Hindawi

Retraction

Retracted: Analysis and Optimization of Online Music Teaching System Based on Dynamic Model

Scientific Programming

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] M. Miao, "Analysis and Optimization of Online Music Teaching System Based on Dynamic Model," *Scientific Programming*, vol. 2022, Article ID 4426555, 9 pages, 2022.

Research Article
Analysis and Optimization of Online Music Teaching System Based on Dynamic Model

Miao Miao (ID)

Music and Dance College, Liaocheng University, Liaocheng 252000, China

Correspondence should be addressed to Miao Miao; miaojing@lcu.edu.cn

The online teaching system is based on a high-tech framework to realize the integration and utilization of existing resources. Applying the online teaching system to distance learning education will help practitioners or self-study people to obtain learning resources more conveniently and quickly. With the development of technology and the social environment, more and more people are participating in online teaching. This has led to rapid growth in online teaching. However, when users use it, there are still problems, such as poor system interaction performance, and cumbersome interface. The construction of a system dynamics model is based on powerful system dynamics methodology and rules to analyze and solve complex problems and make optimal judgments. Through this research, we can get (1). to design the dynamic model music online teaching components: student user table, teacher user table, administrator table, virtual classroom, electronic courseware table, and multimedia music library table. (2). To correct the audio quality, audio speed, audio height, initial efficiency, initial efficiency parameters, video quality, and video traffic. The 3A-10 group has the best effect ($k = 13.9$, $c = 0.30$, $A = 3.27$, $\alpha = 0.80$, B = 1.67, and $\gamma = -4.31$). (3). During the appreciation of different music types (groups A, B, C, D, E, and F), the scores were evaluated according to the dynamic model, and the scores were found to be better than 10^6. (4). The comparison of kinetic equations, Kuramoto, and LIF shows that the scores of the kinetic equations are significantly better than the other two models. In the kinetic model, $F\text{-}s = 0.81$, $F\text{-}c = 0.66$, $D\text{-}s = 0.81$, $D\text{-}c = 0.71$, $H\text{-}s = 0.72$, $H\text{-}c = 0.56$, $V\text{-}s = 0.65$, and $V\text{-}c = 0.75$.

1. Introduction

In 2019, due to the impact of the coronavirus disease (COVID-19) pandemic, many schools around the world have to carry out online teaching. The Ministry of Education of China has also proposed a plan to transform offline education into online teaching to deal with the impact of the epidemic on teaching. Through the use of Tencent conferences and DingTalk software, etc., a small-scale personal education online course (SPOC) model was established to solve the needs of students to attend classes and perfectly deal with the obstacles of the epidemic to teaching. The small-scale personal education online course model is based on "video courses as the main body, supplemented by online questions and answers" [1–3]. The system also has feedback and improvement links such as online discussions and chapter tests. The teaching quality and effectiveness are evaluated through student group presentations, course examinations, and questionnaire surveys. The online teaching system is also of great help to the education of the elderly. The online teaching system is a combination of web-based modules or courses, other distance learning technologies, and traditional learning methods. The online teaching system can also provide unified training for rural teachers and update the course content in time. We try to narrow the gap between urban and rural schools as much as possible [4]. The online teaching system is based on a high-tech framework to realize the integration and utilization of existing resources. Applying the online teaching system to distance learning education will help practitioners or self-study people to obtain learning resources more conveniently and quickly. With the development of technology and the social environment, more and more people are participating in online teaching. This has led to signs of rapid growth in online teaching [5–7]. The online teaching system is most related to distance education, but it also appears in classroom education in the form of blended learning. In this period of growth in online teaching, there is time to develop

standards to ensure its quality. Online classrooms are derivatives of traditional classroom teaching standards. There are no specific requirements or rules for online education. Due to its appearance too early, various systems may still have some defects, which requires us to follow-up to improve them. The most useful help for online teachers does not come from the education sector, but from the technical support services of the industrial sector, especially the IT industry. The online teaching system also plays an important role in the online teaching of music, making music teaching more intelligent and personalized, providing technical support for the offline and online teaching of the majority of music teachers, and enriching the means of music teaching. The chain reaction produced by scientific and technological progress has caused corresponding changes in the music teaching model [8]. The traditional music teaching model emphasizes the role of the teacher. Without a balanced relationship between the teacher and the student, the student's independent learning ability and the ability to explore and innovate are restricted. The development of modern information technologies such as mobile Internet technology, artificial intelligence, and big data has made new teaching models more and more abundant. The diversification of teaching methods, tools, and forms not only affects the development of social music teaching but also affects the teaching of music classrooms in primary and secondary schools. The dynamic model also plays an important role in online music teaching [9] involving systematic self-learning, model optimization, checking for omissions and filling vacancies, etc. Generally, there are two mathematical forms used to describe system dynamics, namely differential equations and iterative mapping. Differential equations are used to describe time-continuous dynamic systems, while iterative mapping describes time-discrete systems. There are many universities across the country, and the academic resources and other online resources of the libraries of these universities are very complicated to manage. Generally speaking, it is a very unscientific method to measure which resources the school must purchase more of and which are excess resources. It only depends on the ratio of teachers to students in the school. Some resources will be extremely short-term [10–14]. In order to provide schools with more accurate predictions, it is necessary to introduce system dynamics models. The system dynamics model can be used to measure the distribution and occupation of educational resources to meet the needs of college students' academic activities. The system dynamics method is a powerful computer simulation technology that can bring convenience to people in real life and at work. The construction of a system dynamics model is based on powerful system dynamics methodology and rules to analyze and solve complex problems and make optimal judgments. System dynamics modeling technology can also provide certain assistance to the management and development of enterprises. The cross-impact analysis (CIA) method can be used to construct a system dynamics model [15]. The use of system dynamics can realize the collaborative office of company and enterprise employees and provide convenient conditions for online offices and freelancers. This research will demonstrate

