



## Research Summary

**This summary is based on independent research undertaken by Anni Raw & Associates during 2023 as part of Yorkshire Sound Women Network's WIRED education project, funded by Youth Music.**

It offers insights into engagement in music technology learning amongst girls, women and people of minority genders, and forms part of a wider toolkit which includes strategies for educators to use to support gender-inclusive learning environments, recommendations for policy change and testimonies from research participants as to the blocks and barriers they have faced in their learning and careers in audio. The toolkit is intended to be used by:

- Music technology educators and music leaders in formal and nonformal settings
- Those involved in music technology education policy and strategy
- Those in the wider audio sector and industry – with a view to EDI (equity, diversity and inclusion) considerations in music technology and audio.

### 1) Why is this toolkit needed?

- Copious evidence and previous publications exploring equity for women, girls and minority genders in the music technology sector have demonstrated persistent and severe gender inequality at all levels, from learning and education to the highest levels as professionals. This is detailed in the WIRED Toolkit Literature Review, and summarised below:
  - o **We now have more than enough data to justify proactive and conscious action.** A significant body of data now reports that our audio industries and institutions are still overwhelmingly white cis male and ableist.
  - o **There is still a problem with pervasive and debilitating sexism in the audio industries.** Bias, sexism and misogyny are persistent and debilitating factors that significantly reduce opportunities and plausible pathways for women and gender minority young people.
  - o **More is now understood about the social factors that may be contributing to a drop in engagement amongst girls and gender minority youth in music technology.** Engagement diversity is healthy amongst younger children but the field becomes increasingly male as young people move through their informal and formal education. Educators have a key role in changing the culture and opening up the field more equally.
  - o **Research shows women and people of minority genders in the music tech industries are responding to these realities** by ploughing their own furrow outside the mainstream, speaking up and resisting, and stepping up as role models.
  - o **Very little work has explored the perspectives of men.** Existing research almost exclusively centres the experiences and views of women, girls and gender minorities, but it is difficult to find materials that explore the perceptions of white, cis and able-bodied men, who constitute a very significant majority of music technology educators. Many are supportive and interested in sharing examples of interventions and positive action, however, no equivalent study explores their experiences, observations or responses.



- A gender imbalance has been observed in music technology education since the 1980s, when technology was introduced to the music classroom to encourage more boys to study music<sup>1</sup>. On some level, an association of technology, ICT and male interest was understood and cultivated<sup>2</sup>. A key 2015 paper by Born and Devine describes a “leaky pipeline”: the proportion of students aged five to 16 choosing music technology as their instrument being approximately 40% female (sometimes more), and, “After age 16 this figure drops to 25%, while among music technology A Level entries the fraction of young women is 18%. And, finally, at university enrolment on music technology degrees, they represent approximately 10%”.<sup>3</sup> More recent analysis of A-Level data from OFQUAL found that between 2018 and 2022, 24% of A-Level music technology students were female.<sup>4</sup>
- New 2023 research through WIRED has raised an alarming range and regularity of negative experiences for girls, women and people of minority genders that either inhibit their learning, are driving them out, or offer new reasons why they don’t enter or remain involved with the audio sector.
- Women and minority gender professionals must rely on extreme resilience to remain in the sector; several of our responding professionals report being close to leaving it.
- Schools and informal learning settings have different approaches to teaching music technology, but both types of setting see numbers of girls and minority gender learners dropping from the age of 11 onwards, and differences are noticed between boys and other learners in how comfortably they are engaging.
- Higher Education environments are producing the most negative experiences for many women and minority gender learners who pursue music technology this far, as well as for women and minority gender lecturers, tutors and technicians.
- Testimony from women and minority gender professionals in music technology (post-production, live music technician and production roles, DJing, composition) shows that many industry settings are plagued by extreme hallmarks of misogyny.
- Informal learning settings offer more bespoke learning options, including targeted sessions, which can help restore lost faith in options to learn music technology.
- Experts by experience offered a wide range of recommendations, from subtle adjustments through to radical change requirements, to ensure the music technology field can become a more friendly environment for women, girls and minority gender learners.
- These contributions based in tough experiences are too valuable and important not to be shared as widely as possible.
- Positive change and equity for women, girls and minority genders in music technology is long overdue, and this toolkit offers evidence-informed steps to create this change.

1 Born, G., & Devine, K. (2015). Music technology, gender, and class: Digitization, educational and social change in Britain. *Twentieth-Century Music*, 12(2), pp.135-172.

2 Comber, C., Hargreaves, D. J., & Colley, A. (1993). Girls, boys and technology in music education. *British Journal of Music Education*, 10(2), pp.123-134.

