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DISSERTATION

**FORMATION OF FUTURE MUSIC TEACHERS' READINESS FOR
PROFESSIONAL ACTIVITY BASED ON INTERDISCIPLINARY INTEGRATION**

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АНОТАЦІЯ

ЧЖАН Геґе. Формування готовності майбутніх учителів музичного мистецтва до професійної діяльності на засадах міждисциплінарної інтеграції. – Кваліфікаційна наукова праця на правах рукопису.

Дисертація на здобуття ступеня доктора філософії за спеціальністю 011 Освітні, педагогічні науки. – Західноукраїнський національний університет МОН України, Тернопіль, 2026.

У дисертації викладено нове вирішення проблеми формування готовності майбутніх учителів музичного мистецтва до професійної діяльності на засадах міждисциплінарної інтеграції.

Актуальність теми підтверджується наявністю низки об'єктивних суперечностей, котрі суттєво перешкоджають формуванню готовності майбутніх учителів музичного мистецтва до професійної діяльності на засадах міждисциплінарної інтеграції. Зокрема, це суперечності між потребою громадянського суспільства у майбутніх учителях музичного мистецтва, здатних ефективно реагувати на динамічні виклики освітнього середовища, та реально-існуючим станом професійної підготовки здобувачів вищої освіти відповідного профілю у закладах вищої освіти (ЗВО); підвищеними вимогами до професійно-педагогічної підготовки майбутніх учителів музичного мистецтва в межах формування їхньої готовності до зреалізування освітнього процесу в закладах загальної середньої освіти (ЗЗСО) на засадах міждисциплінарної інтеграції та недостатнім рівнем сформованості у здобувачів вищої освіти відповідної готовності до самостійного та педагогічно-доцільного застосування міждисциплінарних зв'язків у майбутній фаховій діяльності; потребами ЗЗСО у вчителях, спроможних під час викладання занять музичного мистецтва ефективно забезпечувати міждисциплінарну інтегрованість освітнього процесу, та існуючою недостатньо-організованою у цьому напрямку професійною підготовкою студентів у ЗВО до реалізації міждисциплінарного підходу; об'єктивною необхідністю в науковому обґрунтуванні та цілісному впровадженні дієвих педагогічних умов, структурно-функціональної моделі і

відповідного науково-методичного забезпечення процесу формування готовності майбутніх учителів музичного мистецтва до професійної діяльності на засадах міждисциплінарної інтеграції та переважно емпіричним характером зреалізування означеного процесу за традиційної організації навчання майбутніх учителів музичного мистецтва у ЗВО.

У сучасних умовах важливого значення в Україні та за її межами набуває якість фахової підготовки майбутніх педагогів музичного мистецтва до професійної діяльності на засадах міждисциплінарної інтеграції у ЗВО. Виклики сьогодення спричинили зростання потреби у формуванні в процесі організації навчання в майбутніх учителів міждисциплінарних компетентностей, оскільки для ефективного здійснення професійної діяльності нині недостатньо володіти сукупністю фахових знань. Сучасний учитель музичного мистецтва повинен бути компетентним фахівцем, здатним якісно виконувати професійні обов'язки та творчо застосовувати набуті знання, інтегруючи їх із положеннями інших освітніх і мистецьких галузей, для ефективного розв'язання різнобічних педагогічних завдань. У цьому контексті міждисциплінарна інтеграція у професійній підготовці майбутніх учителів музичного мистецтва забезпечує здатність майбутнього педагога музичного мистецтва ефективно організовувати інтегрований освітній процес у ЗЗСО, встановлювати взаємозв'язки між мистецькими й педагогічними компонентами змісту освіти та розв'язувати реальні освітньо-педагогічні проблеми.

Основними вимогами, що ставляться до формування готовності майбутніх учителів музичного мистецтва до професійної діяльності на засадах міждисциплінарної інтеграції є освоєння ними освітньо-професійної програми, яка передбачає системність та цілісність професійної підготовки; інтеграція музично-теоретичних, психолого-педагогічних та методичних знань; розвиток творчого, критичного та інтегративного мислення; формування здатності встановлювати й реалізовувати міжпредметні зв'язки у професійній практико-орієнтованій діяльності; застосування інноваційних та цифрових технологій у роботі з учнями ЗЗСО; розвиток професійної самостійності та оволодіння

педагогічною рефлексією, творчою активністю та готовністю до постійного професійного саморозвитку.

Визначено, що сформована готовність майбутніх учителів музичного мистецтва до професійної діяльності на засадах міждисциплінарної інтеграції є складним інтегральним особистісно-професійним утворенням, що характеризується здатністю здобувачів вищої освіти цілісно поєднувати знання, уміння, навички й досвід із різних галузей науки, мистецтва та педагогіки для успішного зреалізування себе у сучасному музично-педагогічному середовищі та ефективного здійснення педагогічної діяльності. Сформована у ЗВО готовність є засадничо-особистісною основою спроможності майбутнього вчителя музичного мистецтва ефективно здійснювати у ЗЗСО музично-педагогічну діяльність, розвивати творчий потенціал учнів, формувати у них художньо-естетичну культуру та забезпечувати цілісне мистецьке виховання.

Опрацювання сучасних психолого-педагогічних й мистецько-педагогічних праць щодо ідей міждисциплінарної професійної підготовки у вітчизняному і закордонному науковому просторі та використання власного професійно-мистецького досвіду стосовно змісту і структури формування даної готовності у майбутніх учителів музичного мистецтва сприяло встановленню важливих для експериментально-дослідної роботи структурних компонентів такого формування: мотиваційно-ціннісного, когнітивно-професійного, діяльнісно-операційного та рефлексивно-оцінкового. Для кожного з виокремлених компонентів визначено відповідні критерії оцінювання (мотиваційний, змістовий, практичний та самореалізуючий), детальна характеристика яких допомогла виокремити за його показниками рівні сформованості готовності майбутніх учителів музичного мистецтва до професійної діяльності (високий, достатній, середній, низький).

Із врахуванням різнобічності проблеми формування готовності майбутніх учителів музичного мистецтва до професійної діяльності на засадах міждисциплінарної інтеграції застосовано комплекс взаємопов'язаних теоретичних підходів (компетентнісного, системного, особистісно

орієнтованого, діяльнісного, культурологічного, аксіологічного, інтегративного та міждисциплінарного).

Результативність процесу формування готовності майбутніх учителів музичного мистецтва пов'язуємо з виокремленням, обґрунтуванням і впровадженням в освітній процес ЗВО відповідних педагогічних умов: формування стійкої позитивної мотивації та ціннісного ставлення майбутніх учителів до міждисциплінарної музично-педагогічної діяльності; спрямування змісту фахових дисциплін на забезпечення міждисциплінарної інтеграції у процесі професійної підготовки майбутніх учителів музичного мистецтва; створення практико-орієнтованого освітнього середовища на засадах міждисциплінарної інтеграції; забезпечення творчої самореалізації та супроводу рефлексивно-оцінної діяльності майбутніх учителів музичного мистецтва у процесі професійної підготовки.

Авторська структурно-функціональна модель формування готовності майбутніх учителів музичного мистецтва до професійної діяльності на засадах міждисциплінарної інтеграції розроблена із урахуванням вимог Проекту Стандарту вищої освіти за спеціальністю 014.13 Середня освіта (Музичне мистецтво) першого (бакалаврського) рівня й охоплює цільовий, теоретичний, процесуально-організаційний і критеріально-оцінювальний блоки. Впровадження структурно-функціональної моделі в освітній процес здобувачів освіти ЗВО відбувається з урахуванням наукових принципів (цілісності, системності та послідовності, дидактичної доцільності, взаємозв'язку теорії і практики, культуровідповідності та творчого самовираження).

Виокремлені педагогічні умови та структурно-функціональна модель вводилися в дію відповідно до авторської Програми покрокового формування готовності студентів експериментальних груп до професійної діяльності. Програма реалізовувалася здобувачами освіти I-II курсів у процесі вивчення дисциплін «Психологія», «Педагогіка», «Цифрові технології у професійній діяльності та музична інформатика» та проходження занять факультативу «Міждисциплінарні виміри музично-педагогічної діяльності» у чотири логічно-

узгоджені етапи (підготовчий, мотиваційний, практично-діяльнісний та підсумково-рефлексивний).

Результати проведеної науково-пошукової та дослідницької роботи щодо формування готовності майбутніх учителів музичного мистецтва до професійної діяльності на засадах міждисциплінарної інтеграції підтверджено якісно-кількісними експериментальними даними, отриманими за допомогою емпіричних методів дослідження і методів математичної статистики.

Порівняльний аналіз результативних показників констатувального, формувального та узагальнювально-підсумкового етапів експериментального дослідження засвідчив позитивну динаміку рівнів сформованості готовності майбутніх учителів музичного мистецтва до професійної діяльності за визначеними компонентами й продемонстрували сумарне підвищення рівня сформованості досліджуваної готовності. Підсумкові результати педагогічного експерименту засвідчили результативність зреалізованих у дослідженні педагогічних умов і впровадження структурно-функціональної моделі формування готовності студентів експериментальних груп до професійної діяльності на засадах міждисциплінарної інтеграції.

Наукова новизна одержаних результатів. Вперше означено й теоретично і методично обґрунтовано педагогічні умови формування готовності майбутніх учителів музичного мистецтва до професійної діяльності на засадах міждисциплінарної інтеграції, створено авторську Програму з формування готовності у бакалаврів в ЗВО, розроблено структурно-функціональну модель формування у майбутніх учителів музичного мистецтва готовності до професійної діяльності як сукупність цільового, теоретичного, процесуально-організаційного і критеріально-оцінювального блоків, які враховують динамічно-змінні суспільні та освітні вимоги до такого формування; розроблено результативну методику впровадження педагогічних умов у викладання дисциплін професійної підготовки та занять факультативу. Удосконалено змістове наповнення і сутність понять «професійна підготовка майбутніх учителів музичного мистецтва», «готовність», «професійна готовність».

майбутнього учителя до педагогічної діяльності», «професійна компетентність майбутнього учителя музичного мистецтва», «міждисциплінарна інтеграція у процесі навчання майбутніх учителів музичного мистецтва у закладі вищої педагогічно-музичної освіти», «міждисциплінарний підхід»; обґрунтовано критерії (мотиваційний, змістовий, практичний, самореалізуючий) і рівні (високий, достатній, середній, низький) сформованості готовності майбутніх учителів музичного мистецтва до професійної діяльності на засадах міждисциплінарної інтеграції. *Подальшого розвитку набули* зміст професійної підготовки майбутніх учителів музичного мистецтва у ЗВО в напрямі формування міждисциплінарної компетентності, а також форми й методи організації освітнього процесу, спрямовані на формування відповідної готовності здобувачів вищої освіти на засадах міждисциплінарної інтеграції.

Ключові слова: музичне мистецтво, заклади вищої освіти, міждисциплінарна інтеграція, майбутні учителі музичного мистецтва, формування готовності до педагогічної діяльності, освітній процес, професійна підготовка, міждисциплінарний підхід, музична діяльність.

ANNOTATION

ZHANG Gege. Formation of future music teachers' readiness for professional activity based on interdisciplinary integration. – Qualification research work in manuscript form.

Doctoral dissertation for the degree of Doctor of Philosophy in the specialty 011 Educational and Pedagogical Sciences. – West Ukrainian National University, Ministry of Education and Science of Ukraine, Ternopil, 2026.

The dissertation presents a new approach to the problem of developing future music teachers' readiness for professional activity based on interdisciplinary integration.

The relevance of the study is determined by a number of objective contradictions that significantly hinder the development of future music teachers' readiness for professional activity based on interdisciplinary integration. In particular, these contradictions include: the needs of civil society for future music teachers capable of effectively responding to the dynamic challenges of the educational environment and the actual state of professional training of students in this field at higher education institutions; the increased requirements for the professional and pedagogical training of future music teachers in preparing them to organize the educational process in general secondary education institutions on the basis of interdisciplinary integration and the insufficient level of students' readiness to independently and pedagogically appropriately apply interdisciplinary connections in their future professional activity; the needs of general secondary education institutions for teachers capable of effectively ensuring the interdisciplinary integration of the educational process in music lessons and the currently insufficient organization of students' professional training for implementing an interdisciplinary approach; the objective need for the scientific substantiation and comprehensive implementation of effective pedagogical conditions, a structural-functional model, and appropriate scientific and methodological support for developing future music teachers' readiness for professional activity based on interdisciplinary integration; and the predominantly empirical nature of implementing

this process under the traditional organization of music teacher education in higher education institutions.

In today's context, the quality of professional training of future music teachers for professional activity based on interdisciplinary integration within higher education institutions is becoming increasingly important both in Ukraine and internationally. Contemporary challenges have led to a growing need to develop interdisciplinary competencies in future teachers during the educational process, since merely possessing a body of professional knowledge is no longer sufficient for effective professional activity. A modern music teacher must be a competent professional capable of performing professional duties effectively and creatively applying acquired knowledge, integrating it with concepts from other educational and artistic fields, and addressing diverse pedagogical challenges. In this context, interdisciplinary integration in the professional training of future music teachers enables them to effectively organize an integrated educational process in general secondary education institutions, establish connections between the artistic and pedagogical components of the educational content, and solve real educational and pedagogical problems.

The main requirements for preparing future music teachers for professional activity based on interdisciplinary integration include mastering an educational and professional program that ensures the systematic and holistic nature of their professional training; integrating music-theoretical, psychological-pedagogical, and methodological knowledge; developing creative, critical, and integrative thinking; developing the ability to establish and implement interdisciplinary connections in professional and practice-oriented activities; applying innovative and digital technologies in work with students in general secondary education institutions; and developing professional autonomy, pedagogical reflection, creative activity, and readiness for continuous professional self-development.

It has been established that the readiness of future music teachers for professional activity based on interdisciplinary integration is a complex, integral, personal-professional formation characterized by the ability of higher education students to holistically combine knowledge, abilities, skills, and experience from

various fields of science, art, and pedagogy in order to successfully realize themselves in the modern music-pedagogical environment and effectively carry out pedagogical activities. The readiness developed in higher education institutions constitutes the fundamental personal basis for a future music teacher's ability to effectively conduct music-pedagogical activities in general secondary education institutions, develop students' creative potential, foster their artistic and aesthetic culture, and ensure holistic artistic education.

A review of contemporary psychological, pedagogical, and arts-pedagogical research on interdisciplinary professional training in domestic and international academic literature, combined with the application of our own professional artistic experience regarding the content and structure of developing this readiness in future music teachers, contributed to the identification of structural components important for the experimental research: motivational-value, cognitive-professional, activity-operational, and reflective-evaluative. Corresponding assessment criteria were defined for each component (motivational, content-based, practical, and self-actualizing). A detailed description of these criteria made it possible to identify, on the basis of their indicators, the levels of future music teachers' readiness for professional activity (high, sufficient, average, low).

Taking into account the multifaceted nature of the problem of developing future music teachers' readiness for professional activity based on interdisciplinary integration, a set of interrelated theoretical approaches was applied: competency-based, systems-based, personality-oriented, activity-based, cultural, axiological, integrative, and interdisciplinary.

The effectiveness of the process of preparing future music teachers is associated with the identification, substantiation, and implementation of appropriate pedagogical conditions in the educational process of higher education institutions: developing sustained positive motivation and a value-based attitude among future teachers toward interdisciplinary music-pedagogical activities; aligning the content of professional disciplines to ensure interdisciplinary integration in the professional training of future music teachers; creating a practice-oriented educational environment based on

interdisciplinary integration; and ensuring creative self-actualization and supporting the reflective and evaluative activities of future music teachers during their professional training.

The author's structural-functional model for developing future music teachers' readiness for professional activity based on interdisciplinary integration was developed in accordance with the requirements of the Draft Standard for Higher Education in specialty 014.13 Secondary Education (Music) at the first (bachelor's) level and encompasses the goal-oriented, theoretical, process-organizational, and criteria-and-assessment blocks. The implementation of the structural-functional model in the educational process of higher education institutions is carried out in accordance with the scientific principles of integrity, systematicity and consistency, didactic expediency, the interconnection of theory and practice, cultural appropriateness, and creative self-expression.

The identified pedagogical conditions and the structural-functional model were implemented in accordance with the author's Program for the Step-by-Step Development of First- and Second-Year Students' Readiness for Professional Activity in the experimental groups. The program was implemented with first- and second-year students while they studied the courses «Psychology», «Pedagogy», and «Digital Technologies in Professional Activity and Music Informatics», as well as through participation in the elective course «Interdisciplinary Dimensions of Music-Pedagogical Activity», across four logically coordinated stages: preparatory, motivational, practical-activity, and summative-reflective.

The results of the scientific research on developing future music teachers' readiness for professional activity based on interdisciplinary integration were confirmed by qualitative and quantitative experimental data obtained through empirical research methods and methods of mathematical statistics.

A comparative analysis of the performance indicators at the diagnostic, formative, and generalizing-summative stages of the experimental study revealed a positive trend in the levels of future music teachers' readiness for professional activity across the specified components and demonstrated an overall increase in the level of

the readiness under study. The final results of the pedagogical experiment confirmed the effectiveness of the implemented pedagogical conditions and the introduction of the structural-functional model for developing the readiness of students in the experimental groups for professional activity based on interdisciplinary integration.

Scientific novelty of the obtained results. For the first time, the pedagogical conditions for developing future music teachers' readiness for professional activity based on interdisciplinary integration have been identified and theoretically and methodologically substantiated; an original program for developing the readiness of bachelor's students in higher education institutions has been created; a structural-functional model for developing future music teachers' readiness for professional activity has been developed as a combination of target, theoretical, procedural-organizational, and criteria-and-assessment blocks that take into account dynamically changing social and educational requirements for such development; and an effective methodology for incorporating pedagogical conditions into the teaching of professional training courses and elective classes has been developed. The content and essence of the concepts «professional training of future music teachers», «readiness», «professional readiness of a future teacher for pedagogical activity», «professional competence of a future music teacher», «interdisciplinary integration in the process of training future music teachers at an institution of higher pedagogical and musical education», and «interdisciplinary approach» have been clarified; the criteria (motivational, content-based, practical, and self-actualizing) and levels (high, sufficient, average, and low) of future music teachers' readiness for professional activity based on interdisciplinary integration have been substantiated. Further development has been achieved in the content of professional training for future music teachers in higher education institutions with a focus on developing interdisciplinary competence, as well as in the forms and methods of organizing the educational process aimed at developing the corresponding readiness of higher education students based on interdisciplinary integration.

Key words: music, higher education institutions, interdisciplinary integration, future music teachers, readiness for professional activity, educational process, professional training of music teachers, interdisciplinary approach, musical activity.

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DOI: <https://doi.org/10.46502/issn.1856-7576/2025.19.01.9>

URL: <https://revistaeduweb.org/check/19-1/9-134-152.pdf>

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LIST OF SYMBOLS

HEI – higher education institution

GSEI – general secondary education institutions

II – interdisciplinary integration

FT – future teacher

MA – musical art

FMAT – future music art teacher

PA – professional activity

PT – professional training

IC – initial control

FC – final control

AV – average value

CG – control group

EG – experimental group

MAT – music art teachers

ER – experimental research

ES – experimental study

INTRODUCTION

Rationale for the choice of research topic. The need to study the process of developing future teachers of music art (FMAT's) readiness for professional activity (PA) based on interdisciplinary integration (II) is driven by a number of significant factors, including:

The need to study the process of developing FMAT's readiness for PA based on II is driven by a number of significant factors, including:

First, the societal need for professionally trained FMAT teachers. Today, MA is an important component of society's general culture and an integral element of the educational system, aimed primarily at the comprehensive and harmonious development of the individual, which involves the formation of the emotional and value sphere, creative abilities, imaginative thinking, creative activity, and the capacity for personal self-expression. The societal need for well-prepared MA graduates is driven by contemporary transformations in the educational, cultural, and social environments, which place new demands on educators' pedagogical activities and their role in shaping students' personalities. The demand for MA students capable of effectively carrying out interdisciplinary activities in higher education institutions in the future necessitates the development, within HEIs, of their ability to integrate knowledge from various related fields, establish interdisciplinary connections, creatively apply modern pedagogical technologies in practical work, and collaborate with teachers from other disciplines.

Second, the growing role of the interdisciplinary approach in the modern educational process. The integration of knowledge from related educational fields makes it possible to develop a holistic view of artistic phenomena and to establish connections between music, culture, pedagogy, psychology, and information and communication and digital technologies. For FMAT, this creates conditions for diversifying teaching methods, developing students' creative thinking, and ensuring the effective organization of arts education activities.

Third, the development of FT's ability to teach the MA in GSEI in an integrated manner. This development is essential for PT of students, as the modern educational

process requires a coordinated combination of knowledge acquisition in the arts and **related disciplines**. The ability to establish interdisciplinary connections contributes to the diversification of the educational process and helps FMAT foster a holistic perception of artistic phenomena in students. The development of interdisciplinary skills in higher education institutions (HEIs) equips future teachers (FT) with the ability to creatively select instructional content and methods, adapt them to students' educational needs, and effectively implement interdisciplinary integration (II) in the teaching process.

This addresses the scientific task of improving the quality of preparing future teachers (FMAT) for the teaching process (PA) based on the requirements of regulatory and legal documents designed to govern this process.

Current requirements for organizing the PT process highlight and reinforce the need to improve scientific and methodological approaches to developing FMAT readiness for PA, taking into account the provisions of the regulatory framework that defines the procedure and content of its implementation. Thus, the “World Declaration on Higher Education for the 21st Century: Approaches and Practical Measures” (UNESCO Conference on Higher Education, 1998) served as a significant impetus for intensifying efforts to address pressing issues in contemporary science and practice based on an interdisciplinary approach. A valuable aid in fostering readiness for PA based on Principle II is the legislative decree “On the Approval of the Strategy for the Development of Higher Education in Ukraine for 2022–2023” (2022), which defines the strategic and operational goals and objectives of the Strategy for the Development of Higher Education Institutions and emphasizes the importance of implementing an interdisciplinary approach in educational and research programs. The Draft Standard of Higher Education of Ukraine (for the specialty 014.13 Secondary Education (Music) (2023)), which emphasizes the acquisition of FMAT subject competencies (SC) (the ability to integrate knowledge from pedagogy, psychology, music, and other academic disciplines and apply it in the educational process (SC1); the ability to freely use musical-pedagogical terminology based on a systematic understanding of the historical and theoretical foundations of pedagogy, psychology, art education, and information

technology in GSEI (SC2); the ability to master modern diagnostic methods and software tools for distance music education (SC3)). These competencies reflect current trends in the professional training of FMAT students (toward the development of interdisciplinary knowledge, skills, and abilities, and thus readiness to perform professional activities at a high level).

However, an important role in ensuring readiness for professional activity is assigned to the administrative staff of higher education institutions, who must effectively organize the educational process and bear responsibility for the level of preparedness of future specialists.

Thus, developing FMAT readiness for PA based on II is an integral component of their professional training in HEIs.

The relevance of this research stems from the insufficient development of the theoretical and methodological foundations of the problem at hand. A review of the scientific literature devoted to the development of FMAT readiness for PA based on II revealed that scholars have paid insufficient attention to its comprehensive study. In the works of domestic and foreign scholars that address the theoretical and practical aspects of PT. Ageykina-Starchenko, N. Chorna (2021); A. Artyushenko (2023); K. Bogianu (2020); Y. Wang (2025); L. Vasilevska-Skupa, N. Kravtsova, I. Shvets (2023); S. Grozan (2014); M. Duday (2025); O. Dudnik (2020); O. Krasovska (2015); I. Yefimenko (2022); O. Ionova, L. Ma, C. Chen (2023); T. Kominarets, V. Fomin, O. Bieloliptseva, M. Tkachenko, A. Malykhin, O. Pryshliak (2022); O. Krychkivska, O. Tsaryk, O. Pysarchuk, 2026; V. Lunachek (2013); N. Leshchuk (2025); N. Mozgalova (2022); N. Mozghalova (2025). N. Mozgalova, M. Sushytskyi, A. Novosadova (2022); Y. Moskvichova, V. Fritsyuk (2023); N. Ovcharenko (2018); N. Oliinyk (2023); L. Onofriychuk, L. Sushkevych (2016); N. Ponomaryova, A. Boyarska-Khomenko, O. Zhernovnykova, V. Masych, N. Olefirenko (2022); L. Rebukha, H. Zvarych (2026); T. Reizenkind (2006); A. Sokolova, V. Fomin, M. Tkachenko, O. Vasylieva, I. Parfentieva, I. Martynenko (2022); N. Todosiienko, S. Malov (2023); S. Steblyuk (2025); I. Usatova, T. Korol, A. Vedmedyuk (2024);

T. Zhou (2021); L. Yan (2022), et al.), this issue has been addressed only a little and requires further scientific justification.

At the same time, researchers investigated the impact of the integrated educational process on the development of students' interdisciplinary skills, the use of digital technologies in teachers' pedagogical activities, and the development of psychological and pedagogical knowledge and professional competencies (O. Agapova (2022); A. Artyushenko (2023); L. Bezemchuk, V. Fomin (2021); N. Bovsunivska, O. Gavrosh, M. Tkachenko (2025); N. Broyako, V. Dorofeeva (2025); S. Ganaba (2012); T. Gogol (2026); O. Dykyi, G. Ulyanova, O. Kibik (2025); M. Duday (2025); O. Ekonomova (2016); V. Zhelanova (2021); G. Karas (2021); O. Krasovska (2015); L. Likhitska (2022); L. Matvienko (2024); I. Nechitailo (2020); O. Oleksiuk (2020); I. Pastyrska (2022); O. Sysoeva, V. Ognevyuk (2012); O. Tsaryk, O. Pysarchuk, O. Krychivska, 2025; R. Slukhenska, I. Biryuk, E. Nazymok (2024); I. Usatova, T. Korol, A. Vedmedyuk (2024); A. Filippenko (2018); L. Rebukha (2019); O. Shynkevych, Ye. Lutskin, H. Bondarenko, I. Myronenko (2023); V. Fomin, Yu. Lo, F. Tian (2022); A. Shulhai, L. Fedonyuk, A. Mudra, O. Oleshchuk (2018); O. Teplova, N. Mozghalova, A. Novosadova (2022) and others) in the context of preparing future teachers for PA.

A review of the regulatory and legal documents governing the professional training of higher education students, as well as an analysis of scientific research on this topic, made it possible to define the main goal of professional education, which is to develop FMAT's readiness for PA as competent specialists capable of effectively performing professional tasks based on II. The complexity of the problem outlined above stems from a number of contradictions that we identified during our research, specifically between:

- civil society's need for FMATs capable of effectively responding to the dynamic challenges of the educational environment, and the actual state of professional training for higher education students in the relevant fields at higher education institutions;

- the heightened demands for music -pedagogical training of future music teachers in preparing them to implement the educational process at GSEI based on Principle II, and the insufficient level of readiness among higher education students to independently and pedagogically apply interdisciplinary connections in their future professional practice;
- the needs of GSEI for teachers capable of effectively ensuring the interdisciplinary integration of the educational process while teaching MA courses, and the currently insufficiently organized professional training of students in higher education institutions (HEIs) in this area to implement an interdisciplinary approach;
- the objective need for scientific justification and comprehensive implementation of effective pedagogical conditions, a structural-functional model and the corresponding scientific and methodological support for the process of developing FMAT's readiness for PA based on II; and the predominantly empirical nature of implementing this process under the traditional organization of training future music teachers at HEIs.

Thus, the relevance of this research, determined by the societal need to develop FMAT's readiness for PA based on II, the insufficient theoretical and practical exploration of the outlined problem, as well as the need to resolve certain contradictions, determined the choice of the research topic **«Formation of Future Music Teachers' Readiness for Professional Activity Based on Interdisciplinary Integration»**.

This dissertation was conducted as part of a research project by the Department of Educational Studies and Pedagogy at the Western Ukrainian National University titled "Professional Growth of Educators in Educational Institutions: Fundamental, Theoretical-Technological, and Practice-Oriented Aspects" (state registration number 0121U110855).

The research topic was approved at a meeting of the Department of Educology and Pedagogy (Minutes No. 5 of 20.11.2021).

The purpose of the study is to develop, theoretically justify, and experimentally verify the effectiveness of specific pedagogical conditions and the efficacy of a

structural-functional model for preparing future music teachers for professional practice based on interdisciplinary integration.

The purpose of the study involved addressing the following **objectives**:

1. To analyze the characteristic features, identify the key conceptual foundations, and describe contemporary scientific approaches to developing FMAT's readiness for PA based on II.
2. Specify the components, criteria, indicators, and levels of development of FMAT's readiness for PA based on II, and reveal their pedagogical essence and significance.
3. Identify and theoretically substantiate the pedagogical conditions and create an effective structural-functional model for developing FMAT's readiness in higher education institutions (HEIs).
4. To experimentally establish the effectiveness of implementing the substantiated pedagogical conditions and the structural-functional model for developing FMAT's readiness for PA based on II.

Research Object – the professional training of prospective music teachers at higher education institutions (HEIs) based on interdisciplinary integration.

Research Topic – the pedagogical conditions and the structural-functional model for developing the readiness of prospective music teachers for professional practice based on interdisciplinary integration.

The research hypothesis is that the development of future music teachers' readiness for professional activity based on interdisciplinary integration will be effective provided that certain pedagogical conditions are established and implemented:

- fostering sustained positive motivation and a value-based attitude among future music teachers toward interdisciplinary music-pedagogical activities;
- orienting the content of professional disciplines toward ensuring II in the process of teacher training for FMAT;
- creating a practice-oriented educational environment based on II;

– ensuring creative self-realization and supporting the reflective and evaluative activities of FMAT during their master's program in teacher training.

To address the outlined tasks, a set of **research methods** was applied:

Theoretical: reviewing, generalizing, and systematizing normative and legal documentation, legislative acts, regulatory materials, and scientific, pedagogical, and methodological sources related to the research problem; clarification and analysis of the content of key concepts; application of methods of synthesis, comparison, and classification (to determine the current state of research on the development of FMAT's readiness for OA based on II); modeling, generalizing, and systematizing scientific results (to provide a theoretical and methodological justification for pedagogical conditions and to develop a structural-functional model for fostering FMAT's readiness for PA in HEIs based on II).

Empirical: questionnaires, testing, pedagogical observation and self-observation, interviews, self-assessment, oral and written surveys, and analysis of FMATs' academic performance (to diagnose and determine the actual state of their readiness for PA based on II).

Pedagogical experiment: diagnostic stage (conducted to assess the initial level of FMAT's readiness for PA based on II); developmental stage (used to experimentally verify the effectiveness of the identified pedagogical conditions and the efficiency of the structural-functional model for developing students' readiness for PA based on II); generalization and summary stage (aimed at comparing, systematically analyzing, and scientifically interpreting the results obtained during the experimental work).

Statistical: use of methods of mathematical statistics, in particular Fisher's F-test (which involved the quantitative processing of experimental data, their visual presentation, the identification of statistical relationships between the studied indicators, and the calculation of mean values for the level of FMAT's readiness for PA based on II for each of the identified components).

