

Institution: University of Sussex		
Unit of Assessment: 33 – Music, Drama, Dance, Performing Arts, Film and Screen Studies		
Title of case study: <i>Syncphonia</i> : Enhancing Young People's Experience, and the Teaching of Ensemble Music Making, Through Digitally-Networked Musical Scores		
Period when the underpinning research was undertaken: Sep 2015 – 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): Ed Hughes Chris Kiefer Alice Eldridge	Role(s) (e.g. job title): Professor of Composition Lecturer in Music Technology Lecturer in Music & Music Technology	Period(s) employed by submitting HEI: Sep 2003 – present Dec 2013 – present Nov 2012 – present
Period when the claimed impact occurred: Feb 2016 – 2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact Playing ensemble music has 'amazing wellbeing benefits' (Ian McCrae) for young people but usually requires an advanced level of skill and music-reading ability that may cause stress and anxiety, and thus deter young people from participating. Hughes's research into young people's experiences of playing in musical ensembles has led to <i>Syncphonia</i> , an app that solves these problems by visually synchronising parts on a tablet network. <i>Syncphonia</i> has benefitted school children in 21 schools and multiple mixed settings (including a rock school, Brighton Youth Orchestra) across the UK. It has been adapted to support teaching of ensemble music at GCSE level, and been endorsed by Edition Peters music publishers, as well as teachers in five UK regions.		
2. Underpinning research Professor of Composition in Music, Hughes' practice and research focuses on composition for ensembles, for films as well as operas, and he has developed theoretical explorations of the process of composing in numerous articles and book chapters. For this project the research grew out of various projects focused on working with young people, which then led to the creation of a bespoke app, <i>Syncphonia</i> , that could display and visually synchronise a conductor's score with instrumental parts on networked wireless computer tablets. Hughes was the PI for the AHRC-funded <i>Networking technology and the experience of ensemble music-making</i> [G1] and project leader for the follow-on grant <i>NETEM: Supporting Musical Ensembles with Synchronised Digital Scores</i> with PI Kiefer and Col Eldridge [G2]. With combined expertise in composition, performance and computer science, Hughes, Kiefer and Eldridge worked together to co-design, develop, evaluate and release a novel software solution [R1] that would demonstrably enhance the experience of group music making through digitally networked musical scores [R2]. Ongoing work has included stabilisation of the app and development of diverse portfolios of specially composed music to make the app relevant to users beyond the initial target group (primary school music-making). The research grew out of Hughes' extensive experience working with young people including ensemble experience composing for and performing with young people in the Brighton Festival (2016, 2018) and Arts Council England supported work in East Sussex schools (2014-2018). Hughes observed the distress experienced by young players in a primary school orchestra when they lost their place in the music. During the research Hughes discovered that school children found the paper-based score and parts of commercially sourced musical arrangements difficult to follow, impeding sessions, disconcerting and demotivating beginners, and frustrating more		

experienced players. This research was underpinned by an understanding of the psychology behind the importance of 'developing technologies for enhancing musical motivation' in children, developed through collaboration with Sussex psychologist Fidelma Hanrahan [R3].

This research has enabled the creation of a total of 30 arrangements for the app, including easy and accessible arrangements of classical and popular music for primary schools [R3], some experimental compositions [R4], and in 2018 further arrangements of GCSE set works were included [R4]. Teachers and music leaders can also easily create their own arrangements as the app integrates smoothly with mainstream notation software (Sibelius®) and music instrument pedagogic systems (Boomwhacker®).

Key findings from the completed research on the benefits of the app to ensemble music-making are that: beginner players are encouraged to access the ensemble music-making by choosing from normal and simplified notations, including 'colour notes'; players feel more relaxed because it is less critical if they pause playing; more advanced players in mixed ability groups are less frustrated due to reduced interruptions; longer and more satisfying pieces can be attempted by less experienced groups; players and leaders/conductors all like the instant 'jump-to' any point in the score function. Perhaps most importantly, the app 'appeared to interrupt the downward spiral of frustration and lack of confidence in playing for some young people, and enhanced the likelihood of feelings of enjoyment and belonging.' [R3]

3. References to the research

R1 The app webpage <https://www.syncphonia.co.uk/> (includes links to App Store). Submitted to REF2.

