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## Exploring the Reform of Piano Course Teaching based on AGIL Model



**Abstract:** - University music performance majors are strongly encouraged to take a piano fundamentals course as one of their necessary foundational topics. For college music achievement majors, it is very crucial to develop and raise students' piano playing proficiency and expertise. For the analysis and creation of complex systems, the AGIL model serves as a theoretical framework. This model may be used to create a complete methodology for piano instruction that emphasizes the growth of the student's flexibility, goal achievement, skill integration, and pause in action. Learning to play the piano may test these connections in the brain that control movement in students and people with poor motor abilities, and it can even improve coordination. Thus, we suggested the AGIL model for the reform of piano course teaching to further encourage the creative growth of piano instruction for music majors in colleges and universities in a diverse environment. The dataset used was made up of Chinese piano students. The performance measures used to assess suggested efficacy include ideal teaching, student performance, note-reading skill, teamwork ability, and student support rate. The evaluation's results indicate that the AGIL approach has provided 98.5% which seems to be useful for improving students' piano skills.

**Keywords:** Piano teaching, AGIL, skill integration, piano theory, practice, reform.

### Research Highlights

- Using the AGIL paradigm as a guide, one can create and analyze complicated systems. Based on this concept, a comprehensive approach to teaching piano can be developed, with an emphasis on helping students become more adaptable, reaching their goals, integrating their skills, and taking breaks when needed.
- Students and those with impaired motor skills may benefit from learning to play the piano since it can enhance coordination while also testing these connections in the brain that regulate movement.
- We proposed the AGIL model as a means to revamp piano course pedagogy in order to foster the innovative development of piano education for college and university music majors in inclusive settings.
- Chinese piano students contributed up the dataset. Student support rate, optimal instruction, note-reading competence, teamwork ability, and performance are the performance metrics used to evaluate the efficacy of the suggestions.
- The findings of the evaluation show that the AGIL method has been successful in enhancing pupils' piano skills, with a rate of 98.5%.

### 1. Introduction

A musical instrument that has been around for centuries is the piano. This keyboard instrument makes music by hitting strings with hammers when the keys are depressed. Physical and mental talents are equally necessary for playing the piano. Physically, the musician must be able to play the keys and control the dynamics and articulation of the song with their hands and fingers. The player must possess the mental skills necessary to read music, decipher musical notation, and comprehend musicology. The piano is a stunning and adaptable instrument that has contributed significantly to the history of music and is still a favorite among artists of all stages of development. It may be pleasant to begin playing the piano. It may aid in the growth of emotional and cognitive abilities like self-expression and creativity as well as cognitive abilities like memory, focus, and problem-solving [1]. The study of the methods used to teach piano is known as piano pedagogy. Piano pedagogy focuses on teaching musical skills to individual piano students, in contrast to the particular practice of music education, which deals with teaching music in educational environments or group settings. When advancing to more complex methods, it is indeed essential that student has a strong base in fundamental piano techniques including hand and finger placement, posture, and articulation. Learning to play the piano effectively requires an understanding of music theory. To assist the student to comprehend the music they are playing better, include theory courses in the instruction. It should be pleasurable and interesting to learn the piano. To keep the students interested and motivated, include games and enjoyable activities in the teaching. The process of learning the piano should be entertaining and engaging. Teaching piano needs patience, planning, and a love of music [2]. Figure 1 shows the benefits of piano learning.

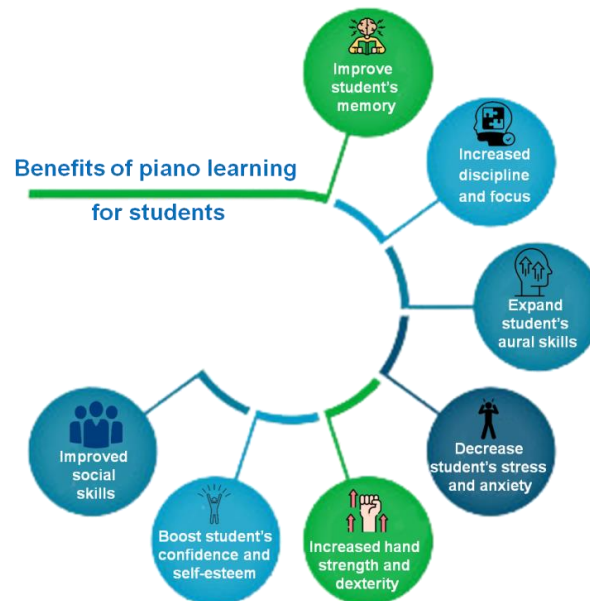
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**Figure 1: Benefits of piano learning**