Experimental Basis of the Study. The experimental research was conducted at the Mykhailo Kotsyubynsky Vinnytsia State Pedagogical University (Department of Vocal, Choral, and Performing Arts, Faculty of Arts and Art Education Technologies);

Sumy State Pedagogical University named after A. S. Makarenko (Department of Musical Arts, Educational and Scientific Institute of Culture and Arts); Khmelnytskyi Academy of Humanities and Pedagogy (Department of Musicology, Instrumental Training, and Methods of Music Education, Faculty of Humanities). A total of 37 higher education institution students participated in the study at various stages.

The scientific novelty of the results obtained lies in the fact that:

for the first time: the *pedagogical conditions* for developing FMAT's readiness for PA based on II have been identified and theoretically and methodologically substantiated (the development of sustained positive motivation and a value-based attitude of FMAT toward interdisciplinary musical -pedagogical activity, orienting the content of professional disciplines toward ensuring II in the process of FMAT's PT, creating a practice-oriented educational environment based on MI, and ensuring creative self-realization and supporting the reflective-evaluative activities of FMAT in the process of PT); a *structural-functional model* for developing FMAT's readiness for PA based on II has been developed and scientifically substantiated as a combination of the goal-oriented component (including the societal demand for MA educators and the research objective), the theoretical component (comprising research tasks, a system of definitions, theoretical approaches, and scientific research principles), procedural-organizational (comprising the stages of developing FMAT's readiness for PA based on II, pedagogical conditions, forms of instructional organization, and teaching methods), and criteria-and-assessment (reflecting the system of assessment components and criteria, levels of readiness development, and the final outcome of that development) – which take into account the dynamic and transformative requirements for developing FMAT's readiness for PA based on II; methodological support has been developed and scientifically substantiated for implementing pedagogical conditions in the teaching of professional disciplines (“Psychology,” “Pedagogy,” “Digital Technologies in Professional Activity and Music Informatics”) and for conducting the elective course “Interdisciplinary Dimensions of Music-Pedagogical Activity,” including an original curriculum aimed at developing FMAT's readiness for PA based on II;

improved: the content and essence of the concepts “professional training of future music teachers,” “readiness,” “professional readiness of future teachers for pedagogical activity,” “professional competence of future music teachers,” “interdisciplinary integration in the process of training future music teachers at an institution of higher pedagogical and musical education,” and “interdisciplinary approach”; criteria (motivational, content-related, practical, and self-actualizing) and levels (high, sufficient, average, low) of the development of prospective music teachers’ readiness for professional activity based on interdisciplinary integration have been substantiated;

– *further development has been achieved in*; the content of professional training for future music teachers at HEIs aimed at developing interdisciplinary competence, as well as the forms and methods of organizing the educational process designed to foster the corresponding readiness of higher education students based on interdisciplinary integration.

The practical significance of the results obtained lies in the development of these results and the possibility of their application and implementation in the educational process at HEIs:

– an original program for developing FMAT’s readiness for PA based on MI by modifying the content of specific topics in the academic disciplines «Psychology», «Pedagogy», «Digital Technologies in Professional Activity and Music Informatics» (specialization 014.13 Secondary Education (Music Culture), bachelor’s level) and strengthening the interdisciplinary connections between them;

– an author-developed elective course titled «Interdisciplinary Dimensions of Music Pedagogical Activity», implemented as part of independent study by bachelor’s students with the aim of deepening intradisciplinary and interdisciplinary connections.

The results of this research have practical value and can be effectively applied to the organization of a comprehensive FMAT’s PT in HEI; specifically, they should be used when creating instructional and methodological support for the process of preparing students for pedagogical activity and when developing educational components aimed at developing interdisciplinary skills, skills, and professional

abilities of FMAT; conducting extracurricular work with higher education students (in particular, when organizing student research and practical events, creative projects, seminars, and training sessions aimed at deepening interdisciplinary competencies); professional self-development and self-education of practicing teachers with the aim of broadening their interdisciplinary worldview and finding new approaches to organizing the educational process.

The research materials have been incorporated into the professional training curriculum at the Faculty of Mathematics, Physics, and Astronomy (FMAT) of the Mykhailo Kotsyubynsky Vinnytsia State Pedagogical University (certificate of implementation dated June 24, 2026), the Volodymyr Hnatiuk Ternopil National Pedagogical University (certificate of implementation dated August 28, 2026), and the Khmelnytskyi Academy of Humanities and Pedagogy (certificate of implementation dated August 28, 2026).

The candidate's personal contribution. The candidate's personal contribution. The scientific results presented in the dissertation were obtained by the author independently. In joint publications, the candidate's personal contribution lies in the fact that the article indexed in Web of Science (Shevel B., Palaguta I., Marushko L., Barkasi V., & Zhang G., 2025), the possibilities of using AI-based educational chatbots as a tool for interactive learning in higher education institutions are analyzed, and the results of the study are interpreted.

Validation of Research Results. The main scientific and research findings of the dissertation were discussed and received positive evaluations through participation in scientific and practical conferences, namely:

- international conferences – «Innovations in Education: Realities and Prospects for Development» (Ternopil, 2021 – 2023), «Transformational Processes in Social and Humanities Education in Modern Ukraine under Wartime Conditions: Challenges, Problems, and Prospects» (Ternopil, 2024), «Traditional and Innovative Approaches to Scientific Research» (Chernivtsi, 2024), «The Development of Teachers' Professional Competence in the Context of a New Sociocultural Reality» (Ternopil,

2024), «Innovative Processes in the Educational Sphere of Ukraine and Central European Countries: Status, Problems, and Prospects» (Ternopil, 2024).

The main provisions and results of the dissertation research were discussed and approved at meetings of the Department of Educational Science and Pedagogy, West Ukrainian National University (Ternopil) (2022–2026).

Publications. The research findings are presented in 14 solo publications by the author, of which 4 reflect the main scientific results of the dissertation (all publications appear in Ukrainian scientific journals categorized as «B»), 1 publication is indexed in Web of Science, and 9 are of a pilot nature.

Structure and Scope of the Dissertation. The dissertation consists of an introduction, three chapters, conclusions to each chapter, general conclusions, a list of references (333 titles), and appendices (8 on 38 pages). The total length of the dissertation is 306 pages of printed text, with the main content covering 195 pages. The work contains 13 figures and 27 tables.

Declaration on the Use of AI.

While preparing this thesis, the author used Gemini 3 Pro and OpenAI GPT-5 to search for and conduct an initial review of literature, format illustrations, and identify and correct grammatical, spelling, and stylistic errors.

After using these tools, the author conducted a thorough review and made the necessary changes, assuming full responsibility for the final content of the dissertation.

CHAPTER 1

THEORETICAL BASIS OF FORMING FUTURE MUSIC TEACHERS' READINESS FOR PEDAGOGICAL ACTIVITIES IN GENERAL SECONDARY EDUCATION INSTITUTIONS

1.1 Basic definitions of the problem under research substantiation

In the context of ongoing reforms in general secondary education and Ukraine's integration into the European educational space, particular importance is attached to preparing teachers as competent, creative, and adaptable professionals who are able to respond effectively to the rapidly changing demands of contemporary education. This fully applies to MATs, whose PA combines pedagogical, artistic-creative, and culture-forming aspects. The level of teachers' professional readiness is a key factor in ensuring the quality of pupils' musical and aesthetic education, while also contributing to the development of their spiritual culture, emotional intelligence, and value orientations.

A modern school requires a MAT who possesses not only thorough knowledge of musicology and teaching methodology but is also capable of innovative activity, integrating different types of art, using digital technologies, and individualising learning. In this regard, the issue of FMAT's readiness for PA in GSEI forming is of particular importance.

An examination of the scientific and pedagogical literature reveals diverse approaches to understanding and defining the concept of «training», «professional training», «professional training of future music art teachers», «readiness», «professional readiness», «professional readiness of future music teachers for pedagogical activity», «music art teacher», «practical activity of a music art teacher», «professional competence of a future teacher», and «artistic values of a music art teacher», which necessitates the clarification and systematisation of the most important definitions of the research.

Effective preparation of future music art teachers for professional activity that meets the demands of contemporary society requires a systematic and holistic approach to the educational process. According to the explanatory dictionary, «training» refers to a body of knowledge and skills, as well as experience acquired through both formal learning and practical activity (Busel V. H., 2003, p. 767). Researcher I. Blokhina emphasizes that effective preparation of future teachers in higher education institutions should prioritize personal development, provide students with solid fundamental and applied knowledge, and foster the acquisition of universal human moral values, ethical standards, a high level of moral culture, and professional ethics. An essential aspect of such preparation is the development of future teachers' ability to respond appropriately to non-standard pedagogical situations and make independent decisions when addressing challenges arising in professional practice (Blokhina I., 2013, p. 18). Researcher O. Morozenko argues that training in HEIs enables future specialists to develop personal values, an emotional-volitional state, general intellectual abilities, a system of knowledge, skills and abilities, the ability to work with various information resources and sources, a system for making organisational and managerial decisions, time-management skills, and the ability for self-development and self-control (Morozenko O. M., 2019, p. 301).

Therefore, the concept of “training” may be interpreted as a comprehensive process focused on the professional and personal development of students, resulting in the formation of competent, responsible, and competitive specialists who are able to perform professional activities effectively and engage in continuous professional growth and self-improvement.

In this context, PT in HEIs is of particular importance for FTs, as it is the title of many scientific studies addressing its various aspects. In particular, the scientific literature pays considerable attention to contemporary perspectives on the philosophy of higher education (O. Dubaseniuk (Dubaseniuk O. A., 2019), V. Kremen (Encyclopedia, 2008)), issues of didactics and innovative teaching methods in HEI (I. Palshkova et al. (Palshkova I. O., ... & Shpaliarenko Yu. A., 2021)), the implementation of a person-centred approach to professional training (O. Piekhota (Piekhota O. M.,

2004)), problems of PT of FT in GSEIs (I. Konovalchuk (Konovalchuk I. M., ... & Rudnytska N. Yu., 2024)), and others.

At present, PT provided in HEIs is a multifaceted system characterised by:

- the creation of new knowledge (engaging students in scientific research and applying its findings in practice-oriented activities; designing new educational programmes by academic staff; incorporating innovative developments into the teaching and learning of academic disciplines);

- the dissemination of knowledge (encouraging students to prepare and publish scientific papers; involving them in scientific and practical conferences, educational and methodological seminars, and other academic and research events).

- the acquisition of knowledge (organising the educational process with consideration of students' level of knowledge acquisition; the use of effective methods, forms, means, and innovative educational technologies in the integration of innovative approaches into the teaching and learning of academic disciplines);

- the formation of learners' need-based motivation for professional self-improvement and self-directed learning throughout their lives (Bilyk R., 2020, p. 112).

Researchers V. Serhiienko and I. Voitovych expand the PT system, underlining the need to take into account the needs of the socio-economic development of society (Serhiienko V., & Voitovych I., 2013, p. 11).

Professional training of a student is a regulator and a prerequisite for effective and creative-pedagogical activity of a MAT. For our study, it is important to outline the specific features of the PT of FMATs in HEIs. Research conducted by Ukrainian and foreign scholars has addressed the competence-based approach, the creative personal development and digital transformation transformation of professional education, inclusive and methodological training, vocal and choral training of FMATs, and other issues. Thus, a significant contribution to the study of the issue has been examined by the following Ukrainian and foreign scholars:

- T. Horobets and V. Shkoba focused on the development of soft skills in future music art teachers' professional training, emphasizing communication skills, creativity, adaptability to the digital transformation of education, and the adoption of a

European integration approach to art education (Horobets T. V., & Shkoba V. A., 2023).

- N. Todosiienko and S. Maliov (considered the PT of FMATs in the context of the formation of interdisciplinary and aesthetic competencies (the formation of both the interdisciplinary and aesthetic thinking of pupils and creative-interpretive activity, the mix of all types of art) of primary school pupils) (Todosiienko N. L., & Maliov S. V., 2023);

- H. Stets and S. Kyshakevych (identified the challenges associated with modernising the professional training of future music art teachers, including the development of creative abilities and the acquisition of pedagogical mastery by teachers, and the improvement of higher pedagogical and art education)) (Stets H., & Kyshakevych S., 2023);

- K. Bohianu (investigated the specific features (the teacher's professional readiness for inclusive education, the necessity to study inclusive conceptual and terminological frameworks, and the adaptation of music education for children with special educational needs) of the PT of FMATs within the framework of their involvement in educational inclusion) (Bohianu K. O., 2020);

- N. Leshchuk investigated competence-oriented models of professional training for modern music art teachers, with particular attention to the competence-based approach to teaching, educational digitalisation, teacher competence within the New Ukrainian School framework, and information and communication competence)) (Leshchuk N., 2025);

- L. Yan (studied the PT of FMATs in a multicultural environment (multicultural competence, intercultural communication, international experience in art education, and the integration of global cultural perspectives into the educational process)) (Yan L., 2022), and others.

Thus, contemporary research demonstrates that the PT of FMATs is currently a multicomponent process that combines pedagogical, musical, methodological, and creative training. Taking these dimensions of professional training into consideration contributes not only to students' acquisition of the knowledge, skills, and abilities

required for their future profession but also to the development of their capacity for effective professional self-realisation. Thus, the principal outcome of professional training in higher education institutions is the formation of future teachers' readiness for professional activity.

The concept of "readiness" is of particular importance to the present study, as it encompasses not merely the acquisition of professional knowledge and skills but also the individual's ability to apply them consciously, effectively, and appropriately in real professional contexts.

Unlike simple "preparedness", readiness includes integrated personality characteristics – motivation, professional values, emotional-volitional stability, self-regulation, and the ability to make decisions in non-standard situations. It is through readiness that the outcome of the professional training of a future specialist and their actual ability to perform professional tasks effectively can be comprehensively assessed.

The lack of a unified understanding of the structure and content of future music art teachers' readiness for professional activity necessitates a theoretical analysis and conceptual substantiation of this phenomenon, enabling its essential characteristics to be identified more comprehensively. The concept of "readiness" occupies a fundamental position in psychological and pedagogical research, as it reflects an individual's capacity to successfully perform a particular type of activity. The notion was initially addressed within experimental psychology in the late nineteenth century by K. McBee and O. Külpe. From the middle of the twentieth century onwards, researchers such as D. Katz, G. Allport, W. Thomas, and others further explored readiness as a qualitative indicator of an individual's behavioural self-regulation in response to various external and internal influences of the surrounding environment.

Thus, contemporary scholars approach its interpretation in different ways and regard readiness as:

- a complex personal formation that includes motivational, cognitive, and emotional-activity components and ensures the effective performance of PA (Simko R., 2011, p. 418);

- an integrative personal characteristic/quality of an individual that combines knowledge, skills, abilities, motives, and psychological attitudes necessary for successful activity (Mazur N. P., 2013, p. 290);
- a state of mobilisation of an individual's psychophysiological systems that ensures the effective performance of a particular activity and contributes to the activation of personal potential (Danylo L. I., 2017, p. 45);
- a combination of values, emotional-volitional state, knowledge, skills, and abilities that ensures an individual's capacity for professional self-improvement (Zelenyi I. I., 2022, p. 314);
- a particular mental state of an individual characterised by an orientation towards activity, awareness of its significance, and the ability to perform it successfully (Kyrychenko A., 2020, pp. 118–119);
- a multicomponent phenomenon that fully encompasses the motivational-cognitive and operational-personal spheres of an individual (Hurkova T., 2020, p. 320);
- an integrative property of an individual that is formed in the process of preparation for activity and manifests itself in the ability to act effectively under specific conditions (Rii Yu., 2025, p. 175), among others.

According to the dictionary Professional Education, “readiness” is understood as an integrated system of personal qualities and components that enables an individual to perform the functions of a particular profession. It may also be viewed as the outcome of long-term professional preparation, an integrative quality of a future teacher, and the willingness to participate in different forms of professional activity. (Professional Education: Dictionary, 2000).

Thus, “readiness” is currently understood as a dynamic system encompassing an individual's intellectual, volitional, emotional, and motivational spheres. Within the framework of activity theory, it is manifested through a person's capacity to consciously and purposefully apply the knowledge, skills, and abilities acquired during training in future professional practice. T. Hurkova regards readiness as a complex personal formation and examines it from the perspective of two approaches: functional and personal. From the functional perspective, readiness is interpreted as a relatively

short-term mental state that facilitates effective performance and is manifested through emotional engagement, intrinsic motivation, job satisfaction, and focused attention. The personal approach, by contrast, conceptualises readiness as an integral characteristic of the individual that incorporates motivational, cognitive, and emotional-volitional components, together with the knowledge, skills, abilities, and professionally significant qualities required for effective professional activity. From this perspective, readiness represents the outcome of preparation for a particular type of activity and contributes to the development of stable personal characteristics, including beliefs, values, interests, and needs (Hurkova T., 2020, pp. 321–322).

Considering long-term and immediate/temporary/situational readiness, scholars have concluded that long-term readiness, which is formed in the process of training, is characterised by personal professional stability, whereas immediate readiness is referred to as a state of “operational calm,” a “pre-start state,” or “mobilisation readiness”. This type of readiness reveals the characteristics and requirements of the future situation, depends on situational circumstances, and ensures the mobilisation of internal personal resources for the effective performance of PA under specific circumstances (Yurkova O., 2020, p. 217) (see Fig. 1.1).

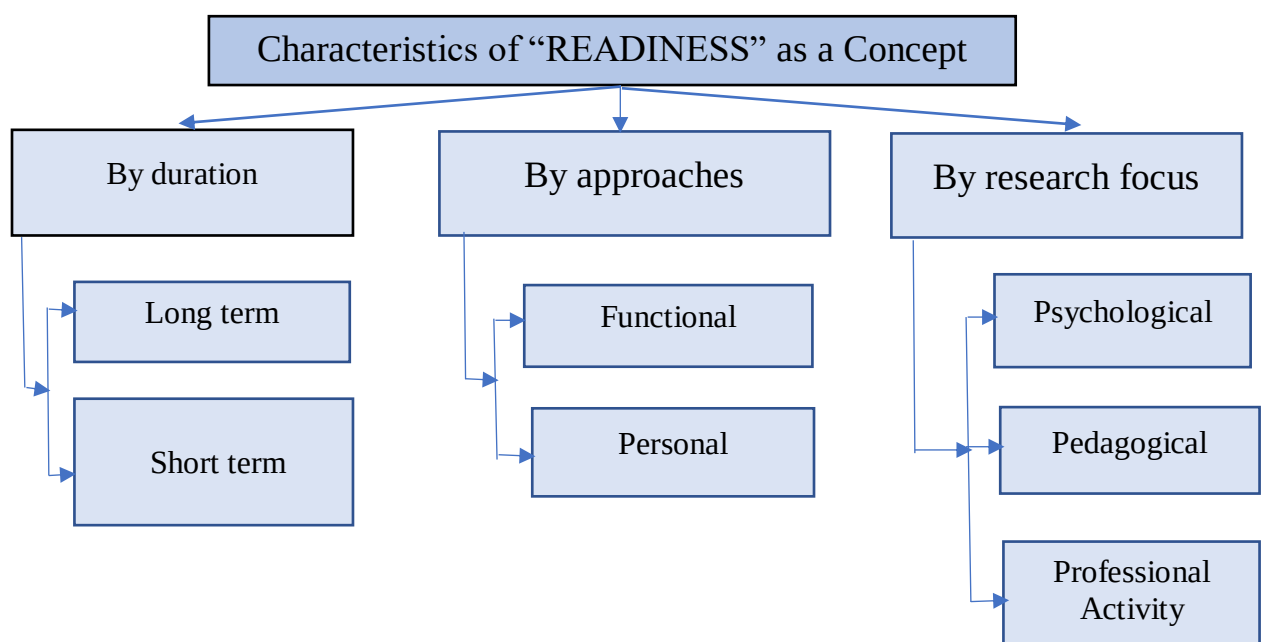


Fig. 1.1. The Content of the Concept of “Readiness” in Terms of Duration, Approaches, and Research Focus

In our understanding, “readiness” will be considered a complex integrative formation, a holistic manifestation of personality that encompasses motivational attitudes, a system of fundamental knowledge, practice-oriented skills and abilities, individual emotional-volitional qualities, and personal characteristics. At the same time, the development of readiness is shaped by the social environment, educational and upbringing processes, as well as an individual’s previously acquired personal and life experience. When selecting a profession, individuals seek to acquire specialised knowledge and practical skills throughout their formal education and to continuously enhance them over the course of their professional lives through formal, non-formal, and informal learning. A crucial prerequisite for successful professional activity is therefore an individual’s willingness and capacity for self-development and ongoing professional growth.

Consequently, the concept of “readiness” is intrinsically linked to “readiness for professional activity”, a notion that is of particular relevance to this study. Since the 1980s, teachers’ preparedness for professional practice has been extensively examined within pedagogical research (T. Huzhanova, V. Fedoryk, O. Kononenko, L. Kushnir, N. Ortikova, V. Fedoryk (Huzhanova T. C., ... & Kononenko O. I., 2023), V. Moliako (Moliako V. O., 2022), and others), including pedagogical studies (S. Honcharenko (Honcharenko S., 2021), N. Ponomarova, A. Boiarska-Khomenko, O. Zhernovnykova, V. Masych, N. Olefirenko (Ponomarova N., ... & Olefirenko N., 2022), and others). Researcher N. Chorna associates the interpretation of readiness for PA with several approaches:

a) functional (professional readiness determines the potential activation of all mental functions necessary for future PA);

b) personal (professional readiness is viewed as a holistic personal formation aimed at integrating internal subjective factors of individual activities into a single professional preparation for them);

c) personal-activity (professional readiness is defined as the manifestation of all personal qualities that ensure the effective performance of professional functions);

d) resultative-activity-based (professional readiness is considered as the final-resultative process of professional training) (Chorna N. B., 2012, p. 192).

Thus, readiness for PA is directly oriented towards the profession and is characterised by stable attitudes towards work. This readiness includes professional and pedagogical knowledge, skills and abilities, as well as the acquired experience of applying them in practice.

At the same time, contemporary scholars Z. Kramaska and S. Popychenko, from a pedagogical perspective, consider the readiness of FTs for PA as a complex integrative formation that encompasses motivational, cognitive, emotional-volitional, and activity-personal components characterised by certain specific features; the teacher's ability to engage in innovative PA, which combines professional knowledge, practical skills, and readiness for pedagogical changes (Kramaska Z., & Popychenko S., 2023, p. 209); Yu. Yu. Shevchenko conceptualises the professional readiness of future teachers as a multidimensional phenomenon comprising knowledge-based, emotional-value, and activity-practical dimensions, complemented by initial professional experience (Shevchenko Yu., 2018, p. 92). V. Chornous links future teachers' professional readiness to the development of creative activity, professional thinking, and the capacity for self-realisation in pedagogical practice (Chornous V., 2020, pp. 94–95). O. Dudnyk views the professional preparation of future teachers as a purposeful process aimed at developing the professional competencies required for effective pedagogical practice (Dudnyk O. M., 2020, p. 82). N. Pavlyk highlights the significance of teachers' psychological readiness for creative professional activity within the context of the New Ukrainian School, with particular emphasis on adaptability, creativity, and professional resilience (Pavlyk N. V., 2020, p. 12). L. Rybalko examines readiness for pedagogical activity through the lens of professional self-realisation, focusing on the discovery and development of one's creative potential, the analysis and evaluation of methodological work, and the design of further achievements for both teachers and pupils (Rybalko L., 2017, p. 69). V. Zhyvytskyi defines readiness as a complex structural formation encompassing positive attitudes

towards the teaching profession, professional motives, and internalised professional values. (Zhyvytskyi V., 2013, p. 99).

The review of scholarly literature demonstrates that the phenomenon of readiness for pedagogical activity has not yet received a universally accepted interpretation. Accordingly, on the basis of an analysis of relevant scientific approaches and research perspectives, this study examines the concept of «professional readiness of future teachers for pedagogical activity».

Thus, for the purposes of this study, the «professional readiness of future music art teachers for pedagogical activity» is understood as a holistic and integrative personal-professional formation that develops throughout professional training and is manifested in future teachers' capacity to perform pedagogical activity effectively and successfully. It incorporates a system of professional and pedagogical knowledge, skills, abilities, and value orientations, together with psychological and practical preparedness, the capacity to overcome professional challenges, reflect on the outcomes of one's own practice, and engage in continuous professional self-development. Collectively, these characteristics ensure a high level of pedagogical competence and professional expertise required for effective pedagogical practice.

Since the readiness of FMATs for pedagogical activity is formed in the process of their PT in HEIs, according to the orientation of PT and the content of PA, the readiness of FTs for pedagogical activity is divided into:

- general, which encompasses the basic professional qualities of a teacher, as well as the knowledge and skills necessary for carrying out pedagogical activity in general;
- special, which is related to the preparedness of FTs for specific types of pedagogical activity or for performing particular professional functions (Smoliuk A. I., 2018).

In our study, the professional readiness of FTs for pedagogical activity is considered as an integrated professional-personal quality of a student that includes motivation for the profession, fundamental pedagogical knowledge, practice-oriented

skills, emotional-volitional readiness, and the future specialist's ability for creative self-realisation.

Accordingly, today a MAT is a specialist who provides both musical and aesthetic education and instruction of pupils and develops their artistic culture, musical abilities, and creative-personal potential through music art. Contemporary scientific studies analyse the MAT from the perspective of a pedagogue, a performer of PA, an organiser of creative activity, and a bearer of national and cultural values.

L. Sbitnieva characterises the professional activity of music art teachers as a multifaceted domain that, alongside comprehensive professional preparation, requires a high level of musical knowledge, the ability to communicate and interpret musical works in an accessible way, as well as well-developed creative and communicative-organisational skills. At the same time, the professional activity of future teachers encompasses both performance-related and pedagogical-managerial dimensions. The researcher stresses that professional training should equip contemporary music art teachers to foster pupils' sustained interest in musical activities, stimulate their creative engagement, and contribute to the development of their musical culture. The knowledge and practical skills acquired during studies in higher education institutions contribute to an understanding of current trends in the development of music pedagogy, reveal the importance of MA in shaping a child's personality, and help the future specialist understand the individual possibilities for developing pupils' musical abilities (Sbitnieva L., 2021, pp. 183–184).

According to researchers S. Slobodiak et al., the professional expertise of a MAT is determined by their ability for creative self-expression, innovative pedagogical activity, and artistic-communicative interaction with pupils. Current expectations regarding the professional preparation of future teachers emphasise the development of a comprehensive body of knowledge, well-rounded skills, and practice-oriented abilities, alongside the capacity to organise professional activity at a level consistent with the pedagogical expertise acquired during training. The researchers argue that the modernisation of professional training for future music art teachers should be grounded in national cultural identity, sociocultural relevance, the humanistic foundations of

education, inquiry- and problem-based learning, a learner-centred approach, and dialogic interaction among all participants in the educational process (Slobodiak S., Yitun L., & Jin Ya., 2023).

In outlining the content of music art teachers' professional activity, it can be established that this type of pedagogical work is multifaceted, encompassing pedagogical, managerial, performing, educational, and creative dimensions. Its specific nature lies not only in communicating musical knowledge and performance skills to pupils but also in fostering their aesthetic culture, nurturing creative potential, and developing a value-oriented attitude towards art. The professional activity of music art teachers is implemented through a set of interrelated functions, each of which contributes to the effective organisation of the educational process:

1. Educational (teaching) function. This function involves enabling future teachers to provide pupils with musical knowledge, skills, abilities, and competencies in accordance with the principles and requirements of the New Ukrainian School (NUS), while promoting effective music education and the development of pupils' creative potential (Liubchak L., 2020).

2. Educational (upbringing) function. This function is concerned with fostering pupils' moral and spiritual values, worldview orientations, behavioural culture, and overall spiritual development through the professional activity of future teachers (Liubchak L., 2020).

3. Developmental function. This function focuses on promoting pupils' intellectual, creative-emotional, and communicative development, stimulating their cognitive engagement and creating conditions for their successful self-realisation (Pavlyk N. V., 2021).

4. Organisational function. Focuses the attention of FTs on planning, organising, and properly conducting the educational process, managing pupils' learning activities, and creating a favourable educational environment (Irkliienko V. S., & Yakovlev V. P., 2024).

5. Communicative function. Stimulates FTs to engage in pedagogical interaction with pupils, parents, and colleagues, ensuring effective communication and partnership relations based on the culture of pedagogical communication (Hrynevych L., 2018).

6. Methodological function. Determines the direction of the PA of FMATs towards the effective implementation of teaching methods, forms, technologies (innovative and digital), and means in accordance with educational objectives and the personal needs of pupils (Hrynevych L., 2018).

7. Diagnostic function. Ensures that FTs study pupils' individual characteristics, conduct objective assessment of learning outcomes, and determine their level of development (Serheieva V., 2025).

8. Prognostic function. Involves the strategic forecasting by FTs of the results of the educational process, modelling of PA, and determination of prospects for pupils' artistic and educational development (Spirina T. P. & Liakh T. L., 2021).

9. Reflexive function. Encourages FTs to conduct self-analysis of their pedagogical activity, assess their own professional competence, and pursue continuous self-improvement and professional growth (Pavlyk N. V., 2021).

10. Culture-forming function. Organises the PA of FT around pupils' acquisition of the spiritual and cultural experience of humanity, the formation of the individual's general culture, and the involvement of schoolchildren in the cultural and national heritage (Irkliienko V. S., & Yakovlev V. P., 2024).

The above considerations demonstrate that the contemporary music art teacher is a multifunctional professional whose work encompasses pedagogical, performing, educational, culture-forming, and organisational dimensions. The effectiveness with which future teachers perform these functions largely depends on the quality of their professional training, their capacity for creative self-realisation, and their readiness to engage in musical and pedagogical activity within the contemporary educational environment. Consequently, a key issue for the present study is the development of the professional competence of future music art teachers, understood as an integrative characteristic of the teacher's personality that substantially determines the effectiveness of professional activity.

The professional competence of future music art teachers constitutes one of the essential outcomes of their professional training and, consequently, an important foundation of their future professional expertise. It reflects their capacity to perform musical and pedagogical activities effectively within the context of contemporary education. In the scholarly literature, «professional competence of future music art teachers» is generally conceptualised as an integrative personal-professional formation that brings together professional knowledge, skills, abilities, professionally significant qualities, and creative potential. Researchers characterise this competence as:

- an integrative personal quality manifested in the ability to apply musical and pedagogical knowledge and skills effectively in developing pupils' musical perception and abilities, conducting artistic and pedagogical analyses of musical works, and organising vocal-choral and extracurricular activities (Sbitnieva L., 2021);

- a complex multicomponent formation that includes artistic, psychological and pedagogical, communicative, and methodological training, as well as the ability for creative self-realisation and professional self-improvement (Moroz M. O., 2018, pp. 120–123);

- a process that includes motivational, cognitive, activity-based, and reflective components that influence the formation of a teacher's readiness for successful PA, creative self-expression, and effective interaction with pupils (Dobrovolska R. O., 2020);

- a process encompassing motivational, cognitive, functional, and reflective components that ensure a teacher's readiness for effective PA of MT and creative interaction with pupils (Yalovskyi P. M., 2020, pp. 91–92);

- a key dimension of music art teachers' professional development, reflected in their capacity to select and apply effective methods, technologies, and forms of music education in response to the evolving demands of contemporary education (Labunets V. M., & Kartashova Zh. Yu., 2024, pp. 297–298);

- an important factor in the professional development of MATs that ensures the ability to conduct self-analysis, evaluate one's own pedagogical activity, and engage in professional self-improvement (Kolesnikova Ye. S., 2025, p. 23).

