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ADAPTING A YEAR 9 LGR-22 MUSIC CURRICULUM USING A SEAMLESS LEARNING APPROACH THROUGH MOBILE TECHNOLOGY

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Abstract

In this qualitative study, the Year 9 LGR-22 Music curriculum at a Swedish Grundskola was modified by introducing a seamless learning approach using mobile technology. Combining formal and informal learning, the study aimed to fill a gap in the music education taught at this school and to promote personalised self-directed learning for Gen-Z and Gen-Alpha students. The adaptation of the curriculum was supported by the Seamless Learning Experience Design framework, which promotes an environment that is adaptable, inclusive and student-centred. Autors used convenience sampling to select 13 students who participated in the post-study interviews. Through thematic analysis, were identified the advantages of seamless learning, such as enhanced collaboration, better time and self-management, greater accessibility and increased engagement. Challenges such as diverse levels of student readiness for self-directed learning and the technology infrastructure are acknowledged. A conclusion drawn from the study was that by bridging traditional and digital environments, seamless learning promotes self-empowerment, inclusivity, cross-cultural understanding and lifelong learning. Although the study focused on a Swedish primary school, the findings offer valuable insights into music education pedagogy globally, presenting, as it does, practical approaches to integrating seamless learning by embracing mobile technology to support diverse student needs.

Keywords*: seamless learning, SLED framework, Swedish Grundskola, mobile technology, year 9 Music curriculum, personalised learning, instructional design, student-centred approach*

Introduction

Generations Z (1997–2007) and Alpha (2010–2025) students are strongly influenced by social factors and technological trends. Some of the characteristics associated with Gen-Z students include digital literacy, creativity, curiosity, and social awareness (McCrindle & Wolfinger, 2009). Gen-Alpha students are familiar with smartphones and social media since they have grown up in a technology-saturated world (Patel, 2021). Therefore, to accommodate the needs and capabilities of these groups, it is preferable that school curricula are not presented in the same way as before the onset of the Digital Age. On the contrary, these students need to be stimulated, challenged and allowed to express themselves personally and through their creativity.

For this reason, authors developed a research study that explored the possibility of adapting the Year 9 Music curriculum of the 2022 *Swedish National Curriculum for Compulsory School and Preschool Education* (LGR-22). This curriculum is divided into four units: Theory, History, Performance and Composition. Most of the content is text-

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book-based and fails to consider individual student preferences. Therefore, we proposed a more holistic alternative to teaching and learning – a seamless learning (SL) approach – integrating mobile technology across the entire curriculum rather than focusing on only one or two aspects. Seamless learning happens anytime and anywhere across different scenarios, weaving formal and informal experiences through handheld devices and varied technologies, blending personal and social assignments, driving innovation, enabling networking with others and expert engagement, and underpinned by robust assessment approaches (Wong & Looi, 2011; Looi et al., 2012; Wong, 2012; Hwang et al., 2015; Sharples, 2015; Wong, 2015; Durak & Çankaya, 2018).
This approach ensures continuity throughout the school year and has been found to promote a more cohesive educational experience. It may also enhance continuous and personalised mobile learning experiences (Looi et al., 2012; Wong, 2015).
Although previous research has covered several aspects of online, hybrid or blended learning (Greenhow et al., 2022; Kirby & Thomas, 2022), little is known about how a Music curriculum can be adapted by applying an SL approach. One key challenge lies in incorporating technology: teachers often struggle to integrate digital tools into their teaching and learning process (Carrillo & Flores, 2020; Hambrock & De Villiers, 2023). Moreover, implementing technology calls for robust IT systems and significant financial resources for hardware and software – not always available to schools or students. Consequently, while SL-based approaches may offer promising new avenues for contemporary music education, these practical constraints must be considered if integration is to be successful (Robertson & Muirhead, 2019).

Literature Review

Aspects such as SL, its integration with technology, teaching and learning approaches, and key student considerations are discussed in this literature review. These elements contribute to our understanding of the Seamless Learning Experience Design (SLED) framework used to adapt the Music curriculum.

Seamless learning

SL integrates formal and informal learning through digital technologies; it enables continuous individualised education at any time and location (Wong & Looi, 2011). Rusman, Tan & Firssova (2018) define SL in this way: *"SL connects (learning) experiences and learning activities through technology-supported learning scenarios using ubiquitous technology and handheld devices that students experience through participation in various contexts (e.g. formal/non-formal) and hereby supporting, improving and enhancing learning (and support) processes so that students experience a continuity of learning across environments and settings at different times and are, for their learning processes, optimally benefiting from their personal experiences both in and across contexts"* (p. 88).
To meet the educational demands of the 21st century, SL seeks to overcome or circumvent traditional learning boundaries (Wong et al., 2015); to achieve this, it integrates technology in ways that contribute to continuous, contextual, and global education. According to Ng and Nicholas (2007) and Sharples et al. (2007), the characteristics of SL include establishing a pervasive learning environment that both integrates mobile and fixed technologies and facilitates contextual and mobile learning. Furthermore, continuous learning experiences are made possible wherever students are, thanks to ubiquitous learning environments that incorporate educational materials into various other-

wise conventional environments (Chiu et al., 2008; Hwang et al., 2008).

