

Fine arts high school students' experiences on the use of Tonic, an interactive instrument practice application

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Highlights

- Phenomenological study with 22 fine arts high school musicians over four weeks examined Tonic app use.
- Personalization, planning, and interaction features fostered regular practice, motivation, and perceived performance gains.
- Barriers included English-only interface and high internet dependence; students recommended multilingual and offline options.

Abstract

This study explores the experiences of Anatolian Fine Arts High School music students using Tonic, a gamified interactive instrument practice application designed to enhance individual study efficiency. The research builds on the understanding that structured and engaging practice methods are crucial for developing instrumental proficiency, as individual differences and effective time management significantly impact learning outcomes. Employing a phenomenological qualitative research approach, the study collected data through semi-structured interviews with 22 students over four weeks. Findings revealed that Tonic's features, such as personalization, planning, and interaction, significantly improved students' motivation, study discipline, and performance. Students highlighted the motivational effects of customizable avatars and instrument-specific functionalities and the benefits of planning tools for scheduling and organizing practice sessions. Interactive features, including live broadcasting and feedback mechanisms, boosted confidence and reduced performance anxiety. However, challenges such as the language barrier and high internet dependency hindered accessibility. Suggestions for improvement include multilingual support and offline functionality. Overall, Tonic demonstrates significant potential as a supportive tool for music education by fostering regular practice habits and enhancing the learning experience. Future research could focus on broader samples and longer study durations to assess its long-term impact on performance and learning outcomes.

Article Info: Research Article

Keywords: *Music Education, Individual Instrument Practice, Digital Applications.*

1. Introduction

Instrument training, one of the essential dimensions of music education, is a process that involves individual differences. Individuals need to support the education they receive by creating a systematic study in order to make their learning processes efficient. According to Özmenteş (2008), practicing the instrument in instrument education is fundamental to developing instrument skills. From this point of view, how the student practices his/her instrument, the practicing tactics he/she uses, and his/her conscious practicing habits are the factors that significantly affect his/her performance. In this context, it is thought that a planned and continuous system created to overcome the difficulties encountered while practicing, to improve the technical skills learned, and to provide instrument mastery will contribute to effective learning.

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2. Literature

There are many studies on the instrument practice process in music education. It has been found that creating a daily practice routine and practicing consistently increases success (Akiba & Yang, 2022; Özmenteş, 2012); there is a positive relationship between individual instrument practice time and habits and grade point average, class attendance, solo performance (Şentürk et al., 2018), that there is a positive relationship between students' interest and motivation and their level of instrument practice (Kement, 2018), that weekly practice time affects instrument practice habits and improves the level of valuing and being interested in studying (Albayrak & Bulut, 2021), and that there are positive relationships between daily practice time and focused mind flow (Araújo & Hein, 2019).

In addition to the importance and impact of daily studying, research has also focused on individual differences in study habits (Galamian, 1962). With the view that individual needs and possibilities differ, it is stated that if the strict time rules set for students turn into inefficient study hours, it will cause desensitization to mistakes and time loss. Similarly Önder (2009) stated that if study time is not used effectively, it may cause failure in education.

Emphasizing the importance of effective use of study time, Şendurur (2001) lists the current conditions a student should have in a compelling study process as mental state, physical state, mental state, motivation, and study spaces. Awareness, effective learning tactics and self-control (Dönmez & Kurtaslan, 2022; Özmenteş, 2008; Parasız & Gülüm, 2007), learning to learn and correct guidance by the teacher (Büyükkayıkçı, 2004), using the Pomodoro technique (Esen & Sakin, 2021), goal setting and self-evaluation strategies (Flisinger & Fleming, 2022), time management with cognitive and metacognitive study tactics (Erim & Çiftçi, 2022), listening to recordings and practicing slowly (Vellacott & Ballantyne, 2022), creating a systematic study method with warm-up movements, exercises and studies (Barrett, 2006; Küçükosmanoğlu et al., 2017) emphasized.

In this period, when technological developments are rapidly advancing and becoming a part of our lives, new learning and application tools are being developed. Study tools that attract attention, thanks to their features that offer interactive learning experiences and flexible transportation contribute to the learning process of individuals (Chen et al., 2018). For a generation dominated by the digital age, social networks or applications with motivational feedback can be a source of planning and motivation for the instrument study process; in addition, it has been stated that being part of online study groups with digital tools affects student participation and facilitates practice and learning (Trei, 2016). Referring to the problems that may arise from the fact that traditional methods do not give feedback to students during the individual study (Marky et al., 2020), they mention applications that can contribute to the learning experience by transforming the developing technology into smart objects in their studies.

In order to systematically evaluate student experiences and to theoretically interpret technological interactions, it is essential to integrate digital tool models from educational technology into the study. In this context, the Technology Acceptance Model (TAM) focuses on two core variables that influence individuals' acceptance of a technology: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). PU refers to the belief that the technology will enhance individual performance, while PEOU describes the perception that the technology can be used effortlessly (Akça & Özer, 2012; Ramayani et al., 2023). Research indicates that perceived usefulness, in particular, plays a key role in determining technological acceptance (Mechta et al., 2024). Moreover, it is emphasized that when the TAM model is applied in different cultural contexts, additional variables may need to be incorporated into the model (Silva, 2015).

The Unified Theory of Acceptance and Use of Technology (UTAUT), which provides a more comprehensive framework than the TAM model, explains technology acceptance through four core components: performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003). The model suggests that individuals' intention to use a technology is determined

by these four variables, which in turn influence their actual usage behavior. UTAUT's main contribution lies in its emphasis that technology use is shaped not only by individual evaluations but also by the social environment and structural conditions. In this respect, it is particularly valuable for analyzing the impact of cultural and environmental factors on technology adoption in the field of educational technologies.

The theory of Self-Regulated Learning (SRL), which emphasizes the effectiveness of individuals in their own learning processes, is defined as a multidimensional model that encompasses the cognitive, affective, and behavioral aspects of learning. The SRL process includes the learner's ability to set learning goals, develop strategies, monitor progress, and evaluate their own learning (Zimmerman, 2002). This process consists of three main components: *metacognitive strategies*, which involve awareness and evaluation of one's own learning process, including planning, monitoring, and reviewing (Dragomir & Niculescu, 2024); *motivational factors*, which enhance the learner's determination and effort through goal setting and a sense of self-efficacy (Darmiany et al., 2024; Shi et al., 2022); and *behavioral applications*, which support learning efficiency through external regulation strategies such as time management and structuring the learning environment (Han & Park, 2024). In this respect, SRL represents a holistic approach that focuses not only on the content of learning but also on how the process is managed. Considering these three models together enables a better understanding of how digital technologies influence not only acceptance processes but also the way individuals structure their learning.