Thus, we will consider the PC of FMATs an integrative characteristic of a teacher's personality that combines musical-performance, psychological and pedagogical, methodological, communicative, reflective, and creative-interpretive training and ensures the effective implementation of musical and pedagogical activity in GSEIs.

At the same time, personal artistic values constitute an essential dimension of the professional competence of future music art teachers, as they shape the spiritual and aesthetic orientation of pedagogical practice, foster artistic thinking among pupils, and facilitate the transmission of cultural and aesthetic ideals. Within the framework of the present study, particular attention is therefore given to the development of future music art teachers' artistic values as a foundation for their professional and personal growth and their creative self-development. In contemporary educational practice, these values represent an important element of the teacher's professional culture: they influence the nature of pedagogical interaction, guide artistic and creative practices, and contribute to the aesthetic development of pupils.

In the research of contemporary scholars, artistic values are considered as a multicomponent personal formation characterised by aesthetic ideals, artistic taste, and spiritual orientation, which manifests itself in the abilities for emotional and value-based perception of art and awareness of its culture-forming mission. Researcher M. Tkach notes that, for FMATs, value orientations constitute a basic construct of professional worldview, since they reveal the ways in which an individual is oriented towards professional and spiritual self-realisation, manifested in generating new creative ideas, managing flexible educational and interdisciplinary projects, consciously choosing one's own professional position, and, consequently, forming a value-based "self-image" (Tkach M., 2023, p. 29).

N. Nazarenko argues that the artistic and aesthetic consciousness of music art teachers develops through the cultivation of artistic and aesthetic feelings, aesthetic taste, and an aesthetic ideal, which together provide a foundation for the professional competence of future music art teachers. These qualities enable teachers to perceive and interpret artistic images and effectively communicate the values embodied in art

to pupils (Nazarenko N., 2021, p. 68). Accordingly, well-developed artistic values can be regarded as an outcome of professional training and an essential element of the teacher's spiritual and artistic development.

V. Labunets and Zh. Kartashova emphasise the role of the aesthetic culture of music art teachers as an integral dimension of pedagogical culture. Within the present research and experimental study, it is understood as a personally mediated system of values, cultural and pedagogical knowledge, and behavioural norms that are consistently manifested in teachers' professional practice. This system is oriented towards pupils' personal development, the identification and cultivation of their abilities, and the formation of their moral and worldview orientations, supported by appropriate pedagogical conditions in higher education institutions.

M. Malakhova, in turn, identifies several groups of professional and personal qualities characteristic of a music art teacher: motivational and value-based characteristics, which determine the level of pedagogical and artistic competence; musical and creative qualities, reflecting the development of musical abilities and creative-musical skills; and social-personal characteristics that facilitate adherence to ethical and behavioural norms within society and professional communities and constitute an important prerequisite for effective musical and pedagogical practice (Malakhova M. O., 2021, p. 48). Therefore, the artistic values of future music art teachers represent an important foundation for their professional activity, contributing to the development of pupils' aesthetic culture, creative potential, and spiritual growth through musical and pedagogical interaction (see Tabl. 1.1).

Overall, the review of the scientific and pedagogical literature confirms the relevance and multidimensional nature of the problem of developing future music art teachers' professional readiness for pedagogical activity amid the ongoing transformation of the education system. The analysis has made it possible to clarify the essence and interconnections of the key concepts underlying the study, including «training», «professional training», «readiness», «professional readiness», «professional competence», «professional activity of a music art teacher», and «artistic values». It has been established that the professional readiness of future music art

Table 1.1

**Systematisation of the Main Definitions of the Study on the Formation of
FMATs' Readiness for Pedagogical Activity**

No. No.	Main Definitions	Content of the definitions	Fundamental characteristics	Scientific significance for the study
1.	Training	A process of forming a body of knowledge, skills, abilities, and experience acquired through education and practical activity	Knowledge, skills, experience, practical activity	A basic process of specialist development aimed at the comprehensive development of personality
2.	Professional training	A systematic process of forming professional knowledge, skills, values, and professional ethics in higher education institutions	Professional expertise, competencies, values, innovativeness	The basis for the formation of readiness for PA
3.	Readiness	An integrative state and property of personality that ensures the ability to act effectively	Motivation, knowledge, emotions, will, self-regulation	An indicator of the actual ability to perform PA
4.	Professional readiness	A system of integrated professional and personal qualities that ensure the performance of PA	Competencies, attitudes, experience, self-development	The result of professional training
5.	Readiness for PA	A holistic formation that ensures the effective performance of professional functions	Motivational, cognitive, and activity-based spheres	An indicator of the professional maturity of a specialist
6	MAT	A future teacher as a specialist who provides pupils' musical and aesthetic education, upbringing, and development	Pedagogy, performance, creativity	A bearer of cultural and artistic values
7.	PA of a future MAT	A multifaceted activity that combines the pedagogical, performing, and creative functions of a future teacher	Teaching, upbringing, organisation, creativity	A complex integrative system of pedagogical work
8.	Professional competence of a FMAT	An integrative characteristic that combines knowledge, skills, abilities, and the future teacher's capacity for self-realisation	Interrelated components that ensure effective musical and pedagogical activity	A key condition for effective pedagogical activity
9.	Artistic values of a FMAT	A system of aesthetic and spiritual orientations that determine an individual's attitude towards art	Aesthetic taste, ideals, spirituality, culture	The basis of artistic and pedagogical influence on pupils

teachers represents an integrative personal-professional formation that develops through the process of purposeful and effective professional training.

The reviewed studies demonstrate that professional training of future music art teachers in higher education institutions should be grounded in competence-based, person-centred, creative, and innovative approaches. Such training is expected to foster professional knowledge, practical skills, creative potential, digital literacy, pedagogical mastery, and the capacity for continuous professional development.

At the same time, the specific nature of music art teachers' professional activity is determined by the integration of teaching, educational, developmental, organisational, communicative, methodological, diagnostic, prognostic, reflexive, and culture-forming functions. Their effective implementation requires not only a high level of professional competence but also well-developed artistic values.

The synthesis of the identified scientific approaches has further demonstrated that professional competence and artistic values constitute significant structural elements of future music art teachers' professional readiness. Their interaction creates the basis for creative and pedagogical self-realisation, effective musical and pedagogical practice, and the development of pupils' spiritual and aesthetic culture. Therefore, the theoretical clarification of the key concepts of the study provides a conceptual foundation for the subsequent examination of interdisciplinary integration as a pedagogical issue within the system of higher pedagogical and art education.

1.2 Interdisciplinary integration as a pedagogical problem in the system of higher pedagogical -music education

The current stage of development in pedagogical and musical science is characterised, in general, by the increasing complexity of research subjects and the need for their comprehensive and multidimensional analysis, which requires the active and practical implementation of interdisciplinary integration (ID) into the system of higher pedagogical education. Examining this issue requires an exploration of the

conceptual content of the terms «interdisciplinarity», «interdisciplinary approach», «integration» and «interdisciplinary integration».

1. Interdisciplinarity is a general phenomenon of modern science, characterising the interaction of various scientific disciplines in the process of researching common problems/objects and reflecting a trend towards the integration of scientific knowledge. It indicates a trend towards the unification of knowledge from different scientific fields. Consequently, the boundaries between academic disciplines are becoming more permeable (Diachenko-Bohun M., Homlia L., Shkura T., Rokotianska V., & Orlovskiy O., 2023; Slukhenska R. V., Biryuk I. G., & Nazymok Y. V., 2024).

2. The interdisciplinary approach, as noted by researchers T. (Gogol, O. Krasovska, L. Matvienko, I. Usatova et al., serves as an effective way of organising research/teaching, as it involves the use of fundamental knowledge, methods and principles from several disciplines to understand and study a single problem area with the aim of developing an effective strategy for its resolution. Accordingly, we will consider the interdisciplinary approach as a practical strategy for activity that implements interdisciplinarity at the level of methods and process (Gogol T. V., 2026 ; Krasovska O. O., 2015 ; Matvienko L. G., 2024; Usatova I., Korol T., & Vedmedyuk A., 2024).

3. Integration processes in education reflect contemporary trends that are characteristic of all spheres of public life. In arts education, integration plays a vital role in creating a holistic learning system that fosters the development of creative thinking, critical analysis and social skills among learners. It involves combining different art forms, their interconnection with other academic disciplines studied at HEI, as well as the active use of modern educational and artistic technologies in the educational process (Belinska T. V., 2024, p. 17). In the Oxford University Dictionary, the concept of «integration» is defined as «the act or process of combining two or more parts so that they function together» (Oxford Advanced Learner's..., 2000, p. 675). The Pedagogical Dictionary defines the concept of «integration» as both the state of coherence of the individual differentiated parts and functions of a system or organism into a whole, and the process leading to such a state (Pedagogical Dictionary, 2001, p.

229). The scholar I. Kozlovska defines integration as the process of interaction between individual elements possessing certain characteristics, during which essential connections are established, developed and strengthened between them. As a result of such interaction, a coherent system with new qualitative features is formed, whilst the initial properties of each element are preserved within the structure of the newly created entity (Kozlovska I. M., 1999). Furthermore, such integration leads to an increase in the coherence and organisation of the educational process (Belinska T. V., 2024, p. 18). In accordance with the generalisation of educational content, horizontal integration (which involves the coordinated study of educational material within one or several disciplines, allowing students to consider common problems and find comprehensive solutions) and vertical (ensuring the cross-cutting inclusion of global interdisciplinary issues in the content of various academic disciplines, forming a holistic view of them and facilitating the implementation of educational projects) forms of integration (Pastyrska I. Ya., 2022, p. 19).

4. Interdisciplinary integration is defined as both a process and a result of the combination and synthesis of knowledge, methods and theories from various academic disciplines into a unified and holistic system. Unlike the interdisciplinary approach, it focuses on the deep synthesis and unification of scientific content, which can contribute to the emergence of new concepts, models and even the formation of new scientific fields (Artyushenko A., 2023; Ganaba S., 2012 ; Vasylevska-Skupa L. P., Kravtsova N. Ye., & Shvets I. B., 2023 ; Gomonyuk O., 2019; Pastyrska I. Ya., 2022).

Clarifying the meaning of the terms «interdisciplinarity», «interdisciplinary approach», «integration» and «interdisciplinary integration» has enabled us to examine the historical origins of their emergence and development. Thus, the first discussions on interdisciplinarity began in the 1970s and were primarily linked to research in the natural sciences. In the humanities, comprehensive research based on an interdisciplinary approach only became widespread in the mid-1990s. An important impetus for this was the adoption in 1998 at the UNESCO conference «World Declaration on Higher Education for the 21st Century: Approaches and Practical Measures» of recommendations encouraging the use of interdisciplinarity in

addressing the challenges of modern science and practice (World Conference..., 1998). Ukrainian scholars I. Ziazun, A. Kolot, V. Kremen, V. Ognevyuk, S. Sysoieva and others made a significant contribution to the development of interdisciplinary ideas in the domestic scientific community, who, in their works, substantiated the need to integrate knowledge from various fields of science, emphasised the importance of a comprehensive approach to the study of social phenomena, and highlighted the role of interdisciplinarity in educational modernisation (Zyazun I. A., 2000; Kolot A. M., 2014; Kremen V. G., 2013; Sysoieva S. O., & Ognevyuk V. O., 2012).

Today, interdisciplinarity serves as a means of integrating various sciences in the context of creating interdisciplinary objects and is linked to the emergence of new interdisciplinary fields – acmeology, educational studies, corporate pedagogy, pedagogical axiology, and others. It involves the interaction of various fields of scientific knowledge when studying the same object, whilst preserving the specific characteristics of each discipline. The interdisciplinary approach does not limit the knowledge gained, but creates the necessary conditions for establishing links between different sciences. This, in turn, makes it possible to obtain the necessary data for studying the subject of research. At the same time, this approach ensures the integration of scientific concepts, theories, information, facts and methods with the aim of forming a systematic understanding of real phenomena in education, and also helps to resolve the contradictions between the fragmentary acquisition of knowledge and the need for its synthesis for holistic and comprehensive application in human activity and life (Zhelanova V., 2021, p. 478).

Researcher A. Kolot notes that in practice, the interdisciplinary approach is implemented in two main forms, namely as:

- a) the informal combination of different sciences whilst preserving their independence and uniqueness;
 - b) the creation of new integrated projects, interdisciplinary research areas, etc.
- (Kolot A. M., 2014).

The implementation of the interdisciplinary approach in modern higher education takes place at various levels:

1. Methodological. Its implementation is driven by the contemporary paradigm of higher education, characterised by a multi-paradigmatic synthesis of ideas from person-centred, cognitive-semantic and reflective educational paradigms, as well as a combination of axiological, cultural, systemic, synergetic, competence-based, technological and environmental scientific approaches.

2. At the scientific and theoretical level. The implementation of an interdisciplinary approach at this level is linked to the formation and development of such academic disciplines as acmeology, pedagogical axiology and educational studies. Furthermore, this approach facilitates the study of integrated personal constructs (professional motivation, values, meanings, and reflection on pedagogical activity), the investigation of which requires the application of principles from philosophy, sociology, psychology and pedagogy (Zhelanova V., 2021, p. 478).

3. At the practical level. The implementation of an interdisciplinary approach at the practical level is aimed at the direct application of integrated knowledge, skills and competences in the process of educational activity. This level ensures the interaction of various academic disciplines through the organisation of joint creative, research and project work, which contributes to the formation of a holistic worldview, the development of professional competences and the creative potential of the individual (Kuzan K., 2019, Zhelanova V., 2021) (Fig. 1.1).

An interdisciplinary approach in the educational process does not replace or limit the methods of individual disciplines, but rather creates the conditions for a broader and more holistic examination of the subject under study, which contributes to the expansion of scientific knowledge, enhances the effectiveness of solving professional tasks, and ensures the mutual complementarity and enrichment of various fields of knowledge. Its successful implementation in HEI requires access to the necessary resources and digital infrastructure for carrying out joint projects and research (Usatova I., Korol T., & Vedmedyuk A., 2024, p. 55).

In recent years, the issue of an interdisciplinary approach within the system of higher music education has been the subject of active research by academics. In particular, researcher O. Oleksyuk views interdisciplinarity as the foundation for the

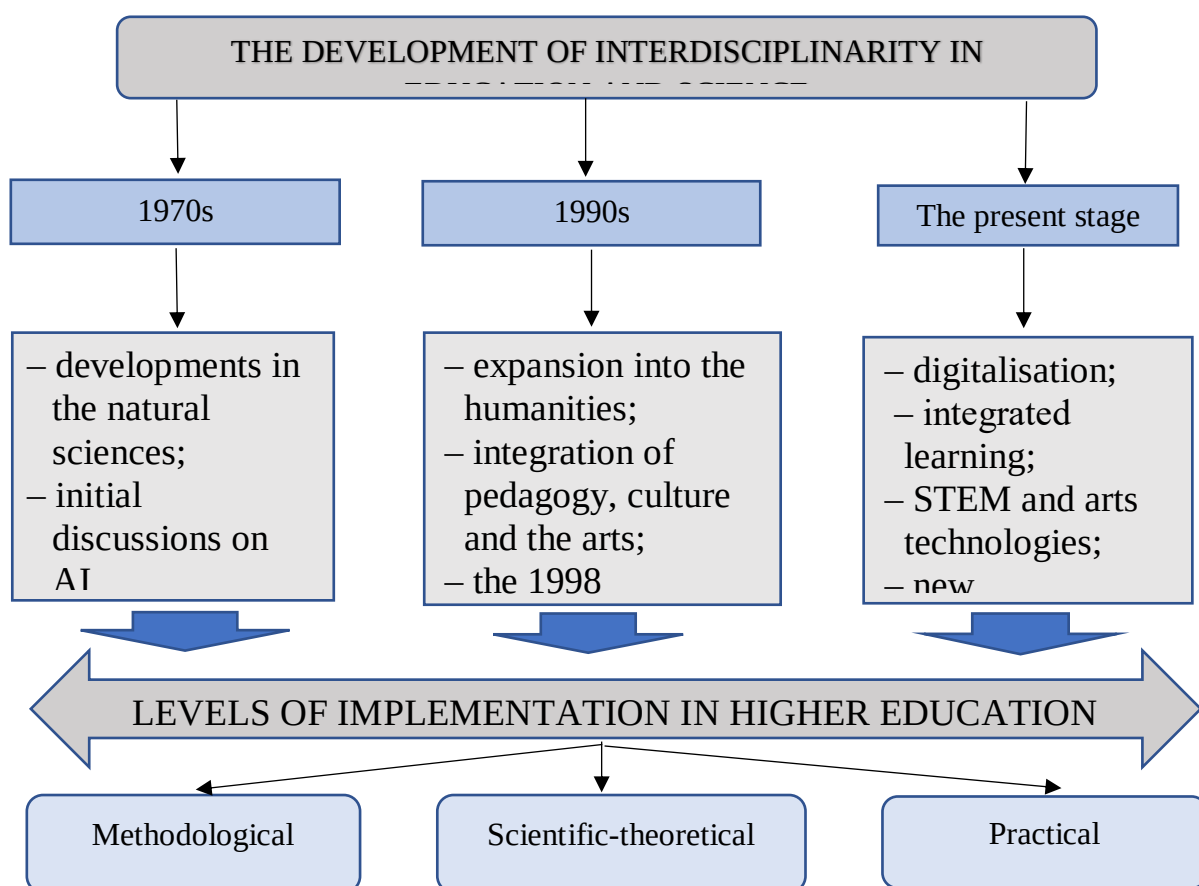


Fig. 1.2 The evolution of the implementation of the interdisciplinary approach

development of post-classical arts education and a new pedagogical paradigm, emphasising the integration of art, culture and pedagogy (Oleksyuk O. M., 2017, pp. 3–5; Oleksyuk O. M., 2019, pp. 4–7); researcher G. Karas explores the use of interdisciplinarity as an innovative approach in the educational process at music and arts HEI, emphasising the importance of integrating various fields of knowledge into the training of future arts specialists (Karas G. V., 2021, pp. 19–21); researcher A. Rastrigina analyses the issue of integrative and interdisciplinary discourse in teacher education and substantiates the significance of art communications and interdisciplinary interaction between the arts in the professional development of music teachers (Rastrigina A. M., 2022, pp. 87–91); researchers L. Vasilevska-Skupa, N. Kravtsova and I. Shvets studied interdisciplinary interaction as a factor in the professional development of music teachers and paid particular attention to the interconnection between vocal performance, conducting, acting skills and pedagogy

(Vasilevska-Skupa L. P., Kravtsova N. Ye., & Shvets I. B., 2023, pp. 33–35); researcher T. Gogol interprets interdisciplinarity from the perspective of combining, within pedagogical practice, the interacting knowledge, methods and conceptual frameworks of various academic disciplines with the aim of forming a value-based understanding of the patterns of development, functioning and improvement of pedagogical practice (Gogol T. V., 2026, p. 426); researcher O. Krasovska focuses on the issue of an interdisciplinary approach to teacher training in the field of music and arts education, explores integrated teaching technologies and traces their role in teacher training (Krasovska O. O., 2015, pp. 25–30); researchers N. Bovsunivska, O. Gavrosh and M. Tkachenko substantiate contemporary aspects of the synergy between pedagogy, psychology and art history in an interdisciplinary approach (Bovsunivska N. M., Gavrosh O. I., & Tkachenko M. O., 2025) and others.

Researcher I. Nechitailo defines interdisciplinarity as the combination of contemporary paradigms, methods, ideas and approaches from two or more sciences or academic disciplines with the aim of achieving specific educational and research objectives. She notes that interdisciplinarity can be implemented at both the global and local levels. The global level involves the development of interdisciplinary educational programmes formed at the intersection of several specialisms, whilst the local level ensures the implementation of the principles of interdisciplinarity in the educational, research and project activities of students, particularly when they undertake independent research work (when writing coursework and qualification papers based on the integration of several studied academic disciplines) (Nechitailo I. S., 2020, pp. 396–397). According to the scholar O. Agapova, the use of interdisciplinary diversity in problem-based research contributes to the successful writing of academic work. In this case, science is enriched with a variety of new ideas and concepts (Agapova O. V., 2022, p. 35). As noted by foreign researchers R. Frodeman, J. Klein and R. Pacheco, interdisciplinarity is based on the concept of interaction and integration of different fields of knowledge, which contributes to the expansion of scientific dialogue and the acquisition of new knowledge. They view interdisciplinarity as a new approach to research, teaching and practice, underpinned by the integration of the theoretical,

methodological and organisational foundations of various disciplines (Frodeman R., Klein J. T., & Pacheco R. C. S., 2017, p. 308).

Consequently, in recent years there has been growing interest within the academic community in the study of the interdisciplinary approach as an important theoretical and methodological foundation for research in the field of higher music education. Researchers are investigating both the characteristics of the integration of different fields of knowledge and identifying the specifics of interdisciplinary interaction, whilst analysing its impact on higher music education. This is due to the fact that the field of music education is integrative in nature, as it combines pedagogical, psychological, sociocultural and musical-artistic aspects of the development of the future teacher's personality and their professional development as a whole. In this regard, it is particularly important for researchers to develop and implement integrative scientific concepts in music education that can ensure a systematic study of the interrelationships between various components of the educational environment.

The importance of interdisciplinarity in the educational process of HEI is reinforced by the national legislative decree «On the Approval of the Strategy for the Development of Higher Education in Ukraine for 2022–2023», which defines the strategic and operational goals and objectives of the Strategy for the Development of HEI and outlines the importance of implementing an interdisciplinary approach in educational and research programmes (On the Approval of the Strategy..., 2022).

This is precisely why interdisciplinary integration currently serves as an active process manifested in the interaction of various fields of knowledge, resulting in the formation among students of new modes of scientific cognition, research methods common to several academic disciplines, and a holistic vision of the subject as a whole. «Interdisciplinary integration» is one of the key concepts in modern science and education, as it reflects the trend towards combining fundamental knowledge, modern methods and innovative approaches from various disciplines with the aim of comprehensively solving complex scientific-theoretical and practice-oriented tasks. Importantly, this results in new interdisciplinary communication among participants in

the educational process, which goes beyond the already established critical and creative thinking that emerges among learners as a result of collaborative learning (Gardiner P., 2020).

Researchers V. Le and T. Vang (Le V. T., & Vang T. K. C., 2020) explore several key approaches to interpreting this concept and examine it within the context of knowledge integration, the synthesis of sciences, and interdisciplinary connections. Researcher O. Mykytiuk views MI as a process of harmonising the content of academic disciplines from the perspective of reflecting the unified, continuous and holistic phenomena of the PD, and as an opportunity for learners to utilise the body of knowledge of a particular discipline in conjunction with others. In the researcher's view, interdisciplinary integration (II) ensures the alignment of the aims and objectives of theoretical and practical disciplines within a single educational process and serves as an effective tool for lecturers to shape students' holistic understanding of the phenomena and processes of the natural world by integrating knowledge from various disciplines into a unified system (Mykytyuk O. Yu., 2013, pp. 602–603).

European-level regulatory acts place particular emphasis on the need to enhance the effectiveness of scientific research through the implementation and use of diverse scientific approaches. Thus, in accordance with the Regulation of the European Parliament and of the Council (EU), the «Horizon Europe» Framework Programme has been established, with set rules for participation and the dissemination of innovation outcomes. It emphasises the importance of multidisciplinary, interdisciplinary and transdisciplinary approaches as fundamental conditions for achieving significant scientific progress, and identifies research activities that should be shaped in line with current needs and scientific potential and be geared towards ensuring scientific excellence with the aim of strengthening the European Research Area (European Parliament..., 2021).

Accordingly, Ukrainian and foreign researchers have proposed considering MI in accordance with the classification of such important concepts as multidisciplinary, interdisciplinarity and transdisciplinarity (Tabl. 1.2).

The advantages of multidisciplinary in the study of academic disciplines lie in the fact that students conduct their own research within the scope of knowledge of the discipline they are studying (Krylova O., 2024, pp. 99–100). This allows them to:

Table 1.1

No.	Concept	Definition of the concept
1.	Multidisciplinary	– combines different fields of knowledge and methods to solve complex problems; examines the subject of study within the scope of several academic disciplines (Krylova O., 2024, p. 99); – involves the use of augmented reality technologies in all forms of STEM education (Drokina, A. S., 2023), with interactive lessons and visualisation of the material, leading to teamwork, maximising its effectiveness and productivity (Aleksov S. V., & Didyk A. V., 2023, p. 6).
2.	Interdisciplinarity	— the interpenetration of methods and concepts from different disciplines (Barry A., Born G., & Weszkalnys G., 2008, pp. 23–26); – unifies an approach in which methods from one discipline are transferred to another to study subjects that go beyond the boundaries of a single field of knowledge but remain within the scope of disciplinary research (Nicolescu B., 2002); – explains to students the practical importance of a given subject through its connection with other disciplines that they have already studied, are currently studying, or will need to study in the future (Nalyvaiko O. O., & Nalyvaiko N. A., 2020).
3.	Trans-disciplinarity	– goes beyond the boundaries of a given science and incorporates the socio-cultural and practical aspects of the problem under consideration, forming entirely new knowledge that is closely linked to practical experience (Gogol T. V., 2026, p. 423); – aims to bring together different disciplines with the potential to reach a qualitatively new level, which may lead to the emergence of a new scientific field or a separate scientific discipline (Filippenko A. S., 2018, p. 8); – is characterised by crossing ‘through’ and ‘across’ disciplinary boundaries, going ‘beyond’ specific disciplines and finding itself in a superspace above them, insofar as it not only unites ‘related’ (Shinkevich O. S., Lutskin E. S., Bondarenko G. G., & Myronenko I. M., 2023, p. 158).

– broaden one’s own perspective on the problem and examine it from various angles and through different lenses (the perspective of the relevant discipline on this problem, the use of available technologies, procedures, methods, etc. to solve it), which

contributes to a comprehensive understanding of the phenomenon/problem under investigation;

- make decisions in a comprehensive manner, as multidisciplinary teams are able to develop more comprehensive solutions to the problem in question within the scope of knowledge from various subjects studied;

- carry out a creative synthesis of ideas and methods from various academic disciplines to solve a problem or conduct research, as the interaction between students from different specialisms (fields) enriches the research with new conceptual ideas and methodological approaches;

- tackle challenging problems more effectively, as knowledge from different academic disciplines enables students to fully grasp and resolve various aspects of a problem;

- form various interdisciplinary groups (by bringing together students from different disciplines) with the aim of exchanging knowledge and experience, developing collaboration skills and finding comprehensive solutions to set tasks;

- utilise research and educational multidisciplinary programmes in the educational process of higher education students to develop multidisciplinary skills among students of the FT of MA.

An interdisciplinary approach to the study of academic disciplines (as an effective method of conducting research or teaching, in which a problem is considered not from the perspective of a single discipline, but through a combination of knowledge, methods and approaches from various disciplines) helps students acquire comprehensive knowledge, develop critical thinking, effectively solve practical problems and form skills in integrating knowledge from different fields and professional interaction. The benefit of interdisciplinarity in students» study of academic disciplines lies in the fact that learners:

- gain a holistic view of the problem, as the combination of knowledge from different fields contributes to a comprehensive understanding of problem-oriented and research-based phenomena and processes (Klein J., 1990);

- critical and analytical thinking is developed, as the interdisciplinary approach requires analysing problems from different perspectives and seeking non-standard solutions (R. Frodeman, 2017, p. 25);

- effectively acquired knowledge from various academic disciplines allows for a full consideration of different aspects of a problem and the identification of optimal solutions (Repko A. F., Szostak R., & Buchberger M. P., 2017, p. 205);

- the level of creativity and innovation increases, as the integration of different approaches and methods stimulates the generation of new ideas (Sysoeva S. O., 2015a, pp. 10–18);

- teamwork and equal communication skills are developed; accordingly, interdisciplinary groups exchange knowledge, experience and professional approaches to problem-solving (Kremen V. G., 2013; Sysoeva S. O., 2015; Ziazun I. A., 2000);

- There is a rapid adaptation to the current demands of the labour market, as educational administrators require managers who are capable of working at the intersection of several fields of knowledge (Nychkalo N. G., 2013, p. 45).

- the capacity for self-education and continuous learning is developing, as interdisciplinarity encourages the search for new information and the exploration of related fields of knowledge (Pometun O. I., 2021, pp. 52–54).

- One's own research activity is enriched with new approaches and methods, which contributes to improving the quality of scientific research and practical outcomes in higher education (Sysoieva S. O., 2014).

Accordingly, multidisciplinary and interdisciplinarity form the basis for the interaction of different fields of knowledge, whilst preserving their boundaries. In this context, the next stage of the interdisciplinary process in education is transdisciplinarity, which goes beyond the boundaries of individual disciplines and forms a holistic view of the problem under study.

In contemporary higher education, transdisciplinarity is viewed by scholars as a level of knowledge integration that goes beyond the boundaries of individual academic disciplines and is aimed at forming a holistic understanding of complex professional and socio-cultural phenomena (Van Ya., 2025, p. 5) and as a unified plane of

heuristically and axiomatically coherent scientific thinking in the study of a subject field (Bevz G. M., 2022, p. 31). Unlike the previous two approaches, transdisciplinarity involves the interaction of different fields of knowledge, but focuses on overcoming rigid disciplinary boundaries, which allows for the construction of new conceptual and practical models of PD.

At the same time, in the context of higher music education, a transdisciplinary approach takes on particular significance, as the programme for Music Teachers and Music Managers involves the integration of pedagogical, art-historical, psychological, cultural studies and performance components, which are capable of ensuring the development of comprehensive professional competence with the ability to flexibly solve problems in various pedagogical and musical-artistic situations (Leshchuk N., 2025). Another important aspect of transdisciplinarity is the involvement of students in their own research activities that go beyond the boundaries of a single academic discipline. This allows students of Music and Arts to not only acquire theoretical knowledge but also apply it in solving complex professional and practical tasks. In the course of such work, the ability to analyse, synthesise and interpret information from various sources is developed, which forms the basis for the development of critical and systematic thinking (Chunjiang L., 2024). In turn, the scholar V. Kremen emphasises the need to form a holistic worldview of the individual in the context of dynamic social changes, which directly correlates with the ideas of transdisciplinarity (Kremen V. G., 2013, pp. 45–55).

In music education, transdisciplinarity manifests itself through the combination of pedagogical and performance practice, pedagogical modelling, and the research-based analysis of musical phenomena. For example, the study of the musical work may combine historical and cultural analysis, elements of the psychology of music perception and teaching methodology, thereby ensuring a multidimensional understanding of the learning material. This approach helps students develop the ability to creatively solve pedagogical tasks, adapt teaching content to pupils' needs, and use innovative teaching methods (Padalka G. M., 2008). Consequently, transdisciplinarity in higher pedagogical and musical education serves not only as a methodological

approach but also as a prerequisite for the development of a modern specialist capable of integrating knowledge from various fields, conducting research, and acting effectively in complex and multidimensional professional situations (Tabl. 1.3).