To promote active engagement and individualised feedback, SL uses digital tools such as learning management systems and mobile technologies (Sharples et al., 2007). Moreover, SL tends to promote critical thinking, independence and collaboration among students by bridging the gap between online and offline learning environments (Tervaniemi et al., 2018). By incorporating various educational contexts, this approach may promote lifelong learning and may enhance learning flexibility and inclusivity.

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Role of technology

The evolution of technology in the classroom has influenced and changed students' approach to learning. Game-based learning systems, educational applications and online platforms foster creativity and interaction. By providing students with access to various digital resources that are critical to skills development and personalised learning instruction, technology helps to reduce the 'Digital Divide' gap (Sarkar, 2012). In addition, Yuan, (2023) emphasises how virtual learning environments can contribute to inclusivity, especially for students in marginalised or remote communities. It is important to state that hardware and software are essential to applying SL to a curriculum: together with internet connectivity, mobile devices such as laptops, cell phones and tablets enhance interactive and effective learning (Özer & Demirbatir, 2023).

According to Zhu & Riezebos (2016), dependable and stable internet connectivity is also required to ensure successful and productive access to real-time collaboration and digital resources. The same could be said of a strong information technology support system for teachers and students, and teachers should attend professional development programs to provide them with the know-how and self-assurance needed to embrace technology in their teaching. Moreover, Taylor and Newton (2013) indicate that providing students with appropriate training and coaching can help to close the digital divide and provide them with fair and equal access to online resources.

Alternative teaching and learning approaches

Appreciation of the importance of inclusivity, creativity and active participation in music education is growing (Lindner & Schwab, 2020). Traditional approaches such as direct teaching (Pozo et al., 2022) and rote learning (Lazaric, 2012) may well be effective for foundational skills, but they often limit creativity and critical thinking (Thomas, 2015). In contrast, diverse learning preferences can now be accommodated through personalised and interactive approaches, which are the focus of alternative approaches.

According to Adamek et al. (2015), positive reinforcement, interactive whiteboards, and online quizzes enhance motivation and engagement. However, whereas self-directed learning (Morris, 2019) and multimodal approaches (Pozo et al., 2022) promote auton-

omy and flexibility in students, project-based learning (Cahyani, 2021) serves to connect theory to practical outcomes.

Moreover, differentiation and scaffolding (Tomlinson, 2001; Darrow, 2012) can adjust tasks to varying skill levels, whereas problem-based learning encourages exploration and critical thinking. Blau (2019) and Lebler (2012) have shown that real-time feedback and peer collaboration improve both the knowledge and the abilities of students. It is now widely acknowledged that technology is vital in modern teaching, with flipped classrooms (Bergmann & Sams, 2012) and gamified activities (Rivera & Garden, 2021) fostering engagement and practical skills. Furthermore, experiential learning (Cahyani, 2021) has been shown to deepen students' understanding through engaging them in authentic practice. Kolb (1984) has indicated that experiential activities such as composing and performing promote deeper understanding, whereas, according to Ladson-Billings (1995), culturally responsive approaches serve to validate identities and build empathy. Moreover, incorporating global perspectives enhances cultural awareness, whereas growth mindset approaches (Dweck, 2009) promote resilience. In addition, inclusive practices (Shemshack & Spector, 2020) ensure equity and appropriate teacher training (Yu et al., 2023) supports effective instruction.

Student factors and considerations

Teachers must have a thorough grasp of their students' individual preferences in addition to their socio-emotional dynamics and generational characteristics before they embark on adapting any curriculum to accommodate diverse student factors and considerations. As digital natives (the term 'digital native' refers to a person born or brought up during the age of digital technology and is therefore familiar with computers and the internet from an early age and therefore comfortable with using them (Helsper & Eynon, 2010)), Gen-Z and Gen-Alpha students excel in settings that emphasise technology, innovation and teamwork (Patel, 2021; De Witte, 2022), whereas Gen-Alpha students tend to value dynamic and captivating approaches that encourage creativity and global awareness; Gen-Z students are inclined to favour interactive, personalised and experiential learning that incorporates real-time feedback, autonomy and real-world application (Hosid, 2021).

The curriculum design must also carefully incorporate both intrinsic and extrinsic motivation, as these can play a significant role in determining student outcomes. This is essentially because motivation is important in shaping student outcomes; it therefore, requires careful integration into curriculum design. The difference between the two types of motivation has been explained by White et al. (2020): intrinsic motivation is sparked by curiosity and individual interests, whereas extrinsic motivation is connected to rewards and recognition. Accordingly, teachers can increase students' motivation by setting clear task goals, assigning challenging assignments and providing timely feedback (Wardani et al., 2020).