Talcott Parsons created the AGIL model, a sociological theory that stands for adaptation, goal attainment, integration, and latency. The AGIL model is used to describe how societies preserve stability and order by putting various social organizations into operation. That refers to a society's capacity to uphold social and cultural norms throughout history. That involves fostering education and cognitive growth, upholding social stability, and conserving cultural heritage and customs. The AGIL model offers a framework for comprehending ways societies maintain stability and modify their behavior in response to changing conditions. For sociologists and other social scientists for being interested in researching how social systems work and change over time, it is an effective instrument [3]. The AGIL model can serve as a structure for piano instruction. The capacity of the learner to adjust to the piano and the musical pieces they are learning is referred to as adaptation in the context of piano instruction. By choosing songs that are suitable for the student's level of proficiency, demonstrating proper hand posture, and giving exercises to help the student acquire the essential abilities, the instructor may assist the student in developing. Applying the AGIL model in their piano lessons, instructors may assist the students in building a solid foundation of piano abilities, establishing and achieving the musical objectives, fusing their playing with the knowledge of and enjoyment for music, and maintaining the ability to play over time [4]. The group course teaching method for the piano first emerged internationally and eventually developed utilizing an electronic piano instruction system. Many research hypotheses have arisen along its growth. The goals of the present personnel training are not compatible with the piano teaching method currently in use, and the growth of the current teaching is hampered by this trailing teaching method [5]. The piano should play to its originality, creativity, and talent as a very significant component of the music industry to create a particular beauty of music. Colleges and universities should value the application of abilities in training as a significant talent output. There is a need to enhance the traditional teaching techniques for piano among music majors. They can experience a range of classroom experiences using creative methods of instruction. They can only really develop practical and technical skills by encouraging learners to push themselves [6]. The only courses included in the piano teaching program are theoretical and practical ones. The theoretical course covers the history of the piano, piano artists, and piano production solely interpreted. Teachers provide piano demonstration lessons in practical courses, and each student receives individualized instruction and evaluation. Piano lessons are distinct from other courses in that not all students may be instructed simultaneously, which means that instructors cannot focus on one student at a time. Courses on piano pedagogy are often taught in groups at colleges and institutions [7]. Using the attitude scale toward the piano lesson, one may assess whether or not the programs are achieving the desired success and if the attitudes of the students have improved along with the knowledge and abilities required of them. Understanding the attitudes of the prospective music teachers regarding the piano lesson is important to determine if the piano education program achieves the intended results and for deciding how to improve the student's performance in the piano lesson [8]. The AGIL model may provide a helpful foundation for updating piano lesson instruction. The use of engaging games and applications, digital pianos, and other electronic instruments are just a few examples of how technology may be utilized to improve piano training. Understanding and performing music need a solid grasp of music theory. To assist students comprehend the structure of music and enhance their general musicianship, teachers might include music theory studies in their education [9]. A good piano class should also provide pupils with the chance to play in front of an audience. Public performances may help students build their self-assurance and stage presence as well as provide them with a feeling of success and appreciation for their hard

work. A commitment to providing individualized instruction, a willingness to adopt new methods and technologies, and a focus on creating well-rounded musicians who can play the piano in addition to comprehending and appreciating music on a deeper level are all necessary components of the reforming piano course teaching [10]. In this article, we proposed the AGIL model for piano course teaching.