Table 1.3

Comparative characteristics of types of interdisciplinary interaction

No .	Characteristic features	Multidisciplinarity	Interdisciplinarity	Transdisciplinarity
1.	Essence	The involvement of several disciplines in the study of a problem	The interpenetration of methods, concepts and approaches from different sciences	Going beyond the boundaries of individual disciplines and creating new knowledge
2.	Nature of interaction	The parallel use of knowledge	Synthesis and interaction of disciplines	Integration of science, practice and socio-cultural experience
3.	Boundaries of disciplines	Remain	Partially blurred	Virtually non-existent
4.	Main objective	Comprehensive examination of the problem	Formulation of a holistic vision	Development of innovative models and new approaches
5.	The student's role	Team player	Integrates knowledge	A researcher and creator of new knowledge
6.	Significance for music education	Broadening professional horizons	Development of critical thinking and professional interaction	Development of creative and research competence

Thus, multidisciplinarity, interdisciplinarity and transdisciplinarity in higher music education serve not only as methodological approaches, but as essential conditions for the development of a modern specialist capable of integrating knowledge from various fields, conducting research and acting effectively in complex and multidimensional professional situations. The implementation of these approaches necessitates close interaction between various educational and academic fields, which is significant for interdisciplinarity as the leading mechanism for combining knowledge, methods, forms of activity and professional experience. It is MI that

ensures the integrity of the educational process, facilitates the synthesis of its pedagogical, musicological, cultural and artistic components, and lays the foundation for the development of comprehensive professional thinking in future music teachers.

In contemporary pedagogical science, II is regarded by scholars as:

a) a mechanism for the synthesis of knowledge, ensuring the unification of concepts, methods, theories and approaches from various disciplines to form new, holistic knowledge. Its essence lies not merely in the automatic combination of individual scientific fields, but in the creation of qualitatively new ways of understanding complex pedagogical phenomena and problems. In an interdisciplinary environment, various types of knowledge are integrated – from theoretical, methodological and practical to empirical – which facilitates the comprehensive study of objects and processes (Ganaba S., 2012; Dykyi O. V., Ulyanova G. O., & Kibik O. M., 2025; Zhelanova V., 2021). It is precisely this synthesis of knowledge that is the central component of inter- and transdisciplinary research, as it allows for the establishment of new connections between previously separate elements of knowledge, the formation of innovative concepts, and the generation of new scientific results. In the process of such synthesis, various scientific perspectives, methodologies, research findings and professional practices are combined, and ‘the whole becomes greater than the sum of its parts’ (Hoffmann S., Pohl C., & Hering J. G., 2017);

b) the synthesis of methods from different disciplines to study complex phenomena that cannot be fully explained within the confines of a single discipline. The essence of this method lies in the interaction of different fields of knowledge, the integration of theoretical approaches, methodologies, analytical tools and practical experience with the aim of forming a holistic view of the problem associated with a complex phenomenon. This approach allows us to overcome the limitations of highly specialised research and creates the conditions for a comprehensive understanding of social, economic, technological, environmental and cultural processes (Shulhai A. G., Fedonyuk L. Ya., Mudra A. Ye., & Oleshchuk O. M., 2018, pp. 114–115);

c) an important educational principle aimed at integrating the knowledge, skills, methods and approaches of various academic disciplines with a view to fostering a

holistic worldview among students. Its aim is to establish interconnections between different fields of knowledge so that students can assimilate fundamental facts or theories and understand the complex nature of modern professional processes. This approach fosters the development of critical thinking, the ability to analyse complex problems, the creative search for solutions, and the application of knowledge in real-life situations. American scholars J. Klein (who argues for the importance of interdisciplinarity in education, as it overcomes the fragmentation of knowledge and helps form a holistic picture of the world) and J. Beane (who emphasises the importance of interdisciplinarity as one of the leading principles of modern education, as the integration of learning content around current issues and topics creates conditions for the active involvement of students in the learning process, the development of their cognitive motivation and the formation of the ability to apply knowledge in an interdisciplinary context) confirm the advisability of introducing interdisciplinary learning in HEI with the aim of combining academic knowledge with the real needs of society and the practice of everyday life (Beane J. A., 1997; Klein J. T., 1990);

d) a means of developing key professional competences, as the essence of interdisciplinary education lies in combining students' knowledge, skills, modes of activity and value orientations from various academic disciplines to create a holistic educational environment. This approach ensures the assimilation of specific facts and theoretical principles and significantly develops students' ability to apply the acquired interdisciplinary knowledge in a comprehensive manner and in accordance with various professional and life situations. In contemporary educational discourse, interdisciplinary education is viewed by scholars as an effective mechanism for developing 21st-century competencies, namely critical thinking, creativity, communication skills, teamwork, the ability to analyse complex problems and make decisions (Belinska T. V., 2024; Komova M., Myna Zh., Bilushchak T., Petrushka A., 2022; Chenzi S., 2024);

c) a driver of innovative development, given that, in the context of contemporary globalisation, digitalisation and rapid technological advancement, interdisciplinarity is

regarded as the foundation for the creation of new scientific concepts, innovative educational products and models of professional practice. Researchers emphasise that interdisciplinary integration contributes to the formation of new ways of thinking and the development of creativity. In particular, researchers M. Bonaventura, V. Latora, V. Nicosia and P. Panzarasa note that combining knowledge from different fields ensures the effective dissemination of ideas, stimulates the creation of new knowledge and enhances the effectiveness of activities. They highlight the importance of collaboration between specialists from different fields to create conditions for innovative breakthroughs and the formation of a competitive educational and scientific environment (Bonaventura M., Latora V., Nicosia V., & Panzarasa P., 2017). Ukrainian researchers (O. Dykyi, G. Ulyanova and O. Kibik) regard the interdisciplinary approach as a key factor in enhancing the effectiveness of modern scientific research and emphasise that the integration of different disciplines contributes to the development of new scientific methods, improves the quality of research and ensures the practical implementation of innovative solutions (Dykyi O. V., Ulyanova G. O., & Kibik O. M., 2025). Accordingly, researchers L. Homlia, M. Diachenko-Bohun, O. Orlovskyi, V. Rokotianska, and T. Shkura, who define interdisciplinarity as an innovative approach to teaching natural sciences, assert that the integration of disciplines forms the basis of the most significant scientific discoveries of the 21st century (Diachenko-Bohun M., Homlia L., Shkura T., Rokotianska V., Orlovskyi O., 2023); N. Padun and A. Padun view integrated learning as an interdisciplinary challenge in contemporary pedagogy, the resolution of which contributes to the intensification of the educational process, the development of students' creative potential, and the formation of a coherent system of knowledge (Padun N., & Padun A., 2021).

Integration enables the adaptation of teaching materials to the interests and needs of students. Contemporary themes are explored through the arts, including environmental issues, digital technologies, questions of social interaction, cultural heritage, and issues relating to globalisation and the arts, making learning more meaningful and relevant to real life. Furthermore, integrated learning focuses students

not only on acquiring theoretical knowledge, but above all on developing the ability to work in a team, communicate effectively, think critically, solve problems creatively, and apply acquired knowledge in practical activities. An important component of FT's integrated learning is the implementation of project-based activities, which combine various art forms and academic disciplines, as reflected in multimedia presentations, musical and literary compositions, interdisciplinary creative projects, and so on.

The introduction of interdisciplinarity into the educational process of FT of MA students enables them to:

a) Take a comprehensive approach to solving educational problems, successfully combining their own acquired knowledge, innovative methods and educational practices from various disciplines. This approach contributes to the formation of a holistic view of the subject and ensures more effective assimilation of the learning material. Thanks to the integration of knowledge from different fields, new methods, approaches and tools emerge for analysing and solving complex tasks, which improves the quality of the FT's educational programmes.

b) Acquiring creative skills. The combination of sometimes incompatible conceptual ideas stimulates creative thinking among students, promotes the generation of innovative solutions and helps to develop non-standard approaches to task completion.

c) Achieve a high level of flexibility and adaptability. Interdisciplinary education enables university lecturers to acquire knowledge across several scientific disciplines, master new educational technologies more easily, work effectively in various teaching teams and with students in the classroom, and adapt quickly to the rapidly changing conditions of the modern labour market.

d) Develop personal, communicative and social skills. Interdisciplinary interaction helps students develop the ability to work in teams comprising both like-minded individuals and opponents, to engage in professional dialogue, to argue their position effectively, and to collaborate with representatives from various sectors of their future professional field (Fig. 1.3).

e) To increase personal motivation for learning. The integration of various disciplines directs the educational process towards a practical focus, making it more interesting and closer to real-life situations, which effectively stimulates cognitive interest in studying International Management.

Accordingly, in our view, II in the process of teaching FT of MA at a HEI specialising in music pedagogy is a pedagogically-organised process of combining the content of music theory, performance, psychological-pedagogical and methodological disciplines, which ensures the interaction of various fields of knowledge within the unified educational space of the HEI and promotes the development of the ability of students of music to apply integrated knowledge and skills in their future music education practice.

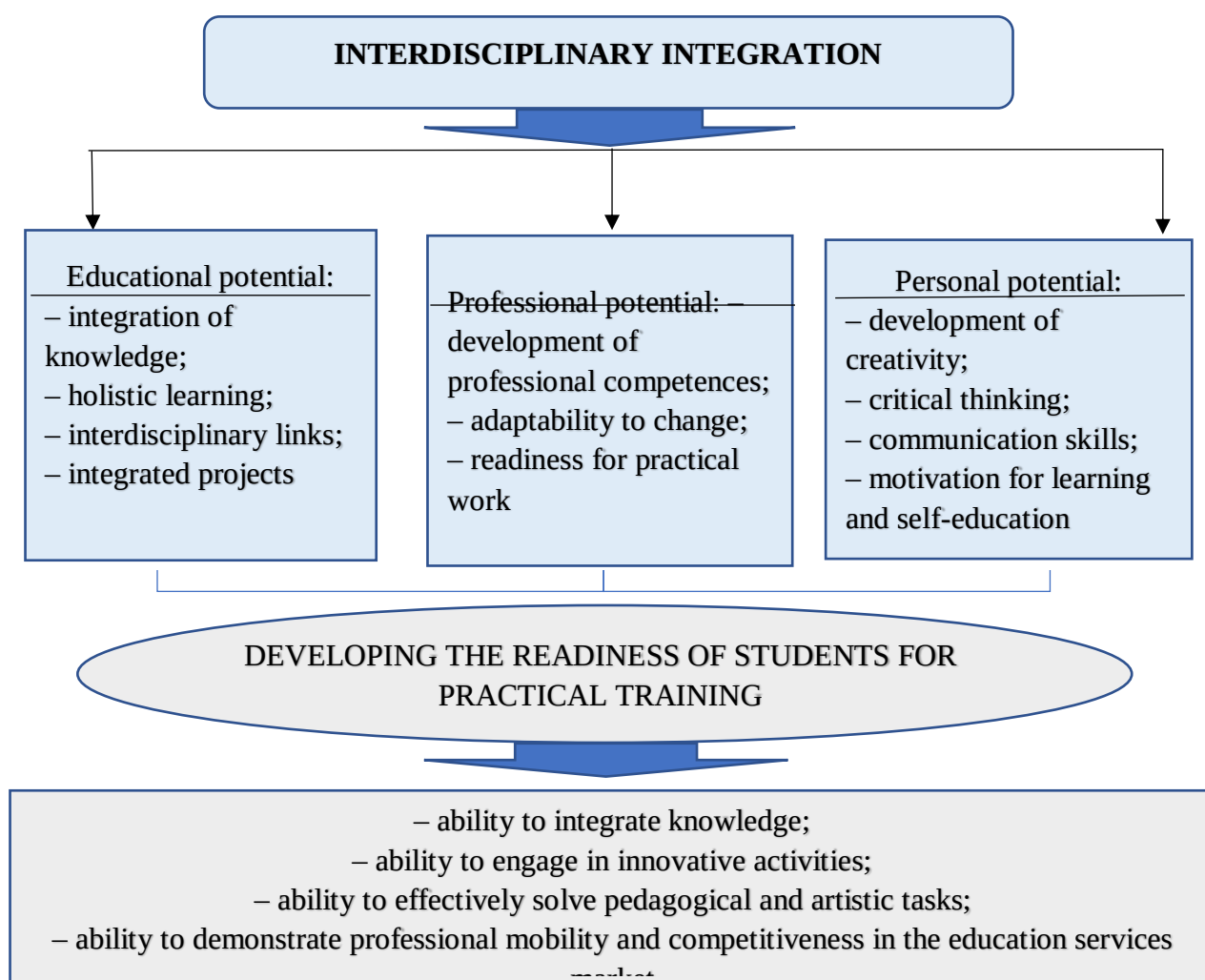


Fig. 1.3. The pedagogical potential of interdisciplinary integration in the training of FT of MA

It is important that the educational process of the Master's programme in Music Education, based on interdisciplinary approaches, is effective and systematic in nature; therefore, it must combine:

- motivation (aimed at fostering in students a sustained motivation to master interdisciplinary connections and an awareness of their significance in professional activity);
- a fundamental approach to learning (which guides students towards specific goals and ensures the effective integration of knowledge from different subjects to solve problem-based tasks);
- specific teaching methods, forms and tools (used by lecturers during integrated sessions and contributing to qualitative changes in students' knowledge, skills and professional competences);
- summative assessment (enables the teacher to determine the level of knowledge acquisition among students, specifically its systematic nature and coherence, as well as to evaluate the effectiveness of the interdisciplinary integration implemented in the educational process) (Usatova I., Korol T., & Vedmedyuk A., 2024 , p. 55).

Thus, the interdisciplinary approach in modern pedagogical science serves not only as a methodological principle for organising research, but also as a powerful driver of its innovative development. It facilitates the synthesis of knowledge, the emergence of new research areas, the refinement of teaching methods and learning strategies, and the creation of innovative educational technologies. It is precisely the interdisciplinary approach to the study of academic disciplines in HEI that serves as the foundation for the development of the modern future teacher as a competent and competitive specialist, promotes openness and self-development in modern higher pedagogical education, and creates the conditions for the formation of an educationally integrated scientific space as a whole.

1.3. Contemporary theoretical approaches to the training of future music teachers based on interdisciplinary integration

In the current context of higher education reform and Ukraine's integration into the European Higher Education Area, the issue of PT of FMAT is becoming particularly relevant. Social transformations, the rapid development of digital technologies, the updating of the content of arts education and the introduction of a competence-based paradigm are placing new demands on the PD of a music teacher. Today a teacher of MA is a repository of specialist musical knowledge, performance skills and pedagogical experience and, at the same time, a creative individual capable of innovative pedagogical practice, effective intercultural communication, the appropriate use of modern educational technologies, and the organisation and management of various forms of artistic and creative activity among pupils in GSEI.

In this regard, PT of FMAT is regarded as a complex and multidimensional process of developing professional competence, encompassing its musical-performance, psychological-pedagogical, methodological, cultural and personal-creative components. The outcome of the programme is a specialist prepared for future PA, capable of effectively carrying out musical and pedagogical work, developing pupils' creative potential, shaping their artistic and aesthetic culture, and ensuring a holistic artistic education.

At the same time, current practice in the training of PT of MA students highlights the need to overcome the fragmentation of knowledge and to strengthen the links between different educational components. This challenge can be effectively addressed through the implementation of the II programme, which ensures the integration of music theory, performance, psychology and pedagogy, cultural and creative studies, and information technology training into a unified system for the professional development of future music teachers.

In view of the above, defining the methodological foundations of the practical training component of the Master's degree programme in higher education institutions takes on particular significance. Contemporary pedagogical science has accumulated a substantial body of theoretical work on the rationale behind scientific approaches that

ensure the integrity, effectiveness and practical orientation of the educational process. It is for this reason that it is appropriate to analyse contemporary theoretical approaches to the pedagogical activity of full-time students based on principle of II, the leading ones being the competence-based, systems-based, person-centred, activity-based, cultural, axiological and integrative approaches.

1. In contemporary arts and teacher training, the competence-based approach deserves particular attention; it is aimed at establishing a system of professional competences necessary for the successful practice of music teaching. It is the leading methodological direction in the modernisation of contemporary teacher training and involves the use of new teaching methods and technologies that guide learners towards achieving practically significant and effective goals (V. O. Kholodenko, 2022, c. 269). The importance of this approach stems from the need to train teachers who are in demand in the labour market and who are capable of operating effectively in a context of rapid socio-cultural change, integrating knowledge from various fields and applying it in educational practice (Grosan, S., 2014). Researchers emphasise that the competence-based approach ensures the development of an individual's readiness for effective professional activity and personal fulfilment, and consequently for charting their own path of professional growth (Danylyuk S. S., 2014, p. 174); it focuses the educational process on the acquisition of a system of knowledge, skills and competences, and on developing an individual's ability to successfully apply them in various professional and practical situations (Zhelanova V. V., 2020; Leshchuk, N., 2025); develops in future professionals a set of key professional competences that ensure their versatility, multidisciplinary skills, cultural sensitivity and their ability to successfully tackle professional and socially significant challenges (Malik, G. D., 2017); ensures that the development of a future teacher's professionalism is practice-oriented, based on the cultivation of general key competences and subject-specific professional competences (value- and orientation-based, general cultural, information and cognitive, social and communicative, and personal and self-improvement-related) (Ionova, O. M., Ma, L., & Chen, C., 2023; Onofrychuk, L. M., & Sushkevich, L. V., 2016). In the European Higher Education Area, the competence-based approach has

been developed within the framework of the Bologna Process and the Tuning project, where competences are regarded as key learning outcomes and criteria for the quality of education (González J., & Wagenaar R., 2005).

In the context of music education, integration is manifested through the interconnection of music theory, performance, pedagogical and organisational, and psychological training. Researcher L. Sbitneva notes that the professional competence of music teachers is developed on the basis of the unity of general pedagogical and specialised training. It encompasses knowledge of pedagogy, psychology, cultural studies, music theory and music teaching methodology, as well as practical performance skills and the ability to conduct artistic and pedagogical analysis of musical works. (Sbitneva, L., 2021, p. 181). This type of PT enables adaptation to the current conditions of PA, which are now characterised by a high degree of dynamism and the need for constant updating of knowledge.

The interdisciplinary approach plays a crucial role in this process, ensuring the interaction of various educational components and contributing to the development of a holistic professional outlook for future specialists. This approach enables the integration of knowledge from musicology, pedagogy, psychology, cultural studies, ICT and arts management. As a result, students on the Music Education programme gain the ability to analyse professional phenomena comprehensively and creatively solve specialist tasks. In contemporary music education, interdisciplinary competences are becoming increasingly important. These are developed at the intersection of various educational disciplines and ensure readiness for teaching within an integrated cultural and educational environment. Such competences include the ability to think critically, engage in creative exploration, communicate across cultures, work in teams, utilise digital technologies in education, and engage in professional reflection (Ionova, O. M., Ma, L., & Chen, C., 2023) and an effective means of responding to the current challenges posed by the New Ukrainian School, inclusion and the digitalisation of society as a whole (Leshchuk, N., 2025, p. 83; ‘New Ukrainian School’ Concept, 2016; NUS: A Guide for Teachers, 2017) (Fig. 1.4).

Consequently, the outcome of the PT of FMAT programme during the period of study at the HEI, in line with the interdisciplinary nature of the training and the competence-based approach, is the development of competence in the field of the future PA.

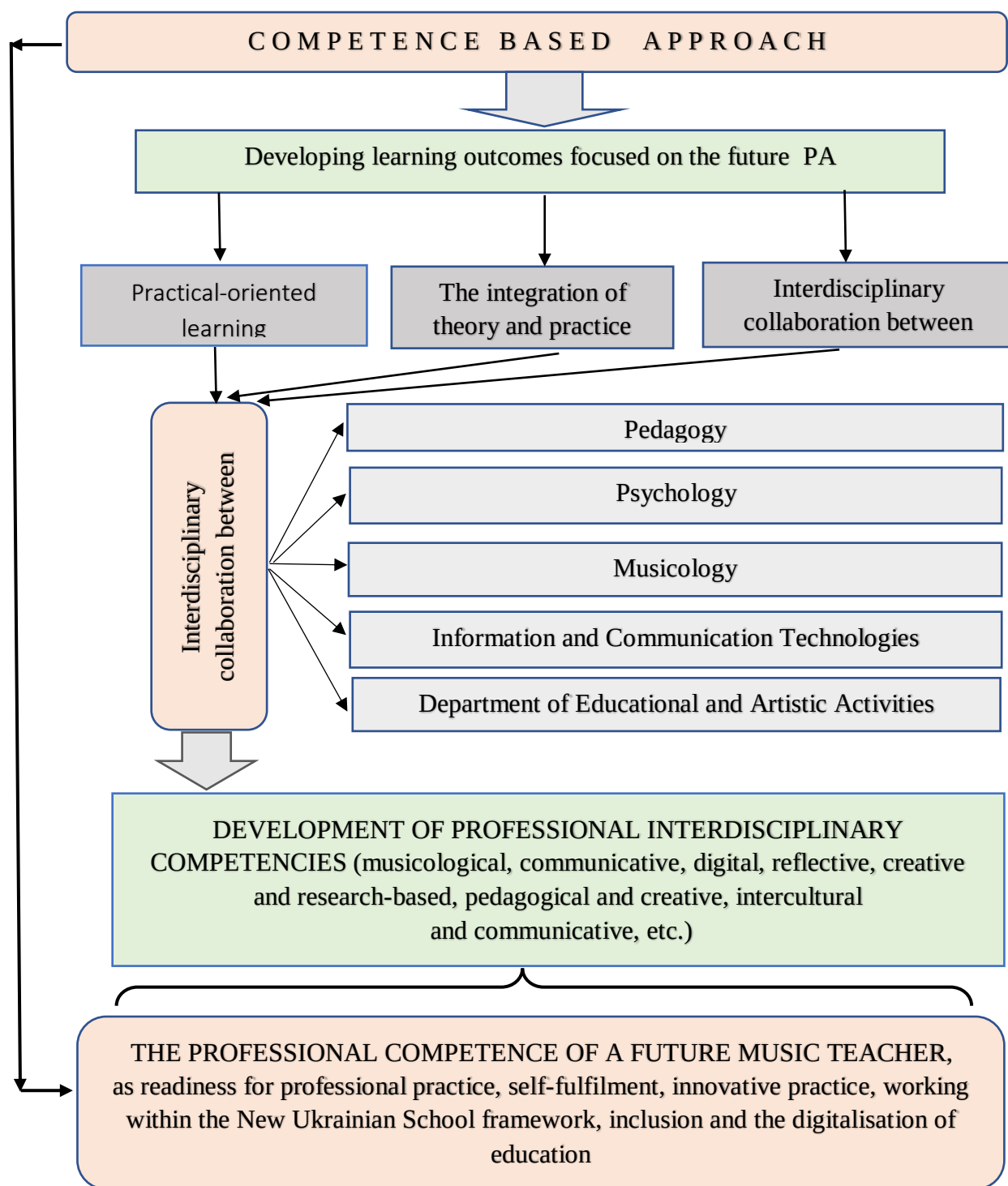


Fig. 1.4 A competence-based approach to the FMAT's training

This encompasses the totality of knowledge, skills, abilities, values and other personal qualities which students acquire through the effective implementation of the II and demonstrate upon completion of their studies within their specialism. The competence-based approach ensures the integrity of the training programme, helps to overcome its fragmentation and ensures a link between theoretical knowledge and practical activity. At the same time, the competence-based approach is an effective tool for ensuring the quality of arts and teacher training, and for preparing future teachers capable of successfully realising their potential within the contemporary cultural and educational landscape.

2. A systematic approach to the training of FMAT enables the educational process to be examined not as a collection of separate elements, but as a holistic entity in which all components are interconnected and interdependent, as academics view such training as a complex, multi-level system that combines objectives, content, methods, forms of teaching organisation and the outcomes of professional development.

The theoretical foundations of the systems approach were laid out in the works of foreign scholars. L. Bertalanffy viewed a system as a complex of interrelated elements forming a whole (Bertalanffy L., 1968). The further development of a systems-based view of educational processes was reflected in the scholarly work of B. Banathy, which emphasised the need to conceptualise education as an open social system (Banathy B. H., 1991).

A systems approach to music education involves viewing PT of FMAT as a holistic pedagogical system that integrates training in music theory, performance, methodology and psychology and pedagogy. The application of a systemic approach helps to reveal the structure and interdependence of the internal and external components of the modelled educational process, where the content of academic disciplines is determined by the objective, and the effectiveness of the training for students depends on the relevant organisational and pedagogical conditions. According to the researcher O. Umrikhina, this approach ensures that training is organised as a holistic process of shaping students' professional culture, in which each structural

component is geared towards achieving a common goal – the development of competent music teachers (Umrikhina O., 2022, p. 313).

Music education, as a pedagogical system, is characterised by a complex structure and multifunctionality. Its effectiveness depends on the coherence of the curriculum, the sequential development of professional competences, and the interaction of all participants in the educational process. Ukrainian scholars G. Padalka (Padalka G. M., 2017), O. Oleksyuk (Oleksyuk O. M., 2020), Y. Shabanova (Shabanova Y. O., 2014) view arts education as an integrative space in which the processes of an individual's artistic development, professional formation and the development of pedagogical skills are combined. Within this approach, music education functions as an open system capable of self-development, renewal and adaptation to societal changes, whilst the theoretical approach itself serves as a methodological principle and a method of scientific inquiry into the process of training specialists (Ovcharenko N., 2012).

An important aspect of the systemic approach is ensuring the interconnection between the disciplines of the professional cycle. The training programme for the Master of Arts (MA) covers a wide range of academic components: music theory, instrumental performance, voice, conducting, music teaching methodology, pedagogy and psychology. Studying these subjects in isolation does not ensure the development of comprehensive professional competence. This is precisely why the interdisciplinary integration of the content of academic disciplines and the establishment of interdisciplinary links. Researcher O. Ekonomova emphasises that the integration of disciplines within the music performance cycle contributes to the formation of a comprehensive vision of the future professional development of music teachers, ensures the transfer of knowledge and professional skills from one area of training to another, and enhances the effectiveness of students' professional development, which is entirely consistent with the logic of a systematic approach, according to which the professional training of music teachers is regarded as a holistic, interconnected system (Ekonomova O. S., 2016, p. 86).

Researcher I. Yefimenko emphasises that the structure of PT of FMAT encompasses various types of activity (scientific and theoretical, performance-related, creative, pedagogical, etc.), which complement one another and ensure that students are prepared for multifunctional pedagogical work (Yefimenko I., 2022, pp. 176–180). Therefore, the integration of the content of academic disciplines is one of the key mechanisms for implementing a systematic approach. It helps to overcome the fragmentation of knowledge, ensures the formation of a coherent picture of the future PA, and creates the conditions for the development of students' creative thinking. According to L. Likhitska, the integrative-axiological approach makes it possible to combine the musical-performance, pedagogical and value-worldview components of the professional training of future music teachers, which has a positive impact on their readiness for practical work with pupils (Likhitska L. M., 2022, pp. 24–26).

Foreign scholars such as J. Bruner and H. Gardner had previously drawn attention to the need to integrate the various components of professional education and emphasised the importance of structuring the curriculum around interrelated concepts and meanings, and also justified the importance of applying an interdisciplinary approach in the educational process to develop the professional thinking of future specialists and to foster their ability to combine practical, creative and educational activities within a single professional and educational framework (Bruner J., 1996; Gardner H., (2011).

A summary of the theoretical aspects of implementing a systems approach in the training of FT MA students, as presented in academic research, is given in Table 1.4.

Thus, the systemic approach in the PT of FMAT ensures the integrity and coherence of the educational process through the integration of the content of academic disciplines, the implementation of the principles of systematic and comprehensive learning, and the development of the future teacher's professional competence as an integrated aspect of their personality. The effectiveness of such training, in line with this systematic approach, is determined by the level of interaction between all the educational components studied within this specialism and their focus on achieving a common professional goal.

Table 1.1

Theoretical Foundations of the Systems Approach in the Professional Training of Future Music Teachers

Sscientist	Key conceptual principles of the systems approach	The significance of the researchers' findings for the PT or FT of the MA
Bertalanffy L. (1968)	The education system is regarded as a set of interrelated elements that form a coherent whole.	It enables us to view the software product as a single system of interrelated components.
Banathy B. H. (1991)	Education is an open social system that requires holistic planning.	It focuses on aligning the objectives, content, methods, forms of teaching and learning outcomes.
Umykhina O. S. (2022)	PA as a holistic process of shaping the professional culture of the future teacher.	It ensures that all structural components of the training programme are geared towards developing competent music teachers.
Padalka G. M. (2017)	Art education is an integrative space for the artistic development of the individual.	It helps to combine professional development, creative growth and teaching skills.
Oleksyuk O. M. (2020)	Art education is characterised by its interdisciplinary and integrative nature.	It creates the conditions for interaction between the various components of PA of FMAT
Shabanova Yu. O. (2014)	The educational process functions as a coherent system of interrelated elements.	It paves the way for the development of an open education system capable of self-development and adaptation.
Ovcharenko N. A. (2012)	The systems approach serves as a methodological principle of scientific inquiry.	Provides the scientific basis for the PT of FMAT process
Ekonomova O. S. (2016)	The integration of subjects within the music performance programme ensures that knowledge and skills are interlinked.	It helps to develop a comprehensive understanding of PA and contributes to the development of professional competence.
Yefimenko I. V. (2022)	PT encompasses various types of activity: theoretical, practical, creative and pedagogical.	It ensures readiness for multifaceted musical and pedagogical activities.
Likhitska L. M. (2022)	The integrative-axiological approach combines the professional and value- and worldview-based components of training.	It helps to develop the skills needed for practical work and professional fulfilment.
Bruner J. (1996)	The curriculum is structured around interrelated concepts and meanings.	It facilitates the integration of subject content and the development of professional thinking.
Gardner H. (2011)	An interdisciplinary approach is an important prerequisite for personal development and professional thinking.	Enables students to combine performance, creative and teaching activities in their professional practice.

3. *The person-centred approach* plays a leading role in the modern system of vocational education at the Municipal University of Management, as it is aimed at developing the learner's individuality, creative potential, professional abilities and value orientations (Moskvichova Y. O., & Fritsyuk V. M., 2023, p. 133). Within this approach, the student is regarded as an active participant in the educational process, capable of independent learning, creative exploration and professional self-improvement. Accordingly, learning takes the form of purposeful cognitive activity, carried out through interaction and collaboration between the lecturer and students with the aim of developing the professional competence and personal growth of the future specialist (Oliinyk N. V., 2023, p. 25).