Many digital music applications developed in light of these models incorporate various pedagogical strategies to make the learning process more engaging and sustainable. One of the most prominent strategies is gamification, which stands out particularly for its role in helping students develop self-discipline, actively participate in the process, and engage more easily with technological tools.

Digital applications for music education often include gamification elements to increase students' intrinsic motivation and support their self-discipline. Gamification transforms learning into a goal-oriented and enjoyable activity through elements such as point accumulation, badge earning, and level progression, thereby sustaining student motivation (Toda et al., 2020). Additionally, personalization options like avatars help strengthen users' sense of belonging to the application and enrich individual learning experiences (Frazier Roberts & Peoples, 2019). Furthermore, feedback mechanisms—especially real-time feedback—assist students in identifying and correcting their mistakes, accelerating the learning process (Weatherly, Wright & Lee, 2024). Thus, gamified music applications offer more than just an entertaining tool; they provide a holistic learning environment that supports both affective and cognitive processes.

In this context, numerous digital applications designed for various purposes in music education support both individual instrument practice and enrich students' learning experiences through their features. When examined, these digital applications appear to be designed to address subfields of music such as theory, sound, and instrumental performance. Regardless of which subfield they are designed for, these applications can be considered instructional, learning-facilitating, or practice-organizing in nature.

EarMaster, Perfect Ear (Acquilino & Scavone, 2022; Demirbatır, 2021) for musical hearing education; Met4u (Cho et al., 2019) on analytical, aesthetic, and sensory listening, AuralBook (Chen, 2015) for learning and developing aural skills, Cadenza and Piano Partner (Upitis et al., 2021; Roland, 2024), QuetschnApp, Duolingo Music, Yousician, SkyNote, SmartMusic for interactive instrument teaching (Acquilino & Scavone, 2022; Duolingo, n.d.; Moosbrugger et al., 2022). Looking at the applications in general, it can be thought that they focus on instrument practice aids or instrument teaching. Among the applications designed as an instrument study aid, Cadenza, with its features such as setting goals, recording, and providing feedback by creating personalized portfolios, aims to be systematic and motivated while studying the instrument. In addition, the notes in the application library offer the opportunity to work with accompaniments at different speeds (Upitis et al., 2021). Piano Partner, another practice organizer, allows statistical recording and data sharing on practice time and daily functions (Roland, 2024).

Among the apps designed for instrument training, SkyNote focuses primarily on violin performance with algorithms that control the accuracy of timbre and rhythm by providing real-time feedback. The application also provides bow and posture control with visualization features. Yousician, another instrument teaching app, provides real-time feedback on musical instrument teaching. It collects data on performances and applies statistical models to show progress. It provides alternative suggestions for playing a particular note or chord, enabling learning with the correct fingerings. Both applications have tuning and metronome features (Acquilino & Scavone, 2022).

AuralBook teaches musical skills through voice and rhythm exercises. The application covers the entire curriculum of the ABRSM exam and provides learning in a game environment. It guides students with rhythm and melody repetition and responds interactively to the answers (Chen, 2015).

EarMaster, another interactive application, provides an interface to help users monitor their progress, analyze their strengths and weaknesses, and visualize the time and skill spent on each exercise. The application allows for tracking how much time is spent on each exercise and statistical calculations regarding the distribution of working time (Acquilino & Scavone, 2022).

Despite the growing integration of digital tools in music education, there is still limited research focusing on how students interact with and perceive these applications, particularly within the Turkish secondary education context. This study addresses that gap by exploring how high school music students experience the Tonic application, which blends gamification, personalization, and interaction.

Unlike other applications, the Tonic application examined in this study is not a systematic educational design but a study aid that aims to make individual practice times efficient and enjoyable regardless of instrument differences and uses gamification elements to achieve this goal. It offers a system where students collect points during their time in the application, increase their points, and earn digital items as they increase their level. It also offers a personalized learning experience with the ability to create different purpose-built study rooms and community interaction through live broadcast studios. It also includes interaction dimensions such as listening to all users using the application on live broadcast and receiving feedback by creating common groups. Unlike curriculum-driven tools, Tonic allows for self-directed and socially mediated practice, which aligns with SRL principles and supports autonomy—a critical component in adolescent music learning.

As observed in the literature, mobile and digital applications that support instrument instruction and individual practice stand out with their diverse features. It is assumed that needs analyses targeting the user group are conducted during the design processes of these applications. However, it can be stated that learning needs may vary depending on different age groups and educational systems.

The Tonic application is used in various countries to support individual instrument practice and is experienced within different cultural contexts. However, differences may arise among these contexts in terms of music education approaches, levels of access to technology, and user expectations. For instance, features such as the English interface and social interaction tools may offer advantages for some users while being limiting for others. At this point, it is emphasized that the Technology Acceptance Model (TAM) may need to be restructured with various variables when applied in different cultural contexts (Silva, 2015). Similarly, the UTAUT theory suggests that technology use should be considered not only through individual evaluations but also in relation to social environment and contextual affordances (Venkatesh et al., 2003). Therefore, it is evident that the same digital application may lead to different user experiences across different contexts. In this study, the aim is to examine how the Tonic application is experienced by music students in Turkey, offering a contribution both theoretically and culturally. Understanding how students in Turkey experience these tools can inform localized digital education practices and help design more culturally responsive music learning environments.

The Tonic application is designed to create a regular instrument practice discipline with its planning, personalization, and interaction dimensions. These dimensions—personalization, planning, and interaction—were chosen based on both the functional design of the application and theoretical models emphasizing self-regulated and socially engaged learning. In this respect, it is thought to be more beneficial for students at the beginning level of instrument education. The application's main page states that it suits individuals aged twelve and above. In our country, the institutions that provide beginning-level instrument education in this age group are fine arts high schools. For this reason, it is curious what experiences fine arts high school students have gained by using the tonic application.

Although the data of the Tonic application provides us with statistical data about how often and for how long it is used, it does not reach the individual experiences and comments of the users. In this context, it is a matter of curiosity for which reasons students prefer or find the features offered by the program while using it. In this context, the research aims to reveal the experiences of Anatolian Fine Arts High School music department students regarding using the Tonic application, which is designed to make individual study time efficient in music education. In order to achieve this aim, answers to the following questions were sought.