3 Born, G., & Devine, K. (2015). Ibid.

4 Data from *Music Teacher* magazine Freedom of Information request, published 24/10/2022 <https://www.musicteachermagazine.co.uk/news/article/only-a-quarter-of-a-level-music-technology-students-are-female>

## **2) How: about the WIRED research**

Research data originated from 43 individual contributors (all aged 16 years old and above):

- 35 women, girl and minority gender contributors
- Eight cis male contributors (all music leaders).

As well as data from three session observations and focus groups.

Contributors included current learners, those working in the audio industry and music leaders/educators (most also working in the audio industry).

All 35 women, girls and minority gender contributors offered their own stories as verbatim testimonies, including suggested solutions to issues they faced or still face.

Eight male music leaders offered observations from their teaching experiences.

Contributors took part through responding to a survey (34 survey responses, of which six were male music leaders); through in-depth one-hour interviews (eight interviews conducted, three of the interviewees also took part in survey, and two interviews were with male music leaders); and through focus groups and informal chats in connection with observed music technology sessions (involving seven further girls and minority gender contributors).

## **3) What: research findings**

The research offered insights on spotting engagement and disengagement amongst music technology learners:

- Across the 40 research participants (learners and educators) offering responses on this theme;
  - including details of music leader observations and descriptions of their own behaviours
  - interesting and clear trends emerged in how learners were expressing being engaged, or struggling to engage, with learning in music technology settings.
- These signs and signals can help music leaders better understand and be alert to how woman, girl and minority gender learners express their levels of engagement.
- Whilst responses on girls and minority gender learners' dis/engagement signals showed consistency across our research cohort, there was also evidence of differences between these learners' engagement patterns and the signs and behaviours of male learners, which is important knowledge for maximising equity in mixed learning settings.

### 3.1 Disengagement in girls and minority gender music technology learners

Findings reference a range of types of learner groups: learners aged nine to 21, from informal education such as clubs and groups to formal education settings including schools, colleges and universities, with some groups offering learning spaces specifically for girls and minority gender learners.

Signs of learners disengaging are largely consistent across our sample group ages and sites of setting. Headline findings for spotting signs of disengaged girls and minority gender learners are:

- **Invisible signs** – completely internal – 10% of respondents.
- **Non-verbal and non-disruptive visible signs** (largest category of disengagement signals, with 65% of our respondents naming this one descriptor category as typical amongst girls and minority gender learners), including:
  - o Non-verbal, with low mood and body language signs. This was the biggest category, with 10 different descriptions including hunched body and clues in facial expressions.
  - o Looking at phone (photos, text conversations) and escaping.
  - o Remaining quiet and still/zoning out.
  - o Passively refusing to engage in tasks.
  - o Shrinking/absenting/anxious.
- **Perhaps verbal, though non-intrusive, behaviours** (15% of respondents)
  - o Distracted – looking around, looking bored, not following because thinking about other things.
- **Outwardly expressive signs of disengagement** included two subgroups – named by only 7.5% of respondents:
  - o Expressing annoyance.
  - o 'Silliness' or signs of restless distraction/distracting others.

#### What may this indicate?

- Quiet girls and minority gender learners may be masking a struggle to engage. The majority of disengagement signs by far observed by our sample fall into non-verbal (subtle, private, or low-key) behaviours. This suggests that educators should look deeper than the surface level, to be more inquisitive and nuanced in their observations, and not to make assumptions based on a 'gender-blind' map of engagement behaviours.
- The last finding suggests that this more visible and expressive kind of behaviour is relatively uncommon amongst girls and minority learners in music technology. Both examples given were specifically amongst younger learners, in contrast to older learners in the same groups. However, it is important not to read restlessness or high spirits automatically as disengagement only, as we found both engagement and disengagement expressed in this way.
- The findings are likely not to be specific to this subject area. They may resonate with girls and minority gender learner engagement patterns more generally in mainstream mixed gender environments. But they may tell us something more subtle about the learning environments in which girls and minority gender learners who are interested in music technology find themselves, and the usefulness of sessions specifically targeted at girls and minority gender learners. More research with larger samples is needed to understand these behaviours and settings better.

### 3.2 Gender differences in music technology learners' engagement and disengagement signals and behaviours

We collected responses from music technology educators (18, of whom eight were male) on their observations of any differences in engagement and disengagement signals, between male and non-male (girls and minority gender) learners in their sessions. Of the 18, five stated that they saw no differences along gender lines (this doesn't however mean there were none, just that they didn't recognise any). Among the other 13 there seems largely to be agreement that boys and girls and minority gender learners express their engagement in contrasting ways.