Finally, because performance anxiety is common among students who engage in music education, it is crucial to include aspects of mental health and socio-emotional learning in the curricula. In this regard, Francis (2023) points out that students who use resilience, mindfulness and gratitude techniques can control their stress levels better and stay more focused. In this context, approaches that encourage resilience, mindfulness,

and gratitude can help students manage their stress levels and maintain their focus on the tasks and content at hand.

Seamless learning experience design framework

The SL approach is the foundation of the SLED framework (see Figure 1), which was created by Hambrock and De Villiers (2023). The framework incorporates technology into formal and informal learning experiences to establish adaptable and inclusive learning environments that promote individualised learning and student engagement, boost motivation and encourage real-world application.

Figure 1. ***Authors' visual representation of the SLED framework by Hambrock and De Villiers (2023)***

Five key concepts make up the framework: core, positive, practical, human and design (Hambrock & De Villiers, 2023). The **core concepts** focus on incorporating alternative teaching and learning approaches, expert engagement, innovation and student networking into the curriculum while also dealing with implementation challenges. This ensures the integration of real-world scenarios and cross-cultural learning into the curriculum, thus fostering an inclusive educational learning environment. The **positive concepts** focus on a student-centred approach, globalisation, practical experiences, preparation for the future, real-time interaction and remote access (Hambrock & De Villiers, 2023).

The establishment of strong organisational policies, infrastructure and support systems to facilitate SL environments is emphasised in the **practical concepts.** These relate to dependable Wi-Fi, access to mobile devices and adequate funding for the required software that underpins SL. The **human concepts** focus on skillsets, time management, technology training, equality and mindset cultivation. Finally, the **design concepts** cover knowledge application, assessment approaches, curriculum design, feasibility, implementation and learning approaches (Hambrock & De Villiers, 2023). By incorporating these five interconnected concepts, the SLED framework provides a comprehensive structure for implementing SL in education, which ensures its adaptability and effectiveness across diverse contexts.

In summary, the literature indicates that the SLED framework affords a continuous, personalised and authentically contextualised music-learning experience by interweaving formal and informal settings through ubiquitous technologies and thereby broadening access, fostering collaboration and cultivating future-ready creative skills (Wong & Looi, 2011; Hambrock & De Villiers, 2023) yet its realisation is constrained by uneven infrastructure, the additional design and facilitation load placed on educators, persistent equity risks for students who struggle with self-direction, and assessment practices that do not readily capture learning that unfolds across multiple contexts (Sharples et al., 2007; Özer & Demirbatir, 2023). Consequently, empirical clarity is still lacking on how SLED can be translated into a practicable sequence of secondary-school music activities, how digital-native students actually experience its affordances and limitations, which institutional supports teachers consider indispensable, and whether such an approach demonstrably enhances engagement, skill development and motivation compared with conventional instruction - questions that the present study addresses through an investigation of design implementation, student perceptions, teacher perspectives and measurable learning outcomes.

While the advantages of SL are acknowledged (Sharples et al., 2007; Wong & Looi, 2011; Kinshuk, 2014; Sharples, 2015; Milrad, 2016; Al-Shahrani et al., 2017; Setyosari et al., 2020; Dindar et al., 2021) a structured framework is absent to help teachers integrate it into the Music curriculum.

Therefore, **the research questions for this study are as follows:** The first question is, what is the viability of adapting the Year 9 Music curriculum by applying an SL approach using mobile technology? The second question relates to the advantages and challenges of the implementation, and the third question refers to the specific modifications that can be implemented to apply SL successfully in a learning environment.

Although the study is based in Sweden, the results are relevant to and significant for adapting any school Music curriculum since the same principles can be applied in any comparable context.

Method

Autjors used a qualitative method to explore the students' perceptions of and engagement with the adapted curriculum. According to Creswell and Creswell (2023), qualitative research is an effective method for ascertaining the emotional and unique responses to social or human matters. The present study was grounded in a pragmatic

paradigm that aims to respond to real-world problems by offering tangible solutions, as described by Kelly and Cordeiro (2020). For this reason, we used a descriptive explanatory framework.

Semi-structured interviews with open-ended non-leading questions were our data-collection method of choice. The purpose of the interviews was to get a reflection of the students on the reworked curriculum to improve further recirculation based on the seamless learning approach. According to (Cohen et al., 2018) semi-structured interviews provide flexibility when extracting participants' points of view. The 12 interview questions (see Appendix) we included focused on aspects such as planning, executing and reflecting on projects; the flexibility of completing projects at anytime and anywhere; the benefits and challenges of using handheld devices; the use of different apps and programs; technological skills; ownership of learning; and aspects of SL that were particularly enjoyable or helpful.

