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REDEFINING THE ROLE OF TEACHERS IN THE DIGITAL ERA 5.0: IMPLEMENTING CREATIVE PEDAGOGY IN MUSIC ARRANGEMENT COURSES

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Abstract

The rapid development of artificial intelligence in music software during the Society 5.0 era has significantly transformed how students approach music arrangement. Automated features and generative systems enable students to produce sonically complex works in a short time. However, this condition also gives rise to a phenomenon known as the illusion of competence, in which convincing musical output is not necessarily accompanied by a solid understanding of underlying musical structures. This study aims to describe how the instructor's role needs to be redefined through a creative pedagogical approach in response to these changes. The research employs a descriptive qualitative method, combining literature review and classroom observation of arrangement learning supported by music software. The findings indicate that instructors can no longer function merely as technical trainers. Instead, they need to act as post-algorithmic aesthetic validators, guiding students to reflect on and justify their musical decisions. The study highlights that integrating AI into music education may accelerate sound production while simultaneously shortening the development of musical reasoning, if not balanced by critical pedagogical intervention. Redefining the instructor's role, therefore, becomes essential to ensure that arrangement learning cultivates musical awareness rather than merely operational proficiency with digital systems.

Keywords: *creative pedagogy, music arrangement, artificial intelligence, instructor role, Society 5.0*

Abstrak

Perkembangan kecerdasan buatan dalam perangkat lunak musik di era Society 5.0 mengubah cara mahasiswa menyusun aransemen. Fitur otomatis dan sistem generatif memungkinkan karya terdengar kompleks dalam waktu singkat, tetapi kondisi ini juga memunculkan gejala ilusi kompetensi, yaitu kemampuan menghasilkan bunyi yang meyakinkan tanpa pemahaman struktural yang sepadan. Penelitian ini bertujuan mendeskripsikan bagaimana peran pengajar perlu diredefinisi melalui pedagogi kreatif untuk merespons perubahan tersebut. Penelitian menggunakan metode kualitatif deskriptif dengan pendekatan studi literatur dan observasi pembelajaran aransemen berbasis perangkat lunak musik. Hasil penelitian menunjukkan bahwa pengajar tidak lagi cukup berperan sebagai instruktur teknis, melainkan perlu berfungsi sebagai validator estetika pasca-algoritmik yang mengarahkan mahasiswa mempertanggungjawabkan keputusan musikalnya secara reflektif. Temuan ini menegaskan bahwa integrasi AI dalam pendidikan musik berisiko mempercepat produksi bunyi sekaligus memendekkan proses pembentukan nalar musikal apabila tidak diimbangi intervensi

pedagogis yang kritis. Redefinisi peran pengajar menjadi prasyarat penting agar pembelajaran aransemen tetap membentuk kesadaran musikal, bukan sekadar kecakapan mengoperasikan sistem.

Kata kunci: pedagogi kreatif, aransemen musik, kecerdasan buatan, peran pengajar, Society 5.0

I. INTRODUCTION

Changes in music learning in higher education are inextricably linked to the increasingly widespread penetration of digital technology and artificial intelligence. Arrangement software, digital audio workstations, and generative systems now not only assist but also shape the way students make musical decisions. This situation aligns with the character of Society 5.0, which positions intelligent technology as a partner in human activity (Fukuyama, 2017), while also presenting new challenges for the education system in maintaining the human dimension amidst digital acceleration (Amelia, 2023). This transformation also represents a continuation of music education's adaptation to previous digital accelerations, which encouraged more intensive use of technology in the learning process (Kapoyos & Manalu, 2021). The integration of AI in education is even considered capable of enriching the learning experience and expanding access to creative resources (Li & Wang, 2024). However, several studies warn that excessive automation can displace human cognitive engagement if not balanced with appropriate pedagogical strategies (Holmes et al., 2019; Luckin & Holmes, 2016). These symptoms begin to appear in arrangement classes, particularly when students construct harmonic progressions, determine voicings, or choose accompanying textures by relying on the system's instant suggestions. The resulting works sound complex, but the musical rationale behind their choices often lacks a thorough understanding.