## 2. Related works

The article [11] discussed the meaning of the ideological and political curriculum before examining the foundation and processes of the ideological and political construction of college piano teaching curricula. The goal of the article is to serve as a resource and inspiration for colleagues in the field and to help the political and ideological components of the construction of college piano teaching curriculum content advance smoothly. The study [12] of the piano will build a solid basis for further musical study for college music students. Yet, throughout the learning process of piano classes, students often have issues with poor practice efficiency, frequently playing incorrect notes, erroneous rhythms, and challenges with music memorization. The piano course is significant to college and university music courses. They must skilfully use new media technologies and aggressively modify the educational and instructional approaches used in piano classes at colleges and institutions, To considerably boost students' music literacy and thoroughly develop their piano abilities, we must continually enrich and extend the teaching techniques used in college and university piano courses, as well as strengthen the teaching quality. The study [13] aimed to address the issues with the classic back-propagation neural network assessment method for music teaching's easy entrapment into local extremes and poor convergence speed. The classic note identification techniques are vulnerable to complicated noise. Instructors and students participate for a minute to gather research data for BPNN training and assess the effectiveness of the evaluation framework. The player's sounds and pitches now have substantially higher mistake correction efficiency owing to the enhanced BPNN. The model may successfully assist piano novices in correcting mistakes and enhancing the precision and effectiveness of practicing. The paper [14] discussed the method for putting computerized piano instruction into practice, the problems with it, what imparts information in a one-way manner, and the absence of contact. There are many different methods for assessing music performance characteristics, including rhythm, expressiveness, music, and style understanding. It identifies the mathematical link between variables influencing musical performance and assessment indicators by simulating the assessment process on a device. The neural network (NN) model is used to assess pianistic performance in addition to being used to imitate instructors and direct students throughout the practice sessions. The paper [15] created a collection of mathematical models based on the Markov model for piano voice recognition, learns them methodically and scientifically, and improves instruction effectiveness. In the modern world, learning to play the piano is one of the most common ways to educate students. Piano instructors need to be aware of the consequences. Only if they adopt a methodical, forward-thinking, useful, and creative attitude toward piano teaching will we be able to fully adapt piano instruction to the educational goals of institutions of higher learning. The article [16] focused on the examination of complicated networks and multimodal design's entry into piano instruction and performance. To categorize, examine, study, and assess piano teaching cases, remove the unnecessary, preserve the essential, and eliminate some typical teaching occurrences that may not adhere to current learning theories, teaching standards, and piano discipline characteristics, the said paper applies complex network and multimedia technology. Develop and construct some network teaching situations for piano instructors to use and explore while carrying forward the benefits and addressing the limitations. Create a fresh teaching approach to replace the outmoded teacher-lecture-heavy single-class teaching approach. The study [17] investigated whether a beginner and experienced piano students learn to play a certain kind of staccato in three different types of group training situations. Just audio and the teacher's live performance are used to show how challenging the music sounds. The ability of college piano instruction may be evaluated and categorized to some degree using the complete ability assessment method for piano teaching. As a solution, the research combines immediate assessment with the attribute technique to produce 7 characteristic indicators. The study [18] offered a particular approach to assess the machine learning-based correlation of piano instruction. The enhanced T-test approach is included while the association rule mining machine learning methodology is being used. The frequent patterns are measured using the modified T-test, and a new measure of the connection rules' effect is also suggested. The findings make it clear that using the degree of effect as a proxy for association rules to assess the possible applicability of assessment data for multimedia-assisted piano instruction is very practicable.

## 3. Proposed method

Students acquire a variety of emotions and empathy through piano instruction. According to research, students who have taken music classes are superior able to distinguish between minor tonal changes in speech and music. It improves their listening skills. To improve student piano learning, we proposed the AGIL model to reform the piano course teaching.

### i. Dataset

The study technique and methodology were designed together and were conducted in China's higher education colleges, where piano instruction is offered. 328 third-year intramural students from the Faculty of Music and Performing Arts made the study population. There were 53% girls and 47% boys, with an average age of 20.67

0.63. The sample had to fit certain characteristics, like having a passion for music, being able to perform the piano, knowing about contemporary technology, and being able to employ them in teaching.

## **ii. Reform of piano course teaching based on AGIL model**

The modernizing and enhancement of conventional piano teaching techniques is part of the reform of piano course instruction and will increase their efficiency and student engagement. With an emphasis on creativity, tailored training, and technology, the teaching of piano courses will be changed to adopt a more thorough and personalized strategy. A theoretical framework for analyzing and creating complex systems is the AGIL model. Its acronym stands for Integration, Goal Attainment, Latency, and Adaptation. This model may be used to create a complete strategy for piano instruction that emphasizes the growth of the student's flexibility, goal achievement, skill integration, and delay in reaction.