We also used convenience sampling for this study, as described by Clarke and Braun (2017), to select the participants. This type of sampling is based on the participants' availability and proximity (Merriam & Tisdell, 2016). In the present study, the student participants were between the ages of 14 and 16, male and female, and part of the Year 9 classes at a school in Sweden. Both before the implementation of the adapted curriculum and once again at the end of the semester, they were asked if they would like to participate in the interviews at the end of the semester. There was no obligation on them to participate.

Ethical clearance was obtained from our host university (clearance number UFS-HSD2023/0634), and we obtained permission from the school's principal to conduct the study. The participants and their parents received written informed consent letters containing the relevant information (e.g., confidentiality, voluntary participation and detailed information about the study) to sign. Pseudonyms were assigned to protect the participants' identities, and the data were secured on a password-protected laptop. The interviews were conducted in person by a colleague (not the researchers) to minimise personal bias, in a quiet place and at a convenient time for the participants. Before each interview, the participants were informed about the interview's purpose and assured confidentiality. Each interview was recorded and transcribed verbatim to ensure accurate data representation. Regarding the number of participants, Vasileiou et al. (2018) emphasise that the sample size must be adequate if data saturation is to be reached (Creswell and Creswell, 2023). However, Merriam and Tisdell (2016) and Yin (2018) claim that there is no fixed sample size. Based on this assumption, we interviewed 13 willing participants - nine girls and four boys.

The rich qualitative data obtained from the interviews were inductively and thematically analysed, as described by Varpio et al. (2017), Clarke and Braun (2017) as well as Creswell and Creswell (2023). We identified themes through a manual coding process involving a detailed systematic approach, working through the transcriptions repeatedly to familiarise ourselves with the data. Open coding resulted in an extensive list of initial codes, which was narrowed down and combined to form five overarching themes. The next section describes the ways in which the modifications made to the Year 9 LGR-22 Music curriculum shaped these overarching themes.

Modification of the Year 9 Lgr-22 Music Curriculum

We decided to focus on one curriculum to delineate the study. Based on the findings of this study, we envisage conducting further research that will include other curricula and bigger sample sizes.

In the Year 9 LGR-22 Music curriculum (Skolverket, 2022), the students refine their vocal and instrumental skills, explore various musical genres individually and in groups, and study Music Theory and Music History to understand how music shapes identity and society. In this particular curriculum, across 17 lessons, four 45-minute sessions are dedicated to historical contexts, culminating in a presentation. In comparison, 30-minute theory segments form the content of 15 lessons, supported by four quizzes and a theory booklet submission. Seven lessons focus on performance, culminating in a recorded assessment, and four lessons towards the end emphasise creative composition, concluding with a composition assignment and a portfolio of work. This structured yet holistic approach balances theoretical understanding, historical awareness, practical performance skills and artistic expression.

The modified curriculum offered alternative teaching and learning opportunities through integrating project-based individualised and multimodal approaches Torrado et al. (2022) combined with the fundamental concepts of the SLED framework. Music Theory incorporated rote learning, direct teaching and positive reinforcement (Lazaric, 2012; Adamek et al., 2015) whereas Performance, Music History, and Composition encouraged self-directed learning (Morris, 2019). Notwithstanding our challenges, such as financial limitations and limited expert engagement, the digital tools used during the study period promoted innovation, accessibility and real-time feedback. Continuous feedback and rubrics enhanced the measurement of success, whereas ensemble playing and peer collaboration strengthened communication and the students' ability to network with their peers.

The positive concepts included globalisation (allowing students to interact with cultures and music traditions globally), integrating practical experience, and developing critical skills and stage presence through live and virtual performances. This hands-on approach supported the students' preparation for the future by linking theory to practical music-making while facilitating feedback exchange and strengthening foundational skills. Experiential learning, as described by Kolb (1984) and Cahyani (2021), enhanced the students' creativity and problem-solving skills in preparation for possible real-world careers such as, but not limited to, composers, arrangers, musicians and teachers. Real-time interaction enabled immediate feedback (Mandouit, 2018) and improved skills development. It also offered assessments aligned with real-world jobs, which increased the students' satisfaction with the content and the methodology. Remote access through online resources, the use of virtual instruments, and flipped classrooms (Bergmann & Sams, 2012) allowed learning to take place at anytime and anywhere, which fostered autonomy, personalisation and engagement in the students.

The practical concepts focused on hardware and device integration to provide dependable Wi-Fi and Chromebooks to all students. Ample funding ensured inclusive tech-rich education by paying for software and hardware. To promote independent and flexible learning, the students were given access to various software tools, virtual instruments

and flipped classrooms (Torrado et al., 2022). Although technology use and AI policies are still evolving, the experience of this methodology served to emphasise that strong infrastructure supports smooth connectivity and flexible usage of technology. And despite occasional frustrations, effective technology integration enhanced engagement, skills development and equitable access, which enabled the students to learn at any time and wherever they happened to be. Ongoing IT support and personalised instruction quickly resolved technical issues.