This shift touches the very core of the musical thinking process in arrangement. The relationships between voices, textural balance, and harmonic direction, previously developed through gradual exploration and revision, are now often interrupted by automated recommendations. While efficiency may improve, students' reflective engagement does not always increase. This situation has been linked to the risk of decreased learning depth in technology-based educational environments where educators do not actively guide (Dang et al., 2024; Riyadi Hs & Sufyan, 2024). In the context of arranging instruction, this situation creates what can be called an illusion of competence. Students appear productive and

technically proficient. Conceptual understanding of harmonic function, accompanying melodic direction, and the role of each textural layer develops more slowly. O'Leary (2025) emphasized that this problem is not solely due to technological sophistication, but rather to the weakness of the pedagogical framework guiding students' interactions with AI-based systems.

Numerous studies on technology-based music learning have indeed demonstrated positive impacts on students' technical skills and creative productivity. The use of notation software and arrangement applications has been reported to facilitate the visualization of musical structures and accelerate the production process (Mawardi & Sriwijaya, 2024; Noviean et al., 2022). The digital transformation in music education is also understood as part of a shift toward more flexible and multimodal learning practices (Camlin & Lisboa, 2021). However, this research remains strongly technocentric, emphasizing the sophistication of tools and their effectiveness, while receiving relatively little attention to the psychological and cognitive impacts on students' musical thinking processes. This is where the research gap lies. The focus is not on the sophistication of the software used, but rather on how the dominance of technology changes the way students understand the musical logic behind the arrangements they produce.

The creative pedagogy framework offers a different approach. Creativity is understood as a dialogic process that demands reflection, directed exploration, and accountability for ideas (Cremin & Chappell, 2019). Teachers or lecturers play a role in designing learning situations that encourage students to recognize and assess their own thinking processes (Lin, 2011). This principle becomes particularly relevant in AI-based arrangement learning, as decisions about harmony, texture, and timbre are no longer entirely derived from students' internal processes. Music education literature in the AI era even emphasizes the need for critical literacy to prevent the aesthetic and human dimensions from being eroded by the dominance of algorithms (O'Leary, 2025; Rivoltella, 2023).

This gap between the acceleration of technology and the slow pace of pedagogical transformation underlies this research. Automated solutions for arranging are increasingly being refined by digital systems, but the role of lecturers in guiding students' musical awareness has not been adequately redefined. This research aims to describe the redefinition of the role of instructors in music arrangement courses in the Digital 5.0 era through the

application of creative pedagogy. This redefinition goes beyond technological mastery, but encompasses a shift from technical instructors to facilitators of musical reflection, curators of technology use, and aesthetic mentors who guide students in understanding the artistic rationale behind each arrangement decision. In addition to providing conceptual understanding, this research also offers pedagogical recommendations that can be used as a basis for developing more reflective, critical, and in-depth musical arrangement learning practices.

II. THEORETICAL STUDIES

Discussions about creativity in education often sound idealistic, as if simply providing space for freedom will automatically foster creativity. This view has long been criticized. Lin (2011) asserts that creativity develops through pedagogical structures that encourage reflection and awareness of thought processes. Cremin and Chappell (2019) reinforce this position by emphasizing the importance of pedagogical dialogue, in which students' ideas are tested, questioned, and revised. This principle is particularly relevant in music arrangement learning. Determining harmonic progressions, arranging inner voices, or balancing textures does not arise from spontaneous inspiration, but rather from a process of iterative evaluation of the function of each voice within the overall musical structure. Arranging creativity is thus reflective, not instantaneous.

In the context of digital music education, creativity no longer develops in a purely manual space, but rather through the interaction between human decisions and the possibilities proposed by intelligent systems. Creativity becomes a process of negotiation between musical intuition and the algorithmic responses offered by technology (Coppi, 2025). Several studies also show that technology can enrich the creative process when positioned as a catalyst for exploration, not a substitute for artistic decision-making (Lam, 2024).