The essence of the person-centred approach lies in taking into account the individual educational needs, cognitive abilities, professional interests and creative talents of each Master's degree student. Under such conditions, the educational process is directed not towards adapting the student to established forms of learning, but towards creating the pedagogical conditions for the realisation of their individual educational pathway and professional development (Skotna N. V., & Lyaluk G. M., 2020, pp. 394–398). This necessitates the use of flexible methods, innovative technologies and differentiated approaches to organising learning.

This approach is of particular importance in the PT of FMAT students, as it fosters the development of their creative activity, artistic and aesthetic thinking, reflection and capacity for self-realisation in their professional activity (Fig. 1.5). Its implementation ensures the development of mechanisms for self-development, self-organisation, self-regulation and professional self-affirmation, which are essential conditions for the formation of the modern music teacher (Lisovyi V., 2021, pp. 70–77; Lisovyi V., 2023, pp. 59–61).

Researcher S. Gorbenko emphasises that person-centred learning in arts education creates favourable conditions for unlocking students' creative potential, developing their professional adaptability, creativity and readiness for innovative teaching practices. According to the researcher, implementing this approach requires the establishment of the following within the educational institution:

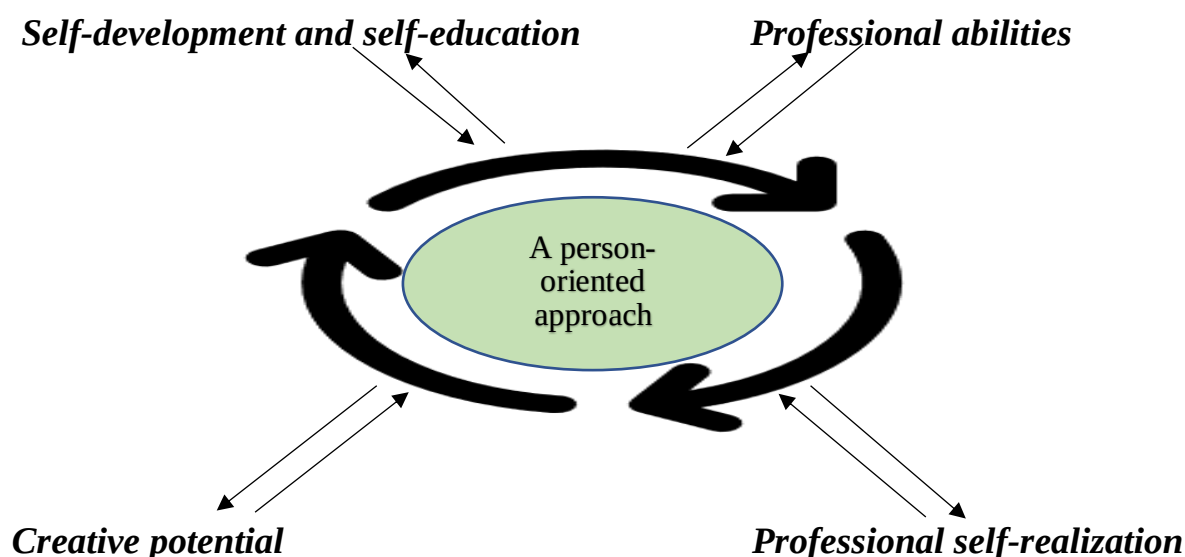


Fig. 1.5 The essence of the person-centred approach in the training of future music teachers

- an effective educational environment characterised by highly humane interpersonal relationships between lecturers and students and effective partnership-based cooperation between them;

- a successful educational process with a fundamentally well-structured and optimised curriculum, which ensures the creative development of Master's degree students as they study professionally-oriented disciplines, since each student's success depends to a large extent on the availability of favourable conditions for realising their cognitive and creative potential;

- a pedagogically sound organisation of teaching aimed at developing key competences in music teachers, encompassing up-to-date specialist knowledge, artistic and pedagogical skills and abilities, professional thinking, cognitive activity, and the capacity for creative self-development and self-education, as well as a value-based attitude towards the surrounding world and one's own personality.

Consequently, such training ensures the acquisition of professional knowledge and skills and fosters the development of a well-rounded personality in music teachers, enabling them to carry out effective artistic and pedagogical activities in the modern educational environment in the future (Gorbenko, S. S., 2023, p. 60).

Consequently, the person-centred approach ensures that the PT of FMAT is geared towards the development of students' individuality, creative potential and professional self-fulfilment. At the same time, the fulfilment of the objectives of modern arts and teacher training requires the application of other theoretical approaches which, when considered in conjunction, ensure the holistic development of the future specialist's PT. In this context, the activity-based approach deserves particular attention, as it is aimed at developing the system of professional competences necessary for the successful practice of music teaching.

4. *The activity-based approach* is one of the leading methodological approaches in contemporary arts and teacher training, as it focuses the process of PT of FMAT on the active acquisition of knowledge through practical, creative-performative, pedagogical and research activities. In the context of II, this approach ensures the integration of musical-theoretical, psychological-pedagogical, performance- and cultural-studies-related, and digital knowledge into a coherent system of PT. At the same time, the essence of the activity-based approach lies in the development of professional competences in the Master's degree programme in Music Performance through students' engagement in various types of activities that are as closely aligned as possible with the real-life conditions of their future professional practice. In this regard, as noted by researchers N. Ovcharenko et al., are not passive consumers of knowledge, but active participants in the educational process, as they independently acquire, analyse, integrate and apply the knowledge gained at HEI to solve professional tasks (Ovcharenko N., Matveieva O., & Chebotarenko O., 2020).

According to the researcher O. Umrikhina, the application of the person-activity approach in student teaching fosters the development of professional culture in the FMAT, as the effective implementation of various types of creative activity in the educational process promotes students' self-fulfilment and cultural and professional self-improvement (Umrikhina O. S., 2023, pp. 312–315). The activity-based approach takes on particular significance in the context of II.

Indeed, researchers L. Bezemchuk and V. Fomin emphasise the development of integrative pedagogical skills in FMAT programme, which takes place most effectively

within the framework of specially organised activities that involve the integration of knowledge from music pedagogy, art teaching methodology, psychology, cultural studies and other specialist disciplines. The researchers identify three stages in this process:

- cognitive and developmental. The primary objective of the first stage is to equip students with a sound professional knowledge base to ensure effective teaching practice in the future and to develop their ability to skilfully apply this knowledge when addressing pedagogical and practical challenges;

- the reproductive-creative stage. The focus of this stage is on developing students' methodological skills in planning and delivering MA lessons, and on fostering their ability to creatively design original educational models and pedagogical solutions. The implementation of these tasks helps to strengthen the professional motivation of MA students and prepare them for work in the context of the modernisation of contemporary arts education;

- the independent and creative stage. This is aimed at mastering artistic and pedagogical techniques in music education, drawing on tolerant pedagogical interaction and the students' independent and creative activities. Its content involves the use of methods of professional engagement, self-analysis, self-monitoring, modelling, the design of the educational process and self-assessment, which holistically ensures the development of the integrative and pedagogical skills of the MA student. The implementation of these stages of the activity-based approach ensures the effective application of the activity-based approach by the MA teacher (Bezemchuk L., & Fomin V., 2021). Within the framework of the Activity-Based Approach II, students implement this by carrying out integrated creative projects, developing cross-curricular lessons using MA, simulating multifaceted pedagogical situations, using problem-based and research-based teaching methods, combining musical performance, pedagogical and digital activities, and creating multimedia educational products, artistic presentations and so on (Duday M., 2025, pp. 84–90; Likhitska L. M., 2017).

Researchers L. Bezemchuk, N. Naumenko and V. Fomin (Bezhemchuk L., & Fomin V., 2021; Naukmenko N. O., 2024) emphasise that the activity-based approach, when combined with II, promotes the development of creative and research skills in students, fosters a motivational readiness for professional self-development, and ensures the ability to apply knowledge from various fields in practical teaching practice. Recent research by academics highlights the need to integrate digital technologies into the PT of FMAT. For instance, L. Cheng et al. investigated the digital competences of music teachers in the context of the digital transformation of education and emphasised the need to develop skills in working with digital platforms and technologies (Cheng L., Lam C. Y., & Leung C. H., 2024), as the use of digital platforms, multimedia resources, music creation software and artificial intelligence technologies broadens the scope for implementing the activity-based approach and contributes to the development of digital competence among students (Leshchuk N., 2025; Liu C., 2024).

Consequently, the activity-based approach in the PT of FMAT, based on Principle II, ensures the development of a comprehensive system of professional competences, the cultivation of creative potential and pedagogical thinking, and readiness for the effective implementation of integrated arts education within the context of contemporary music education. It facilitates the transition from the acquisition of isolated knowledge to the acquisition of practical experience, which meets the requirements of the National University of Arts.

5. The cultural studies approach in the MA programme is based on an understanding of music as a cultural phenomenon and an active vehicle for society's spiritual values. Its implementation in the educational process at higher education institutions is aimed at developing students' ability to comprehend artistic phenomena, interpret musical works in accordance with national and global cultural traditions, apply cultural experience in their future professional activity, and establish effective intercultural communication. Researchers emphasise the cultural studies approach to arts education as one that ensures the integration of arts education with society's

cultural processes and promotes the development of an individual's cultural competence.

Researchers emphasise the importance of the cultural studies approach in music education, as it ensures the interconnection between arts education and cultural processes in society and facilitates the acquisition of cultural competence in music education (Tyutyunnyk M. G., 2023, pp. 309–310); helps students to acquire practical and theoretical knowledge, and to understand the culture-forming function of music and its role in preserving and passing on cultural heritage (Barko M., 2024, pp. 230–234).

A key feature of the cultural studies approach is the establishment of links between music and other art forms: literature, theatre, choreography and the visual arts. Such integration fosters the development of a holistic artistic worldview among students, and creates the conditions for inter-artistic analysis and a comprehensive understanding of artistic phenomena. Within this approach, the musical work studied by students is regarded as part of the cultural landscape, closely linked to other art forms and various forms of creative activity. The scholar M. Tyutyunnik emphasises the need for interdisciplinary and artistic-communicative training for future music teachers (Tyutyunnik M. G., 2023).

One of the key outcomes of applying a cultural studies approach in the education of students is the development of their cultural competence, which encompasses knowledge of the cultural heritage of different peoples, the ability to interpret works of art within their cultural context, and the capacity for cultural self-identification and tolerant interaction in a multicultural environment. Researchers note that cultural competence is an important component of the professional competence of music teachers and determines their readiness for cultural and educational activities (Lin C., 2017; Zhou T., 2021). At the same time, research by R. Crawford demonstrates that music education is an effective means of developing intercultural competence and social inclusion (Crawford R., 2020). Within the Ukrainian academic community, the issue of intercultural competence among future music education specialists has been studied by O. Kovalenko and L. Yepik (Kovalenko O. V., & Yepik L. I., 2021).

Consequently, the cultural studies approach provides a holistic understanding of musical art as a cultural phenomenon, promotes the integration of various art forms, fosters the development of cultural competence, and prepares MA students for intercultural and inter-artistic dialogue in the field of arts.

6. The axiological approach examines the PT of FMAT through the prism of values that determine the content, objectives and outcomes of the educational process. In contemporary arts education, this approach is aimed at fostering professional competences and, consequently, at developing a value-based attitude towards MA, culture, national heritage and PA as a whole. Researcher S. Steblyuk emphasises that FMAT act as bearers of spiritual, aesthetic and cultural values and are capable of disseminating and transmitting them to pupils during the learning process. The training of students within the framework of the axiological approach ensures that they recognise the value of musical culture as a component of national and world heritage. It is precisely the development of emotional culture, artistic taste and moral qualities of the individual during lessons that forms the basis of a music teacher's pedagogical activity. The researcher notes that, in order to successfully carry out their pedagogical activity, a future teacher must possess not only knowledge and professional skills, but also a system of established values that determine their pedagogical stance and professional conduct (Steblyuk S. V., 2025).

The key objective of the axiological approach is to foster artistic and aesthetic values in students of the Master's programme in Music (FMAT), with a view to developing their ability to emotionally perceive, evaluate and interpret musical works, and to recognise their cultural and spiritual value. Researchers A. Kruglyachenko, I. Mazurok and S. Yabkovska argue that the professional and value-based orientations acquired by FMA students at HEI ensure the development of a personal attitude towards art and pedagogical activity in general (Kruglyachenko A. Yu., Mazurok I. V., & Yabkovska S. P., 2024, c. 58–61). At the same time, researchers O. Akimova and V. Frysyuk point out that the axiological approach ensures that educational programmes are geared towards the self-development of the learner and the formation of individual value orientations, which serve as the basis for their professional

development (Akimova O., & Frysyuk V., 2021, pp. 46–48). Accordingly, as M. Majidova notes, artistic and aesthetic values are formed during the learning process through the analysis and artistic interpretation of musical works, performance activities, students' creative self-expression, reflection on their own artistic experiences, and familiarisation with national and global cultural heritage, amongst other things. (Majidova M. M., 2025).

Modern training for the Master's degree in Music (FMAT) requires the integration of disciplines in music theory, performance, pedagogy, cultural studies and art history. This approach helps to foster a holistic worldview and broadens students' opportunities to understand the interconnections between art, culture and society. Researcher I. Lyashchenko emphasises the combination of cultural studies and axiological approaches in the training of music teachers, which can foster a deeper understanding of the artistic meanings and cultural codes of musical works and positively shape students' value orientations (Лященко I. С., 2024, с. 250-254).

Thus, the axiological approach in the Master's programme in Music Education ensures the development of a system of professional and pedagogical values, fosters students' artistic and aesthetic culture, and integrates various art forms to nurture a spiritually developed individual capable of realising the humanistic ideals of arts education in the arts school.

7. The integrative approach is one of the leading methodological approaches in contemporary music education, as it creates the conditions for comprehensive professional development (combining musical-theoretical, performance, pedagogical, psychological and digital components of professional education) in the Faculty of Music of the Academy of Arts. Contemporary research (Bezhemchuk L., & Fomin V., 2021; Broyako N., & Dorofeeva V., 2025; Ekonomova O. S., 2016) They emphasise that an integrative approach helps students to develop interdisciplinary thinking, creative self-expression and the ability to apply their knowledge in various professional contexts. Its essence lies in establishing links between disciplines, creating a unified educational space and revealing a holistic view of the world. In music education, integration involves combining the music-theoretical, performance-pedagogical,

psychological and digital components of professional training. According to the scholar O. Oleksiuk, the contemporary development of music education is characterised by a shift from interdisciplinarity to transdisciplinarity, where integration encompasses not only academic disciplines but also various spheres of professional and socio-cultural activity (Oleksiuk O., 2025).

In modern music and pedagogical education of FMAT, several models of interdisciplinary interaction are identified:

- the multidisciplinary model (knowledge from various disciplines is utilised in teaching in parallel, but without in-depth analysis);
- the interdisciplinary model (which integrates the content of related disciplines around a common problem or theme);
- transdisciplinary model (which creates a new educational space in which knowledge transcends the boundaries of individual disciplines and is directed by the learner towards solving complex, professional pedagogical tasks) (Zhang G., Sun J., & Sun Y., 2023). According to these researchers, the most effective models for the PT of FMAT are project-based and collaborative models of interdisciplinary interaction, combining pedagogy, arts education and innovative educational technologies.

It is important to note that integrative learning for the PT of FMAT programme offers a number of advantages, as it fosters the development of a professionally coherent worldview, as well as creative and critical thinking. At the same time, this approach enhances motivation to learn, purposefully develops interdisciplinary communication skills and improves the ability to engage in innovative activity.

Thus, the integrative approach serves as the leading methodological foundation for our study of the PT of FMAT programmes, as it ensures a holistic combination of the knowledge, skills, values, professional experience and pedagogical competences required for successful professional activity in the National University of Science and Technology (NUS) and effective navigation within the contemporary educational and cultural landscape.

Taken together, all the theoretical approaches mentioned form a coherent methodological framework for the training of FMAT, in which the competence-based

approach defines the learning outcome, the systemic approach ensures the structure and coherence of the training programme, the person-centred approach promotes the professional and individual development of the learner, and the activity-based approach shapes practical experience, whilst the cultural and axiological approaches help to shape the specialist's value- and culture-based personality, and the integrative and interdisciplinary approaches ensure the unity of knowledge and professional thinking in the training of MA students.

Table 1.5 sets out the key ideas, main functions and learning outcomes that define the theoretical approaches.

The approaches described (systemic, person-centred, activity-based, cultural, axiological and integrative) contribute to a deeper scientific understanding of the processes of pre-service teacher training in music education, and also lay the foundations for enhancing the effectiveness of educational practice in line with contemporary societal challenges and needs, which is achieved on the basis of the pedagogical principles of integrity, systematicity and consistency, didactic appropriateness, the link between theory and practice, cultural appropriateness, and creative self-expression (Masol, 2021; Nychkalo, 2020; Otich, 2020; Rudnytska, 2021; Rostovskyi, 2020).

1. The principle of integrity involves viewing the PT as a single pedagogical process in which the musical-performance, pedagogical, research and cultural-educational components are interlinked. The development of their professional competence is achieved through the coordination of the aims, content, methods, forms and outcomes of learning. This approach ensures the harmonious development of the student's personality and their readiness for multifunctional professional activity.

2. The principle of systematicity and consistency involves organising the programme as a holistic pedagogical system, the elements of which are interconnected and interdependent. The training of MA students is carried out in stages, ensuring a logical sequence in the development of knowledge, skills, values and professional experience.

Table 1.5**Theoretical Approaches to the Professional Training of FMAT**

No.	Theoretical Approach	Key defining characteristic	Key features of the PT of MA approach	Learning outcomes
1.	Competency-based	A focus on developing a system of professional competences as an outcome of learning	Practical focus, integration of knowledge, assessment of learning outcomes	Professional competence, readiness for PA, capacity for self-fulfilment
2.	Systemic	Viewing PT as a holistic, interconnected pedagogical system	Structuring content, ensuring links between the components of training	Holistic professional thinking, a systemic view of teaching and learning
3.	Person-centred	The development of the learner's individuality	Personalising learning, creating conditions for self-development	Creative self-fulfilment, professional reflection, self-development
4.	Activity-based	The development of competences through engagement in practical professional activities	Learning through action, simulating real-life professional situations	Teaching and learning experience, practical skills, creative and practical activity
5.	Cultural	Understanding music as a cultural phenomenon	Establishing a cultural context for learning, interdisciplinary integration	Cultural and intercultural competence, artistic worldview
6.	Axiological	A focus on a system of professional and spiritual-value orientations	Fostering values, moral and aesthetic education	A value-based approach to art, the teacher's humanistic stance
7.	Integrative	Integrating various fields of knowledge into a coherent educational framework	Integration of content, methods and types of activity	Holistic professional thinking, innovative practice
8.	Interdisciplinary (as a cross-cutting approach)	Interaction between disciplines in the music-pedagogical, psychological-cultural and digital streams	Ensuring links between disciplines and educational components	Ability to analyse and solve professional tasks comprehensively

The implementation of this principle contributes to students' understanding of the structure of the PA and the patterns of its functioning (Mykhaskova M. A., 2020; Yalovskyi P., 2021, p. 88).

3. The principle of didactic appropriateness involves selecting content, methods, technologies and teaching aids that best meet the objectives of the PT of FMAT

(Reizenkind, T. Y., 2006, p. 20). The use of innovative teaching technologies, interactive methods, creative projects and interdisciplinary links in the programme must be pedagogically sound and aimed at developing the professional competences of MA students.

4. The principle of linking theory with practice involves the organic integration of theoretical knowledge with real-world experience in music education. Its implementation is aimed at developing undergraduates' ability to apply the musical-theoretical, methodological, psychological-pedagogical and art-historical knowledge they have acquired in the process of teaching music in general secondary schools and in addressing artistic, professional and pedagogical challenges (Bezhemchuk L., & Fomin V., 2021, pp. 12–15). In the MA teacher training programme, this principle is put into practice through the integration of subject-specific content with teaching practice, the effective implementation of creative projects, the delivery of MA lessons, and the organisation of extracurricular vocal and choral activities. As a result, students gain experience in applying theoretical knowledge in real-life educational settings and develop the readiness to undertake independent professional activity (Sbitneva L., 2021, pp. 180–185).

5. The principle of cultural appropriateness in the MA programme in Music Education involves organising the educational process on the basis of the assimilation of national and global cultural values, traditions and humanity's cultural musical heritage. The implementation of this principle aims to help students recognise MA as an important component of culture, understand its role in the development of the individual and society, and utilise the cultural potential of music in their own PA. The practical implementation of the principle of cultural relevance is achieved by incorporating works of Ukrainian and global musical culture into the curriculum, studying the cultural and historical context of musical phenomena, and participating in artistic projects, festivals, cultural and educational events, and creative activities. This ensures that MA students recognise the value of cultural heritage and contributes to the development of their cultural creativity (Ovcharenko N. A., 2018; Jingheng G., 2015, p. 10).

6. The principle of creative self-expression involves creating favourable conditions for the realisation of the individual creative potential of MA students, and for the development of their ability to interpret musical works artistically, engage in creative exploration and improvisation, think artistically, reflect, act independently, and be prepared for innovative and creative teaching practice and for making professional decisions independently. The implementation of this principle ensures the development of a creative personality in the music teacher, capable of self-fulfilment in musical-pedagogical, performance and cultural-educational activities.

Thus, the set of principles outlined ensures the conceptual unity of the PT of FMAT, determines the focus of the content, forms and methods of the educational process, and creates the conditions for the effective development of their readiness for PA on the basis of interdisciplinary integration. The application of these principles promotes the integration of musical performance, pedagogical, research and culture-building activities, the development of the future specialist's creative individuality, and their readiness for continuous self-development and successful realisation within the contemporary educational environment of NUS.

Conclusions to the first chapter

The theoretical analysis of the issue of developing FMAT readiness for PA based on II has demonstrated its high relevance in the context of the transformation of the education system, European integration processes, and the updating of the GSEI curriculum. It has been established that a modern MA teacher must meet the requirements of the competency-based educational paradigm and integrate pedagogical, performance-based, creative, and culture-forming professional components into their pedagogical activity.

The concepts of «training» and «professional training» are characterized; we view them as multidimensional processes aimed at equipping students with a system of knowledge, abilities, skills, professional values, and experience in practice-oriented pedagogical activities. These processes ensure the proper assimilation of the subject matter of academic disciplines and contribute to the development of the personal

qualities of future teachers (the desire for self-development, the ability to exercise self-control, the ability to make well-considered pedagogical decisions in complex professional situations, etc.). Therefore, we view professional training as the basis/foundation for the formation of future teachers in higher education institutions.

The study demonstrates that «readiness» is a complex, integrative personal construct that is formed through prolonged pedagogical training and in the context of situational professional activity, which ensures its dynamic nature and encompasses motivational attitudes, a system of fundamental knowledge, practice-oriented skills and competencies, individual emotional and volitional qualities, and the specialist's personality characteristics. At the same time, «professional readiness for pedagogical activity» is the result of a student's successful completion of a holistic educational process and reflects the specialist's actual ability to effectively carry out pedagogical activities in higher education institutions. Professional readiness encompasses a system of professional knowledge, practical skills and abilities, value orientations, emotional and volitional qualities, as well as a readiness for continuous professional self-improvement and creative self-actualization.

The concept of «professional activity of a music teacher» is substantively defined as a complex, multifunctional structure encompassing educational, formative, developmental, organizational, communicative, methodological, diagnostic, prognostic, reflective, and culture-forming functions. It has been demonstrated that such multifaceted professional activity requires a high level of professional competence and well-established personal and artistic values, which ensure the effectiveness of purposeful pedagogical influence on students within the educational process.

Particular attention is paid to the FMAT's professional competence which we define as an integrative characteristic of the individual that unites the musical-performative, psychological-pedagogical, methodological, communicative, and reflective components of PT.

The holistically developed professional competence of FMAT in higher education institutions (HEIs) is a key prerequisite for the successful implementation of

music-pedagogical activities, as it ensures the educator's ability to interact effectively with students, utilize modern teaching methods, and implement innovative approaches in education.

The study demonstrated the significant influence of artistic values on the development of FMAT readiness for pedagogical activity (PA) based on II, as these values spiritually and aesthetically guide students toward a deeply emotional perception of art, shaping artistic taste and pedagogical culture, which will in turn be passed on to students in the future as experience. At the same time, a connection was established between the concepts of «professional training», «readiness» «professional competence», and «pedagogical activity», which together form a holistic system of professional development for FMAT. The theoretical justification of the study's key definitions has laid the scientific foundation for further investigation of the mechanisms underlying the development of MA for PA readiness, particularly in the context of innovative educational technologies and theoretical approaches within the system of higher pedagogical and artistic education.

An analysis of scientific sources revealed that interdisciplinarity is a leading trend in the development of modern science and education, as it facilitates the interaction of various fields of knowledge in the study of complex objects and phenomena. Accordingly, interdisciplinarity is characterized by a deeper level of interaction among disciplines, which involves the synthesis of their content, methods, and approaches and fosters the emergence of new scientific concepts and directions. It has been established that the interdisciplinary approach in higher education is implemented at the methodological, scientific-theoretical, and practical levels, ensuring the holistic professional training of future specialists.

The particular significance of interdisciplinarity for the system of higher music-pedagogical education has been identified, as it integrates psychological-pedagogical, art-historical, cultural studies, and performance components into the professional training. Based on an analysis of scholarly works by MI researchers, we view higher music-pedagogical education as a pedagogically organized process that combines musical-theoretical, performance, psychological-pedagogical, and methodological

knowledge, thereby ensuring the development of integrated professional competencies in MA candidates. II, within the framework of the PT of FMAT, creates conditions for the formation of a holistic professional worldview, readiness to solve complex pedagogical tasks, and the effective application of knowledge in future professional activity.

This paper characterizes contemporary theoretical approaches (competency-based, systems-based, person-centered, activity-based, cultural, axiological, and integrative) to the PT of MA based on II, which are capable of ensuring the integrity, effectiveness, and practical orientation of the FMAT educational process in higher education institutions, and the main ideas, core functions, and learning outcomes defined by them are described. It highlights pedagogical principles (integrity, systematicity and consistency, didactic appropriateness, the link between theory and practice, cultural appropriateness, and creative self-expression) that contribute to enhancing the effectiveness of teacher training in line with contemporary societal challenges and needs.

Thus, fostering FMATs' readiness for PA based on II is one of the priority areas of contemporary teacher education. Within the framework of professional readiness, the interdisciplinary approach provides a holistic view of PT and promotes the integration of knowledge from various fields of science, art, and pedagogy, whereas II serves as an important pedagogical prerequisite for the modernization of higher music-pedagogical education and an effective means of training competitive, creative, and mobile FMATs capable of achieving professional self-realization in the future within the contemporary educational environment of GSEI.

The main results of the chapter are reflected in the author's scientific works:

Zhang G., 2021; Zhang G., 2022; Zhang G., 2022a; Zhang G., 2023; Zhang G., 2024a; Zhang G., 2024e; Zhang G., 2024f; Zhang G., 2025.

CHAPTER 2

JUSTIFICATION OF THE PEDAGOGICAL CONDITIONS AND THE STRUCTURAL-FUNCTIONAL MODEL FOR FORMING FUTURE MUSIC ART TEACHERS' READINESS FOR PA ON THE BASIS OF INTERDISCIPLINARY INTEGRATION

2.1 Components, Criteria, and Levels of Future Music Art Teachers' Readiness for Pedagogical Activity in GSEI

The current stage of development of Ukraine's education system is placing qualitatively new demands on the level of professional readiness of graduates of teacher-training programmes to undertake pedagogical activity in their future professional practice (Maretska Y., Bunchuk O., & Tabler T., 2024, p. 62). Under these conditions, the needs of society are increasingly focused on preparing proactive, creative, knowledgeable, and self-reliant specialists, that is, competent professionals who are able, under diverse learning conditions, to update their knowledge promptly, expand their professional skills and abilities, master new areas of activity, and remain committed to continuous professional self-improvement and self-development in accordance with the current dynamic needs of society and educational practice.

A key priority of contemporary higher education is to develop FTs' readiness for PA within HEIs, particularly because the school education system is currently undergoing rapid changes associated with reform, modernisation, and profound transformations of the educational paradigm. These objective determinants influence the development of future music art teachers' appropriate readiness to carry out effective artistic and pedagogical activity in the educational sphere.

The need to develop students' abilities to acquire music education as an integral component of GSE is established in national educational legislation, in particular in the Law of Ukraine "On Education" (2017). Article 21 stipulates that art education involves the acquisition by FTs in HEIs of special abilities, aesthetic experience, and

professional competences and is aimed at the artistic and creative self-realisation of the individual (On Education, 2017).

At the same time, the Law of Ukraine “On Complete GSE” stipulates that the preparedness of higher education students for PA is determined by their ability to achieve the learning outcomes established by higher education standards. These outcomes include professional, general, and specific competencies, as well as the ability to properly perform professional tasks and duties in accordance with the qualification obtained, which demonstrates their readiness for pedagogical or teaching work. Current trends in the development of GSE entail higher requirements for future music art teachers’ readiness for pedagogical activity and require, as legally established in Article 22 of the Law of Ukraine “On Complete GSE”, adherence to the principles of child-centredness and partnership pedagogy in interaction with pupils and their parents (On Complete GSE, 2020).

It is important to note that the preparation of future specialists with higher education, in our case future music art teachers, is carried out within the framework of a relevant educational programme. Accordingly, the educational and creative level of higher education involves mastering the methodology of artistic and pedagogical activity (Article 5, Paragraph 1) (On Higher Education, 2014) and ensures academic freedom for teachers and students of HEIs in their creative and professional self-expression (Article 1, Paragraph 1) (On Education, 2017).

The issues of PT, the readiness of pedagogical specialists for PA, and their subsequent professional development have been addressed in contemporary studies by Ukrainian and foreign scholars. In particular, Ukrainian researchers have examined:

- teachers’ readiness for innovative activity (Bekh I. D., 2003);
- strategic directions for educating pupils in the Ukrainian education system (Military-Patriotic Education..., 2023);
- the theoretical foundations of professional reflection as a component of specialist training (Vlasenko I., 2025);

- methodological training of teachers as part of the broader issue of their PT (Honcharenko S. U., 2003; Honcharenko S. U., 2003a; Honcharenko S., Kushnir V., & Kushnir H., 2007);
- value priorities in teacher training (Ziaziun I. A., 2012);
- the importance of developing students' digital worldview and the need to form fundamentally new competencies (Karpliuk S. O., 2019, p. 189);
- the digital transformation of education aimed at updating educational and planned learning outcomes, educational content, teaching methods, organisational forms of educational work, and assessment of students' achieved outcomes, as well as their optimisation (Dushchenko O., 2021, p. 42);
- the specific features of preparing a modern specialist in higher education (Kushnir V. A., & Kushnir H. A., 2005);
- the specific features of developing students' readiness for future PA under the competence-based approach and digital transformation of education (Lytvyn S. V., 2025);
- PT of future music art teachers based on contemporary trends in educational development (Lutsenko O., & Seminikhyna N., 2023);
- interdisciplinary interaction and Ukrainian and international experience in teacher PT (Nychkalo N., Lukianova L., & Khomych L., 2021; Nychkalo N., Lukianova L., & Khomych L., 2021a);
- a new strategy for teacher PT in the context of European integration (Palamar S. P., 2023);
- competence-based foundations for developing FTs' readiness for PA in HEIs, which involve participants in the educational process acquiring specific abilities and practical technological skills necessary to perform particular professional functions (Dundar O., 2025; Rebukha L., & Zvarych H., 2023);
- teacher PT under wartime conditions, viewed through the prism of preserving the health and lives of children and young people (Sysoieva S., 2024);
- specific features of the development of contemporary teachers within the system of postgraduate education (Familiarska L. L., 2014), and others.