The headline findings on boys and girls and gender minority learners are these, and they chime very closely with the previous responses:

- Disengaged girls and gender minority learners in mixed groups are quieter and less expressive/ more internal than disengaged boys: *more inward looking and silent; and They kind of make themselves smaller, and disappear into the background.*
- Disengaged girls and minority gender learners are more likely (than boys) to bury their heads in their phones – going internal.
- Girls and minority gender learners in mixed settings are much more likely than boys are to stay quiet when they don't know what they're doing.
- At GCSE stage, from age 14, girls and minority gender learners are more likely to lack confidence to try software: *Girls sometimes hesitate to start using a certain software. More reluctant than boys, while the boys are mostly confident and immediately hands-on, experimenting before they are shown.*
- The same seems to be common for confidence and engagement with equipment: *Boys dominating – grabbing equipment first, seeking to prove themselves which can increase a lack of confidence in minority learners; and this gendered difference with equipment can begin at a younger age*
- Boys tend to be more disruptive when disengaged: *At GCSE, from age 14, The boys can be: 'I'm gonna be loud and obnoxious and on top of everything else!' while girls try to disappear.*
- Post-16: Boys don't always ask for help if stuck: *They just moan, sit back, with a frown; They might not take me (female educator) up on an offer of help at all – they ask each other, or they'll watch a YouTube video to find out.*

It was in targeted sessions where girls and minority gender learners seemed to express their disengagement more openly, the younger learners getting 'silly' or 'giddy', and most learners being more vocal than in mixed sessions. However this wasn't always a sign of disengagement – one music leader found that the high energy and 'chaos' in the room was creatively productive, she thought because it was socially positive for the group members.

There may be behaviour differences linked to having a female or gender minority tutor in mixed gender sessions, with some boys (as shown already) less willing to accept leadership from a woman in a field they consider to be theirs, or masculine: *Swagger, 'I've been doing this for six years'; Confrontational/rude. 'You can't teach me anything!'*. Girls and minority gender learners are perhaps more willing to approach a non-male music leader to ask for help: *willing to say when I need to slow down*. All these areas of comparison need more research to explore directly. Our research was too wide-ranging with a small sample to draw any definitive conclusions on these questions.

### 3.3 Engagement signs in girls and minority gender music technology learners

Our sample offered different ways of understanding signs of positive engagement amongst girls and minority gender music technology learners. Misunderstanding these signs can be as negative for these learners as misunderstanding their signals of disengagement. Responding to the question 'What does engagement look like?' the headlines from our respondents are these:

#### KS3

- Very active and verbal, work well together in pairs or on their own.

#### Post-16 & A Level

- Diligent and put in extra work.
- Body language: *Students' eye and face movements are alive and responsive when they want to know something or find out what you're talking about.*
- Students who are keen for the next step, or *who are helping their friends navigate the step.*
- Willing to get stuck in, but sometimes hesitate to start using a certain software.

#### Higher Education

- If more than one they will work closely together... *just get on with stuff, work very hard, applying themselves. Perhaps needing to overcompensate in case of failure.*
- Learners who are engaged are 'silent': *They'll have their headphones on, they'll be working away... You won't hear a peep out of them.*

#### Mixed gender sessions: nonformal settings

- *Willing to contribute to reflective discussions.*
- *Happy to have a go – more often quiet than boys.*

#### Targeted girls and minority gender sessions (all informal settings)

- Playfulness amongst younger learners: *Just wanted to physically mess with technology and see what came out.*
- Very social, as well as learning. Socialising. Talking...
- Focused: *She had her headphones in so she was really focused on what she was doing – you could see she was using the equipment and the app she was on.*
- Quiet learners: *Always going to be some who just want to get on with stuff.*
- Gaining in confidence: *This interesting curve of them being quite scared to work with it – is this right? And then over time they realise they can do whatever they want.*
- When it's working: *They want to share stuff.*

These signals of engagement are varied but trend towards diligence, motivated, quietly getting on with tasks, with younger learners (as before) chattier and more sociable while learning. The social environment seems to be an important factor in how visible girls and minority gender learners seem prepared to be. The targeted girls and minority gender learner sessions have more sense of interactivity and sociability – related also to being in informal learning settings.

### 3.4 Gendered differences reported in engaged learning behaviours

The contributions below are based on the responses from 13 of 18 educators; which is a small sample and the findings should therefore be seen as light touch.