The problem is that the contemporary digital environment actually encourages instantaneousness. On the one hand, AI in music is promoted as a tool for expanding creative horizons. Li and Wang (2024) demonstrate how intelligent systems can help students explore a wider variety of harmonics and timbres than is possible manually. Various generative systems in music have even been classified based on their compositional functions, ranging from automatic harmonization to the creation of complete musical structures (Herremans et

al., 2017). However, this optimism needs to be read critically. Luckin et al. (2016) have warned that when intelligent systems take over part of the cognitive process, the risk arises not simply of technical dependency but of a narrowing of conceptual reflection. In the context of arrangement, students may choose chord progressions that "sound right" because the system recommends them, rather than because they understand their tonal relationships and harmonic functions. This contrast between the expansion of sonority possibilities and the narrowing of musical awareness creates a paradoxical situation in AI-based arrangement learning.

This situation can be explained through the concept of the illusion of competence, introduced earlier. Cognitively, this illusion relates to a feeling of competence that is disproportionate to the depth of conceptual understanding. While digital systems provide quick solutions, students' cognitive load is indeed reduced, but the opportunity to build a solid knowledge schema is also diminished. Students can produce a balanced-sounding four-voice arrangement, but are unable to explain the reasoning behind the placement of passing notes or the secondary dominant function that appears in the final result. O'Leary (2025) asserts that in AI-based music education, the primary problem is not the accuracy of the machine's output but rather the erosion of students' reflective awareness of their own creative process. The illusion of competence is thus not the fault of technology, but rather a failure of pedagogy to maintain cognitive depth.

This issue demands a rethinking of educators' digital competencies. Many studies have stated that lecturers need to master technology to maintain relevant learning (Dang et al., 2024; Riyadi Hs & Sufyan, 2024). This statement is true, but not sufficiently clear. In arranging instruction, the issue goes beyond simply being able to operate software or understand AI features. A more fundamental challenge is how lecturers assess, critique, and frame arrangements, some of which are generated by algorithms. Lecturers need to be able to ask why this voicing was chosen, what the function of this texture is, and how the interrelationships between layers of sound shape musical character. Digital competency, in this context, is not technical skill, but rather the pedagogical capacity to return musical decisions to the realm of human reflection.

The transformation of music learning culture complicates this situation. Camlin and Lisboa (2021) describe a shift toward increasingly digitalized musical practices, where the

processes of learning, producing, and distributing music are intertwined. This environment expands access while blurring the boundaries between creators and users of technology. Rivoltella (2023) cautions that digital education must be consciously managed to prevent technology from dominating the meaning-making process. In music education, this dominance can arise when aesthetics are determined by presets, sonic balance is determined by auto-mix algorithms, and harmony choices are left to system recommendations. At this point, the role of the teacher becomes crucial as the guardian of the aesthetic and human dimensions of the creative process.

The theoretical framework discussed above demonstrates that redefining the teacher's role is not merely a methodological adjustment, but rather a structural necessity. Creative pedagogy emphasizes the importance of reflection and dialogue in the creative process. Studies of AI in education warn of the risk of cognitive functions being taken over by systems. Digital pedagogy literature emphasizes the educator's role as a mediator of meaning in technology-based learning environments. If these three lines of thought are brought together, the position of the arrangement lecturer can no longer be maintained as a mere technical instructor. They must transform into a facilitator of musical reflection, a curator of AI use, and an aesthetic guide, ensuring that every arrangement decision remains rooted in the student's artistic consciousness. Without this shift, arrangement education risks being reduced to training software operators, rather than the process of developing thinking musicians.

III. RESEARCH METHODS

This research is a qualitative study with descriptive specifications that aims to describe the changing role of teachers in learning music arrangement in the Digital 5.0 era. The approach used focuses on pedagogical studies in the context of technology-based music education, in line with research trends on the integration of artificial intelligence in higher education (Haleem et al., 2022; Zawacki-Richter et al., 2019). Data collection techniques were carried out through literature studies of scientific publications discussing creative pedagogy, digital pedagogy, and the use of AI in music education (Li & Wang, 2024; Rivoltella, 2023), as well as through observations of the arrangement learning process using notation software and digital audio workstations, as well as digital music learning practices that have been studied in contemporary music education literature (Camlin & Lisboa, 2021;

Mawardi & Sriwijaya, 2024). Observations focused on how students construct harmonic progressions, arrange musical textures, and distribute sounds when interacting with automated features or AI-based systems, as well as on the forms of instructor intervention in guiding these musical decisions. The data obtained were analyzed using content analysis techniques to identify patterns of changing instructor roles, forms of musical reflection facilitation, and indications of students' cognitive dependence on technology. They were then interpreted conceptually by referring to creative pedagogy frameworks and critical literature on music education in the era of artificial intelligence (Cremin & Chappell, 2019; O'Leary, 2025).