its support for online music education by optimizing the system dynamics model.

2. Technical Analysis of Music Teaching System

2.1. Streaming Media Technology. Streaming media technology is used to enable digital transmission and playback of audio and video. After the video and audio are compressed and decoded, they can be played on the designated server and storage unit, which can achieve the effect of playing while downloading, instead of waiting for 100% of all audio and video downloads to enjoy and watch. Streaming media technology brings together some of the characteristics of the computer field, including data collection, data compression, data storage, and network communications. Sequential streaming can transmit data in real-time, and audio pictures can be transmitted in real-time. Teachers can record their lectures in advance, upload them to the proprietary streaming media database, and then transcode, translate, and re-encode them through the Windows Media Encoder, finally showing lossless sound quality and high-definition picture playback. Windows Media and PowerPoint can combine audio and video [16–18]. You can use the screen recording function and save audio and video as resynthesis in Figure 1.

2.2. Video Live Broadcast Technology. Using the Microsoft streaming information broadcasting program, can realize the promotion and dissemination of audio and video tutorials. Based on the current Internet technology, the rapid dissemination of multimedia data can be realized. The existing technologies basically require users to download impact resources on a dedicated player or the Internet and use dedicated video decoding players or plug-ins to browse and watch audio and video. Therefore, the problem we are facing is that the consumption of downloading the original data is relatively large, time-consuming, and labor-intensive, and occasionally the download is interrupted, which makes users miserable. After a long time of downloading, it may be necessary to perform decoding operations and so on. There is also an important storage issue. When files are downloaded locally, it will be a burden for mobile terminal devices, occupying a large amount of storage resources on mobile phones and computers. This will cause the burden of ordinary users to increase, and the memory may become full and the computer may crash for a long time. Therefore, we optimize the system, increase the threads of the system, perform multithreaded connections and operations, and develop the maximum energy of the server and use the equipment. We count the needs of users, provide peer-to-peer services, and carry out relevant courses according to the students' own learning plans and learning needs. They can learn and work independently in the VOD mode no matter where and when. The control of the node can be operated on its own mobile terminal [19–21].

2.3. Online Music Teaching Module. This online teaching system is based on computer hardware and integrates communication technology, streaming media technology,
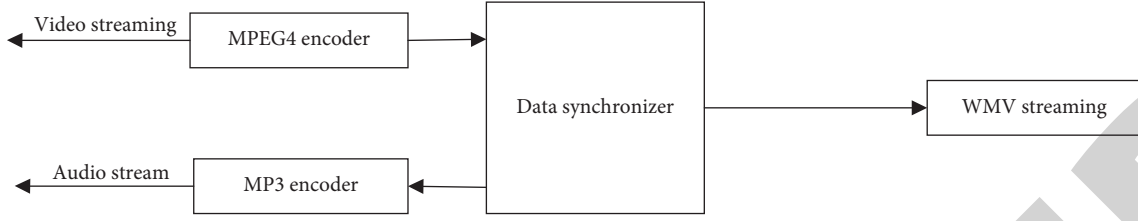
FIGURE 1: Streaming media production method.

network video technology, and cross-cooperation in multiple fields to provide users with an online teaching system. This system is divided into three modules, 1. student space (as shown in Figure 2 online music teaching student space), the student space module includes autonomous learning space, real-time learning, examination learning, and collaborative learning. We use these learning modes to understand and learn unknown knowledge, and the final detection method is answer detection. 2. Virtual classroom (Figure 3 online music teaching virtual classroom), the virtual classroom module is divided into performance and appreciation of music stories, live classroom, grading courses, discussion, and exchanges, through the appreciation and understanding of music, online questions to test the teaching of this lesson quality. 3. Teacher space (Figure 4 online music teaching teacher space). The teacher space module is divided into electronic courseware, live teaching, discussion management, and examination management.