What are the opinions of Anatolian Fine Arts High School music department students regarding

- a. personalization,
- b. planning, and
- c. interaction dimensions of the Tonic application?

3. Methodology

3.1. Research Design

This research is a qualitative study designed to determine the experiences of Anatolian Fine Arts High School music students while using Tonic, an instrument practice application designed for musicians and music students. This study employed a qualitative research design, with data analyzed through deductive content analysis. Deductive content analysis is a specific approach within content analysis where researchers use pre-existing theories, models, or frameworks to analyze qualitative data (Pandey, 2019; McKibben et al., 2020; Kyngäs & Kaakinen, 2020). This approach was chosen to examine students' experiences within a predefined analytical framework systematically. This approach was chosen because the analysis was guided by pre-established categories, explicitly focusing on the application's key dimensions, such as work planning and accessibility. The researchers first examined the Tonic application by trying it themselves and testing the possibilities it offered. These opportunities were identified and analyzed as the deductive framework of the research. This provided a deeper understanding of the students' experiences. This method enables a structured exploration of the data, ensuring that the analysis remains consistent with the theoretical foundations established before the study.

3.2. Study Group

In the design of Tonic, the individual study application in music education, which is the subject of this research, the target audience is twelve years old and above. Students need to establish a regular practice discipline, especially in the first beginning stage of the instrument. The study group of this research consists of students studying in Fine Arts and Sports High Schools in terms of the suitability of the target group of the application in terms of age and the stage of developing a study discipline at the high school level. However, although there are many fine arts high schools across Turkey, only students from high schools in Istanbul and Batman were selected for this study. This choice was made because the research team had easier access to students in these provinces. Given time, cost, and logistical constraints, easy access is a

sampling method frequently used in research. Marshall (1996) emphasizes that the convenience sampling method in qualitative research should be selected by providing easy access to the group that will provide the best results in line with the research objectives. Furthermore, Etikan, Musa, and Alkassim (2016) defined convenience sampling as “an effective method when the researcher can reach the participants quickly and effortlessly.” Similarly, Bornstein et al. (2013) state that convenience sampling facilitates in-depth analysis of a specific group, but caution should be exercised when generalizing. Based on this information, the study group of this research consists of twenty-two instrumental students studying in the Music Department of Anatolian Fine Arts and Sports High School in Batman and Istanbul. Detailed information about the characteristics of the students is given in Table 1.

Table 1.

Specialties of study group

Class (High School)	Grade 1	5
	Grade 2	5
	Grade 3	8
	Grade 4	4
Age	14	5
	15	5
	16	8
	17	4
Instrument	Violin	14
	Viola	3
	Cello	2
	Piano	1
	Flute	2
Total		22

3.3. Features and Possibilities of Use of the Mobile Application

Designed as a study and interaction platform for musicians and music students, Tonic was released globally on June 9, 2021. The version used in this research was 4.25.2, updated on May 7, 2024. The application is primarily available in English and is categorized for educational purposes on app platforms, targeting individuals aged 12 and above. While detailed usage statistics are often proprietary, their presence across diverse cultural settings, such as the United States, Taiwan, and Australia, suggests a broad international interest in technology-supported music practice tools.

The introduction page of the application shows that it aims to bring new opportunities to individual studies. It includes features such as live and customizable studios to reach real-time listeners, systems to record progress over time and provide feedback, the opportunity to meet new friends and be part of a global community of musicians to increase motivation, and the opportunity to win concrete prizes with real competitions. An initial, in-depth analysis of the Tonic application's functionalities, conducted by the researchers before data collection, revealed three core functional dimensions: personalization, planning, and interaction. These dimensions served as the predetermined thematic framework for the study, guiding the development of data collection instruments and subsequent data analysis.

Within the scope of the personalization dimension, sub-themes such as avatar creation, instrument selection and the ability to determine individual practice hours by the student emerged. In this direction, it was examined at which times of the day students preferred to use the application, and how avatar design and instrument selection through the application contributed to their individual study motivation and habits.

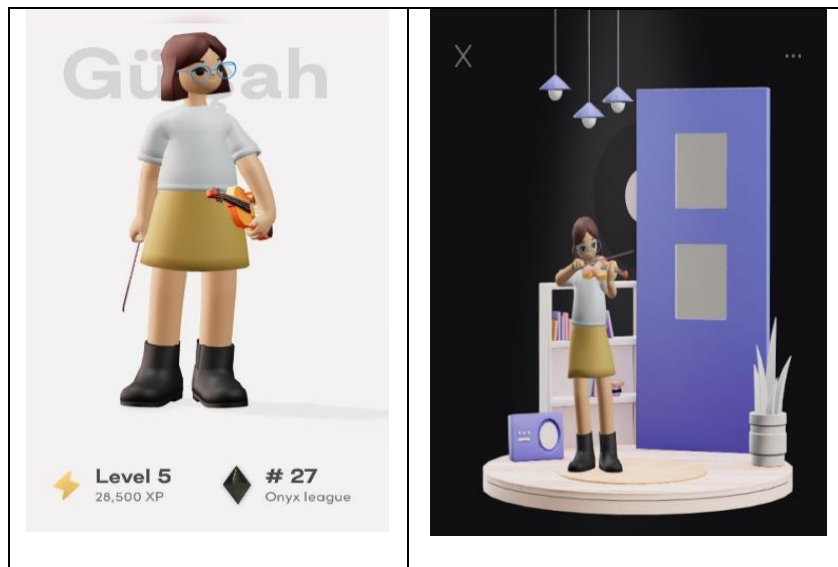


Fig. 1. An avatar and a studio

The planning dimension of the application allows for determining the purpose of the practice before the studio starts, writing down the pieces or technical exercises to be played, and recording the practice time after the studio starts. It keeps records of practice time and daily serialization at the end of the practice, with options for awarding points for practice time, focus, and breaks. These are features for monitoring progress and establishing a daily practice routine.