- Younger girls (Year 9 and below, so under 14s) are similar to boys: *very active, excited by what they're doing, get stuck in, seem to have a stronger work ethic than boys.... Verbal at this age.*
- Equipment differences: *Boys dominating – grabbing equipment first, seeking to prove themselves which can increase a lack of confidence in minority learners.*
- Girls stay in the safer zone – following instructions exactly: *Feel they need the right answer first.*
- Boys more willing to take risks: *Quite happy to have a go, and if it goes wrong – no problem just try again!*
- Generally the girls don't go to YouTube, while boys do. *Girls will ask either each other or come straight to the teacher.*
- Boys seem more confident and independent: *Sharing ideas/ work, asking etc, trying themselves first, then asking each other, oh how have you done that? Showing each other what they've done.*

### 3.5 Drop-off stages

Most music educators reported that children of all genders are interested in music technology up to the age of 11. Things then begin to change, and the drop-off begins amongst girls and minority gender learners. A 'cliff-edge' then occurs with subject choices, and as learners begin GCSE (KS4) numbers of girls and minority genders drop fast. Our data on this is limited, but reports we have chime with previous published research:

- *In my experience, female participation in music technology at junior school (i.e. up to 11) is 60% of classes, however at secondary this falls off a cliff to around 10%.*
- *We have music tech club for Years 9–10. Sixth formers run that, but only boys attend, despite us trying to encourage girls. They're not so willing to engage outside lessons.*
- *In Year 10 (GCSE) we have four girls and seven boys. In GCSE Year 11 we have just one girl and seven boys*
- *Music tech at sixth form is 12 students with one female and 11 male.*
- *I have had female students quit music technology after school clubs [at secondary level] because out of 20 students only one or two girls apply.*

### 3.6 Summary of findings

To prevent and reverse the drop-off trend in girls and minority gender learners pursuing music technology learning, actions are needed at all levels of practice and policy/strategy in music education. All individuals and organisations must give attention to the changes that are needed if girls and minority gender learners are to benefit from equitable opportunities to learn music technology, and fulfil their real potential in this specialist subject area.

- The dramatic decline in engagement from age 14 onwards clearly coincides with a new developmental stage for most young people, and the behaviours and needs of different genders seem to diverge by this point (if not before).
- Social behaviour trends, supported by a combination of hormone changes and structural differences in those who feel they have permission to dominate the space (in and out of learning settings), seem to leave girls and minority gender learners on the retreat from age 11 or 12 onwards. They may take some time before they actually leave.
- Girls and minority gender learners largely become quieter and less visible in sessions, or they stop choosing to learn music technology in mainstream mixed gender environments.
- Those who remain involved are dealing with a wide range of serious barriers and blocks (outlined in the WIRED Toolkit, Testimonies: Blocks and barriers document).
- In particular, the realities outlined by women, girls and minority gender learners and educators in Higher Education settings ring serious alarm bells. Some learners who get this far describe being faced by toxic and damaging environments.

### Working in the industry

- After qualifying in music technology and audio, conditions for women and people of minority genders as professionals – whether in the industry or as educators – are often shocking, negative and relentless.
- These professionals must rely on extreme resilience to remain in the sector, and several of our 21 professionals (10 music leaders and 11 working as professionals outside the education sector) report being close to leaving the sector:

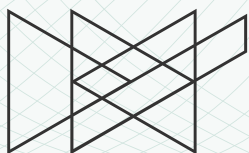
*I still experience the 'death by a thousand cuts' of everyday sexism in the field. And I pretty much stopped networking in person because of the assaults and the way I was treated after I complained about them.*

*I don't think the lifestyle is sustainable, ridiculously long hours, little pay, horrible work-life balance, and constantly being undermined for my gender. I don't see myself doing it for much longer to be honest.*

*So many people have quit the music industry, whether it's performance, production, tech. They've quit everything because of this bad treatment.*

- Retaining women and minority gender professionals as leaders and role models is a priority if we want to halt (or even slow) the trends in inequalities and damaging environments women, girls and minority genders experience in this field. These realities are not inevitable, they are avoidable and should be tackled.

**We highlight the urgent need for action and change in all aspects of this field:** from learning settings, teaching styles and materials, and the need for new, specific training; to policy and strategy, resource allocation and an overall culture shift.



**YSWN**

[www.yorkshiresoundwomen.com](http://www.yorkshiresoundwomen.com)

**f** @YorkshireSoundWomen

**✉** @YSWN\_

**📷** @yorkshire\_sound\_women\_network

**📍** @yorkshire\_sound\_women\_network

Thanks to our WIRED funders and supporters:

**YOUTH  
MUSIC**



Supported using public funding by  
**ARTS COUNCIL  
ENGLAND**