2.4. Dynamic Model Music Online Teaching Composition. Dynamic model music online teaching is divided into student user tables, teacher user tables, administrator tables, virtual classrooms, electronic courseware tables, and multimedia music library tables. The student table is to collect some information about the student, as shown in Table 1(dynamic model music online teaching student user table), including the student's name, set ID, initial password, and other information. The teacher information form needs to fill in some information about the teacher, and its basic information is similar to that in Table 2. The administrator table includes information such as the administrator number, password, last login time, and last login IP. The virtual classroom includes information such as a classroom number and a classroom type. The electronic courseware table, as shown in Table 3, includes courseware number, courseware type, producer, class to which it belongs, courseware content, courseware duration, number of viewers, etc. The multimedia music library table includes file type, file path, upload time, performance skills, number of listening times, and number of collections.

3. Application of Dynamic Model in Online Music Teaching

3.1. LIF (Leaky Integrate Fire) Model [22, 23]. For a dynamic system, the state variable X can be used to characterize the system as

$$X = (x_1, x_2, \ldots, x_n). \tag{1}$$

Continuous time music appreciation ability is

$$X'(t) = f[X(t)], \quad x \in R^n. \tag{2}$$

Dynamic equations of time-discrete systems

$$x(t+1) = g[x(t)]. \tag{3}$$

Online teaching system parameters are

$$x_0 = (x_{0,1,\ldots,}x_{n,0}). \tag{4}$$

Music node bifurcation (saddle-node bifurcation) is

$$\dot{x} = r - x^2 \left(x_1 = \sqrt{r}, x_2 = -\sqrt{r}\right). \tag{5}$$

Treble frequency is

$$\dot{x} = rx - x^2. \tag{6}$$

Online teaching system is expressed as follows:

$$\begin{aligned} \dot{x} &= rx - x^3, \\ \dot{z} &= \left(r + iw - |z|^2\right)z. \end{aligned} \tag{7}$$

Node degree is

$$k_i = \sum_{j=1}^{N} a_{ij} \sqrt{a^2 + b^2}. \tag{8}$$

3.2. Kuramoto Model.

$$\dot{\theta} = \varpi_i + \frac{K}{N} \sum_{j=1}^{N} \sin\left(\theta_j - \theta_i\right), \quad i = 1, 2, \ldots, N. \tag{9}$$

Natural audio frequency is

$$\dot{\tilde{\theta}} = \varpi_i + \frac{K}{N} \sum_{j=1}^{N} \sin\left(\tilde{\theta}_j - \tilde{\theta}_i\right). \tag{10}$$

White noise is as follows:

$$re^{i\tilde{\psi}} = \frac{1}{N} \sum_{j=1}^{N} e^{i\tilde{\theta}_j}. \tag{11}$$

Kuramoto model fitting online music teaching system is expressed as follows:
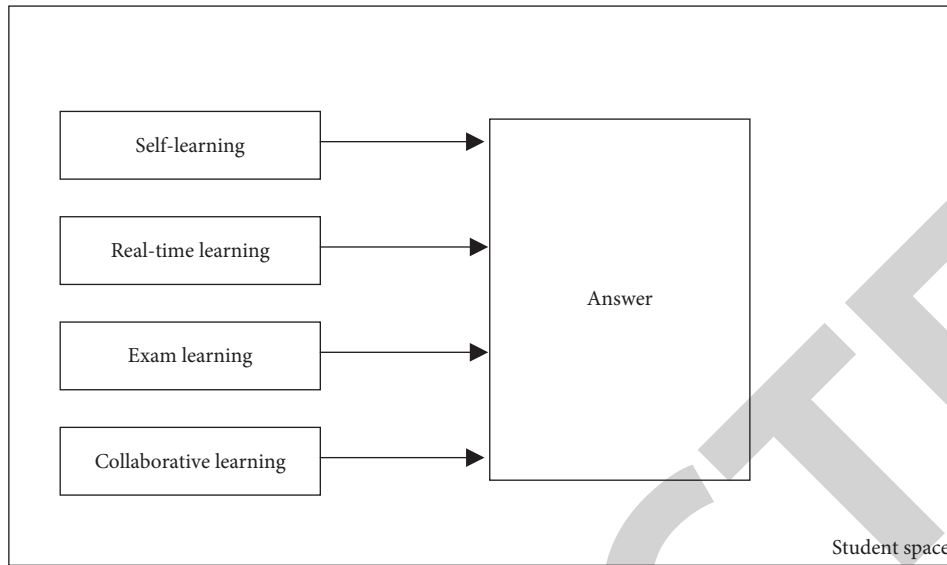
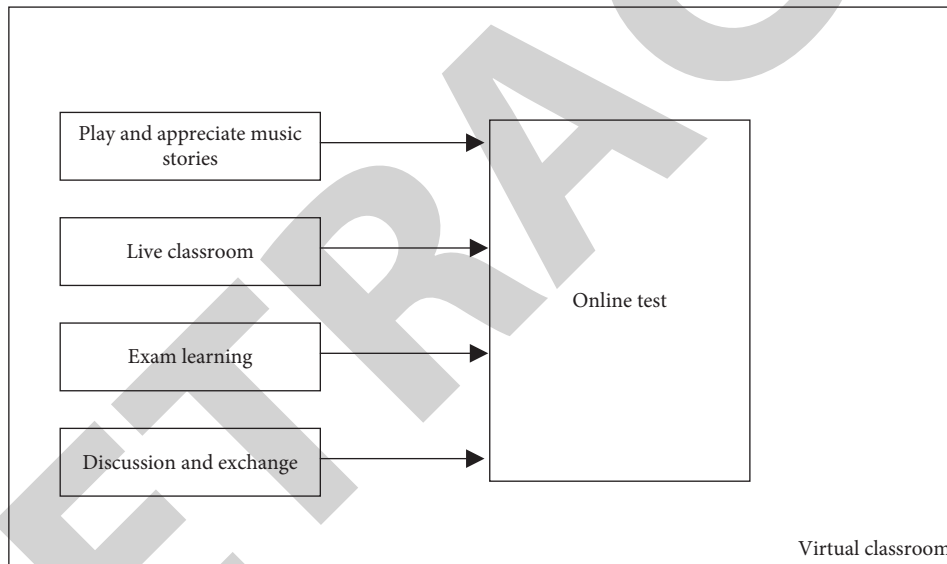FIGURE 2: Online music teaching student space.

