development of skills in relation to new technologies, but also to overcome lack of confidence in, or openness to their usage (Farrimond et al. 2011; Gall 2013). A carefully thought-out, sustainable, whole-institution strategy, such as that devised by Bristol Plays Music (BPM 2017a), is also essential as the backdrop to work in formal and non-formal educational settings.

The subject of inclusivity is not new within education in the UK. Indeed, for many years it has been at the heart of the work of many arts institutions and individuals (Drake Music Scotland 2017; Farrimond 2016; Sound Sense 2015; The OHMI Trust 2017) yet it is recognised that there is still some way to go to ensure that anyone with a special educational need or disability has as equal an opportunity to fully engage in music as any other young person. In recognition of the benefit of “joined-up” thinking, the Music Education Council’s SEN/D Working Group meets regularly to facilitate cross-sector networking and sharing of good practice across the UK (MEC 2011). I am aware that, owing to national education policies, the ideology of inclusivity varies from country to country, and may be realised in varied ways according to each context. Nevertheless, dialogue at an international level on music and SEN/D would be enlightening, particularly in relation to the affordances of new technologies, since ICT in music education is relatively new in some countries, and is used infrequently in many (Gall, Sammer, & de Vugt 2012). There is always much to learn from others’ thinking and practice. I would suggest that some form of international collaboration is essential if we are to attain UNESCO and UNICEF’S educational goal of ensuring “equitable and inclusive quality education and lifelong learning for all by 2030” (UNESCO & UNICEF 2014).

Addendum

The work described in this chapter is being taken forward into a large-scale project called Getting Things Changed, funded by the Economic and Social Science Research Council (ESRC: grant ES/M008339/1). The project aims to understand and change social practices which regularly exclude disabled people. As part of the project we hope to analyse further the ways in which music technology can literally open up opportunities for young disabled people who may be excluded from more conventional forms of music making, and from verbal communication (UoB 2017).

References