R2 Eldridge, A., Hughes, E. and Kiefer, C. (2016) 'Designing dynamic networked scores to enhance the experience of ensemble music making.' TENOR 2016: Second International Conference on Technologies for Music Notation and Representation, Anglia Ruskin University, Cambridge, UK, 27- 29 May 2016. Peer reviewed and published. Available on request.

R3 Hanrahan, F., Hughes, E., Banerjee, R., Eldridge, A., & Kiefer, C. (2018). 'Psychological benefits of networking technologies in children's experience of ensemble music making.' *International Journal of Music Education* 37(1): 59–77. DOI: [10.1177/0255761418796864](https://doi.org/10.1177/0255761418796864)

R4 Hughes, E., Eldridge, A. and Kiefer, C. (2020) 'Syncphonia: understanding the value of participatory design in developing music technology to support musical ensembles that use notation.' *Journal of Music, Technology and Education* 13(1): 57-77. DOI: [10.1386/jmte_00016_1](https://doi.org/10.1386/jmte_00016_1)

Grants

G1 [AH/M010120/1](#) PI Ed Hughes, *Networking technology and the experience of ensemble music-making*. AHRC 01/09/15 to 31/03/16. Total £39,386 to Sussex.

G2 [AH/P008712/1](#) [follow-on grant] PI Chris Keifer, *NETEM: Supporting Musical Ensembles with Synchronised Digital Scores*. AHRC 15/01/17 to 06/10/17. Total £22,262 to Sussex.

4. Details of the impact

The *Syncphonia* app displays and visually synchronises a conductor's score with instrumental parts on networked wireless computer tablets. The app supports specially adapted parts using a range of simplified notation options which the user chooses. The current bar and/or beat is highlighted to ensure nobody loses their place. Coloured notes are available which correspond with identically-coloured classroom percussion instruments, making the ensemble music accessible to performers with limited or no musical literacy.

Syncphonia has had demonstrable impacts and benefits in the area of ensemble music playing: improving participation, enjoyment, technical skills and access in young players, and changing educators' understandings of the ways in which music can be taught in the UK and internationally.

Transforming access to – and increasing participation, enjoyment, and technical skills in – ensemble music making

The app was first used by Southover Primary School (East Sussex) between 14 January and 11 February 2016. Between January 2016 and October 2020, 20 further schools have used the app including 8 schools in Sussex (Dorothy Stringer, Heathfield Community College, Hastings Academy, St Richard's, St Paul's, and others), and 5 schools or county-wide school Musical Services nationally (Kent [Hillview] [S1], Cheltenham [S2], Hertfordshire [S2] Bolton, Cornwall [Wadebridge School]), and a further 8 mixed settings nationally (including a rock school and Brighton Youth Orchestra) all with positive results [S2].

In its various school trials *Syncphonia* software increased depth of participation, enjoyment and technical skills by reducing the aspects of ensemble playing that were most difficult to young musicians. One young player from Southover School states 'I liked [using the *Syncphonia* app] because you can never get lost [...] now we have [Syncphonia's] green bar [...] I like it because everyone stays together [S2, 11 February 2016 'Interviews with pupils conducted by pupils' @ 14s]. Another young player from Southover School says that *Syncphonia* has helped her not just to follow but also 'learn the music' [S2, 11 February 2016 'Interviews with pupils' @ 7mins 35]. The teacher running the trial at Southover, Gill Fenton, comments that the increased confidence *Syncphonia* gave pupils, who were now no longer 'worried about losing their place', in turn 'enables us to do some tricky things, syncopated parts that before would have taken weeks to perfect' [S2, 9 March 2016 'ITV Meridian News' Vimeo clip, @ 1min 20s]. Stephen Giles, orchestra convenor at East Sussex Music staff, reporting on another primary school trial (Wallands), notes that, '[T]he technology proved beneficial immediately. Two younger violinists also found the app very helpful in keeping their place. The response I have had from all the players is that using *Syncphonia* is very helpful.' [S2, 14 December 2018].