The regulatory and legal framework governing teacher PT abroad is based on two main approaches. The first involves the adoption of specialised laws and subordinate legislation directly aimed at regulating teacher education, as is the case in Germany and China. The second approach involves incorporating issues related to teacher training into the general legislative framework governing particular educational practices and levels of education, as observed in the United Kingdom, Australia, Denmark, Hungary, Poland, Finland, and other countries.

Reviewing the regulatory framework of these and other countries shows that, at the legislative level, their national education policies are subject to continuous and systematic updating, with a democratic model of policy development and implementation based on the “bottom-up” principle. Efforts are also being made to strengthen social partnership in the field of teacher training (Nychkalo N., Lukianova L., & Khomych L., 2021a, pp. 41–42; Tovkanets H. V., 2023; Współczesne..., 2007).

At the same time, based on an analysis and comparison of conceptual and empirical studies conducted in different countries around the world, including Australia, the United Kingdom, Denmark, China, the Netherlands, Germany, Norway, the Republic of South Africa, Finland, and others, foreign scholars have substantiated the need, within the PT of future music art teachers, for:

- reforming teacher education at the international level, with the aim of transforming traditional models of education to improve the quality of pupils’ educational outcomes (Trippestad T. A., Swennen A., & Werler T., 2017);
- orienting FTs towards advanced learning, thereby enabling them to develop pupils’ diverse abilities, knowledge, and experience in the future and acquire an education that contributes to improving people’s quality of life as a whole (Darling-Hammond L., & Oakes J., 2021);
- transforming the content of teacher education, which involves moving away from teacher preparation based on a traditional subject-oriented pedagogical paradigm and its reduction, while simultaneously shifting towards a paradigm focused on personal development (Karsent I. T., 2019, p. 105);

– digitalising education, which contributes to the development of FTs' flexible skills for adapting to changes in society and the professional environment (Kladder J., 2021; Olvera-Fernández J., Montes-Rodríguez R., & Ocaña-Fernández A., 2022; Parkita E., 2021; Selwyn N., 2016, p. 132), among others.

Thus, contemporary studies by Ukrainian and foreign scholars are primarily focused on the theoretical and practical dimensions of higher pedagogical education, with the PT of FTs regarded as one of the key priorities of state policy in any country. Analysing globalisation processes and examining international experience in the PT of pedagogical specialists constitute important prerequisites for the effective development of innovations within higher education. At the same time, the state education policies of the countries considered above are primarily aimed at modernising teacher education, introducing contemporary teaching methods and tools, providing FTs with access to up-to-date knowledge and information resources, and developing educational programmes designed to enhance their competence and professional qualifications.

However, the issues of PT in HEIs and the readiness of specialists in speciality 014.13 Secondary Education (Music Art) for future artistic and pedagogical activity in the context of the New Ukrainian School (NUS) (Nova Ukrainська Shkola, 2016) have been addressed in the works of numerous scholars. In particular, within the field of pedagogy, acmeological, activity-based, integrative, competence-based, personal, praxeological, innovative, and other approaches to the professional education of future teacher-musicians have been explored in the studies of N. Demianko (Demianko N. Yu., 2020), O. Yeremenko (Yeremenko O., 2021), Z. Kartashova and M. Kuziv (Kartashova Z., & Kuziv M., 2024), O. Morenko (Morenko O. M., 2017), T. Olefirenko (Olefirenko T. O., 2024), Ye. Provorova (Provorova Ye. M., 2018), I. Ratynska et al. (Ratynska I. V., Soliar L. V., & Yalovskyi P. M., 2022), O. Teplova et al. (Teplova O. Yu., Mozhalova N. H., & Martyniuk A. A., 2022), N. Verchenko (Verchenko N. V., 2020), O. Khyzhko (Khyzhko O., 2019), and others.

Scholars have investigated the music-theoretical and practical training of future teacher-musicians in HEIs and their readiness for educational activity in GSEIs, including V. Irkliienko and V. Yakovliev (Irkliienko V., & Yakovliev V., 2024),

I. Yefimenko (Yefimenko I. V., 2019), V. Labunets (Professional and Pedagogical Training..., 2020), M. Moroz (Moroz M., 2020), S. Novosadova (Novosadova S. A., 2019), N. Remezova (Remezova N. M., 2020), N. Sulaieva (Sulaieva N., 2021), P. Yalovskyi (Yalovskyi P. M., 2023), and others. The studies of such scholars as Yu. Lokarieva (Lokarieva Yu. V., 2022), V. Yakovliev (Yakovliev V., 2021), and others have also addressed this issue.

The significance of innovative technologies in the educational process of future music art teachers, particularly in the study of music-theoretical disciplines, has been substantiated by H. Stets and S. Kyshakevych (Stets H. V., & Kyshakevych S. V., 2024), among others. Innovative methods for diagnosing the development of professional competencies of future music art teachers have been examined by O. Bukhniieva and L. Bankul (Bukhniieva O. A., & Bankul L. D., 2019), H. Stets and S. Kyshakevych (Stets H. V., & Kyshakevych S. V., 2024), and others.

Thus, contemporary Ukrainian and international scholarly communities approach the issue of FTs' readiness, including that of music art teachers, to carry out pedagogical activity from different perspectives. The concept is multidimensional and has been interpreted by scholars through several approaches, namely:

1. Personal approach. Within the personal approach, readiness is understood as a holistic personal formation that integrates a set of internal subjective factors associated with a particular type of activity. It is considered primarily in the context of PT; accordingly, education is aimed at developing the emotional and sensory, intellectual, motivational, and other spheres of the future teacher's personality.

2. Operational-technological approach. This approach focuses on students' acquisition of the technological and methodological tools required for the subsequent implementation of pedagogical activity.

3. Functional approach. From the functional perspective, readiness is regarded as a specific mental state that determines the potential mobilisation of psychological functions in the course of future PA.

4. Activity-based approach. Within this approach, readiness is interpreted as the manifestation of all aspects of personality that enable an individual to perform professional functions effectively.

5. Resultative-activity approach. From the resultative-activity perspective, readiness is viewed as the outcome of the PT process.

Having synthesised these different interpretations, scholars describe future music art teachers' readiness for professional pedagogical activity as a:

- complex structural formation of personality, developed through activity or purposeful training and encompassing a combination of psychophysiological, personal and cognitive characteristics, a system of values and attitudes, as well as knowledge, skills, abilities and acquired experience that enable an individual to perform pedagogical activity (Konovalchuk I. M., 2019, p. 340);

- multifunctional and multicomponent personal formation, determined by the diversity and specific nature of teachers' artistic and pedagogical activity (Chorna N. B., 2012, p. 196);

- personal formation developed through specially organised education, whose structure includes scientific-theoretical and practical components and also provides for the development of *soft skills* (Irkliienko V., & Yakovliev V., 2024, p. 98);

- stable individual characteristic of personality, ensured by the unity of its components and the effective application of acquired performance-related knowledge, skills and abilities in the course of active instrumental and performing activity (Huseinova L. V., 2018, p. 163);

- psychological formation encompassing acquired knowledge, practical skills and personal-motivational components, including the capacity for self-education, self-development, overcoming difficulties, and striving for professional success. The formation of these components regulates professional behaviour through the integration of the cognitive, emotional and volitional qualities of the individual as a subject of activity (Potapkina L. V., 2015, pp. 199–200), among others.

At the same time, in Subsection 1.1, we established that the professional readiness of future music art teachers constitutes a complex, integrative personal

formation. It encompasses students' substantial knowledge of music-theoretical and performance disciplines, their ability to adapt effectively to various educational situations in GSEIs, and their capacity to apply contemporary pedagogical technologies and teaching methods purposefully and effectively in their work with pupils. Furthermore, a well-developed level of professional readiness enables specialists to establish high-quality, emotionally positive pedagogical interaction not only with pupils and their parents but also with colleagues and the wider community.

Further development of scholarly thought in this field involves a more precise identification of the structural components of readiness. Contemporary approaches to its investigation focus, in particular, on professional competence, psychological maturity, the capacity for innovative thinking, and other related characteristics. This highlights the need to integrate professional knowledge with the development of such personal qualities as responsibility, communicative competence, tolerance, teamwork, result orientation, and the ability to function under conditions of increased psycho-emotional demands.

Expanding the understanding of readiness, L. Huseinova defines its level according to the degree of integration of its structural components – motivational-value, cognitive, performance-related, and reflective – which are significant for pedagogical activity (Huseinova L. V., 2018, p. 163).

Summarising the above-mentioned scholarly approaches to the development of future music art teachers' readiness for PA, researchers identify the following structural components:

- motivational component (reflecting interest in the profession, an internal orientation towards pedagogical activity, and commitment to professional self-improvement); content-operational component (involving FTs' ability to select appropriate educational materials, employ effective educational technologies and teaching methods, and organise pupils' learning effectively in GSEI); and reflective component (aimed at balancing and gaining a deeper understanding of one's own PA) (Serheieva L. M., Muranova N. P., Mykytiuk S. M. et al., 2023, pp. 101–102);

– motivational component (involving a set of motives consistent with the teacher's professional goals); cognitive component (covering knowledge in the fields of art studies and aesthetics); operational component (focusing on practical skills and pedagogical methods); personal component (encompassing individual characteristics of the teacher); and reflective component (ensuring the ability to analyse and improve one's own PA) (Tomashivska M. M., 2018, p. 92);

– cognitive component (comprising ideas, regularities, and principles that make it possible to determine the teacher's attitude towards pedagogical activity); emotional-sensory component (characterising the content, quality, and dynamics of FTs' emotions and feelings towards the profession); and meaning-and-goal-oriented component (contributing to the development of meaningful professional and personal purposes and goals) (Kruhliachenko A. Yu., Mazurok I. V., & Yakovska S. P., 2024, p. 61);

– activity-based component (reflecting FTs' ability to perform musical works expressively and artistically and to interpret musical material skilfully during lessons); motivational component (characterising future music art teachers' interest in and engagement with instrumental performance and their orientation towards improving their professional mastery); cognitive component (including the knowledge, skills and abilities required for mastering musical instruments, as well as the capacity to reproduce musical and artistic images accurately and emotionally); and reflective component (involving the ability to evaluate one's own achievements objectively and identify shortcomings in the process of learning to play a musical instrument in order to further improve pedagogical activity) (Kovaliova-Honchariuk L. O., 2020, p. 205), among others.

O. Teplova regards future music art teachers' readiness for creative self-realisation as a complex phenomenon comprising aesthetic-orientational, motivational-evaluative, activity-creative, music-educational, and organisational-methodological components. The researcher demonstrates that these components are interconnected and contribute to the development of professional skills, creative self-expression, and pedagogical mastery (Teplova O. Yu., 2016, p. 112).

The importance of the personal dimension of professional readiness is also emphasised by V. Zhukov, who defines it as a complex formation based on professional knowledge, skills, practical experience, and personal qualities. According to the researcher, these components are essential both for designing pedagogical tasks and for implementing them in the process of teaching pupils, since they determine the integrity and effectiveness of a teacher's PA (Zhukov V. P., 2020, p. 91).

O. Pavlenko, N. Batiuk, and M. Tkachenko propose a four-component model of the PT of future music art teachers comprising musical-performance, music-theoretical, musical-pedagogical, and digital components. Each component performs a specific function, while their close interaction creates an integrated system for developing professional competence. Particular attention is given to the digital component which, when incorporated into the traditional structure of professional preparation, enables the educational process to respond to contemporary challenges associated with digitalisation and contributes to the development of FTs' digital literacy and adaptability (Pavlenko O. M., Batiuk N. O., & Tkachenko M. O., 2024, p. 1233).

L. Voievidko, examining PT in the context of the New Ukrainian School, likewise emphasises its multidirectional nature and the resulting need to combine methodological, pedagogical, music-theoretical, performance, and cultural components. A future teacher is expected to possess a broad range of knowledge extending from teaching methodology and folklore studies to improvisation, conducting, and accompaniment, while also being able to adapt educational materials to pupils with different levels of preparation. Consequently, implementing the educational objectives of the New Ukrainian School requires teachers to demonstrate not only professional flexibility but also an ability to engage in creative inquiry and provide artistic interpretations of musical material (Voievidko L. M., 2022, p. 229).

In view of the above, greater emphasis should be placed on the practice-oriented component of the PT of future music art teachers. This involves, in particular, combining artistic reflection with pedagogical analysis, interactive teaching methods,

interdisciplinary projects, tutoring support, and purposeful development of *soft skills* required for the creative, communicative, and organisational dimensions of PA.

Overall, the analysis suggests that, in our view, the effective formation of a professional profile of a music art teacher rests on the interaction of several key factors: the motivational sphere of personality, awareness of the pedagogical mission, balanced PT, and methodological flexibility. Understanding these interrelationships allows us to conceptualise future music art teachers' readiness for PA as a holistic process encompassing four components: motivational-value, cognitive-professional, operational-activity, and reflective-evaluative.

The integration of these components provides the basis for FTs' readiness to interact effectively with pupils and supports the implementation of comprehensive artistic and pedagogical activity. In this context, FTs are viewed as active participants in the pedagogical process who are capable of reflection, self-development, and constructive pedagogical decision-making. Such an approach facilitates not only the productive acquisition of educational content but also the development of aesthetic attitudes, which become integrated into the overall structure of professional readiness.

Our research focuses on analysing publications devoted to the preparation of music art teachers for working with pupils and examining the structure of future music art teachers' readiness for PA in GSEIs (Zhang G., 2024; Zhang G., 2024b; Zhang G., 2024d; Zhang G., 2024c).

Determining the structural components of future music art teachers' readiness for PA in GSEIs is of considerable theoretical and practical importance, as it can ensure the proper performance of their professional functions in the course of conducting music art lessons. In this context, future music art teachers' readiness for PA in GSEIs is viewed as a complex, multicomponent and integrative personal-professional formation that develops in the course of PT through students' acquisition of individually oriented artistic qualities, a system of professional knowledge, pedagogical skills, and practice-oriented abilities required for successful implementation of the music educational process with pupils. The authors'

conceptualisation of future music art teachers' readiness for PA is presented in Figure 2.1, which identifies four interrelated and mutually determined components.

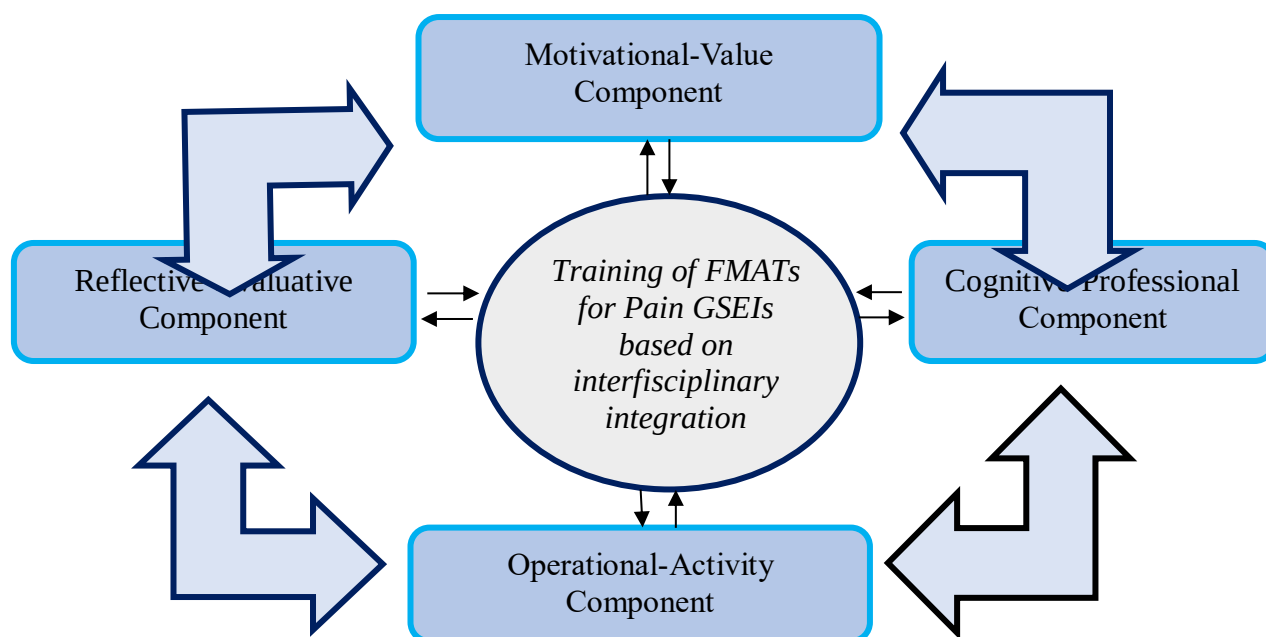


Fig. 2.1 Components of Future Music Art Teachers' Readiness for PA in GSEI Based on Interdisciplinary Integration

1. The Motivational-Value Component. The motivational-value component ensures students' positive attitude towards the profession of a music art teacher, fosters their interest in it, and strengthens their value orientation towards further conscious personal and professional transformation and effective self-improvement in this area.

The development of the motivational-value component is assessed according to the motivational criterion of future music art teachers' readiness for PA and is reflected in the following indicators of readiness: interest, aspiration, need, and ability to conduct music art lessons with pupils in GSEI (see Tabl. 2.1).

The motivational-value component is system-forming, as it appropriately shapes students' positive attitude towards PA, characterises the degree of their orientation towards professional self-development, and reflects the development of value-based professional orientations that ensure the successful course and effectiveness of a music art teacher's PA. This component reflects the professional and pedagogical orientation

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Table 2.1

Structure of Future Music Art Teachers' Readiness for Professional Activity in General Secondary Education Institutions

№	Readiness Components	Readiness Criteria	Readiness Indicators	Pedagogical Conditions
1.	Motivational-Value	Motivational	– interest in artistic and pedagogical activity; – aspiration for professional value-based and personal self-development; – need to acquire professional and humanistic values; – ability to ensure pupils' artistic development	Formation of positive motivation and value attitudes of FTs toward interdisciplinary music and pedagogical activities
2.	Cognitive-Professional	Content-Related	– knowledge of the history and theory of music and music-pedagogical disciplines; – knowledge of the categorical and conceptual framework of the profession and the level of its development; – knowledge of the specifics of applying theoretical knowledge and materials in the process of modelling pedagogical situations; – knowledge of applying an interdisciplinary approach to solving professional tasks	Focusing the Content of Professional Disciplines on Ensuring Interdisciplinary Integration in the Professional Training of FTs
3.	Operational-Activity	Practical	– the ability to integrate theoretical knowledge into practical pedagogical activities; – the ability to plan and conduct music lessons; – the ability to apply music and pedagogical methods in practice; – the ability to implement interdisciplinary connections in the process of teaching music and solving professional and pedagogical tasks.	Creating a practice-oriented educational environment based on interdisciplinary integration
4.	Reflective-Evaluative	Self-Realisation	– the ability to engage in professional reflection; – the ability to objectively assess the outcomes of professional training; – the ability to self-correct and improve oneself based on a reflective analysis of professional training; – the ability to achieve professional self-realization in future music and pedagogical activities.	Ensuring Creative Self-Realization and Supporting the Reflective and Evaluative Activities of FTs in the Process of Professional Training

of FTs' personalities and the development of the level of professional competence necessary for the effective delivery of music art lessons to pupils.

The aspiration to become a highly qualified specialist helps students master innovative technologies, tools, methods, and techniques for effective PA and, consequently, to develop lesson content in accordance with contemporary educational requirements, drawing on the pedagogical experience acquired in HEIs and working purposefully and persistently towards their professional growth.

At the same time, the motivational-value component of readiness for PA is effectively developed through students' participation in offline and online activities (workshops, interactive classes, group discussions, meetings with artists, conferences, etc.), which motivates students towards their future PA. This motivation is manifested in their willingness to attend academic courses and elective classes, solve situational tasks, complete practice-oriented assignments and thematic tests, thereby contributing to their self-expression and the acquisition of personal and professional values.

The motivational-value component plays an important role in the professional development of future music art teachers. A well-developed motivational sphere of a student constitutes a driving force behind future pedagogical activity and can provide it with personal meaning, facilitate the establishment of appropriate relationships with pupils, parents, and colleagues, and support well-grounded and balanced decision-making when addressing professional problems, among other things. This component provides the foundation for the effective functioning of the other structural components of future music art teachers' readiness for PA, around which all their individual value-based qualities and characteristics are integrated and organised (Chorna N. B., 2012, p. 195).

Faculty members of HEIs, when developing the content of course syllabi, should select the most effective motivational mechanisms, techniques, and methods for organising educational activities with students enrolled in speciality 014.13 Secondary Education (Music Art). At the same time, the motivational-value component of future music art teachers' readiness for PA can be further developed through both the value-oriented content of each academic discipline and their interdisciplinary integration.

Specific criteria are identified for each of the components outlined above. A. Kuzminskyi defines this concept as a specifically selected measure that serves as a “determinant of the quality of educational activity” (Kuzminskyi A. I., 2011, p. 425). The selected criteria should reveal the principal regularities in the development of FTs, reflect the established relationships among all components of a particular component, and demonstrate the unity of qualitative and quantitative indicators (Kyryliuk O. R., 2011, p. 72). Criteria serve as measures of the development of future music art teachers’ readiness for PA in GSEI. The criteria selected for each component are substantiated, encompass the key essential characteristics and qualities of the phenomenon under study, and make it possible to trace the dynamics of the measured quality over time. The essence of the identified criteria is reflected in indicators, which serve as specific and stable measures that make it possible to observe and record the phenomenon under study.

For the motivational-value component, we identified the motivational criterion, which presupposes students’ conscious orientation towards learning, a sustained interest in and appreciation of musical and pedagogical activity, motivation for professional self-development, the ability to focus on pupils’ personal development through music art, and adherence to humanistic, cultural, and artistic values in professional practice. The indicators of this criterion include interest in artistic and pedagogical activity, aspiration towards professional value-based and personal self-development, the need to acquire professional and humanistic values, and the ability to promote pupils’ artistic development.

2. Cognitive-professional component. The next component identified in the structure of future music art teachers’ readiness for PA in GSEI on the basis of interdisciplinary integration is the cognitive-professional component.

Within this component, students of music art develop fundamental knowledge of the history and theory of music, pedagogy, psychology, and methods of teaching music art. The knowledge acquired by students in HEIs provides the foundation for developing FTs’ professional conceptual and creative-methodological thinking, analysing pedagogical situations, making professionally grounded decisions, and

implementing the educational process at a high level, among other things (Buzova O., 2025).

At the same time, the cognitive-professional component enables the integration of knowledge from different academic disciplines in order to create a holistic educational process, which is particularly important under conditions of interdisciplinary integration. For FTs, it establishes connections among different areas of knowledge and contributes to the comprehensive development of pupils' educational experience (Belinska T. V., ... & Plakydiuk O. Yu., 2021, p. 27). The knowledge acquired by music art students is determined by their level of mastery of theoretical material, including the categorical and conceptual framework, scientific theories, key ideas, and paradigms, as well as by the practice-oriented nature of this knowledge and the effectiveness of its application in the educational process. In accordance with the objectives of a lesson, the teacher can implement the developmental function of education aimed at developing future music art teachers' cognitive abilities. These include cognitive operations such as acquiring knowledge, recognising, comparing, discussing, and analysing phenomena of music art; maintaining attention; perception; logical and critical thinking in the processes of designing and decision-making; and others. The development of these abilities is intended to ensure a holistic and systematic understanding of future PA. The professional knowledge acquired during studies in HEIs is crucial for obtaining quality education, as it directly influences the professional development of future music art teachers (Myronchuk N., 2014, pp. 20–21).

The cognitive-professional component ensures students' awareness of the specific nature of their future PA in the course of PT. This contributes to the development of their ability to solve both typical and non-standard professional tasks and to interact on an equal basis with colleagues and pupils in various pedagogical situations (Sysoieva S. O., 2014). This component is oriented towards combining a theoretical understanding of the profession with the practical application of knowledge in specific conditions of the educational environment (Honcharenko S., Kushnir V., & Kushnir H., 2007).

The cognitive-professional component identified in the structure of readiness is examined according to the content criterion. From the perspective of this criterion, such readiness encompasses future music art teachers' awareness of the content and specific nature of musical and pedagogical activity; their level of general professional and specialised knowledge necessary to ensure an appropriate educational process; their ability to apply theoretical knowledge consciously in professional practice; their understanding of interdisciplinary relationships; and their ability to integrate the knowledge acquired in music art and pedagogy when solving educational tasks.

This component is assessed according to such indicators as students' mastery of knowledge of the history and theory of music and music-pedagogical disciplines; mastery of the categorical and conceptual framework; understanding of the specific features of applying theoretical material in the process of modelling pedagogical situations; and the application of an interdisciplinary approach to solving professional tasks.

The development of the cognitive-professional component of future music art teachers' readiness for PA is ensured through the purposeful selection of educational content, implementation of the developmental nature of professional and personality-oriented training based on interdisciplinary integration, and effective pedagogical support involving individual assistance to students in overcoming various types of difficulties.

An important factor in developing students' readiness for PA is the creation of pedagogical situations of success, orientation towards professional growth, and prioritisation of specialised knowledge and skills. It also involves facilitating the development of an individual style of creative PA through self-knowledge, self-improvement, and self-education within the educational environment of a higher education institution (Irkliienko V., & Yakovliev V., 2024, p. 98).

3. Operational-Activity Component. The operational-activity component in the structure of future music art teachers' readiness for PA reflects their ability to apply the knowledge, skills, and abilities acquired in HEIs, as well as pedagogical thinking, attention, perception, and memory, in practical musical and pedagogical activity. It also

encompasses the entire range of action-oriented and result-oriented technological resources and rational technological techniques employed in the process of working on a musical composition and performing it (Verbynenko Yu. I., 2013; Kovaliova-Honchariuk L. O., 2020, p. 204).

This component is closely associated with interdisciplinary integration, which ensures the effective organisation of music art lessons. Scholarly studies emphasise that the activity-based aspect of PT determines the level of FTs' professional capacity, their personal readiness to perform and interpret musical works, solve pedagogical problems, employ integrated teaching methods, and apply a creative approach to working with pupils in accordance with their age-related and individual characteristics (Stratan-Artyshkova T., 2014). The operational dimension of the component, in turn, reflects the degree of students' PA and the ways and forms in which it is implemented. It facilitates students' mastery of methods and techniques for self-examination of their professional development and reinforces the need for continuous improvement of professional knowledge and practical skills gradually acquired in the course of PT (Horbenko O., 2016, pp. 48–49; Kovalskyi R. I., 2017, pp. 31, 99; Provorova Ye., 2017).

The operational-activity component reflects the development of practical skills, including the planning, organisation, and implementation of musical and pedagogical activity, as well as professional skills manifested in FTs' actions, such as the ability to generalise and summarise the material studied, independently perceive and analyse musical material, and employ musical thinking to make original decisions, among others. As scholars H. Padalka, O. Pylyp, and S. Provorova point out, the effectiveness of musical and pedagogical activity is determined not only by the level of knowledge but also by the teacher's ability to transform this knowledge into practical actions and artistic and pedagogical decisions (Padalka H. M., 2008; Pylyp O. I., 2025, pp. 129, 190; Provorova Ye., 2017, pp. 181–182).

The aforementioned operational-activity component of future music art teachers' readiness for PA is assessed according to the practical criterion, which reveals the degree of development of students' professional and pedagogical skills and abilities,

their capacity to directly perform PA within musical and pedagogical practice, their ability to organise their own self-educational activity, effectively solve pedagogical, performance-related, and creative tasks, and flexibly adapt their actions to the actual conditions of the educational process.

The main indicators of the practical criterion of future music art teachers' readiness for PA are defined as follows: the ability to integrate theoretical knowledge into practical pedagogical activity; the ability to plan and conduct music art lessons; the ability to apply musical and pedagogical methods in practice; and the ability to evaluate and analyse one's own pedagogical activity.

4. Reflective-Evaluative Component. The reflective-evaluative component involves the higher education student's ability to adequately assess their own musical and pedagogical achievements and shortcomings arising in the learning process (Kovaliova-Honchariuk L. O., 2020, p. 205).

At the same time, while acquiring theoretical and practice-oriented knowledge in HEIs, future music art teachers should consciously reflect on the knowledge and skills they have acquired for teaching and educating pupils in GSEI; evaluate the outcomes of their activity, including methodological ideas, approaches to pupils' personal development, and the technological aspects of organising creative activity in an educational institution; draw generalised conclusions; and adjust their personal behaviour, including through self-assessment and peer assessment during the learning process (Olefirenko T. O., 2024, p. 262; Teplova O. Yu., 2016, p. 111).

As an integrative component of future music art teachers' professional readiness for PA, this component reflects the development of students' personal reflection and analytical thinking required for managing the pedagogical process, comprehending professional situations, and supporting pupils in achieving creative self-realisation.

The reflective-evaluative component is manifested in higher education students' ability to use the information obtained through reflection and evaluation of PA to reconsider their future pedagogical activity and promote their personal and professional growth and development.

The self-realisation criterion of the reflective-evaluative component of future music art teachers' readiness for PA characterises students' ability to engage in conscious self-knowledge, self-assessment, and self-correction of their professional development, as well as their capacity for active professional self-realisation and self-development in the process of musical and pedagogical training. This criterion reflects the level of development of reflective skills aimed at identifying and comprehending individual educational needs and constructing a personal trajectory of professional self-improvement, consciously evaluating and analysing the results of one's own readiness for PA, and orienting higher education students towards self-improvement in their future profession through detailed reflection on and regulation of professional actions and behaviour.

The main indicators of the self-realisation criterion are students' abilities to:

- engage in professional reflection, manifested in the ability to analyse their own pedagogical actions, evaluate their effectiveness, identify problems in musical and pedagogical activity, and recognise the level of their own readiness for PA;
- conduct self-assessment of professional achievements, manifested in the ability to correlate the professional results obtained with the regulatory requirements of the music art teacher profession and provide an objective assessment of the level of development of their pedagogical, creative, and performance skills;
- implement self-correction and self-development, which enable students to make changes to their own PA based on reflective analysis, continuously improve their practice, and expand their pedagogical and artistic experience;
- achieve professional self-realisation in the future, manifested in a continuous aspiration to realise their individual creative potential in the work of a music art teacher and to employ an individual teaching style incorporating innovative pedagogical approaches in lessons.

Thus, the self-realisation criterion of the reflective-evaluative component reflects future music art teachers' ability to analyse and evaluate their own professional trajectory and their readiness for active professional self-realisation, continuous self-

development through self-educational activity, and creative self-expression in the contemporary educational environment.