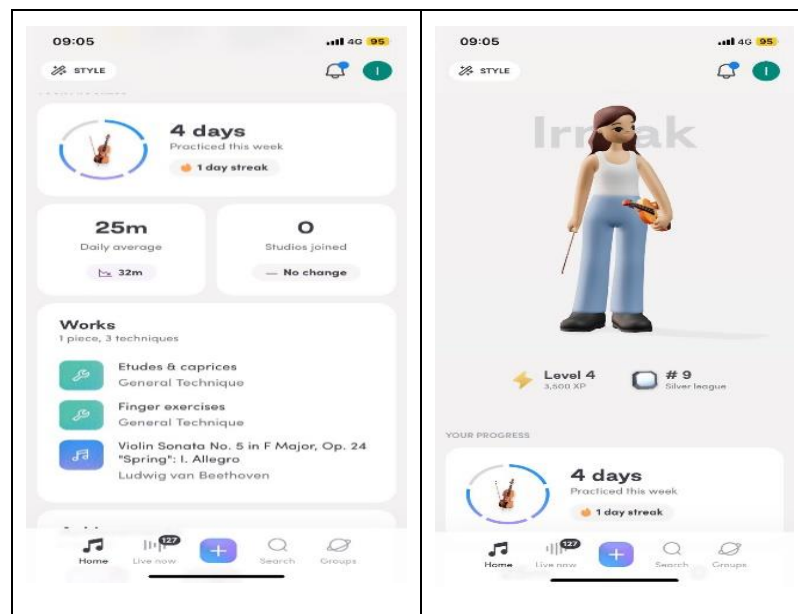


Fig. 2. Work plan and progress status

In the interaction dimension, opportunities such as the opportunity to reach real listeners thanks to live studios, the ability of listeners to comment, to send various emotional expressions for motivational purposes, to participate live in the studios of other workers, to increase the listening experience, to earn points as they listen and comment, etc. stand out at first glance. Apart from this, there are also features for different interaction needs, such as the opportunity to interact with people working on the same piece with the writing of the work worked on in the planning dimension, groups formed by those playing the same instrument, and live workshops.

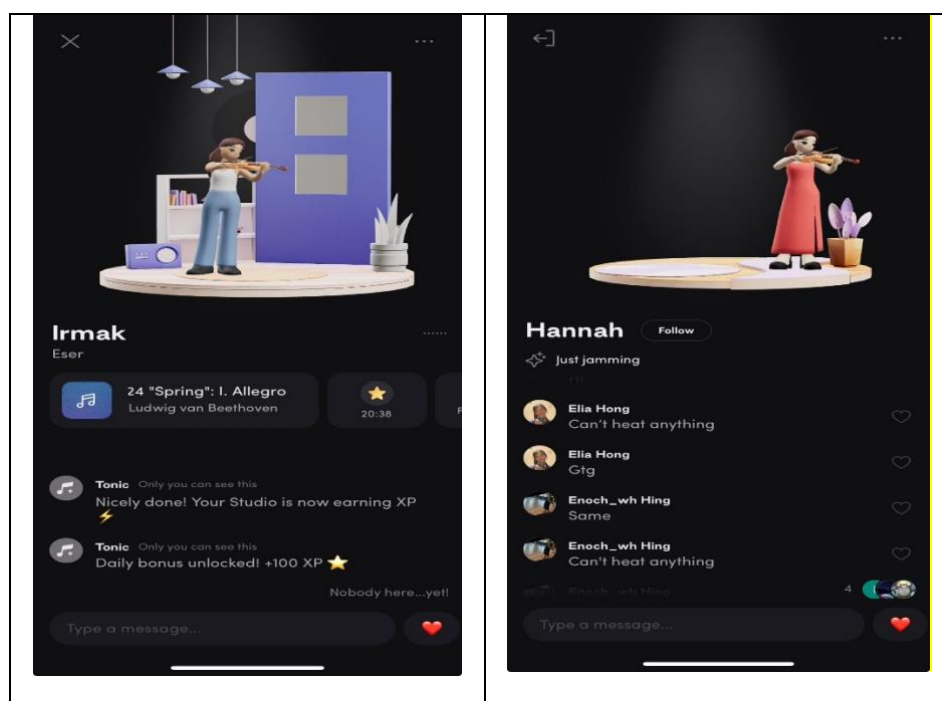


Fig. 3. Interaction

Following this preliminary review process, the questions to be used during data collection and the analytical framework were determined; student opinions were structured under three thematic categories: personalization, planning, and interaction.

3.4. Data Collection

The fundamental qualitative research design allows participants to make their voices heard using various data collection techniques, such as open-ended interviews, focus group discussions, and participant observations (Wolff et al., 2019). This approach allows the researcher to interact with the participants and better understand their context. The data collection process was structured to describe students' experiences using the application. Data was collected using a semi-structured interview based on teacher observations and field notes. Semi-structured interviews, one of the qualitative research methods, were used in the interviews.

The researchers initially used the Tonic application for one month to explore its features, identifying three key dimensions: planning, personalization, and interaction. Based on these dimensions, an initial pool of fifty open-ended interview questions was developed, with each researcher contributing items aligned with the relevant sub-dimensions. This initial pool underwent a detailed qualitative evaluation. First, questions with vague or ambiguous wording were removed to ensure clarity and comprehensibility. Second, conceptually overlapping or redundant questions—those addressing the same construct using similar expressions—were identified and eliminated to avoid repetition. Third, questions that were potentially leading or directive, and thus risked influencing student responses, were excluded to preserve the reliability of the data. Expert opinions from both field specialists in music education and a language expert were incorporated throughout this process. Feedback focused on language clarity, appropriateness for the target audience, and alignment with the intended dimensions. Based on this feedback, several items were revised for clarity and expression, while others were excluded entirely. Through this iterative process of refinement, the number of questions was reduced from fifty to nineteen. The finalized semi-structured interview form consists of nineteen open-ended questions: six addressing the personalization dimension, three planning, six interaction, and four general evaluations. All interviews with students were conducted individually.

Before the implementation process started, a meeting was held with the students about the purpose of the research. The Tonic application was introduced in this meeting, and information about its features and opportunities to motivate individual work was given. It was ensured that all students downloaded the application to their mobile devices and opened an account. The relevant settings were made on the application so that teachers and other friends in the study group could follow the students' work. Tonic is an application created to support students' individual work outside of class. Therefore, researchers were not physically present while students were using the application. However, thanks to settings in the application that allow users to follow each other, researchers received notifications when students broadcast their individual work online, making it possible to observe their work. After the first meeting, students were directed to do their work with the Tonic application for four weeks. At the end of the period, interview questions were asked of the students, and their experiences were collected.