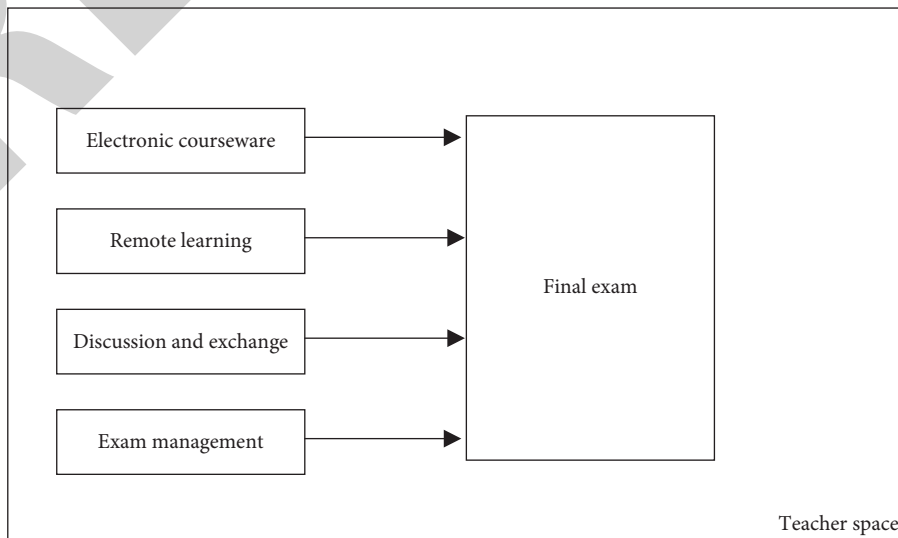FIGURE 3: Online music teaching virtual classroom.

FIGURE 4: Online music teaching teacher space.

TABLE 1: Dynamic model music online teaching student user list.

Field name	Type	Primary key	Foreign key	Can it be empty	Illustrate
StudentID	Int	Y	N	N	Student ID
Name	Varchar (50)	N	N	N	Name
Password	Varchar (50)	N	N	N	Password
Nickname	Varchar (50)	N	N	N	Nick name
Sex	Varchar (5)	N	N	N	Gender
Age	Int	N	N	N	Age
E-mail	Varchar (50)	N	N	Y	E-mail
Address	Varchar (50)	N	N	Y	Contact address
Telephone	Varchar (20)	N	N	Y	Contact number
PicPath	Varchar (100)	N	N	Y	Photo path
Balanced	Int	N	N	N	Point card balance
Grade	Int	N	N	N	User level
RegTime	Date	N	N	N	Registration time
Comments	Varchar (200)	N	N	Y	Remark

TABLE 2: Dynamic model music online teaching multimedia library list.