Syncphonia has also had a transformational impact on access to orchestras and retention of students in orchestras. Teachers note how the app's support for those with mixed abilities, and consequent minimizing of personal exposure, has had an effect on who is now able to play in the orchestra. Johnny Marrows, Teacher of Music, Media & Digital Champion at Heathfield Community College, notes how orchestra involvement used to require grade 3 competency, which reduced numbers and access, but '[with *Syncphonia*] [y]ou can have beginners joining in - that's really good. [B]eginners like being able to choose the part to play without others knowing that they are 'basic'... It's the future' [S3]. Teachers have pointed out how the app prevents drop out of students by enabling engagement in a cultural activity in which they otherwise would not be able to participate. Ian McCrae, Headteacher of Kingsley Primary Academy and experienced ensemble music teacher, explains how *Syncphonia* 'takes away the fear [of getting it wrong]' and also democratizes ensemble music making by removing the barriers for those who cannot read music' [S4]. *Syncphonia*'s democratizing impact has been observed by Liz Mason, Music Teacher at Hillview School, in her recent experience teaching with it: 'The students engaged with it immediately with one young girl, who didn't read music, racing ahead to learn more of the flute' [S1].

Changing practices and understandings of how music can be taught in the UK and internationally

James Underwood, Chief Executive of West Sussex Music [S5], Katie Tearle, MBE, Director of New Music for Edition Peters Group [S6], and teachers using the app in schools and other settings in the UK and in China [S7], recognize how *Syncphonia* as a digital tool is not only changing, but will also further change understandings of how music education is taught as well as how it can be conceived and taught in the future. Mason points out how '*Syncphonia* has transformed Set Work teaching and learning for me already' [S1]. Lizzie Holmes, Subject Leader for Music at St Paul's Catholic School and Leader for Secondary School Engagement in West Sussex, has pointed out how the app can enable GCSE music students to learn about the music they are studying through performance. In response a new portfolio of scores was added to *Syncphonia* to enable students in mixed classes (guitars, keyboards, strings etc.) to perform the set works they are studying. Holmes has said of her students' relationship to learning through *Syncphonia*: 'They understand music by playing it... this is more accessible than paper.' [S2]

Hughes' research has given educators a new way of teaching ensemble music and has transformed the experience of young and novice players in particular, enabling them to confidently participate in group music playing, with all its attendant benefits.

5. Sources to corroborate the impact

S1 Email from Liz Mason, Teacher Trialling Syncphonia at Hillview School, Kent. 18 September 2020.

S2 Syncphonia School Feedback Impact Summary, including statements and links to videos of feedback January 2016-June 2019.

S3 Emailed confirmation of quotation from Johnny Marrows, Teacher of Music, Media & Digital Champion. Heathfield Community College. 17 February 2018.

S4 Interview with Ian McCrae, headteacher of Kingsley Primary Academy, Croydon. Audio evidence, Recorded at British Science Festival 9 September 2017 – excerpted transcript.

S5 Email from James Underwood, Chief Executive of West Sussex Music Service. 16 May 2018

S6 Interview with Katie Tearle, Director of New Music for Edition Peters Group - international publishing company and former Head of Education at Glyndebourne (25 years), Trustee of Spitalfields Music, Trustee of the Tippet Foundation (supports creative music making in schools). 17 February 2020

S7 Interview with Nicholas Smith, Artistic Director, Peking Sinfonietta. 30 July 2020