3.5. *Reliability*

This study used contextual information, intensive description, continuous observation, third-party supervision, and researcher diaries to ensure validity and reliability in phenomenological research. The Tonic application allows students to send notifications to the teacher and other friends when they open a live studio through the application. The researchers also had the opportunity to make continuous observations on the application. In this way, they could observe whether all the students participating in the study were using the application effectively. The observation data was used to validate and deepen the experiences reported by the students, thereby contributing to the triangulation of the findings.

Third-party supervision was applied while preparing the interview questions and data analysis. Three different experts were consulted in the preparation of the interview questions. When preparing the interview questions, the opinions of two experts in the field of music education and one language expert were sought. The experts provided specific feedback on whether the questions were leading, clear and understandable, and appropriate for the research purpose.

In the data analysis phase, the coded data were sent to music education experts, excluding the researchers. The experts were asked to give their opinions on the overlap and consistency between the labels, codes, categories, and pre-determined themes that were created. In addition to this coding process, a specific section of the data set was uploaded to the Chat GPT Academic Assistant Pro artificial intelligence application, which was designed to function as an independent coder. The artificial intelligence analyzed the data within the framework of the identified main themes (accessibility, planning, and personalization), providing an additional perspective. Subsequently, both the coding performed by the researchers and the coding generated by the AI were sent to three music education experts with expertise in the field. The experts were asked to provide their opinions on the overlap and consistency between the created tags, codes, categories, and predefined deductive themes. During this process, the experts made significant contributions to the analysis process by evaluating the extent to which the coding scheme reflected the defined themes, the logical consistency between the data, and the compatibility between the researcher's and AI's codings.

3.6. *Analysis*

Qualitative content analysis was used to analyze the data. First, the audio recordings of the students' interviews were transcribed. The students' opinions were organized under the headings of personalization, interaction, and planning, which were already determined during the design of the interview questions. The transcripts were transferred to Maxqda 22 qualitative analysis software, and coding procedures were carried out using predetermined themes. After the data analysis, expert opinions were consulted to ensure the findings' reliability. This process aimed to evaluate the results in depth from different perspectives. After the expert opinions were received, the data set was uploaded once more to the academic assistant AI application, a module in the artificial intelligence application ChatGPT, and the data set was analyzed with

the following questions: “Examine the uploaded interview questions and students' responses. Create a qualitative analysis of these responses to include the main themes of accessibility, planning and personalization”. The analyses made by artificial intelligence and the researchers separately were compared, and it was determined that they overlapped considerably. The analysis was finalized.

4. Findings

This study presents the analysis of interviews with students using the Tonic app. The data were grouped under four main themes pre-constructed through content analysis: Personalization, Planning, and Interaction Dimension, and General Evaluation. Different codes were created under each theme, and the participants' statements supported these codes. The themes reveal how students used the application, which features of the application they found positive, and the difficulties they encountered. The themes and codes generated by the analysis are shown in Figure 4.

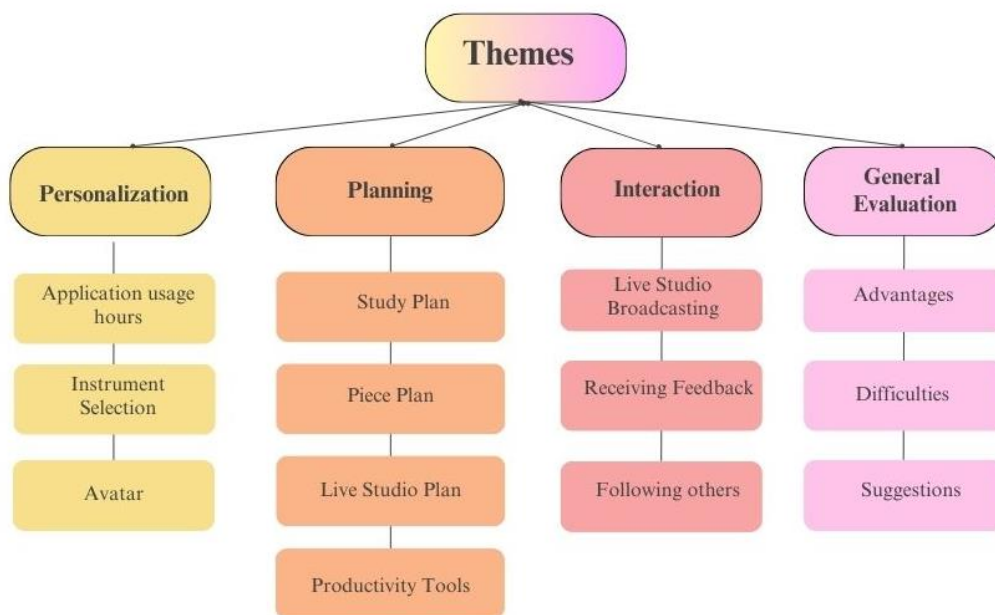


Fig. 4. The themes and codes

4.1. Describing the Working Environments of the Research Participant Students

Anatolian Fine Arts High School students in the research group perform their instrument practices at school, home, or dormitory buildings. Anatolian Fine Arts High School's physical structure is planned so students can perform their instrument practices efficiently. Accordingly, the departments usually have soundproofed instrument practice rooms, and students can continue their studies in these areas outside of class time. Istanbul Fine Arts High School is also open on weekends when students' home environments are unsuitable for instrument practice. However, the school is closed for Batman Fine Arts High School students on weekends. For this reason, six students in the study group used their home environment more intensively for individual instrument practice. The students who participated in the study mainly in the home environment stated that they had their own study room or study corner and could work comfortably without the intervention of the people they lived with, even though they lived in an apartment. Students who participated in the research in the school environment stated that they may experience connection problems from time to time due to the lack of internet infrastructure and shared internet. However, students who mostly participated in the home environment did not report any disadvantages related to internet facilities.

4.2. Findings on Personalization Dimension

This theme addresses how students used personalization features in the Tonic application and the impact of these features on their music studies. Personal settings such as instrument selection, avatar creation, and application usage hours were important in increasing participants' motivation.

Table 2.