Field name	Type	Primary key	Foreign key	Can it be empty	Illustrate
MusicID	Int	Y	N	N	Song number
MusicName	Varchar (50)	N	N	N	name
MusicType	Varchar (20)	N	N	N	Type
Author	Varchar (20)	N	N	N	Author
FileType	Int	N	N	N	File type
FilePath	Varchar (50)	N	N	N	File path
UpdateID	Int	N	Y	N	Uploaded by
UpdateTime	Data	N	N	N	Upload time
PlaySkill	Varchar (200)	N	N	Y	Musical skills
PlayCount	Int	N	N	N	Number of listens
CollectCnt	Int	N	N	N	Favorites
Comments	Varchar (200)	N	N	Y	Remark

TABLE 3: Dynamic model music online teaching electronic courseware list.

Field name	Type	Primary key	Foreign key	Can it be empty	Illustrate
VideoNum	Int	Y	Y	N	Courseware number
VideoType	Int	N	N	N	Courseware type
Author	Int	N	Y	N	Maker
CourseID	Varchar (20)	N	Y	N	Belonging to the course
CourseCN	Varchar (200)	N	N	Y	Courseware content
Time	Time	N	N	N	Courseware duration
PlayCount	Int	N	N	Y	Viewers
Comments	Varchar (200)	N	N	Y	Remark

$$re^{i\widetilde{\psi}} = r = \frac{1}{N}\sum_{j=1}^{N} e^{i\theta_j}, \tag{12}$$

$$\dot{\theta} = \omega_i + Kr \sin(\varphi - \theta_i) = \omega_i + Kr \sin \theta_i.$$

Different types of music inputs are

$$\frac{\partial_\rho}{\partial_t} + \frac{\partial_{(\rho v)}}{\partial_t} = \frac{\partial_\rho}{\partial_t} + \frac{\partial_\rho(\omega - Kr \sin \theta)}{\partial_\theta},$$

$$Z = \iint d\theta d\omega e^{i\theta} g(\omega)\rho(\theta, \omega, t). \tag{13}$$

3.3. Kinetic Model KE (Kinetic Equations). The parameter input of the dynamic model to music online teaching [24–26] is as follows:

$$\rho(\omega, \theta) = \frac{c(\omega)}{|\omega - r \sin \theta|}. \tag{14}$$

The sequence parameter value is calculated as follows:

$$Z = \iint d\theta \, d\omega e^{i\theta} g(\omega),$$

$$\frac{\partial_{(\rho v)}}{\partial_t} = \frac{\partial_\rho(\omega - Kr \sin \theta)}{\partial_\theta},$$

$$r = \iint d\omega d\theta g(\omega) \delta\left(\theta - \arcsin\left(\frac{\omega}{kr}\right)\right)$$

$$= \int_{-\gamma}^{\gamma} d\omega g(\omega) \sqrt{1 - \left(\frac{\omega}{\gamma}\right)^2}. \tag{15}$$

TABLE 4: Initial simulation parameters.

Initial simulation parameters	Numerical value
Audio quality	5000
Audio speed	3000
Audio height	460
Initial efficiency	6
Initial efficiency parameter	1.29
Video quality	78.5
Video flow coefficient	0.8

TABLE 5: Calibration results of k, c, A, α, β, γ and other parameters.

	−3A		−1A		1A		3A	
f/Hz	4	10	4	10	4	10	4	10
k	21.5	22.1	18.9	19.1	17.8	16.8	13.9	14.9
c	0.53	0.48	0.42	0.39	0.37	0.36	0.30	0.31
A	5.61	5.57	4.85	4.53	4.10	3.80	3.27	2.93
α	0.32	0.34	0.52	0.54	0.64	0.63	0.80	0.83
β	2.84	3.16	0.42	1.92	3.54	3.31	1.67	3.94
γ	−5.05	−6.51	−6.48	−5.41	−6.23	−6.59	−4.31	−5.06

Balance equation is expressed as follows:

$$\int_0^{2\pi} d\theta \frac{c(\omega)\sin\theta}{|\omega - r\sin\theta|}. \tag{16}$$

The fitting of a dynamic model to music online teaching is expressed as follows:

$$r = \int 0 = \int_{-\infty}^{\infty} d\omega g(\omega)\omega + \int_{-\infty}^{-\gamma} d\omega g(\omega)\sqrt{\omega^2 - \gamma^2} \\ - \int_{\gamma}^{\infty} d\omega g(\omega)\sqrt{\omega^2 - \gamma^2}. \tag{17}$$

Kinetic function is

$$f(u,v) = u(a - u)(u - 1) - v,$$
$$g(u,v) = bu - \gamma v,$$
$$\frac{d}{dt}\left(\sum_{i=1}^{n} X_i\right) = \left(DF + \frac{x - \mu}{\sigma}\right). \tag{18}$$

Model evaluation is

$$\frac{d\sigma x_i}{dx} = DF\sigma x_i + \epsilon_1 \sum_{j=1}^{N} M_{ij}^1 B^1 + \epsilon_2 \sum_{j=1}^{N} M_{ij}^2 B^2 \sigma x_i. \tag{19}$$

4. Simulation Experiment

4.1. Initial Parameter Settings. At the beginning of the experiment, the initial simulation parameters of the experiment were set, and the audio quality, audio speed, audio height, initial efficiency, initial efficiency parameters, video quality, and video flow coefficient were set. The results are shown in Table 4 as the initial simulation parameters.