### **a. Adaptation**

The term "adaptation" describes a student's capacity to react and adjust to novel and changing circumstances. Many distinct concepts might be referred to as adaptation in piano instruction. It could be used to describe a student's capacity to adapt to new musical compositions. Students of the piano must learn how to read and interpret sheet music and modify their playing technique to fit the demands of each composition. They will come across pieces of increasing complexity as they advance in their studies, and they will need to modify their playing approach appropriately. It can be a reference to the student's capacity to change playing styles. Various playing strategies, such as using various tempos, dynamics, and articulations, are required for various musical genres. Piano instructors may aid students in developing their capacity to modify their playing style to fit the demands of the music by exposing them to a variety of musical genres. A piano student could be required to play in front of an audience or a duet with another artist, for instance. Students may improve their capacity to adjust to the unique needs of each circumstance by rehearsing in a variety of performance settings.

### **b. Goal Attainment**

When a teacher is successful in assisting a student in reaching their musical objectives, this is referred to as goal attainment. Setting precise goals for the student, like learning a particular piece or perfecting a certain technique, and working with them to acquire the skills and information required to reach those goals are two ways to do this. The AGIL model's goal-achieving process for piano instruction includes the following steps:

To build a personalized learning plan that conforms to the requirements and preferences of each student, the instructor must evaluate each student's musical aptitude, learning preferences, and prior knowledge.

Setting objectives is something that both the instructor and the student should talk about and decide upon. These objectives must be attainable, quantifiable, and difficult enough to maintain the student's interest. Implementation: The lesson plan should be written by the instructor and contain exercises and activities that will assist the students in reaching their objectives. During the learning process, the instructor should provide the student with directions, comments, and assistance that are precise and simple.

The instructor should routinely evaluate each student's progress toward accomplishing their objectives. This may be achieved by regular reviews of the student's performance, peer and teacher feedback, and performance evaluations. The instructor should modify the lesson plan to the needs and development of the students in light of the evaluation findings. This can include changing the objectives, tweaking the instructional strategies, or offering more assistance and resources. By doing these actions, the teacher may successfully and efficiently assist the student in reaching their objectives while also fostering a compassionate and inspiring learning environment.

### **c. Integration**

According to the AGIL model, integration is the process of coordinating the many elements of a social system to make sure they function harmoniously. Integration in piano instruction entails the following actions:

**Collaboration:** The instructor must organize several elements of the piano lessons, including lesson plans, instructional strategies, and assessment processes. To ensure that everyone is aware of what is expected of them, this calls for open communication between the student and their parents (if necessary).

**Uniformity:** The instructor must make sure that the instructional strategies and resources are the same across all of the lessons. For the learner, this fosters a feeling of consistency and familiarity that may assist with their learning process.

**Cooperation:** The instructor should promote student cooperation, for instance by planning group performances or ensemble playing. Through peer learning and social skill development, the children may benefit from this.

**Flexibility and adaptability:** A good teacher will be able to modify their lesson plans and instructional materials to suit the requirements of various pupils. This may include altering the speed of the sessions, adding more resources or assistance, or tailoring the lesson plan to the student's preferred method of learning.

The instructor may establish a coherent, integrated learning environment that supports students in successfully and efficiently achieving their objectives by adhering to these principles.

### **d. Latency**

Latency in the AGIL model refers to the persistence of societal and cultural norms across time. The following actions constitute delay in the context of piano instruction:

**Preservation:** The instructor should inspire his or her pupils to recognize and guard the cultural and historical value of classical music. This may be accomplished by teaching students about classical composers, exposing them to their works, and encouraging them to attend concerts of the genre.

**Innovation:** The instructor should promote student creativity and innovation while upholding the classical music heritage. This can include using improvisational methods or adding modern music.

**Transmitter:** The piano instructor should impart her or his expertise and abilities to upcoming piano pupils. Mentoring or training new teachers is one way to do this, as is encouraging students to pursue careers in education.

**Adaptation:** The piano instructor must adjust to changes in the social and cultural environment of piano instruction, such as new technological advancements, shifts in instructional strategies, or shifts in the makeup of the student body.

By using these actions, the instructor may encourage creativity and adaptability to new conditions while also ensuring that the cultural and social patterns of piano instruction are maintained and conserved across time.