IV. RESEARCH RESULTS

The Illusion of Competence in Digital Arranging

Observations indicate a shift in student work patterns when learning to arrange with AI-based software when intensive use occurs. Students tend to begin the arrangement process from style templates, texture presets, or system-provided chord progression recommendations. Once the initial structure is established, subsequent section development often occurs without in-depth evaluation of the relationships between voices. This is evident in the minimal revision of voice leading and the lack of adjustment of the balance between layers of sound.

This condition is reflected in the students' scores. Some arrangements exhibit less-than-smooth transitions between voices and overlapping notes in the same area, resulting in an overly dense and unclear texture. In terms of sound, the resulting arrangements still sound full and convincing. However, in terms of musical structure, the relationships between sections do not always demonstrate a strong logic. Students are able to produce complex-sounding products, but their reflective engagement with the process of harmonic and texture formation appears limited. This phenomenon aligns with concerns about reduced cognitive depth in AI-based learning (Luckin & Holmes, 2016; O'Leary, 2025).

Tension between Instant Aesthetics and Musical Logic

Instructors' efforts to direct students to reconsider harmonic and textural decisions demonstrate a pedagogical tension. When asked to retrace chord functions or refine the movement between voices, the arrangement process often slows significantly. Students take longer to unravel structures previously taken for granted by the system. This situation

demonstrates the gap between the ease of producing finished sounds and the readiness to understand the musical logic behind them.

This phenomenon illustrates the clash between technology-facilitated instant aesthetics and the demands of structural coherence in arrangements. Digital music culture, which encourages rapid, interface-based production (Camlin & Lisboa, 2021), appears to influence students' expectations of the learning process, where sonority results are often considered sufficient without a thorough structural reading. Within the framework of creative pedagogy, this tension becomes a space for intervention through reflective dialogue, score review, and exploration of musical alternatives (Cremin & Chappell, 2019).

Redefining the Role of the Instructor as a Post-Algorithmic Aesthetic Validator

Changes in student work patterns have prompted a significant shift in the instructor's role. Instructors no longer primarily focus on technical demonstrations of software use, but rather on critically examining musical decisions generated through algorithmic assistance. In teaching practice, attention is consistently directed to the relationships between sounds, the function of harmonization, and the aesthetic impact of textural density. This role can be understood as a post-algorithmic aesthetic validator, ensuring that machine-assisted results remain musically explicable and accountable to students.

This role demands more intense cognitive engagement from the instructor. Each arrangement is read as a trace of a thought process that needs to be re-opened. The educator's digital competence extends beyond technical mastery to encompassing the ability to manage the cognitive impact of technology on students (Dang et al., 2024; Riyadi Hs & Sufyan, 2024). In this context, the instructor's role is to ensure that the ease of automation does not replace the process of musical reflection. This shift represents a fundamental shift from a learning model oriented toward technical mastery to one that emphasizes artistic accountability. The differences between the two models can be seen in Figure 1.

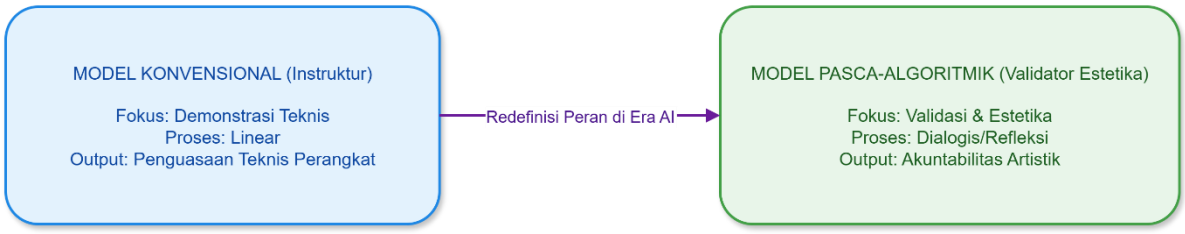

Figure 1. Comparison of Conventional and Post-Algorithmic Arrangement Learning Models

This figure emphasizes that the changes occurring concern not only the use of technology but also the underlying pedagogical orientation. The conventional model places learning success on technical mastery of the device, while the post-algorithmic model emphasizes students' ability to reflectively account for their musical decisions.