The identified criteria-motivational, content-related, practical, and self-realisation criteria-make it possible to determine the effectiveness of the formation of future music art teachers' readiness for PA based on interdisciplinary integration and, together with the respective indicators, to establish the levels of this readiness. Accordingly, four levels of its development among higher education students were identified according to the defined criteria and indicators:

a) High level. Future music art teachers demonstrate a high level of motivation and a stable need to effectively perform musical and pedagogical activity, as well as an awareness of the importance of the fundamental scientific and theoretical knowledge acquired and the practical skills and abilities necessary for successfully organising the educational process with pupils on the basis of interdisciplinary integration and achieving high learning outcomes. A student who demonstrates this creative and result-oriented level has a well-developed need for professional and humanistic values, reflection and self-assessment of their own activity, the realisation of their pedagogical abilities, and active self-development and creative-cognitive exploration of issues related to music art lessons. Such a student demonstrates a high level of satisfaction with their pedagogical work and its effectiveness.

b) Sufficient level. Future music art teachers demonstrate an interest in the profession and, within the requirements of PA, a need for professional self-development. They independently apply the theoretical knowledge and relevant practical skills acquired in HEIs, effectively using appropriate means, techniques, and methods of teaching as a condition for successful PA. At this level, students demonstrate sufficiently developed skills in planning and conducting music art lessons using an interdisciplinary approach to solving educational tasks. Their professional reflection, self-assessment, and capacity for self-realisation are sufficiently developed. FTs consistently demonstrate a desire to expand and apply their knowledge in PA, which contributes to their satisfaction with musical and pedagogical work. c) Medium level. Future music art teachers consciously strive to apply the acquired comprehensive

knowledge in their PA; however, stable professional needs have not yet been fully developed. At this level of readiness, certain errors and shortcomings in musical and pedagogical activity are evident; the educational process is not always organised on the basis of interdisciplinarity, which indicates a partial lack of systematic and flexible thinking, sufficient knowledge of the means, methods, and techniques for organising work with pupils, while the activity itself is carried out on the basis of examples and models. At the same time, FTs demonstrate a desire for professional self-improvement, which, in turn, gives rise to a need to deepen and expand their knowledge in particular areas of music art.

d) Low level. Future music art teachers demonstrate either an absence or only a limited level of skills required for carrying out musical and pedagogical activity, which is practically manifested in the intuitive delivery of music art lessons without the use of any creative activities. The student only partially understands the importance of developing the professional qualities necessary for PA, lacks motivation for work, and does not engage in reflection or self-assessment of their professional actions; there is no aspiration for self-education and self-development in this professional field. The future specialist has very limited knowledge of the means, methods, and techniques for organising the educational process and lacks the skills to plan lessons based on interdisciplinary integration.

Thus, the formation of future music art teachers' readiness for PA on the basis of interdisciplinary integration occurs through the interaction of the following components: motivational-value, cognitive-professional, activity-operational, and reflective-evaluative. This readiness is manifested in students' interest in and motivation for musical and pedagogical activity and the development of pupils in this area; the acquisition, during their studies at HEIs, of fundamental knowledge of the history and theory of music and the ability to apply such knowledge comprehensively when modelling pedagogical situations; the ability to integrate theoretical knowledge into professional practice on the basis of interdisciplinarity; and a personal orientation towards professional self-development, self-improvement, and self-realisation both during their studies and in their future PA.

The structure of future music art teachers' readiness for PA in GSEIs substantiated by us, which includes its components, criteria, indicators, and established levels, serves as an important prerequisite for determining the pedagogical conditions for its formation on the basis of interdisciplinary integration in HEIs.

2.2 Pedagogical conditions for the formation of future music teachers's readiness for professional activity based on interdisciplinary integration

Contemporary changes in the socio-cultural and educational landscape, alongside the rapid development of science, the arts, digital technologies and means of communication, have brought about significant transformations in the system of TT. The integration processes characteristic of today's society promote the interpenetration of various fields of knowledge, the strengthening of interdisciplinary links and the renewal of approaches to organising the educational process in HEI. In these circumstances, the formation of FMAT's readiness for PA based on II is of particular relevance.

Developing the readiness of MT for PA based on II involves the development of a system of knowledge, skills, abilities and professionally relevant qualities necessary for establishing substantive links between MA and other fields of knowledge, creating a holistic and supportive educational environment, and ensuring effective artistic and pedagogical interaction. At the same time, contemporary conditions place demands on FMAT to acquire professional competences intensively, to develop creative and critical thinking, and to be prepared for professional self-education and continuous professional development.

Thus, the established readiness of FMAT to PA in HEI based on II, is a key prerequisite for their successful professional fulfilment, the effective performance of their future teaching duties, and meeting society's current demands regarding the development of music and pedagogical education.

Accordingly, the current PT of FT in HEI should be directed towards equipping them with systematic, substantively structured knowledge of II and the development

of professionally relevant skills and competences with a view to the successful performance of their teaching duties; therefore, the development of such readiness entails:

- the effective fostering of positive motivation to carry out their own music-pedagogical activities;
- the development of creative, pedagogical and musical-interpretative abilities, as well as professional self-fulfilment within the context of MA teaching in GSEI;
- a sustained focus on improving professional mastery, integrative thinking and professional competence;
- the successful conduct of reflective analysis of one's own professional practice, and consequently its self-improvement through continuous professional development and self-directed learning in the field of music and arts education.

The implementation of the aforementioned objectives of the PT of FMAT requires the creation of a supportive educational environment and a purposeful organisation of teaching, and consequently the incorporation of specially designed pedagogical conditions into students' learning. It is precisely these pedagogical conditions that act as a key factor in optimising the educational process and ensuring its effectiveness; they determine the nature of the interaction between all components of the educational programme, which ultimately equips students studying for the 014.13 Secondary Education (Music) qualification with the readiness for integrative music-pedagogical activity. In this regard, and in accordance with the aim, objectives and specific nature of the doctoral research, clarifying the essence and content of the concepts of «condition» and «pedagogical condition» takes on particular relevance. A thorough theoretical understanding of these concepts enables the identification of the set of factors that ensure the effectiveness of the educational process and create the prerequisites for achieving the planned outcomes.

Let us clarify the concept of «condition». In philosophical discourse, the concept of «condition» is regarded as a set of circumstances, factors and preconditions that determine the possibility of the emergence, functioning and development of certain objects, processes or phenomena (Philosophy: A Dictionary..., 2020). The meaning of

this concept reflects the system of interrelationships between an object and its external environment, as well as its internal characteristics, which together determine the specific features of its existence and transformation. The explanatory dictionary provides several definitions of the term, including: «1) a necessary circumstance that enables the realisation, creation or formation of something; 2) circumstances or features of reality under which something occurs or is carried out» («Великий пояснювальний...», 2009, с. 1532). In academic literature, the concept of «condition» is regarded as one of the fundamental categories of pedagogy and denotes the set of external and internal factors that determine the course, effectiveness and efficiency of the educational process. In a pedagogical context, «conditions» are interpreted as purposefully organised circumstances within the educational environment that ensure the achievement of academic and professional goals and contribute to the personal development and the formation of professional competence among learners (Dvornikova N., 2009; Shevchenko L. S., 2022, p. 164; Kashuba A. A., 2024, p. 383). In this sense, they encompass organisational, didactic, psychological-pedagogical and social factors which collectively influence the development of a future specialist's professional competence (Olefyrenko T., 2021; Sysoeva S. O., 2011).

Thus, in the context of educational activity, conditions act as important determinants of the effectiveness of learners' PT, as they provide the necessary organisational, content-related and methodological prerequisites for achieving defined educational outcomes. Consequently, we interpret a «condition» as a complex of external and internal factors that exert a direct or indirect influence on the course of the entire educational process, thereby facilitating the effective development of the FT's professional competences, as well as their personal development and self-realisation.

In contemporary educational theory, the concept of «educational conditions» is regarded as one of the fundamental categories that determines the effectiveness of the educational process. Unlike the general interpretation of «conditions» as a set of circumstances influencing the course of a particular phenomenon, «pedagogical conditions» are specifically organised and aimed at achieving specific educational goals. They encompass a set of external and internal factors that ensure the effective

functioning of the pedagogical system and create the prerequisites for the successful development of learners' personalities.

For instance, the researcher O. Yezhova carried out a theoretical analysis of the concept of «pedagogical condition» and concluded that these serve as a set of interrelated circumstances which are created and ensured at the managerial level to achieve the defined goals of the educational process. Pedagogical conditions relate to the organisation of the activities of teachers and learners, the provision of resources, scientific and methodological support, and the monitoring of the outcomes of pedagogical activities. The researcher notes that pedagogical conditions do not function in isolation from the pedagogical system, but are determined by its purpose, content, methods, forms and means of teaching, whilst the selection of pedagogical conditions must correspond to the specifics of a particular educational process and ensure its effectiveness (Yezhova O. O., 2014, p. 42).

According to O. Sagach, «pedagogical conditions» should be regarded as a set of interrelated factors on which the pedagogical process is based and which ensure the achievement of a defined educational goal. The researcher emphasises the effectiveness of a specialist's professional development, which depends on the purposeful creation and implementation within the educational process of a set of pedagogical conditions that ensure the continuous professional development of FT (Sagach O. V., 2020, p. 34).

According to researchers T. Horokhivska, V. Polyvanyuk and O. Petrachkov (Horokhivska T. M., 2021, p. 223; Polyvanyuk V., & Petrachkov O., 2021, pp. 237–239), pedagogical conditions are necessary and sufficient circumstances that ensure the effectiveness of learning through the appropriate interaction of content, forms, methods and means of teaching, and the effective organisation of the educational environment. At the same time, they are regarded as a tool for the purposeful management of the educational process, which determines its effectiveness and the quality of specialist training (Bosko N., 2023; Zinchenko L., 2020; Shevchenko L. S., 2022).

According to the researcher E. Khrikov (Khrikov E., 2022), pedagogical conditions are an important element of scientific and pedagogical knowledge, as they

ensure the optimisation of the educational process and contribute to enhancing its effectiveness. In turn, A. Lytvyn (Lytvyn A. V., 2022) emphasises that pedagogical conditions serve as purposefully created circumstances for educational activity, which help to realise pedagogical objectives and achieve the anticipated results. Analysing the essence of this category, O. Sahach highlights its comprehensive nature, which involves the interaction of content, methods, forms and means of teaching, united by the common goal of personal development (Sahach O., 2020). At the same time, the researcher L. Rebukha regards pedagogical conditions as a set of interrelated factors that are recognised by all participants in pedagogical interaction and are realised in the process of establishing a solid educational foundation within the context of university education (Rebukha L., 2018, p. 385).

Summarising various approaches to interpreting the concept of «pedagogical conditions», researchers view them as a set of:

- specifically organised factors of the educational environment that ensure the effective functioning of the pedagogical system and contribute to the achievement of defined learning and educational outcomes;
- circumstances that encourage (or hinder) the manifestation of pedagogical patterns resulting from the influence of certain factors;
- factors that lead to success in the process of managing the learning process;
- the objective possibilities of the content, forms, methods, techniques and means of pedagogical management of the educational process, which ensure the successful resolution of the set and planned tasks;
- external circumstances (factors) that exert a significant influence on the pedagogical process, consciously designed by the teacher, and create the preconditions for achieving a specific result, though they do not guarantee its achievement.

Within the scope of our study, we define «pedagogical conditions» as circumstances specifically created in accordance with the aims of the pedagogical process, encompassing a range of forms, methods and practical approaches to the implementation of the educational process's tasks and contributing to the development of FT's of MA readiness for PA based on II basis, ensuring the holistic organisation

of the educational environment, effective interaction between its participants, and the successful attainment of planned educational outcomes.

Thus, in contemporary academic discourse, pedagogical conditions are interpreted as an integrated system of organisational, didactic and psycho-pedagogical factors that create a favourable environment for the effective functioning of the educational process and the achievement of planned learning outcomes by learners.

According to the scholar E. Khrikov, pedagogical conditions are developed within the context of specific scientific studies, which determines their specificity and precludes the possibility of attributing a general pedagogical status to them. However, they are closely interrelated with pedagogical laws and regularities (Khrikov E., 2022, p. 6).

Pedagogical conditions are a key component of our research work, as they ensure the proper organisation of pedagogical activities in the HEI and enhance their effectiveness. They are practice-oriented, based on pedagogical patterns, principles and rules, and are substantiated through a combination of theoretical and empirical research methods. In defining the pedagogical conditions for our study, we took into account that they must meet the requirements of scientific novelty, ensure the effective functioning of the pedagogical process and the PT of FMAT, be characterised by a local scope of application, and contribute to the achievement of the predicted results (the development of the readiness of FMAT for PT based on II), which ensures the achievement of the set objective and increases the likelihood of its realisation.

The development of a FMAT for PA based on II is regarded by contemporary pedagogical science as a complex, multi-level process in which positive motivation acts as the fundamental, system-forming component of PT. Researchers N. Ovcharenko, O. Matveieva and O. Chebotarenko emphasise that the readiness for PA of a future music teacher encompasses the fundamental knowledge acquired during their studies at a teacher-training HEI, performance skills and motivational and value-based orientations, which ensure the individual's professional focus and their capacity for creative self-realisation within an integrated educational environment (Ovcharenko N., Matveieva O., & Chebotarenko O., 2020).

Furthermore, the FT's readiness for PA is determined by the acquisition of in-depth specialist knowledge and involves not only mastering the theoretical content of the subjects, but is also characterised by a well-developed ability to integrate this knowledge into practice-oriented activities, to apply it in both standard and non-standard professional situations, as well as to critically reflect upon and update the knowledge acquired in line with the profession's current requirements. This developed readiness is regarded by researchers V. Irkliienko, T. Kobylyanska, O. Sahach and V. Yakovliev (Irkliienko V., & Yakovliev V., 2024; Kobylyanska T., 2018; Sahach O., 2020) as an integral personal and professional development that is formed during PT in accordance with functional, psychological, competence-based, cultural and personal-activity approaches. Researchers emphasise professional readiness as an integral aspect of personal development, which encompasses a system of professional knowledge, abilities and skills that ensure the effective performance of professional duties in the real-world context of pedagogical practice (Khyzhko O., 2023, p. 163); the readiness of students for PA as the result of holistic personal development, where knowledge, abilities and skills form a single functional system aimed at the successful fulfilment of professional tasks (Rebukha L. Z., 2019, p. 327).

Thus, based on the analysis and synthesis of academic works, we have identified the pedagogical conditions necessary for conducting research into the development of FMAT for PA based on II:

- fostering a sustained positive motivation and a value-based attitude among FMAT towards interdisciplinary music-pedagogical activities;
- orienting the content of specialist disciplines towards fostering II in the process of PT of FMAT;
- creating a practice-oriented educational environment based on the principles of II;
- ensuring creative self-fulfilment and supporting the reflective and evaluative activities of FMAT in the process of PT.

These pedagogical conditions reflect a set of purposefully organised factors within the educational process that ensure the effective development, within HEI, of

students' professional readiness for PA. These conditions are capable of holistically integrating theoretical and practical training, strengthening interdisciplinary links, developing positive professional motivation, stimulating students' independent and reflective activities, and creating an educational environment focused on professional and value-based self-determination and practice-oriented learning. Taken together, these factors ensure the effective development of FMAT's readiness for PA based on II as an integral personal and professional quality, manifested in their ability to successfully apply the acquired knowledge, skills, abilities and professional competences in the context of contemporary music teaching practice.

The implementation of these specifically defined pedagogical conditions took place with due regard to the specific nature of the PT, with the aim of developing, based on II, the readiness of FMAT in accordance with a number of pedagogical principles (integrity, systematicity and consistency, didactic appropriateness, the link between theory and practice, cultural appropriateness and creative self-expression) and various forms of learning (a combination of face-to-face learning under the direct supervision of a lecturer and distance learning in the form of independent work with electronic resources). The implementation of these pedagogical conditions involved the delivery of lectures and practical sessions, as well as independent and individual work by students; the use of effective teaching methods (verbal, visual, project-based and interactive) and resources (information and communication systems, the internet, tools for processing educational information, etc.) to organise the learning process.

Accordingly, each of the identified pedagogical conditions exerts a targeted influence on the development of specific components of professional readiness. In this regard, there is a need for a detailed justification of each pedagogical condition underpinning this study.

I. The first pedagogical condition is defined as the development of sustained positive motivation and a value-based attitude among FMAT towards interdisciplinary music-pedagogical activity. Its significance stems from the fact that the motivational and value-based sphere of the individual is a determining factor in the professional development of a specialist; ensures an awareness of the importance of

interdisciplinary interaction, stimulates interest in professional self-development, and facilitates the active acquisition of the integrated knowledge and skills necessary for the successful implementation of music-pedagogical activities in the modern educational environment.

In the research of V. Labunets, Z. Kartashova and S. Sokhriakova, motivation serves as the leading factor in the professional development of a future music teacher. Its development during lessons, as the researchers note, takes place in stages. Accordingly, the motivational-goal-oriented stage is aimed at helping students realise the significance of their future profession, develop a personal attitude towards it, and assimilate fundamental musical, artistic, pedagogical and universal human values; the «stimulating-process» stage ensures the activation of internal motivations with a view to professional self-development, cognitive activity and the acquisition of interdisciplinary knowledge and skills; the outcome-assessment stage involves developing the ability to reflect on one's own activities, self-assess the results achieved, analyse individual professional progress and foster a need for continuous self-improvement. Researchers have amply demonstrated that positive motivation fosters a creative atmosphere in the classroom, encourages students to engage in group work, supports active collaboration between lecturers and students, and consequently stimulates students' learning activity, fosters a need for independent learning, and ensures the success of FMAT' PT (Labunets V., Kartashova Z., & Sokhriakov S., 2025, pp. 139–140).

An analysis of works by researchers who have studied professional motivation (Piankivska L. V., 2021), intrinsic motivation and self-regulation (Shtepa O., 2023), motivation for professional training in music and music education (Zhoga R., Krygin O., & Melnychenko M., 2024), motivation as the basis for the educational and professional activity of music students (Xie X., 2023) and others, as well as a synthesis of our own empirical experience, provides grounds for asserting that motivational activity is one of the key qualitative characteristics of a music student's personality. It determines the student's readiness for the educational process and the degree of their engagement in it. Motivation acts as an internal mechanism for personal activation,

ensuring the selection of goals, the means of achieving them, and the maintenance of the necessary level of activity to attain the desired result. In this regard, we consider the motivational activity of students in relation to the learning process in this study as a complex personal construct based on:

- a) cognitive needs, as internal processes involved in acquiring new knowledge and understanding the content of an activity;
- b) interests, which serve as the individual's selective orientation towards certain types of activity;
- c) motives, as conscious or unconscious impulses to participate in or refrain from a particular type of activity.

Thus, motivational activity during a lesson acts as a system-forming factor in a student's professional activity and determines the level of their engagement in the educational process, whilst contributing to the development of professional interests and the formation of a positive attitude towards their future teaching career.

The first pedagogical condition is directly linked to the motivational and value-based component, which, in turn, is closely interdependent with one's values regarding the profession. Thus, as noted by researcher Y. Romanova at, when tackling professional tasks, individual personal values take on a professional orientation and are transformed into a system of value orientations that determine the nature of a specialist's professional thinking (Romanova Y. V., 2014, p. 240). According to the findings of C. Fan, the professional readiness of a future music teacher is largely determined by the development of value orientations, an interest in music education, and an awareness of its social and cultural significance (Fan C., 2018, p. 135). The value orientations acquired by music teachers act as an internal regulator of professional behaviour and ensure the personal acceptance of professional goals (Ionova O. M., & Chen C., 2023; Yang J. S., 2018).

The first pedagogical condition takes on particular relevance in the context of interdisciplinary training, as the integration of musical, pedagogical, psychological, cultural and digital knowledge requires students to recognise the value of interdisciplinary connections and their impact on the quality of their future professional

practice. As L. Bezemchuk notes, the development of integrative pedagogical skills among FMAT is based on an awareness of the need to combine knowledge from various disciplines to solve professional tasks (Bezemchuk L., & Fomin V., 2021, p. 13).

According to researchers A. Kruglyachenko, I. Mazurok and S. Yabkovska, the structure of the professional and value-based orientations of FMAT consists of the following components: cognitive, emotional-sensory and sensory-goal-oriented. These form a system of personal attitudes and approaches to the specific nature of pedagogical activity, reflecting its content and essence, and regulating an individual's behaviour whilst carrying out pedagogical activities (Kruglyachenko A. Yu., Mazurok I. V., & Yabkovska S. P., 2024, p. 59).

Consequently, the fulfilment of the first pedagogical condition (the development of sustained positive motivation and a value-based attitude among FT towards interdisciplinary music-pedagogical activity) requires the teacher to create an educational environment in which students recognise the significance of II in music-pedagogical activity, demonstrate a sustained interest in mastering it, understand the possibilities for integrating knowledge from various disciplines, and develop personally meaningful professional values. To this end, teachers utilise modern educational technologies in the teaching process to support effective learning. This fosters the development of intrinsic motivation, professional self-fulfilment and readiness for effective interdisciplinary collaboration in future teaching practice (Fig. 2.2.).

II. The second pedagogical condition, which concerns the orientation of the content of specialist disciplines towards the realisation of II in the process of PT of FMAT, involves the purposeful design of the content of educational components based on the interconnection of musical, theoretical, psychological-pedagogical, cultural and information-technological knowledge, with the aim of developing future specialists's readiness for successful professional activity within the context of the modern educational environment. The essence of this pedagogical condition lies in ensuring

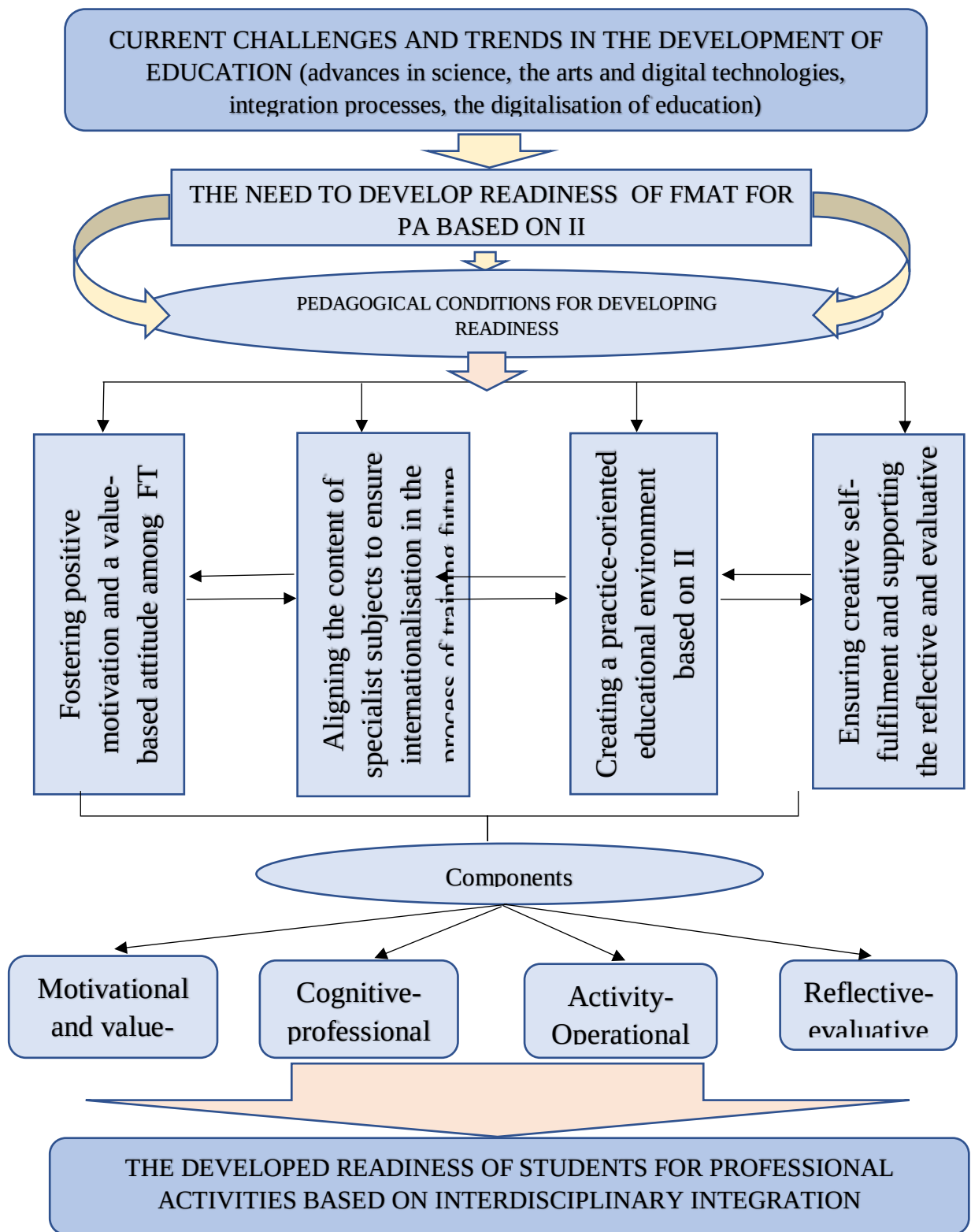


Fig. 2.2 Pedagogical conditions for developing FMAT' readiness for PA based on II

the integration of the content of academic disciplines by establishing interdisciplinary links, coordinating educational components, and utilising integrated learning tasks, artistic-pedagogical case studies and interdisciplinary forms of teaching organisation.

This approach contributes to the development of a holistic professional outlook among FMAT, and their ability to combine knowledge from various fields to address pedagogical, artistic and socio-cultural challenges.

Researchers T. Belinska, K. Kushnir, G. Bilozerska and N. Sizova emphasise the importance of the content of the PT of FMAT, which is determined by the need for the comprehensive development of professional competences, amongst which general pedagogical, performance, music-pedagogical, research, social and personal competences (Belinska T. V., Kushnir K. V., Bilozerska G. O., & Sizova N. S., 2020; Grigoryan M. E., & Boldyrevskii P. B., 2016). At the same time, the effectiveness of professional practice depends to a large extent on the implementation of interdisciplinary integration in students' educational process, which involves the purposeful establishment and development of substantive and functional links between specialist disciplines. Such integration fosters the development of creative thinking, performance skills and readiness to carry out various types of music-pedagogical activities. The professional competence of a music teacher, developed on this basis, is a key prerequisite for their successful creative self-realisation and effective PA in GSEI (Vasylevska-Skupa L., Kravtsova N., & Shvets I., 2023, pp. 51; 55).

The II of psychological, pedagogical and information-communication training is of great importance. According to researchers M. Boichenko, H. Nikolai, A. Linenko, and N. Koehn, the harmonisation of the content of the subjects studied by MA in HEI ensures the development of an integrated system of professional knowledge and skills necessary for future teaching practice (Boichenko M., Nikolai H., Linenko A., & Koehn N., 2020).

Current trends in the development of music and arts education point to the need to expand interdisciplinary links by integrating digital technologies, media resources and elements of STEAM education into the PA of music and arts education. Researchers L. Di, M. Dudai emphasise that the combination of the arts, digital technologies and pedagogical innovations contributes to the formation of an information and digital culture, the development of creative potential and readiness to use modern educational technologies in the teaching process (Di L., 2024; Dudai M.,

2025). Furthermore, the II creates the conditions for the development of socio-cultural competence among FMAT, as it ensures the integration of musical and artistic, cultural, communicative and pedagogical knowledge. As a result, FT acquires the ability to facilitate intercultural dialogue, to use art as a means of educating and socialising pupils, and to organise integrated arts projects and educational events (Slobodyska, O. A., 2023).

Students' desire to learn new things is stimulated through the use of active and participatory forms and methods of teaching. Researcher M. Pashchenko emphasises that the use of active forms and methods of teaching is an important prerequisite for the development of interdisciplinary knowledge, skills and competences among students, as it involves their active and integrative participation in educational and cognitive activities (Pashchenko M., 2016, pp. 259–260).

At the same time, the implementation of II in the process of PT of FMAT involves the appropriate orientation of the content of specialist disciplines and the introduction of interactive teaching methods. An important role in this is played by discussion-based activities, the discussion of academic issues, and the use of interdisciplinary multimedia presentations and video materials, followed by their analysis and discussion.

Let us consider active and interactive teaching methods that contribute to developing the readiness of FMAT for PA based on II. Within the scope of our study, the following methods were identified:

1. The case study method. This involves organising learning through the analysis, discussion and resolution of specific professionally-oriented situations that require the integration of knowledge from various fields. The analysis of case studies related to music education enables students to simulate real-life professional situations and establish links between music, pedagogy, psychology and other disciplines, thereby providing a holistic view of their future PA.

2. Interactive lectures. These involve active interaction between the lecturer and students during lectures and are aimed at developing students' professional readiness. The main aim of interactive lectures is to engage FMAT in active learning, to develop

their professional motivation, creative thinking and ability to establish links between knowledge from various fields of science and MA (Otravenko O. V., & Bryukhovetska I. M., 2021).

The organisation and delivery of interactive lectures based on the principles of II involves:

a) a clearly structured curriculum, which ensures an understanding of interdisciplinary links in the PA of FMAT;

b) the use of multimedia teaching aids in lessons (presentations, video clips, audio recordings, infographics), which facilitate the visual presentation of educational information and demonstrate the interconnection between MA and pedagogy, psychology, cultural studies and other fields of knowledge;

c) organising active interaction between the lecturer and students by posing problem-based questions, discussing professional scenarios, and analysing artistic phenomena and pedagogical practices, which encourages FMAT to critically reflect on information, generate creative ideas, seek effective solutions and develop professional reflection.

3. Professional video materials. The use in lessons of video recordings of MA lessons, artistic projects, concert performances, creative masterclasses and other examples of PA of MA, followed by discussion, analysis and evaluation. Such work helps students develop the ability to assess the effectiveness of pedagogical decisions and to establish interdisciplinary links between the subjects currently being studied and those already covered. To assess students' mastery of the material, lecturers use tests, interactive quizzes, motivational and reflective discussions, and debates.

4. Role-play and simulation exercises. This method involves lecturers modelling a variety of teaching situations by engaging of the FT in taking on professional roles. Working in groups enables participants to tackle pedagogical, creative and organisational tasks related to delivering lessons, organising artistic events, and interacting with pupils and parents. This type of activity contributes to the development of professional competence, teaching skills, communication skills and readiness for practical work in an interdisciplinary environment.

5. Workshops. These serve as an effective form of active learning, ensuring the direct involvement of students in the development of their professional competences. During workshops, students are actively engaged in discussions on current issues in music education, analyse specific professional scenarios, and undertake creative and practical tasks that require the integration of knowledge from various disciplines. Collaboration in small groups develops their skills in teamwork, constructive problem-solving in pedagogical situations, joint decision-making, and taking responsibility for the outcomes of collective, interdisciplinary activities.

The use of active teaching methods ensures that FT develop the ability to integrate knowledge from various academic disciplines, to think critically and creatively, to make pedagogically sound decisions promptly, and to effectively solve educational and professional-pedagogical tasks, which corresponds to the cognitive-professional component of readiness.