4.2. Using Bouc–Wen Model to Calibrate the Online System. The k, c, A, α, β, and γ parameters correct the audio quality, audio speed, audio height, initial efficiency, initial efficiency parameters, video quality, and video traffic. As shown in Table 5 and Figure 5, the Bouc–Wen model is used to analyze the parameter sensitivity of the online system. Grouping into −3A, −1A, 1A, 3A, the 3A-10 group has the best effect ($k = 13.9$, $c = 0.30$, $A = 3.27$, $\alpha = 0.80$, $\beta = 1.67$, and $\gamma = -4.31$).

4.3. Evaluation of Dynamic Model of Music Online Teaching. The scoring of the model is shown in Figure 6.

We group the music online classes into six groups: A, B, C, D, E, and F and appreciate different music types (diplomacy, military, politics, technology, sports, and livelihood) in Table 6, and then scored according to the dynamic model evaluation and found that the score fit is higher than 10^6.

Among them, the various types account for diplomacy = 7%, military = 18%, politics = 26%, technology = 10%, sports = 17%, and livelihood = 22% as shown in Figure 7.

As shown in Table 7(model optimization comparison) and Figure 8 (model comparison), use F-s, F-c, D-s, D-c, H-s, H-c, V-s, and V-c to evaluate and compare the models. Comparing the three models of kinetic equations, Kuramoto, and LIF, it is found that the scores of the kinetic equations are significantly better than the other two models. In the kinetic model, F-s = 0.81, F-c = 0.66, D-s = 0.81, D-c = 0.71, H-s = 0.72, H-c = 0.56, V-s = 0.65, and V-c = 0.75.
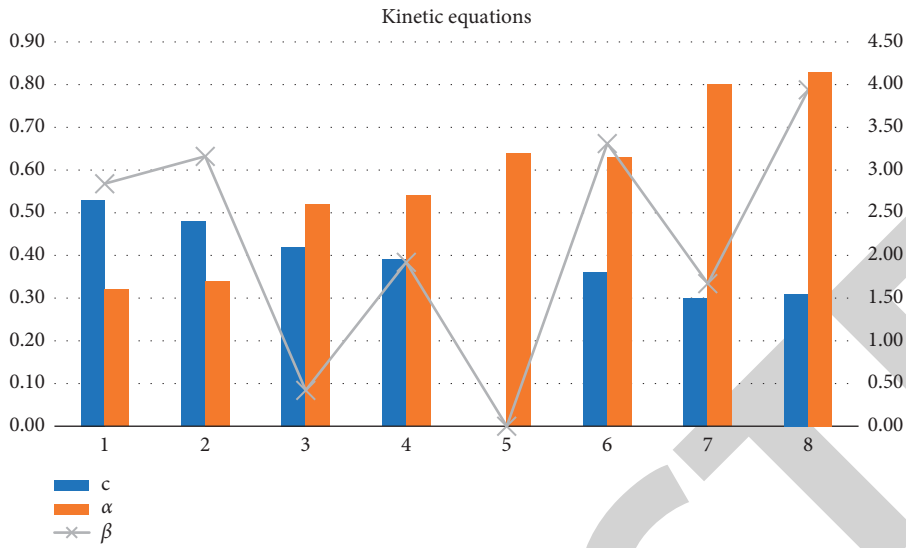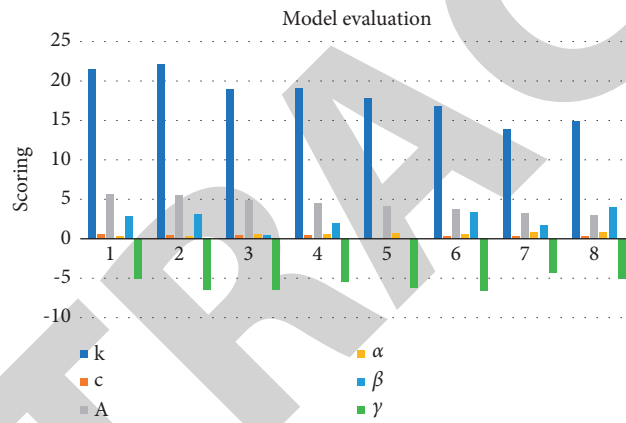
FIGURE 5: Correction results of (c) α and β parameters.

FIGURE 6: Model scoring.