The human concepts focus on incorporating technology across the curriculum, which sometimes proves time-consuming and requires adaptation to new platforms and schedules. To deal with this, supportive introductory lessons augmented by additional training sessions (Taylor & Newton, 2013) helped the students develop the necessary technical skills (Morris, 2019). Even though differences in norms and convictions affected how the students interacted with music from different cultures (Ladson-Billings, 1995), most of the students adopted inclusive approaches that supported equality. As described by Dweck (2009) and Sherrington (2019), a growth-focused mindset views setbacks as opportunities for development. This, together with maintaining a positive outlook, sustained their level of engagement, motivation and enjoyment. This method encouraged tolerance for various musical traditions, strengthened equity and empowered the students.

The design concepts included aspects such as applying knowledge that guided the music units by encouraging the students to apply what they had learned to realistic tasks aligned with professional music roles such as composing, curating, or performing (Kolb, 1984; Dewey, 1986). Using theoretical concepts in historical research and instrumental practice demonstrated that the students could translate them into significant results that were also useful. The problem-based activities we introduced and the digital feedback tools were two assessment approaches that encouraged skills development and effective time management (Power, 2019; Winstone, 2019). To ensure authenticity, cultural responsiveness and adaptability, the modified curriculum design integrated self-directed learning that employed a combination of AI resources and direct instruction (Usman & Makassar, 2022). Whereas effective implementation considers class size, scheduling coordination and technical support, feasibility is ensured by choosing free GDPR-compliant apps and immersive activities. Diverse learning approaches, such as self-assessment (Zhukov, 2015; Chen, 2019; Coppens et al., 2023) and the students' use of digital instruments and online platforms, fostered creativity, collaboration and engagement.

Results

Our qualitative deductive analysis of the interviews produced five overarching themes that captured the adapted curriculum's impact on student experiences, learning and personal development. Each theme crystallised from sub-themes, supported by participant quotations to illustrate their experiences and perspectives. To align our findings with the purpose of this article, specific sub-themes are highlighted to emphasise the role of mobile technology and SL in enhancing flexibility, motivation and creativity while also promoting the practical application of these approaches in the Music curriculum. The five overarching themes and sub-themes are the learning environment and accessibility, collaboration and group dynamics, technology integration and tools, time

and self-management, and learning preference and engagement. Each of these themes is expanded upon below.

Theme 1: Learning environment and accessibility

The sub-themes that crystallised into the main Theme 1 are shown in Figure 2. These sub-themes draw attention to essential elements such as theoretical knowledge, practical application and accessibility, demonstrating their importance in creating a welcoming and productive learning environment. The sub-themes (bolded throughout for enhanced clarity) are now examined to illuminate this theme's complex facets.

The numbers seen in the figure can be explained as follows. There were 13 participants who responded to this question (n=13). When we look at, for example, 'Content difficulty', there were seven participants who talked about the difficulty of the content. So, the number given is how many participants talked about the specific topic in their responses.

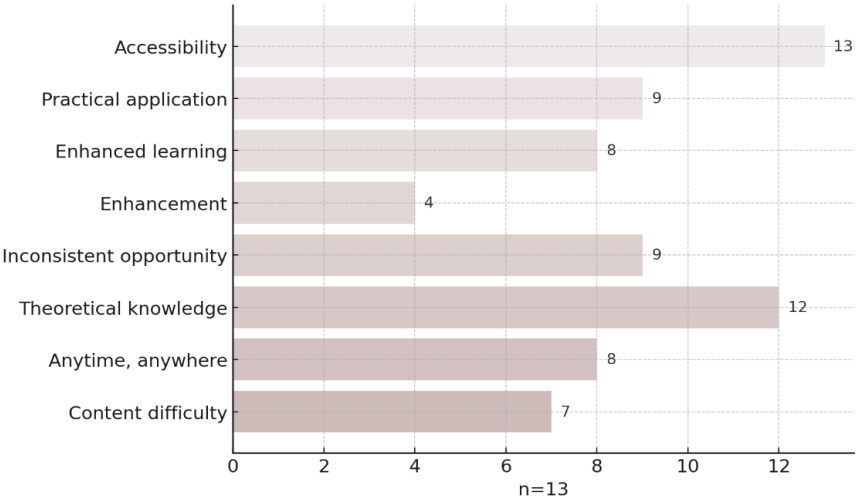

Figure 2. ***Sub-themes of overarching Theme 1***

In their responses, the students emphasised the value of **accessibility**, **theoretical knowledge** and **practical application** in creating a welcoming and adaptable learning environment. With the help of mobile technology such as laptops, tablets and smartphones, students can learn at **anytime, anywhere**, which reduces their stress levels and enhances their **time management**. As the student with the pseudonym Lit shared,

> *I could work on it anytime due to it being online … at home … during breaks at school or whenever you'd like.*

The students were able to compose, practise music theory and make presentations, thanks to resources and applications such as Google Slides, Musictheory.net and Flat.io. Whereas clear instructions on platforms such as Google Classroom ensured efficient access to resources, these digital tools enhanced their comprehension and engagement, promoting effective learning inside and outside the classroom.