Student statements regarding the personalization dimension

Codes	Participants	Example Statements
Application Usage Hours	12	S.9: "I usually use the app in the evening." S.7: "I use it between 15.30-20.30." S.5: "I usually use Tonic in the evening time of the day." S.15: "I use it around 18:00." S.2: "I usually use the application during evening hours."
Instrument selection	16	S.7: "Listening to musicians playing the same instrument as my instrument gave me determination." S.4: "The choice of instrument helped me a lot." S.8: "It affected me very well because the people across the room could see what the instrument I was playing was, and I could see the other instruments. Seeing those people playing and with what kind of emotion they were playing, and I heard that their voices were clean, increased my motivation to work because I honestly thought I should be like that." S.6: "Seeing the ability to choose your instrument in the application affected my studies very well. I got to know my instrument better." S.5: "The feature of choosing my instrument in the application impressed me very well; I found beautiful pieces and pieces related to my instrument." S.10: "I found what I was looking for more easily because it was related to my instrument."
Avatar	10	S.21: "Creating Avatar made me feel special." S.17: "Creating an avatar positively impacted my experience, and I opened the app to see more avatars that look like me." S.12: "I can say that the experience of creating an avatar did not have much effect. My aim was more music." S.16: "It made my studies more fun and naturally made me work harder." S.8: "I was motivated by the fact that as I worked, new things were added to the avatar." S.18: "I liked the fact that my avatar was red like me; I could adjust it to suit me."

The code *Application Usage Hours* was derived from responses emphasizing when students preferred to use the application. A total of 12 participants referenced using the app predominantly during evening hours, highlighting this time as the most convenient or motivating period for practice.

The "Instrument Selection" feature allows users to specify the instrument they play on the application. With this feature, users can interact with other users who play the instrument of their interest. This code was found positive by 16 participants. It was stated that the work of other musicians playing the same instrument strengthened the participants' music practice, motivation, and musical discovery processes, contributing to their knowledge and awareness of their instruments.

The "Avatar" feature allows students to personalize their avatars and study rooms with various items and accessories by offering different options as their study time on the application increases. Ten participants evaluated the code and stated that it allowed them to feel special and to make their experience more fun and motivating. However, for some participants, this feature plays a less decisive role.

These findings suggest that personalization features within the Tonic application—particularly those that allow for customization of practice time, instrument-specific content, and personal representation—play a role in shaping students' engagement and motivation levels, albeit to varying degrees across individuals.

4.3. Findings on Planing Dimension

This theme addresses how students planned and organized their music studies with the Tonic application. According to the findings, practice timing, piece planning, and live broadcast planning made the participants' music studies more organized.

Table 3.

Student expressions related to the planning dimension

Codes	Participants	Example Statements
Study Planning	15	S.5: "I planned my work according to my schedule." S.19: "I planned to work every day of the week." S.8: "In the app, I chose at the beginning how many days a week I should go in and work." S.13: "I practiced when it was time to relax from the violin homework I was concentrating on." S.2: "I worked by scheduling my studies at free and convenient times."
Piece Planing	12	S.22: "It was useful for me to record the works I was working on." S.3: "I contributed to myself by listening to the works of others." S.4: "It is good for the other person to see and know what I am playing." S.18: "It was nice to indicate the pieces we were working on so at least other app users knew what we were playing." S.17: "The planning features on the app, such as naming the studio and choosing a piece, have positively affected my music studies."
Live Studio Planing	11	S.7: "I worked regularly, broadcasting live at the same time every day." S.13: "I made my work more organized by broadcasting live." S.19: "I usually used Tonic when I felt inadequate. Moreover, live studios helped me." S.3: "It planned for me to enter regularly daily."
Productivity Tools	10	S.9: "The break feature allowed me to work without interruption." S.4: "Taking a break allowed me to work for a long time without interruption." S.4: "The duration feature increases productivity." S.7: "Being able to track daily working times helped me to evaluate myself." S.10: "The timing feature made me more disciplined when I went live session." S.12: "The focus mode allowed me to work more efficiently." S.14: "When I turned on the focus mode, I realized I was moving forward with my work." S.16: "Since the planning tools created a more organized working environment, I got more efficiency." S.17: The planning features on the app, such as naming the studio and choosing a piece, have positively affected my music studies. S.20: "When I opened the studio and chose the focus mode, it had a good effect on the efficiency of the work." S.22: "Being able to keep time made me want to work more, and as I saw the time, I realized that my working time increased as I used it."

As part of the qualitative analysis process, student responses regarding the *planning* dimension were analyzed using content analysis. The interview data were carefully coded, and recurring patterns in student statements were grouped into four main thematic codes: *Study Planning*, *Piece Planning*, *Live Studio Planning*, and *Productivity Tools*. These codes reflect how students engaged in self-regulation and structured their musical practice using the features of the Tonic application.

The code "Study Planning" was mentioned by 15 participants, and the application's contribution to regular work was emphasized. Although the code titled tracking study time in the previous section and the study timing codes here are similar, they differ in personalization and planning dimensions. In the personalization dimension, it is emphasized that the Tonic application's feature of tracking study time produces different results for each student. In the planning dimension, it is emphasized that students plan their study schedule and time themselves.

The *Piece Planning* code, referred to by 12 participants, relates to students' organization of repertoire and their engagement with peers' musical content. Under the "Piece Planning" code, students selected the works

they were practicing from the list of works in the application. They noted the works and technical exercises they were practicing according to their needs at the beginning of each practice. Thanks to the works they selected from the list, they could identify other participants who practiced the same works as them and listen to their publications. It can be said that planning the works studied and listening to the works of other participants is one of the most effective methods in organizing the students' study program.

With the “live broadcast planning” feature, the participants could plan the days and hours they would study in advance. Thus, they stated that their studies became continuous and organized. According to participant comments, this feature encouraged time management, planning, and disciplined work.

The most frequently mentioned and cross-cutting theme was *Productivity Tools*, referenced by 10 participants. This code includes features such as break settings, focus mode, time tracking, and session duration monitoring. These tools were widely perceived as enhancing concentration, promoting self-awareness, and increasing the overall efficiency of practice sessions. Students reported that the ability to monitor and reflect on their working time contributed positively to their discipline and motivation.

Collectively, these findings suggest that the Tonic application's planning-related features support students' self-regulated learning behaviors by enabling them to structure their study routines, organize their repertoire, and enhance their practice efficiency through built-in tools. The diversity and depth of the responses indicate that planning is a multidimensional process for students, combining temporal, cognitive, and behavioral regulation strategies.

4.4. Findings on Interaction Dimension

This theme examines how participants interacted with the Tonic app. Features like live streaming, receiving feedback, and following other musicians increased users' motivation and performance.