This shift in orientation demonstrates that the integration of AI in arrangement learning requires a repositioning of the teacher's role from that of a procedural instructor to that of a director of aesthetic awareness. Furthermore, the view that AI should expand the possibilities of human learning can only be realized if the teacher actively strengthens this reflective dimension (Holmes et al., 2019; Li & Wang, 2024).

Implications for Digital Music Education

Research findings indicate that the integration of AI in arrangement learning has fundamental pedagogical consequences. The integration of art and technology in education is fundamentally aimed at expanding students' creative space and encouraging learning innovation (Cahyaningrum et al., 2025). However, careful pedagogical management is needed to ensure that this expansion does not compromise the depth of musical thinking. Technology facilitates the creation of complex sounds, but it also has the potential to shorten the path to musical reasoning. Technology in music education should expand experience, not replace understanding (Ruthmann & Mantie, 2017). In the context of arranging, this means AI needs to be positioned as an exploratory tool that constantly returns to the realm of human reflection.

If the role of the instructor is not consciously redefined, arranging instruction risks devolving into mere software training. Students may produce convincing-sounding works, but they will not develop as reflective musical thinkers. In the long term, higher music education could lose its function as a space for developing musicians with a deep structural awareness and aesthetic sensitivity.

However, this role transformation is not a unilateral one. The redefinition from instructor of technical procedures to validator of post-algorithmic aesthetics requires significant pedagogical readiness. This readiness is also related to digital literacy, which is not merely technical but also encompasses the critical ability to interpret the use of technology in the learning process (Lubis et al., 2025). Educators' digital competence extends beyond the ability to operate devices, but also encompasses the reflective capacity to assess

the cognitive and aesthetic impacts of technology use in learning (Dang et al., 2024; Riyadi Hs & Sufyan, 2024). In practice, not all instructors are prepared to consistently perform this function. The convenience offered by AI can also tempt educators to focus on the efficiency of technical demonstrations without examining the depth of the musical structures produced by students. Unless instructors themselves develop critical reflection on the use of AI, the aesthetic validation function will be difficult to sustain.

In such a situation, the integration of technology has the potential to reinforce teaching patterns that are oriented towards instant results, rather than the formation of deep musical awareness, a risk anticipated in early discourse on the role of educators in the educational AI ecosystem (Luckin & Holmes, 2016). Thus, the challenge of redefining roles lies not only in the readiness of students, but also in the readiness of lecturers to step out of their pedagogical comfort zones. At the institutional level, the integration of AI in music education also demands learning policies that are able to balance technological efficiency with the quality of the artistic process, so that digital innovation does not displace the goal of developing aesthetic sensitivity (Wu, 2025).

V. CONCLUSION

This research shows that the integration of artificial intelligence into music arrangement learning not only changes the tools students use, but also the way they construct musical understanding. The ease of automated features allows complex pieces to sound quickly, but also creates the illusion of competence, namely the gap between the quality of the sound produced and the depth of students' structural understanding of their own arrangements. Thus, the primary issue in learning arrangement in the Digital 5.0 era lies not in the presence of technology, but in how the pedagogical process manages its impact on musical reasoning.

The research findings demonstrate that the role of the teacher is no longer sufficient if it simply serves as a technical instructor. Teachers need to be redefined as post-algorithmic aesthetic validators who actively guide students in reflecting on and accounting for every musical decision, including those involving the assistance of AI systems. This role positions teachers as guardians of the depth of musical thinking processes amidst the acceleration of technology-facilitated sound production.

However, this redefinition also presents challenges to the professional level of educators. Not all teachers are ready to move beyond procedural teaching patterns to a more intellectually demanding, reflective approach. Without such pedagogical readiness, AI integration risks reinforcing the illusion of competence and shifting higher music education to mere training in the use of digital creative systems. Therefore, developing critical digital pedagogical competencies is no longer an optional extra, but rather an urgent necessity so that technology continues to function as an extension of human creativity, not a substitute for musical thinking.

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