The instructor may provide a successful and comprehensive piano instruction experience that fulfills the requirements of the student and promotes their cognitive, emotional, personal, and social growth by adhering to the AGIL model processes.

#### 4. Results and Discussion

The study of piano theory and practice includes learning about the foundational ideas of music, including melody, harmony, and notation. The mechanical and practical components of playing the piano are covered in piano practice. This entails improving finger technique, posture, and coordination as well as tactile awareness and command of dynamics, articulation, and phrases. Piano players can comprehend and execute music more skillfully if they have a strong understanding of music theory. Thus, we suggested the AGIL model. This section discusses the assessment of the suggested AGIL paradigm. The performance indicators utilized for assessment include optimal teaching, student performance, note-reading ability, teamwork ability, and student support rate. New media technology (NMT) [19], flipped classroom (FC) [20], and new curriculum concepts (NCC) [21] are the existing comparative methods.

##### i. Optimal teaching

The ideal learning environment is one in which students acquire the abilities necessary to prepare them for the future. The technique of presenting instructional material and assisting the learning process in a manner that improves student engagement, retention, and comprehension is known as optimal teaching. Optimal piano teaching combines specialized instruction, efficient communication, clear and well-organized lesson plans, regular practice, feedback and evaluation, and the inclusion of creativity and enjoyment. Figure 2 shows the optimal teaching of the proposed and existing techniques. Table 1 shows the outcomes of optimal teaching. In comparison to existing methods, the suggested approach offers a high level of optimal teaching.

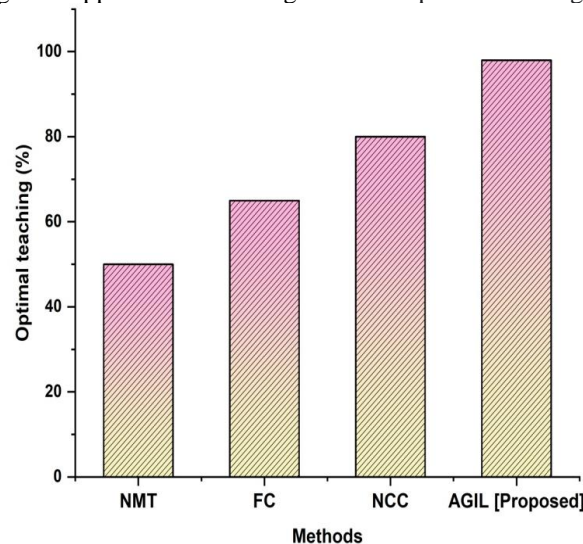


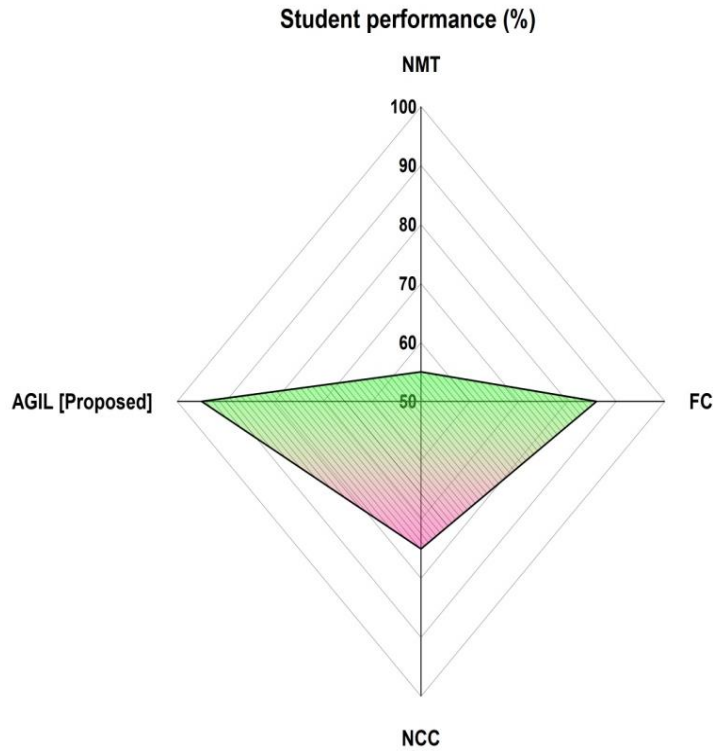
Figure 2: Optimal teaching of the proposed and existing techniques