Table 4.

Student statements related to the interaction dimension

Codes	Participants	Example Statements
Live Studio Broadcasting	16	S.19: "Live broadcasts boosted my confidence." S.18: "Working on live TV made me want to work more." S.22: "I tried to be careful not to make any mistakes, and this focused my attention completely on the piece I was playing." S.14: "I feel on stage while other people are joining my livestream." S.21: "I would like to interpret this question on anxiety because I have anxiety, and I was afraid and hesitant to have some people look at me and perform my piece, my piece, but since we did not see each other in practice, I was comfortable, and I could perform as I wanted and I realized that my anxiety has decreased and I am no longer afraid and hesitant like before." S.11: "It gave me a concert-like experience, so it helped me overcome my nervousness." S.15: "The live broadcast mode made me very nervous, so I could not play it and turned it off." S.1: "Listening to others motivated me more and made me want to work." S.20: "Working live helped me overcome my nervousness." S.3: "Instead of working haphazardly, it provided an organized and organized work." S.15: "I was most impressed by the time it said when I opened the live stream, it was like an indicator that I was working."
Receiving Feedback	12	S.14: "I was encouraged to receive notifications live on air." S.9: "I worked more efficiently as I received feedback." S.15: "I want to be motivated and work harder when others come and make nice comments." S.6: "Exchanging information with other people has improved me musically." S.1: "When I could not play my piece, we saw other people's ways of working and talked to them about what I was stuck on."

Following others	10	S.17: "The work of the people I follow motivated me." S.9: "Following others provided motivation." S.2: "It is very nice to follow and listen to musicians through an app; it made me enthusiastic." S.11: "I followed other users, and it helped me correct mistakes I had made regarding the artifacts." S.17: "It positively affected my music study because I saw people playing at all levels." S.14: "I followed, and when I heard people playing beautifully, I said to myself - I am going to play like that." S.16: "What encouraged me to work on the app the most was getting notifications from the people I follow." S.20: "When they were working, I would get notifications, and my desire to work would increase, and I would start working." S.21: "It helped me learn new works." S.6: "It made me more determined."
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As part of the qualitative analysis process, student statements related to the *interaction* dimension were examined using content analysis. This analysis aimed to identify recurring themes in participants' experiences with the social and interactive features of the Tonic application. Through inductive coding, three primary codes emerged: *Live Studio Broadcasting*, *Receiving Feedback*, and *Following Others*. "Live Studio Broadcasting" was mentioned by 16 participants. According to the participant statements, the live broadcasting feature supported the development of their self-confidence and motivation to work. The participants stated that live broadcasting studios gave them the feeling of being on the stage, and they indicated the positive effects of this feature on excitement management and focus. In addition to these effects, some participants stated that a negative experience created tension.

Thanks to the "Receiving Feedback" feature, users can comment and send statements by participating in each other's live broadcasts on the application. Users who open live broadcasts can write the topics they want to get opinions about their work and fix them during the live broadcast. Participants positively evaluated this feature and stated that the feedback from other users increased their motivation and enabled them to work more efficiently. It can be said that this feature creates a strong interaction network, improves knowledge sharing, and thus provides an efficient learning experience.

With the "Following others" code, users can follow each other and receive notifications through the application during the work of the users they follow. The participants evaluated this code as an incentive and a source of motivation for following users' work at different levels. They also stated that thanks to the work notifications of the people they followed, their desire to work increased, and they started to work more disciplined.

Overall, the analysis of the interaction dimension reveals that the social components of the Tonic application foster meaningful engagement among students. Features such as live broadcasting, feedback mechanisms, and peer following contribute not only to increased motivation and discipline but also to emotional growth and performance confidence. These findings highlight the importance of social interaction and community in digital learning environments, especially within the context of music education.

4.5. General Evaluation

This theme covers the participants' overall satisfaction with the Tonic app, challenges, and suggestions. It discusses the positive aspects, the language barrier, and the adverse effects of internet use.

Table 5.

Student statements on general evaluation

Codes	Participants	Examples
Advantages 18		S.2: "The application increases my desire to work; I find it very productive." S.4: "The app increases my productivity." S.15: "I was most impressed by the time it said when I opened the live stream, it was like an indicator that I was working." S.8: "Thanks to the application, I finished suzuki book 1 and 2 and my desire to study increased."
Difficulties 10		S.21: "The app uses internet data; I cannot open it whenever I work." S.20: "The lack of language options is problematic." S.16: "The app ate much Internet and was slow and cramped."
Suggestions 9		S.13: "A language option should be added because I find it difficult to understand some English words." S.3: "It would be better if a tuner and metronome feature were added." S.12: "There should be a language option; it would be more useful for those whose English is not so good." S.22: "I think introducing a video broadcast feature would be better." S.1: "I think having a co-broadcast feature in the app would be nice."

The Tonic app is generally evaluated as an efficient and motivating tool by the participants, especially notifications and tracking of working time, which are encouraging. However, challenges such as the app using too much internet data and therefore not always available, slowing down due to internet usage, and lack of language options for users with low English proficiency were frequently mentioned as problems that could negatively affect the user experience. In the general evaluation section, only one student's suggestion to improve the application draws attention. This student stated that it would be good to add the feature of joint broadcasting to the application. Thus, he added that working together remotely could significantly contribute to their work. In this respect, it is included here as a comment worthy of evaluation.

5. Conclusion and Discussions

This study analyzed the experiences of fine arts high school students using Tonic, a digital instrument practice application designed to make users' music studies more efficient through personalization, planning, and interaction. The results show that students found the application efficient and that Tonic improved their study discipline. In this section, the findings are discussed and compared with the literature.

5.1. Personalization and Motivation to Work

The results reveal that students actively use Tonic's personalization features, which are important in increasing their motivation to study. For example, students mentioned features such as creating avatars, selecting instruments, and personalizing the study room, which increased their motivation. This finding aligns with Chen et al.'s (2018) findings that digital learning tools enhance the user experience. Magalhães et al. (2018) emphasize that mobile applications can significantly increase the motivation of music students by using supportive tools that facilitate learning and enable students to develop their knowledge and skills in music. Digital tools offer a user-centered approach to learning processes, enabling users to integrate more with their studies and increasing motivation. It can be said that Tonic's personalization features create a space where students can express themselves and make them want to study more. This feature can be linked to the concepts of "perceived usefulness" and "perceived ease of use" in the Technology Acceptance Model. The fact that students have the ability to create avatars, select instruments, and personalize their workspace ensures that the application is perceived as both useful and easy to use.