Theme 2: Collaboration and group dynamics

As illustrated in Figure 3, the sub-themes that enhance group learning and collaboration include flexibility, emotional and social dynamics, group work, and networking and collaborating.

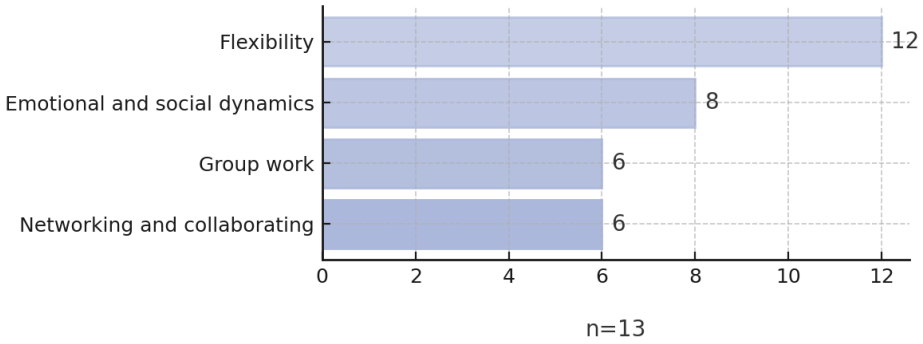

Figure 3. ***Sub-themes of overarching Theme 2***

The students emphasised that music projects gave them the **flexibility** to work at their own speed and in various environments, including their homes, school and free time, which improved their task management. Although sporadic disagreements and scheduling difficulties occasionally interfered with their workflow, **group work** promoted shared responsibility and reduced performance anxiety, creating a supportive atmosphere. Collaboration fostered a sense of community and improved relationships through its **emotional and social dynamics**. Collaboration is essential to academic success, as is evidenced in the sub-theme of **networking and collaboration**. Vibe highlighted the importance of this aspect by saying:

> *Like networking with others, … was used a lot during this curriculum… A lot of people are working together with their performances and their presentations.*

Networking and collaboration showed that teamwork in performances and presentations improved the students' learning engagement and class involvement.

Theme 3: Technology integration and tools

The sub-themes online performance and practice and online composition skills, as shown in Figure 4, emphasise how the students' creativity and proficiency in the music classes were improved by mobile technology.

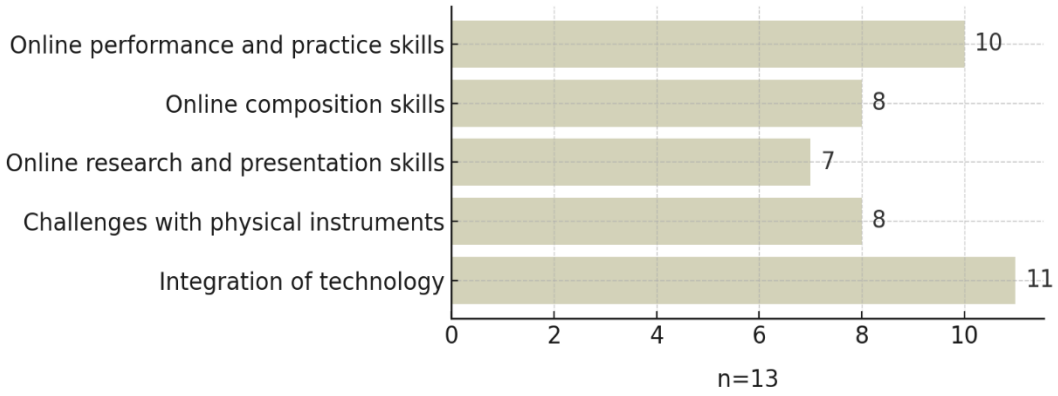

Figure 4. ***Sub-themes of overarching Theme 3***

Websites such as Chord-chord.com, Musictheory.net, Flat.io and YouTube tutorials enabled the students to develop their **theory, performance and composition skills**. In addition, syllable-based song writing and AI tools fostered creative development, and laptops gave users access to performance materials and tutorials. Hype demonstrated this by saying:

'We used flat.io and chord-chord[.com] to compose songs.

These **technologies** promoted proficiency, self-expression and technological competence despite facing challenges such as **restricted access** to physical instruments at home. Once again, this highlighted the critical role that mobile technology can play in contemporary music education. Glow explained that

The digital tools streamlined the learning process by providing immediate access to the necessary materials and resources, both in and out of the classroom.