Table 1: Outcome of optimal teaching

Methods	Optimal teaching (%)
NMT	50
FC	65
NCC	80
AGIL [Proposed]	98

**ii. Student performance**

Several indicators that evaluate a student's achievement and playing growth may be referred to as student performance. Some common measures of student performance include playing skills, attendance, behavior, and participation in piano activities. Student performance in a piano lesson refers to the way a student is doing in terms of understanding the necessary skills and methods to play the piano. Figure 3 shows the student performance of the proposed and existing techniques. Table 2 shows the outcomes of the student performance. In comparison to existing methods, the suggested approach offers a high level of student performance.



**Figure 3: Student performance of the proposed and existing techniques**

**Table 2: Outcome of student performance**

Methods	Student performance (%)
NMT	85
FC	50
NCC	65
AGIL [Proposed]	97

**iii. Note reading skill**

Recognizing the pitches and durations of individual musical notes and interpreting them in the context of musical composition are key components of note reading, a basic ability in music theory. Note reading is a basic skill in piano playing and should be a crucial element of any piano course. Students should start with the fundamentals of music notation to build their note-reading abilities in a piano course. The names of the notes, their locations on the staff, and their lengths are all part of this. They may also need to study time signatures, key signatures, and sharps and flats. Note reading is an important piano technique that can only be learned with time and practice. Figure 4 shows the note-reading skill of the proposed and existing techniques. Table 3 shows the outcomes of the note-reading skill. In comparison to existing methods, the suggested approach has a high level of note-reading skills.

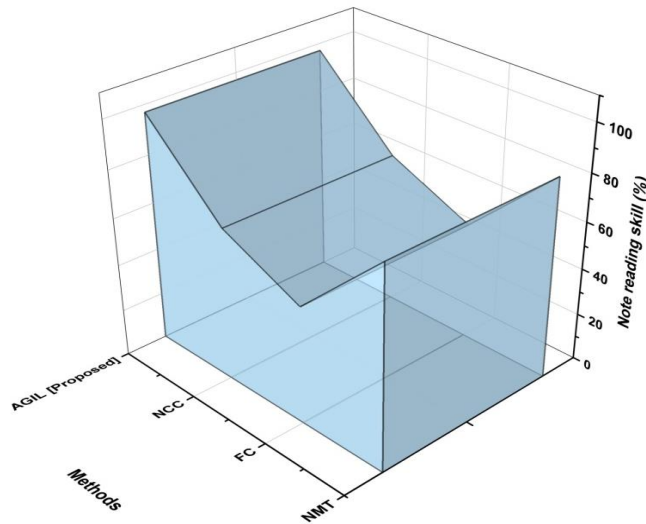


Figure 4: Note reading skill of the proposed and existing techniques

Table 3: Outcome of note reading skill

Methods	Note reading skill (%)
NMT	55
FC	86
NCC	75
AGIL [Proposed]	95

**iv. Teamwork ability**

The abilities that allow a person to work together with others in a group context are referred to as teamwork abilities. A competent team player is capable of discussing thoughts and duties, communicating clearly, and working toward a shared objective. Teamwork ability is an important skill to establish in piano course teaching placing, it can help the students in working successfully with their classmates and achieving their musical objectives together. In our strategy, having strong teamwork skills may help to accomplish their objectives and establish lasting bonds with the teammates. Figure 5 shows the teamwork ability of the proposed and existing techniques. Table 4 shows the outcomes of the teamwork ability. In our method has a strong teamwork ability compare to the existing method.