TABLE 6: Dynamic appreciation scores of different music types.

| Serial number	Category	Content	value
A	Diplomacy	China and the United States agree not to impose new tariffs	1159691
B	Military	U.S. withdrawal from Syria	3144622
C	Politics	Speech at the 40th anniversary of reform and opening up	4462115
D	Technology	Blackmail virus requiring WeChat to pay ransoms	1829246
E	Sports	Ke Jie defeated Korean players	2866745
F	Livelihood	Yueqing boy lost incident	3783792
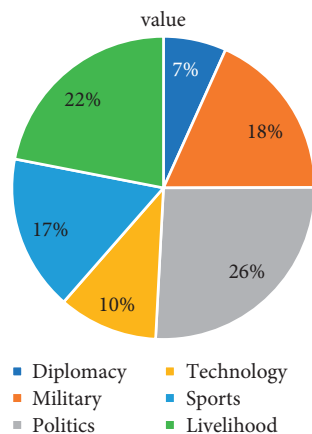
FIGURE 7: Proportion of various types of music.

TABLE 7: Model optimization comparison.

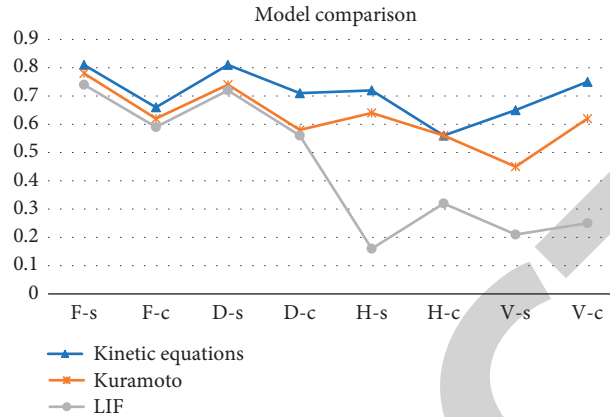|	F-s	F-c	D-s	D-c	H-s	H-c	V-s	V-c
Kinetic equations	0.81	0.66	0.81	0.71	0.72	0.56	0.65	0.75
Kuramoto	0.78	0.62	0.74	0.58	0.64	0.56	0.45	0.62
LIF	0.74	0.59	0.72	0.56	0.16	0.32	0.21	0.25

FIGURE 8: Model comparison.

5. Conclusion

In this study, by setting the initial parameters of the kinetic model, the kinetic model can better fit the music online teaching system. And we use the Bouc–Wen model to detect and modify the online system. Finally: (1). we designed the dynamic model for music online teaching components: student user table, teacher user table, administrator table, virtual classroom, electronic courseware table, multimedia music library table. (2). We corrected the audio quality, audio speed, audio height, initial efficiency, initial efficiency parameters, video quality, and video traffic. The 3A-10 group has the best effect ($k = 13.9$, $c = 0.30$, $A = 3.27$, $\alpha = 0.80$, B = 1.67, and $\gamma = -4.31$). (3). In the appreciation of different music types (groups A, B, C, D, E, and F), the scores were evaluated according to the dynamic model, and the scores were found to be better than 10^6. (4). The three models, kinetic equations, Kuramoto, and LIF, are compared, and it is found that the scores of the kinetic equations are significantly better than the other two models. In the kinetic model, F-$s = 0.81$, F-$c = 0.66$, D-$s = 0.81$, D-$c = 0.71$, H-$s = 0.72$, H-$c = 0.56$, V-$s = 0.65$, and V-$c = 0.75$. The main research work in the future focuses on the characteristics and efficiency of online music communication and puts forward the analysis of relevant online music communication paths. The main propagation models in different application scenarios are deeply studied, and the key propagation nodes and function analysis of different algorithms are proposed.

Data Availability

The experimental data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The author declares that there are no conflicts of interest regarding this work.

References

[1] W. Wang, Y. Zhang, K. Tang et al., "Exploration and practice of online teaching system of medical immunology based on small private online course (SPOC) model during coronavirus disease 2019 (COVID-19) pandemic," *Chinese journal of cellular and molecular immunolog*, vol. 36, no. 4, pp. 376–382, 2020.

[2] Xi Bao, F. Yu, M. Yi, and Z. Xue, "Standards for online teaching: lessons from the education, health and IT sectors," *Nurse Education Today*, vol. 25, no. 1, pp. 23–30, 2005.

[3] R. M. K. Medeiros, R. C. Teixeira, A. B. Nicolini, A. S. Alvares, Á. C. d. P. Corrêa, and D. P. Martins, "Cuidados humanizados: a inserção de enfermeiras obstétricas em um hospital de ensino," *Revista Brasileira de Enfermagem*, vol. 69, no. 6, pp. 1091–1098, 2016.

[4] Z. D. Sun, D. Y. Ran, M. A. Dong-Dong, B. Wang, and S. L. Song, "Design of online teaching system for passing levels engine repair," *Education Teaching Forum*, vol. 11, no. 23, pp. 51–62, 2019.