Theme 4: Time and self-management

The fourth theme, which includes several sub-themes that emphasise critical abilities for learning management, is presented in Figure 5.

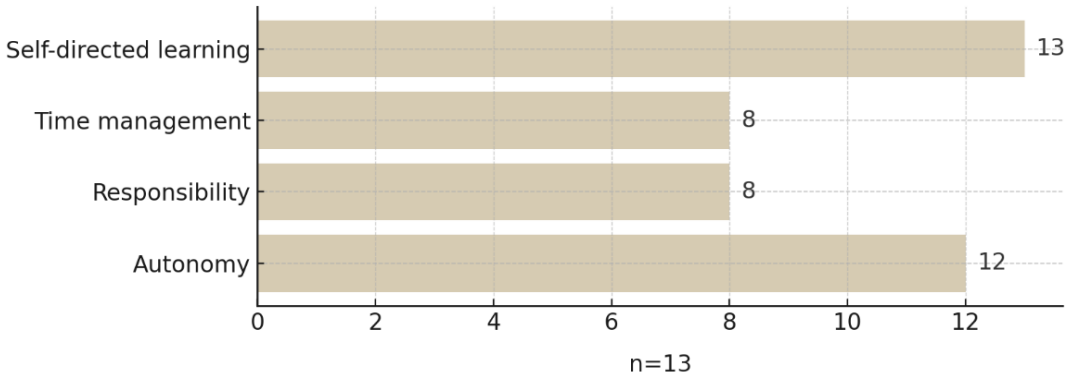

Figure 5. ***Sub-themes of overarching Theme 4***

The sub-theme of self-directed learning emerged from the student responses; it highlighted the ways in which mobile devices facilitated **self-directed learning** throughout the Music units. According to students such as Hype:

Technology helped me learn at their own pace. In music composition, especially, the digital tools were really helpful because it made … it easier to get a hang on … how the notes sound together.

In addition, the sub-theme of **time management** emerged from the student responses, highlighting the importance of planning and organising tasks to meet the requirements of music projects. During the project phases, Lit and other students emphasised how having clear plans helped them to stay organised, effectively manage their time and meet deadlines.

The sub-theme of **responsibility** surfaced naturally, highlighting the significance of students being able to take control of their education. Glow's response encapsulated this idea, which was shared by others who recognised that, although support was available, their progress and comprehension ultimately depended on their efforts. On this point, Glow stated:

Of course, you can get help, but you need to do it yourself.

On the basis of this, the sub-theme of **autonomy** emphasised how students can feel more in charge of their education through personalised learning. Hype highlighted the way personalised experiences deepened their connection with their work, a perspective shared by others who valued having the freedom to choose projects, manage their learning pace and explore areas of personal interest.

Theme 5: Learning preference and engagement

Figure 6 illustrates the ways in which the curriculum became more applicable and inspiring through the use of mobile elements and structured activities, which raised the level of engagement.

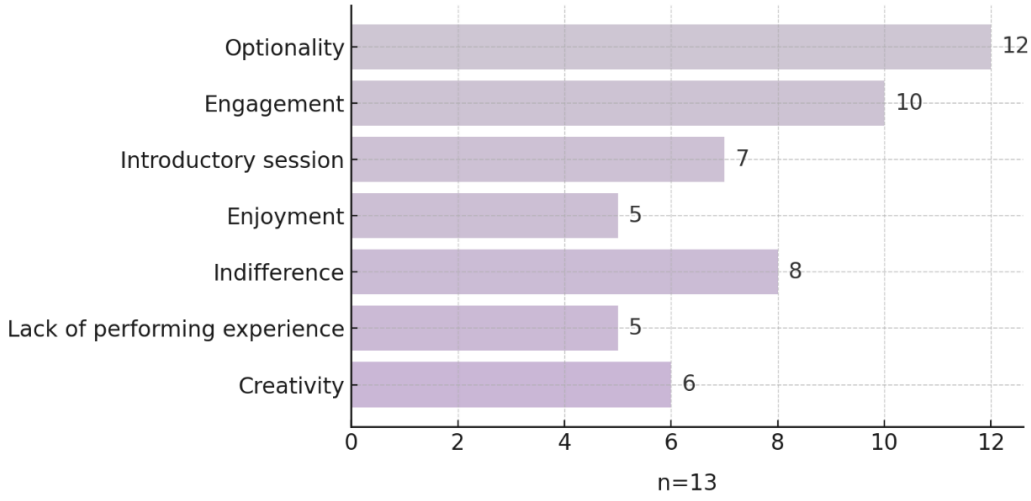

Figure 6. ***Sub-themes of overarching Theme 5***

Combined with a structured approach, practical activities and online tools made the lessons more interactive and relevant. **Enjoyment** was reflected in the students' mixed experiences with the digital tools; while Chill found them 'fun and simple to use', Fire described them as 'frustrating and prone to errors'. These quotations emphasise the im-

portance of finding a balance between personal freedom and clear guidance to optimise **engagement** and pleasure in the learning process.