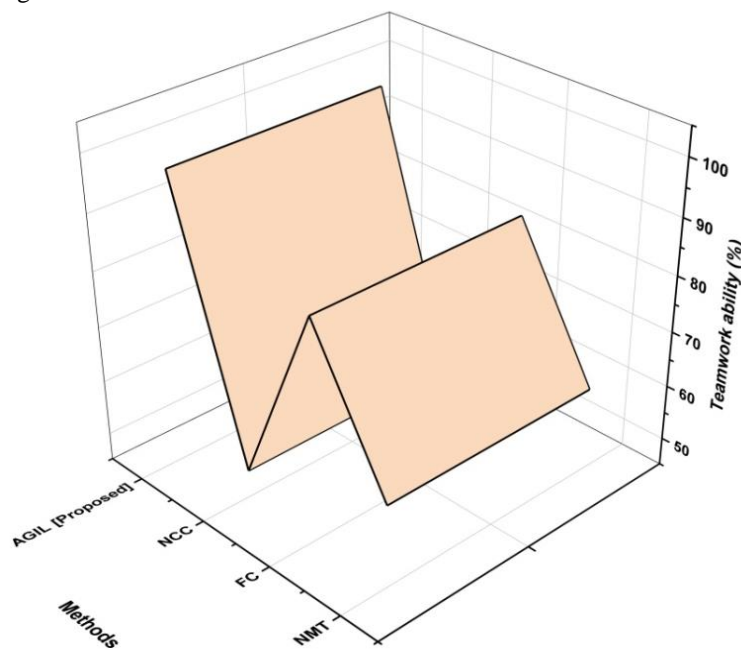


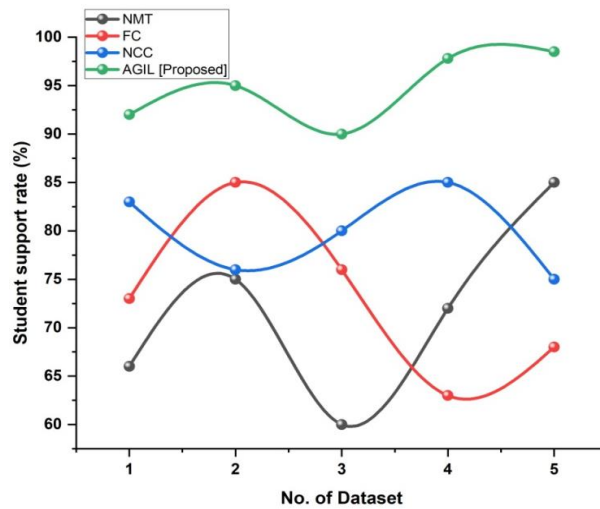
Figure 5: Teamwork ability of the proposed and existing techniques

**Table 4: Outcome of teamwork ability**

Methods	Teamwork ability (%)
NMT	60
FC	85
NCC	50
AGIL [Proposed]	97

**v. Student support rate**

The amount of help and direction are given to students in a learning environment is referred to as the student support rate. It may include a wide range of variables, including resource accessibility, the availability of mentors and coaches, and the quality of training. The performance and accomplishment of students may be significantly enhanced by high student support rates. In a piano course teaching setting, a student support rate is necessary to confirm that students receive the guidance and resources they need to accomplish. Figure 6 shows the student support rate of the proposed and existing techniques. Table 5 shows the outcomes of the student support rate. In comparison to existing methods, the suggested approach offers a high level of student support rate.



**Figure 6: Student support rate of the proposed and existing techniques**

**Table 5: Outcome of student support rate**

No. of Dataset	Student support rate (%)			
	NMT	FC	NCC	AGIL [Proposed]
1	66	73	83	92
2	75	85	76	95
3	60	76	80	90
4	72	63	85	97.8
5	85	68	75	98.5

**5. Conclusion**

Teaching piano skills to students is known as piano course teaching. This is usually done in a one-on-one or group environment. Several places, such as private studios, music schools, and internet platforms, may provide piano lessons. The advantages that students might have from learning to play the piano highlight the significance of piano course instruction. Many advantages come from learning to play the piano, including the improvement of fine motor skills, heightened cognitive functions, better academic achievement, stress reduction, and boosted confidence. The instruction of piano courses is crucial in assisting students in achieving these advantages. To increase the efficacy of piano instruction, the teaching of piano lessons may undergo a variety of modifications. To enhance the teaching of piano courses, an effective method must be created. The AGIL model offers a complete platform for examining the operation and interconnections of many components of a system of education, from personal actions to significant entities. To further promote the creative development of piano instruction for music students, we thus introduced the AGIL model for the reform of piano course teaching. Performance indicators are assessed, including optimal teaching, student performance, note-reading skill, teamwork skill, and student support rate. The results show that the AGIL approach improved both the quality of piano instruction and students' playing proficiency.

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