Creating an avatar, another feature that stands out with its personalization feature in the study, contributed to students having a fun experience. As Marky et al. (2020) state, digital applications can include elements that enrich the user experience, unlike traditional methods. Tonic's avatar feature also enables students to participate in learning by having fun. This is also related to Büyükkayıkçı's (2004) study in which he

emphasized the importance of student motivation in music education; in a long-term learning process such as music education, motivational elements contribute to the continuity of the study.

5.2. The Effect of Planning Characteristics on Work Discipline

According to the students' statements, it is understood that they benefited from the planning features of the application and that these features effectively strengthened their study patterns. The fact that the Tonic application includes features such as determining study times, making pieces, and exercise planning allow users to organize their studies. As Özmenteş (2008) states, a planned study in instrument education is an important factor that increases the success level of the student. These planning features in the Tonic application enable students to allocate specific periods during the day to study and use these times efficiently.

Students stated that they primarily benefited from features such as live broadcast planning and study scheduling. Accordingly, students who made progress by planning their studies had a more organized and motivated study process. This is in line with the findings of Akiba and Yang (2022) on the contribution of regular studies to success in the music learning process. Regular practice is important in processes that require constant repetition, such as instrument training. Thanks to Tonic, students can set daily goals for their studies and increase their efficiency by planning the study process. The planning dimension is directly related to the “cognitive strategies” and “behavioral regulation” components of the Self-Regulated Learning (SRL) theory. Students' goal-setting, effective time management, and process monitoring skills demonstrate that they structure the learning process in accordance with self-regulation principles.

5.3. Interaction Features and Contributions to Learning

It is understood that Tonic's interaction dimension effectively increases students' motivation to study. According to the study, students were positively affected by the opportunities to present their performances to others and receive feedback by broadcasting live. Weyde et al. (2007) stated in their study that technology-enhanced learning tools can facilitate new forms of interaction by providing multimodal feedback that enriches the learning process. According to the students' statements, the live broadcasting feature enables them to experience the stage experience in a virtual environment and reduces their performance anxiety. This aligns with Trei's (2016) findings that student engagement has increased with the digitalization of music education. The presence of features such as receiving feedback and following other users in the interaction dimension allows students to observe not only their performances but also the performances of other users.

It can be said that students' experiences of receiving feedback enable them to improve their performances, and the feature of receiving feedback contributes to students' seeing their shortcomings and evaluating themselves better. This supports Barrett's (2006) view that students should be guided by feedback in music education. Especially in a field such as music performance, where mistakes can be easily noticed, feedback helps students continue their studies more focused and efficiently. The interaction dimension can be explained by the variables of “social influence” and “facilitating conditions” in the UTAUT theory. Students' ability to share their performances through live broadcasts and receive feedback from others increases their intention to use technology and their commitment to its application.

5.4. Language Barrier and Internet Connectivity Issues

In the study, it was also determined that students had some difficulties with the Tonic application. The students frequently mentioned the language barrier. The fact that the app was only available in English caused students to have difficulty understanding some features. This finding emphasized the importance of multilingual support in digital educational tools, as Chen (2015) also pointed out in his study on the AuralBook application. Especially in countries with multilingual education systems, such as Turkey, the

ability of users to receive services in their mother tongue will enable them to use the applications more efficiently.

In addition to the language barrier, the high internet connection requirement was also mentioned as another challenge. Many apps face technical limitations, such as insufficient processing power or poor user interface design, which can frustrate users and limit interaction (Yi, 2022). In line with this view, the inability to use the app without an internet connection makes it difficult for users to work without interruption. Device compatibility and connectivity issues hinder compelling learning experiences (Ghoulam et al., 2024), and the digital divide can limit the benefits of mobile learning for some students by exacerbating inequalities in access to education (Ranbir, 2024). This is one of the harmful effects of the dependency of online study apps on internet access. Particularly for the student population, study productivity can decrease when internet connectivity is limited or interrupted.

6. Suggestions

In conclusion, the Tonic app is a supportive learning tool for fine arts high school students with its personalization, planning, and interaction features. Students found the app motivating, organized, and fun. The app's features, such as setting personal goals and creating a calendar, enable students to approach extracurricular activities more systematically. However, shortcomings such as language barriers and the need for an internet connection make it difficult for the app to appeal to a broader user base. At this point, equipping the application with additional features such as multi-language support and offline study modes may enable it to appeal to a broader user base.

With the growing interest in mobile learning, there is an increasing number of other applications that can contribute to students' development, such as the Tonic application. The music learning process can be made more efficient by using tools developed for different purposes, such as teaching instruments, creating study discipline, and recording. By exploring the various features offered by the applications, studies can be supported with options suitable for the purpose.

Technological tools for music education can contribute to students' development. Applications such as Tonic make music learning more efficient and offer different student needs options. Teachers, who are instrumental in accessing information, can introduce such applications to students, encourage them to use them, and enrich the educational process.

This research was conducted only with students of AGSL (Anatolian Fine Arts High School). Similar studies can be conducted in different schools and groups. In addition, the duration of the research, which was limited to one month, may be helpful to follow the students' thoughts about the application with longer-term research. In future research, a broader perspective can be created by considering not only the opinions of the students but also the opinions of teachers and parents regarding the use of the application. Different research designs can be created on the impact of the use of the app on students' performance, its contribution to regular studies, and its long-term success. In summary, digital applications such as Tonic are becoming increasingly important in music education, and such tools play an important role in improving students' study habits. This study demonstrates that the Tonic application is not merely a technical tool; it also provides a learning environment related to fundamental learning theories such as self-regulation, technology acceptance, and social interaction. When evaluated in light of the TAM, UTAUT, and SRL models in particular, it can be said that the application has a strong theoretical foundation from a pedagogical perspective.

Declaration of generative AI and AI-assisted technologies in the writing process

After the expert opinions were received, the data set was uploaded once more to the academic assistant AI application, a module in the artificial intelligence application ChatGPT, and the data set was analyzed with the following questions: "Examine the uploaded interview questions and students' responses. Create a

qualitative analysis of these responses to include the main themes of accessibility, planning and personalization”. The analyses made by artificial intelligence and the researchers separately were compared, and it was determined that they overlapped considerably. The analysis was finalized.

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