Discussion

It is interesting to consider the emerging themes in relation to the literature to answer the research questions: 1) the viability of adapting the Year 9 Music curriculum by applying an SL approach using mobile technology; 2) the advantages and challenges of the implementation of SL and 3) the specific modifications that can be implemented to apply SL successfully in a learning environment.

The sub-themes of each overarching theme were visually presented in the figures. With 13 students participating in the interview protocol, the number of participants mentioning a certain sub-theme was indicated. We used the interview questions as a reflection on the adaption of the curriculum to get insights for future reference. The core of the sub-questions will now be discussed.

Viability

We established that it is viable to adapt a curriculum by applying SL, a concept described by Wong and Looi (2011) as well as Sharples et al. (2016). Inspired by the research and positive results described by (Rusman et al., 2018), we initiated the research reported on in this article. The participants' comments show an overwhelmingly positive reaction to implementing SL. Students use technology in a manner that suits their personalised learning preferences, as described by De Vos (2017). High-achieving students used digital platforms to their full potential and experimented with exploring new features to improve their skills.For low-achieving students, the diverse range of digital tools helped them to learn at their own pace.

Advantages and challenges

Adapting the Year 9 Music curriculum resulted in a personalised and self-directed learning environment (Sharples et al., 2007) that met the students' individual needs (De Vos, 2017). This proved to be a major advantage of the approach. Using SL practices together with mobile technology (Looi et al., 2012; Sharples et al., 2016) gave the students access to resources at anytime and anywhere (Theme 1). They choose their approach to learning, set their objectives and manage their time effectively (Theme 4). This approach also promoted critical thinking, collaboration and creativity while improving the students' theoretical knowledge, cultural understanding and performance skills (Theme 2).

One drawback of incorporating the SLED framework is its dependence on expert participation, which may result in uneven access to experts in the event that visits are cancelled despite meticulous preparation. Furthermore, a self-directed learning approach may be difficult for certain low-achieving students to adjust to, which could reduce its overall effectiveness for them. For these students to succeed in such an approach, additional help and modifications are required.

Modifications

By obtaining data from the student feedback, the third research question – which concerns the particular adjustments that can be made to apply SL successfully in a learning

environment – can be responded to. We have some suggestions for changes based on the way SL is used. To implement SL successfully, teachers must receive ongoing support and professional development to enhance their own skills and adaptability. Teachers should use a Goal Role Audience Standards and Product starter to create assessment task sheets that mimic real-world situations. This will help them to define the purpose (Goal), the student's perspective (Role), the target audience (Audience), the evaluation criteria (Standards) and the final output (Product) of a particular project or undertaking. Doing so will help them to create a comprehensive approach that integrates both practical applications and critical thinking.

Encouraging students to set goals, track their progress and focus on self-identified knowledge gaps can improve their encoding and retention of information and skills. To promote students' retention of the learning materials, each unit should begin with an introductory and goal-setting session and conclude with a reflective exercise. Teachers should act as coaches to help students evaluate their learning and select the tools and approaches that best suit their needs. Finally, hardware and software are required to enable and ensure SL and reliable Wi-Fi internet access. Last but not least, the students should be provided with a variety of assessment choices which take into account different skill levels so that they can choose the formats that best fit their learning preferences and strong points.

Conclusions

1. The study revealed that adapting the Year 9 LGR-22 Music curriculum is possible and beneficial by combining formal and informal learning through an SL approach using mobile technology. Underscoring the key findings that such a curriculum empowers self-directed learning and fosters inclusivity, cultural understanding and lifelong learning skills, the students responded positively and displayed increased motivation, autonomy, accessibility and collaborative skills.
2. With an emphasis on individualised and self-directed learning approaches pertinent to Gen-Z and Gen-Alpha students, this study offers a practical example of how the SLED framework can direct modifications to Music curricula for contemporary learners. It focuses on the ways in which a careful balance between digital and physical learning environments can foster skills development, cultural sensitivity and continuous student engagement, which give students the tools they need to thrive in a world that is changing rapidly.
3. The recommendations derived from these observations highlight the significance of ongoing professional development to prepare educators for successful technology integration, a strong IT infrastructure, and committed support to guarantee dependability and fair access. To ensure inclusivity, it is essential to provide scaffolding for those students who struggle academically or lack digital skills and maintain a high level of engagement. Assessments should be created to reflect real-world roles in the music industry. To support motivation retention and adaptability and to ensure that the fundamentals of SL are upheld, educators should encourage their students to set personal goals, track their progress and reflect on their educational experiences.

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