[5] S. Wang and M. Mu, "Exploring online intelligent teaching method with machine learning and SVM algorithm," *Neural Computing & Applications*, vol. 36, no. 6, pp. 1–14, 2021.

[6] W. Y. J. Ho and K. W. H. Tai, "Doing expertise multilingually and multimodally in online English teaching videos," *System*, vol. 94, no. 3, Article ID 102340, 2020.

[7] C. S. Pedamallu, L. Ozdamar, G. W. Weber, and E. Kropatd, "A system dynamics model to study the importance of infrastructure facilities on quality of primary education system in developing countries," in *Proceeding of the AIP Conference Proceedings*, vol. 1239, no. 1, pp. 321–325, American Institute of Physics, College Park, MA, USA, june 2010.

[8] L. M. Strauss and D. Borenstein, "A system dynamics model for long-term planning of the undergraduate education in Brazil," *Higher Education*, vol. 69, no. 3, pp. 375–397, 2015.

[9] E. Svirakova, R. Soukalová, and P. Bednar, "Culture managers education: system dynamics model of the coworking design centre," *Procedia - Social and Behavioral Sciences*, vol. 174, no. 106, pp. 1684–1694, 2015.

[10] L. T. Tran and S. Marginson, "International students' choice of destinations for overseas study: a specific push-pull model for vietnam," *Internationalisation in Vietnamese Higher Education*, vol. 51, pp. 161–175, 2018.

[11] K. Jurng-Jae, J. W. Park, and B. Yoon, "An analysis on the urban dynamics structure of education model for long-term prediction of environmental load," *Journal of Korean Institute of Architectural Sustainable Environment and Building Systems*, vol. 8, no. 4, pp. 174–181, 2014.

[12] L. Han, "Research on the system dynamics model and simulation of knowledge sharing incentive for physical education teachers in universities," *Journal of Taiyuan University*, vol. 8, no. 12, pp. 54–81, 2019.

[13] W. Jing and S. Ning, "Study of network media on art design education based on demand model and dynamics theory," *Springer Berlin Heidelberg*, vol. 58, no. 16, pp. 84–104, 2013.

[14] K. Castulus and B. Andreas, "An integrative model for the dynamics of ICT-based innovations in education," *Digital Culture & Education*, vol. 1, no. 2, pp. 89–103, 2009.

[15] L. L. Shi, Y. Y. Cai, and T. Michaela, "Exploration of smoking addiction health education model for teenagers based on system dynamics," *Journal of Shanghai Jiaotong University*, vol. 35, no. 2, pp. 161–165, 2015.

[16] R. Wang, "Design of online music teaching platform based on cognitive wireless sensor network and interactive design," *Journal of Ambient Intelligence and Humanized Computing*, pp. 1–11, 2021.

[17] H. Z. Lv and J. Luo, "Creative approaches in music teaching: p," *Thinking Skills and Creativity*, vol. 40, no. 1, Article ID 100840, 2021.

[18] X. Ning, "Design of online popular music teaching platform based on embedded computer network and virtual reality," *Journal of Ambient Intelligence and Humanized Computing*, vol. 35, no. 2, pp. 11–25, 2021.

[19] L. Devenish, C. Sun, C. Hope, and V. Tomlinson, "Teaching tertiary music in the #metoo era," *Tempo*, vol. 74, no. 292, pp. 30–37, 2020.

[20] A. Xw and C. B. Yao, "Music teaching platform based on FPGA and neural network," *Microprocessors and Microsystems*, vol. 80, pp. 52–63, 2020.

[21] M. D. Schipor and D. S. Duca, "On-site vs online teaching: challenges and coping strategies," *Revista romaneasca pentru educatie multidimensionala - Journal for Multidimensional Education*, vol. 13, pp. 12–26, 2021.

[22] J. Kneen, T. Breeze, S. Davies-Barnes, V. John, and E. Thayer, "Curriculum integration: the challenges for primary and secondary schools in developing a new curriculum in the expressive arts," *Curriculum Journal*, vol. 31, no. 2, 2020.

[23] L. Xu, "Air dust pollution and online music teaching effect based on heterogeneous wireless network," *Arabian Journal of Geosciences*, vol. 14, no. 16, 2021.

[24] X. Liu and C. Yang, "Remote music teaching classroom based on embedded system and cloud platform," *Microprocessors and Microsystems*, vol. 82, Article ID 103844, 2021.

[25] J. Q. Wang and C. O. Music, "The application of "flipped classroom" in music education and teaching in colleges and universities," *Management & Technology of SME*, vol. 74, no. 2, pp. 320–347, 2019.

[26] Y. Xiao, X. Li, and S. O. Arts, "The study on the "time,space and culture crossing" teaching model based on folk music teaching practice," *Curriculum, Teaching Material and Method*, vol. 2, no. 23, pp. 06–29, 2019.