In addition to these methods, as part of their independent study, FMAT took part in a thematic round-table discussion (where current issues in music education were discussed) and a debate (where a specific problem was addressed), which deepened interdisciplinary connections and fostered the ability to analyse pedagogical phenomena from an interdisciplinary perspective.

Whilst studying the following modules: «Psychology» (2nd semester), «Pedagogy» (2-3th semester) and «Digital Technologies in Professional Practice and Musical Informatics» (3rd semester), the main focus was not only on the content of the material to be learnt, but also on identifying and justifying effective forms and methods of PT aimed at developing the readiness of FMAT for PA based on the principles of II. This approach allows for the substantive enrichment of the learning process through a range of integrated teaching and methodological activities, enabling students to acquire a high level of professional competence.

The results of my own teaching practice confirm the effectiveness of using active forms and methods of teaching, which have significant potential for developing the readiness of FMAT for PA. Among these, problem-based learning occupies a special place, involving the creation and resolution of problem situations through the

organisation of heuristic discussions with interdisciplinary content. It was equally important to ensure subject-to-subject interaction, which is based on the principles of partnership and facilitates productive collaboration and effective interdisciplinary communication among all participants in the educational process.

From the perspective of practice-oriented learning, the search for new forms and methods of FMAT's PT that stimulate the development of their readiness for PA helps to solve professional tasks and develops skills for independent work. This requires systemic changes in the educational process at HEI. In our teaching practice, particular attention is paid to forms and methods that facilitate the comparison, contrast, generalisation and identification of key points when studying course material, as well as the exploration of interdisciplinary links whilst studying academic disciplines.

Methodological recommendations for enhancing the effectiveness of the educational process in preparing of FMAT for PA based on II whilst studying specialist subjects are set out in Appendix A.

Consequently, when implementing the second pedagogical condition in the educational process for MA students, the content of academic disciplines encompasses integrated knowledge of MA, teaching methodology, pedagogy, psychology and ICT, as well as a system of professionally-oriented tasks, interdisciplinary case studies and practical scenarios aimed at developing students' readiness to carry out music-pedagogical activities. Its effective implementation in students' education ensures the integrity of PT, promotes the integration of knowledge, skills and experience, the development of professional competences, creative self-realisation and the readiness of FT for PA within the context of contemporary arts and general secondary education (see Fig. 2.1).

III. The third pedagogical condition involves the creation of a practice-oriented educational environment based on the principles of II. The fulfilment of this condition facilitates the development of both general and professional competences across the various academic disciplines included in the specialist training programme for FMAT.

Researcher L. Masol, in her study of arts education, notes that «...the content of general arts education must isomorphically reflect the real, multifaceted artistic picture

of the world and be didactically adapted in accordance with educational and formative objectives» (Masol L. M., 2020, p. 23). According to L. Masol's ideas, the educational environment for training of FMAT in HEI should be characterised by coherence and be integrated and artistically rich – that is, one that reproduces as fully as possible the multidimensional nature of musical and pedagogical reality and ensures its overall pedagogical understanding. Therefore, orienting the content of specialist disciplines towards practical activity involves bringing the teaching material closer to real-life professional situations and demonstrating its applied nature (Mykhaskova, M. A., 2020).

In particular, within the module «Pedagogy», the focus on practical activities is achieved through the simulation of teaching scenarios, the analysis of MA model lessons, the development of teaching strategies and the planning of the educational process, thereby fostering the ability to organise teaching and learning activities based on a pedagogical approach and a practical orientation. In the course of studying «Psychology», attention is focused on understanding the age-related and individual characteristics of pupils, the development of their musical abilities, and their emotional and value-based attitude towards art; this enables music teachers to take into account the psychological mechanisms of perception, experience and interpretation of musical works in the learning process. Whilst studying the module «Digital Technologies in Professional Practice and Musical Informatics», students' readiness for PA is developed through an integrated combination of information, pedagogical and artistic-performance competences, which ensure the effective use of digital tools in the educational process. The readiness for PA developed within this module involves students mastering digital learning tools (creating presentations, videos, interactive tasks and electronic teaching materials); the acquisition of skills in using music software for performing, recording, editing and analysing musical works; the development of skills in designing the learning process using computer-based technologies (creating digital lessons, multimedia sessions and interactive exercises); integrating psychological, pedagogical and artistic knowledge within a digital environment, which is facilitated by an interdisciplinary approach to organising

learning and engaging in professional reflection, and is manifested in the ability to assess the appropriateness and effectiveness of using ICT in music teaching practice. Accordingly, whilst studying the module «Computer-Based Technologies in the Professional Practice of Specialists», of the FMAT acquire the readiness to use computer-based technologies in their professional practice as a tool for modernising the educational process, developing pupils' creativity and enhancing the effectiveness of music teaching.

Consequently, the creation of a practice-oriented educational environment based on II is achieved through the integration of knowledge from various academic disciplines, using practice-oriented forms and methods of teaching in the process of students' PT and the simulation of real-life professional situations, which corresponds to the activity-operational component. The academic disciplines «Developmental and Educational Psychology», «Computer-Oriented Technologies in the Professional Activity of a Specialist» and «Fundamentals of Pedagogical Expertise» collectively serve as the main platform for implementing an interdisciplinary approach within a practice-oriented educational environment, as they ensure the development of FT's readiness for PA. These disciplines not only teach the theoretical foundations and principles of professional activity, but also facilitate their practical application in real and simulated pedagogical situations; they develop the ability to integrate knowledge from various fields, make informed professional decisions, utilise modern teaching technologies and interact effectively with participants in the educational process.

Teaching the subject «Music Art» in general secondary education requires teachers to have a thorough fundamental understanding of the anatomical and physiological characteristics of pupils typical of the various stages of their development, particularly during childhood and adolescence. The integrated knowledge acquired at HEI enables FMAT to effectively plan, organise and deliver the educational process, taking into account the results of analyses of pupils' technique in performing musical exercises, assessments of their musical abilities and the learning tasks developed in accordance with their level of proficiency. At the same time, Bachelor's-level FT (specialisation 014.13 Secondary Education (Music)) learn in their

classes to plan lessons independently and, consequently, to independently seek out, analyse and apply the information obtained to solve professional tasks; to ensure effective collaboration and communication in the classroom, and to exchange interdisciplinary experience with all participants in the educational process (Classification of Professions, 2010).

Success in working with school pupils is made possible by the professional reflection and pedagogical thinking effectively fostered at the HEI in FMAT, with the aim of gaining awareness of one's own activities, analysing mistakes and improving professional practice. The practice-oriented educational environment created in this way is a fundamental prerequisite for students' creative self-realisation, as it supports the development of an individual style of pedagogical activity and a creative approach to solving educational and formative tasks.

The main forms and methods for shaping a practice-oriented educational environment based on II, in accordance with the third pedagogical condition, are:

- interactive lectures and practical sessions incorporating interdisciplinary content and computer-based technologies;
- analysis and modelling of teaching situations drawn from music education practice;
- the case study method, involving the examination and resolution of realistically modelled professional problems;
- thematic round-table discussions and debates on current issues in music education;
- joint viewing of educational films and their discussion with the aim of consolidating the acquired interdisciplinary knowledge and practical experience.

Consequently, the creation of a practice-oriented educational environment based on pedagogical, psychological, artistic and computer-oriented II ensures the formation of a holistic professional worldview among FMAT and creates favourable conditions for the effective implementation of their PA. Such an environment fosters readiness for professional activity through the acquisition of experience in applying integrated knowledge in the context of real-life teaching practice, the development of the ability

to creatively solve pedagogical tasks, and the effective use of modern computer-based technologies in the educational process, taking into account the psychological characteristics of pupils. As a result, music teachers acquire the skills to effectively organise and carry out music-pedagogical activities, which ensures their competitiveness and a high level of professional preparedness to meet the challenges of modern education (see Fig. 2.1).

IV. We have identified the fourth pedagogical condition as ensuring the creative self-realisation of and supporting of the reflective and evaluative activities of the FMAT during their PT. Researchers have investigated the issue of developing FMAT's readiness for creative self-realisation in the PA and have emphasised:

- the need to create appropriate educational conditions for the development of students' creative potential, self-development and professional self-fulfilment in HEI (Hizhna O., 2023);

- the professional self-improvement of FMAT, viewing it as a key factor in achieving future professional maturity within the context of contemporary socio-cultural development. Such self-improvement is characterised by the growing role of culture, creativity and value orientations in the FMAT teacher's PA (Tusheva V., 2025);

- the importance of identifying various approaches to the development of a teacher's instrumental and performance skills as an integrative quality that directly determines the effectiveness with which teachers of music and music education perform their professional pedagogical tasks (Kovaleva-Goncharyuk L., 2020) and others.

At the same time, researchers have described the theoretical and methodological aspects of applying reflective and self-analysis methods in FMAT's PT (Kosyak L., & Ovcharenko N., 2026); the implementation of pedagogical conditions for fostering readiness for professional self-development among MA students, with a significant role played by self-reflection, self-assessment and self-improvement (Ageykina-Starchenko T., & Chorna N., 2021) and others.

Our analysis of scientific and pedagogical research, together with the experience we have gained, has enabled us to identify means of ensuring the creative self-fulfilment of FMAT in the process of PT. We have classified these as: active forms and methods of teaching. Their application in the study of the academic disciplines we have identified enables students to be regarded as active participants in the educational process, as it broadens their personal potential through value-based and professional meanings and encourages self-development; enriching the content of students' educational programmes with psychological, pedagogical and music-pedagogical foundations for personal growth. The content of academic subjects, which promotes the individual growth of students in the field of music teaching, forms the basis for their self-affirmation and professional self-improvement; providing opportunities for personal and professional self-fulfilment.

HEI lecturers enrich academic disciplines with material that enables FMAT to express themselves personally, both during their studies and in their leisure time, as well as when interacting with educators; this is facilitated through reflective conversations and discussions. Discussions of learning outcomes, teaching situations, difficulties and ways of overcoming them currently serve as an effective means of developing reflective and evaluative activities and fostering in FMAT the ability for self-analysis, self-control and continuous professional self-improvement; reflective and evaluative exercises and methodologies. These contribute to the development of self-analysis and self-reflection skills in FT. Their use by FMAT helps them to make sense of their acquired professional experience, assess their own achievements and identify areas for further professional development.

Accordingly, the integration into the educational process of the fourth pedagogical condition (ensuring creative self-realisation and supporting the reflective and evaluative activities of FMAT in the process of PT) presupposes the formed readiness of FMAT for PA, whilst increasing their focus on conscious professional growth, the development of a culture of reflection, the realisation of creative potential, and the ability to self-assess, self-correct and effectively solve professional tasks.

Based on the above, in the FMAT, in accordance with the self-actualisation criterion under the reflective-evaluative component, one can identify the ability to engage in professional reflection, objective self-assessment of the results of PT, self-correction and self-improvement based on a reflective analysis of learning and professional self-actualisation in future music-pedagogical activity. FT acquire all these qualities with the support of the group, through teachers' encouragement of personal potential during lessons, and through the creation of situations conducive to success. The development of these qualities is ensured through pedagogical support for the student group as a whole, the activation by lecturers of the internal personal resources of music students, and the creation of an educational environment that fosters the readiness of students for professional activity based on the principles of music education (see Fig. 2.1.).

Consequently, fostering the readiness of FMAT for PA based on II is a key prerequisite for improving the quality of their PT and ensuring their competitiveness within the modern educational landscape. The integration processes taking place in education, science, culture and the information and technology environment necessitate the training of a new type of specialist who can effectively engage in pedagogical interaction based on a holistic vision of the educational process. Based on an analysis of academic sources and the author's own pedagogical experience, four interrelated pedagogical conditions have been identified, the implementation of which ensures the effective development of the readiness under study. The approaches to implementing these pedagogical conditions in PT do not function in isolation, but form a holistic system of interrelated factors, each of which is aimed at developing specific components of the professional readiness of FMAT. Their comprehensive implementation ensures the development of positive motivation for PA, the formation of integrative thinking, readiness for the practical application of interdisciplinary knowledge, the capacity for creative self-realisation, professional reflection and continuous self-improvement. Therefore, the developed readiness of FMAT for PA based on II, under the pedagogical conditions under consideration, is regarded as a complex, integrated personal and professional formation, characterised by the future

teacher's ability to holistically combine knowledge, skills, competences and experience from various fields of science, the arts and pedagogy. Such readiness manifests itself in the ability to effectively apply an interdisciplinary approach when tackling professional tasks, to utilise modern educational and digital technologies, to carry out reflective analysis and self-assessment of the results of one's own activities, to demonstrate creativity and professional mastery, as well as to fulfil their potential successfully within the contemporary music education environment.

2.3 A structural-functional model for developing the readiness of future music teachers to practise their profession, based on interdisciplinary integration

One of the components of FMAT's PA is the effective delivery of MA lessons in GSEI. In our view, the effectiveness of such work is determined by the teacher's established readiness to plan, organise and deliver MA lessons based on the personal, operational-technological, functional, activity-based and outcome-based approaches, the application of modern teaching methods, forms and resources with the aim of creating a creative and educational school environment that fosters pupils' musical abilities and cultural awareness, as well as their subject-specific and key competences. Furthermore, the effective work of a MA teacher is directly linked to engaging in systematic and in-depth reflection on the organisation and delivery of MA lessons and the assessment of pupils' learning outcomes.

Currently, a FMAT for PA is an integrative personal quality, which is fully manifested in the conscious application of acquired interdisciplinary knowledge to create favourable conditions for the development of GSEI pupils' musical and creative potential, inspired self-realisation, self-expression and personal development (Chemonina L. V., & Lesik A. S., 2021).

Therefore, to provide a scientific basis for, design and forecast the development of pedagogical processes and phenomena, it is advisable to apply the modelling method. This general scientific method is widely used in various fields of knowledge, including pedagogy, as it enables the holistic reproduction of the structure, content,

interrelationships and patterns of functioning of the object of study, as well as the prediction of possible outcomes of activity. It is precisely in pedagogical science that modelling serves as an effective means of understanding educational reality and as an efficient tool for constructing and improving the educational process through the skilful application of pedagogically innovative technologies. Modelling enables researchers to theoretically substantiate the logic behind the organisation of the pedagogical process, identify its structural components, establish interdependencies between them, predict expected outcomes and experimentally verify the effectiveness of the proposed model. Thus, modelling, as noted by researchers R. Martynova, S. Bodnar (Martynova R., 2021; Martynova R., & Bodnar S., 2021), S. Kosyanchuk (Kosyanchuk S. V., 2021) and others, is one of the fundamental categories of modern scientific methodology, enabling the systematic study of complex pedagogical phenomena and facilitating their scientific explanation, prediction and practical improvement.

In modern dictionaries, the term «model» (derived from the French «modèle», meaning «analogue», «scheme» or «structure»; and from the Latin «modulus», meaning «measure», «standard» or «a scaled-down version of a complex phenomenon or process») is defined as:

- a specimen that reproduces or imitates the structure and functioning/operation of a particular object and is used to gain new knowledge about that object (The Great Explanatory Dictionary ..., 2009, p. 683);

- an imaginary or physically realised system that reflects or reproduces the object of study, substitutes for it in the process of cognition, and enables the acquisition of new information about that object (its properties, structure and patterns of functioning) (Encyclopaedia of Education, 2008, p. 516).

Thus, both of the above definitions emphasise that a model, as an ideal object of quantitative and qualitative theoretical research, serves as a means of scientific cognition, explanation and prediction of complex processes and phenomena.

A model, serving as an instrument of scientific understanding, is directly linked to modelling. It is therefore appropriate to clarify the meaning of the concept of «modelling», which reflects the process of creating, studying and using models in

pedagogical practice. A model acts as a certain generalised representation of an object, whilst modelling is a dynamic process of constructing this object, which facilitates the study, explanation and prediction of the properties and patterns of functioning of the phenomenon under investigation, and thus enables its analysis. It is precisely during the modelling process that the transition occurs from a theoretical description of an object to its systematic understanding, which makes it possible not only to interpret existing data but also to project possible paths of development for the process under study.

In contemporary scientific research, modelling is regarded as a general scientific method of scientific inquiry, involving the creation, study and practical application of models to identify and describe the properties, structure, functions and patterns of development of objects, phenomena or processes (Philosophical Encyclopaedia..., 2002). The use of modelling in scientific research makes it possible to reproduce the essential characteristics of the object under study, establish interrelationships between its components, predict the outcomes of its holistic functioning, identify the most systemic changes within the education system, and discover effective ways of improving the object in question.

Researcher S. Kosianchuk regards modelling in pedagogy as a general scientific method for studying pedagogical objects as reflected in models. Consequently, the results of studying a given object within the model are transferred to the real pedagogical object. At the same time, the researcher emphasises the wide application of this method when conducting formative pedagogical experiments and designing educational systems as a whole (Kosyanchuk S. V., 2021).

According to researchers S. Bodnar, R. Martynova and L. Rakityanska, modelling serves as a fundamental method of modern didactics, as it enables the prediction of pedagogical processes based on objective patterns and the principles of pedagogy, psychology and didactics. It contributes to the scientific justification of the structure, content and teaching methods. Researchers emphasise that pedagogical modelling aims to create valid models of the educational process that are capable of

effectively reflecting and improving actual pedagogical practice (Martynova R. Yu., & Bodnar S. M., 2021; Rakityanska L. M., 2024).

Consequently, we shall consider modelling as one of the leading methods of scientific inquiry and pedagogical design, ensuring a comprehensive study of complex educational processes, their theoretical justification, the prediction of expected outcomes, and the verification of the effectiveness of proposed pedagogical solutions.

The theoretical and conceptual basis for modelling education is set out in the works of many researchers (Dudko S. G., 2024; Harachkovska O., Dmytrenko N., & Nikolaieva A., 2025; Savchenko N. S., 2022; Opachko M. V., 2016; Pryimak S. G., & Ratov A. M., 2022; Shevchenko I. A., Fedosov I. V., & Fedotova O. O., 2025, et al.).

According to O. Dubasenyuk, the development of pedagogical models requires compliance with a number of specific requirements, including:

a) conceptuality. The model is based on a scientifically grounded concept that provides a logical explanation of the pathways to achieving specific educational goals;

b) systematicity. A pedagogical model is regarded as a coherent system with its own logical structure, ensuring the interconnection of all its components whilst the model functions in a coordinated manner;

c) manageability. The model enables the educational process to be managed in accordance with the results of monitoring and assessment, whilst allowing for the timely adjustment of teaching methods, forms and resources with a view to enhancing the effectiveness of the educational process;

d) effectiveness. The model facilitates the achievement of planned outcomes through the optimal use of educational and technological resources and the guaranteed fulfilment of set educational objectives;

e) replicability. A key feature of the model is its potential for successful implementation and adaptation in the work of teachers at other educational institutions (Dubasenyuk O. A., 2008).

b) adequacy. The model corresponds to reality and the essential properties of the object (Encyclopaedia of Education, 2008, p. 516).

The scholar I. Ziazun took a different approach to formulating the requirements for a model of the pedagogical process. In his view, a model should be characterised by integrity, that is, it should aim to provide a step-by-step representation of the design and sequential implementation of the entire pedagogical process; it should reflect the dynamics of its development, showing the sequence of stages, the system of means for solving the defined tasks, and the conditions for the effective achievement of the planned results; reflect the objective set by the researcher-organisier and their ability to engage in the pedagogical process in order to foster certain professional qualities in learners (Zyazun I. A., 2011, pp. 24–25).

Modelling an innovative educational process is always linked to the emergence of an innovative idea, its development, and the realisation and implementation of that idea in students' learning. In accordance with this model, the PT of future specialists should encompass both structural (including motivation, creativity, technological competence, reflectiveness and other components) and functional (which contribute to the modernisation of educational programmes, the effective application of educational innovations through the introduction of modern teaching methods, the monitoring of the educational process, and ensure the improvement of innovative educational activities in educational institutions) components (Koval, M. S., & Litvin, A. V., 2023, p. 99). Accordingly, modelling the innovation-based educational process requires specific training for teachers. Therefore, according to the scholar I. Ziazun, a teacher's readiness to carry out innovative professional activities should be viewed as a combination of content- and process-related components and outcome- and assessment-related components (Ziazun I. A., 2011).

Consequently, the transformational processes currently taking place in Ukraine's higher education sector are leading to a re-evaluation of traditional approaches to the organisation of the educational process and a strengthening of its creative focus. Of particular importance is fostering in higher education students the ability to independently seek out and justify professional decisions, develop methodological competence, achieve professional self-determination and creative self-fulfilment, and gain practical experience in creative activity. In this regard, the modernisation of the

artistic and pedagogical training of FMAT involves updating its content, refining its organisational and methodological foundations, and actively utilising innovative and interactive teaching technologies, and the FMAT's PA themselves becomes effective through the artistic and professional qualities and abilities they have acquired at HEI, enabling them to use innovative methods, techniques, resources and pedagogical technologies effectively in the teaching of students; these collectively reflect the development of artistic and pedagogical mastery and professional competence in FMAT (Zyazun I. A., Lavrinenko O. A., Soldatenko M. M., & Pylypchuk V. V., 2012, p. 304). Researchers M. Koval and A. Litvin note that such training should be based on the interaction of relatively autonomous, yet interconnected and interdependent, subsystems of a humanistic, general cultural, professional-artistic and psychological-pedagogical nature (Koval M. S., & Litvin A. V., 2023, pp. 99–100); researcher Y. Kolisnyk-Humenyuk concludes that the system of music-pedagogical training at the FT is a purposeful, multi-faceted, structured and organised dynamic complex of professional training, where the main outcome of the system's operation is the development of students' pedagogical musical and artistic competence (Kolisnyk-Humenyuk Y. I., 2020).

The modernisation of arts and pedagogical education, characterised by the development of a multi-level and flexible training system, requires the identification of effective educational models aimed at unlocking the personal potential of students, stimulating their intrinsic motivation for professional development, and identifying ways to improve the quality of professional training. In this regard, the pedagogical conditions and methodological support for the training of teachers of music and music education, as well as a comprehensive update of the forms and methods of organising the educational process in HEI, require scientific justification.

Our theoretical analysis of the problem of PT, combined with the results of research into contemporary educational practice and taking into account the established principles of pedagogical modelling, formed the basis for the development of a structural-functional model for fostering the readiness of FMAT for PA in the context of II. When developing the model for fostering the readiness of FMAT for PA, we took

into account a number of methodological requirements described by the scholar V. Yagupov, which include:

1. Internal consistency and correctness of the model. This entails a logical and optimal relationship between its interrelated elements, which, taken together, reflect the essential characteristics of the object being modelled.

2. Adequacy of the representation of the model's operational mechanisms. This enables a clear presentation of the principles of its structure and operation in accordance with the actual interrelationships between all elements of the system under study.

3. Alignment of the model with the aim of the scientific research. This ensures the possibility of making well-founded generalisations and formulating conclusions, the validity of which can be verified during experimental work (Yagupov V., 2003).

Drawing on the results of scientific research by the aforementioned scholars, we have identified the sequence of the main stages of pedagogical modelling, which we implemented in the process of developing a structural-functional model for fostering the readiness of FMAT for PA in the context of II. At the first stage, we theoretically analysed the essence and specific features of the pedagogical phenomenon under study, which was to be modelled; we identified the patterns of its functioning and outlined prospects for its development; and we identified the key structural components. At the second stage, the aim and main objectives of the modelling were specified, in accordance with which the most significant pedagogical characteristics under investigation, to be reflected in the model, were selected and systematised. The third stage consisted precisely in constructing a structural-functional model for developing the readiness of FMAT for PA in the context of II. Its practical implementation involves stimulating students' creative and pedagogical activities and creating the necessary conditions for them to gain experience in innovative PA. The fourth stage involves determining the level of soundness and validity of the developed structural-functional model through its testing and experimental verification within the framework of research and experimental work.

As the academic N. Kopnyak notes, a structural model is designed to provide a graphical representation of the main characteristics and interrelationships between the components of the object under study, whereas a functional model enables the analysis of the specific features of a particular process's functioning and defines the purpose and significant role of its components in their interaction with internal and external factors (Kopnyak N., 2015). In our study, we regard the structural-functional model as a graphically represented holistic system with interrelated structural components that reflect its functional characteristics, interactions and operational features of the process under study. It was constructed in accordance with the principles of a systematic and purposeful organisation of the educational process, the comprehensiveness of the blocks represented in the model, and the phased implementation of these blocks in a logically defined sequence, which made it possible to:

1. Outline the aims and objectives of the research and experimental work.
2. Identify and theoretically substantiate the scientific approaches and principles underpinning the development of the readiness of the FMAT for PA based on II.
3. Develop methodological support for the model in accordance with the defined aims and objectives.
4. To justify the pedagogical conditions necessary for the effective development of the readiness of FMAT for PA based on II.
5. To identify the expected outcomes of implementing the developed structural-functional model.
6. To conduct an experimental evaluation of the effectiveness of the proposed model within the context of the HEI's educational process.

The developed, developed in accordance with the requirements of the draft higher education standard for specialty 014.13 Secondary Education (Music) at the first (bachelor's) level, structural-functional model for fostering the readiness of FMAT for PA based on II reflects the specific nature of the professional development of future music teachers and the particularities of fostering their readiness to work in GSEI. The conceptual basis of the model consists of scientific approaches and principles, the

author's methodology for its implementation in the student learning process, and the predicted and expected outcome. All these components are holistically directed towards the effective development of FMAT's of readiness for professional activity in schools – from a low to a high level. The structural components (blocks) of the developed structural-functional model reflect the internal organisation (based on the principles of II) of the process of developing students' readiness to work in their chosen profession and are characterised by a clearly defined functional purpose. The interaction of all components ensures the integrity of the model, the logical sequence of implementation of the defined stages, and the orientation of the educational process towards achieving the planned outcome.

Consequently, the structural-functional model defines the key characteristics and organisational principles of the training of students specialising in 014 Secondary Education (Music), aimed at enabling them to achieve the required level of preparedness. At the same time, the model encompasses both the content and process components of PT, ensuring its integrity, consistency and dynamism in line with changes in professional requirements.

The development of the structural-functional model was preceded by a theoretical analysis and synthesis of the conceptual provisions outlined in sub-sections 1.3, 2.1 and 2.2 of our doctoral thesis. The author's model (Fig. 2.3) presents our conceptual and applied vision of developing the readiness of FMAT for PA based on II, as well as the specific pedagogical conditions necessary for its effective implementation.

In the proposed model, all its components are integrated into a single sequential and logical system, in which each element is interrelated with the others and aimed at achieving a specific outcome. The achievement of the intended outcome is ensured by a clearly formulated objective, which determines the logic behind the model's structure and the coordination of interaction between its components. At the same time, the correct definition of the objective contributes to the meaningful establishment of

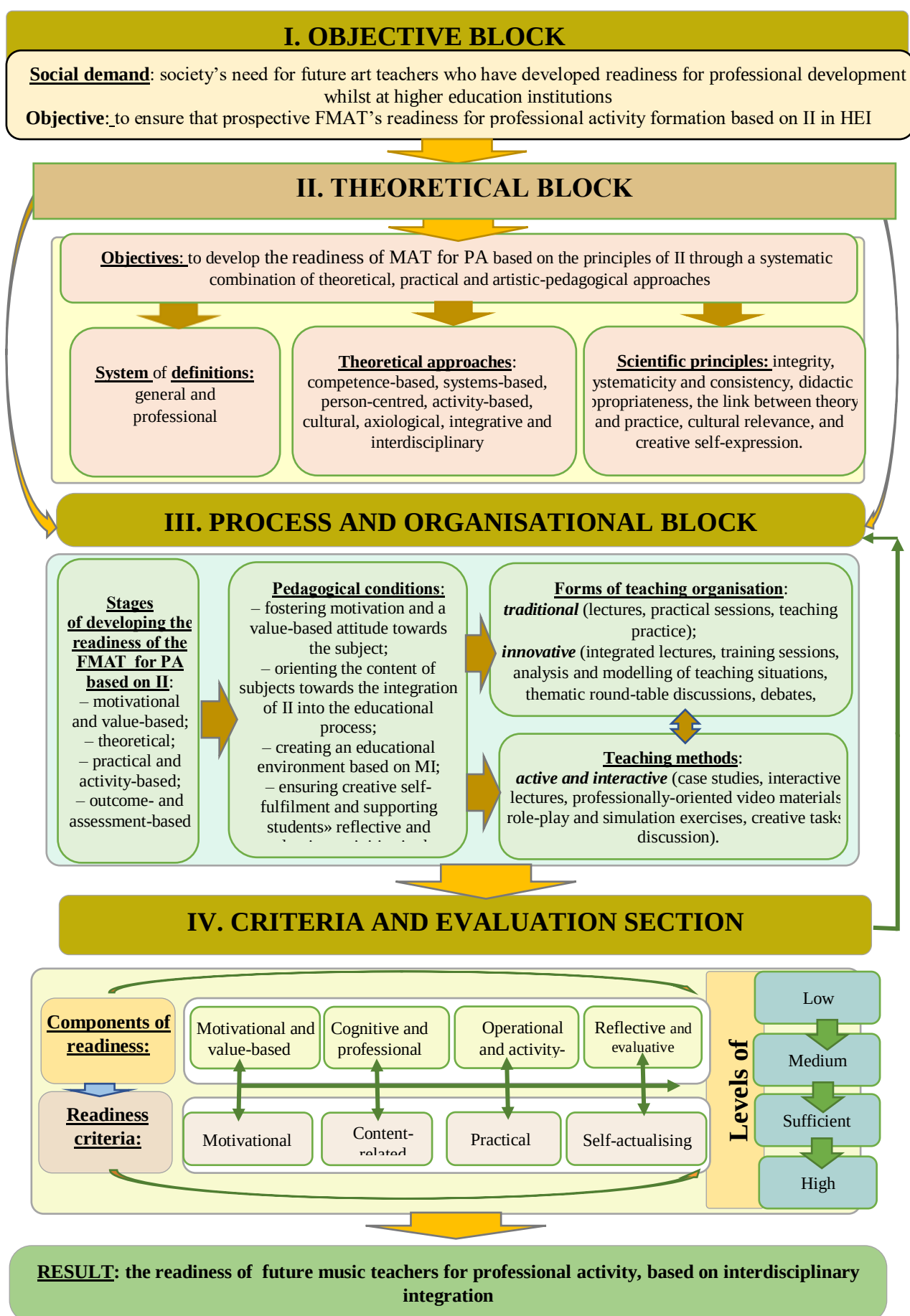


Fig. 2.3. Structural-functional model for developing the readiness of FMAT for PA based on II

comprehensive interaction between all the identified elements of the model and to enhancing the effectiveness of its functioning. Within the scope of this study, the structural-functional model is represented by four interrelated blocks: the objective, theoretical, procedural-organisational and criteria-assessment blocks, each of which performs specific functions, possesses integrative and specific characteristics, and whose interaction is characterised by cause-and-effect relationships.

A comprehensive analysis of the current state of PT of FT in HEI has made it possible, within the objective block of the developed model, to identify societal demand and labour market requirements for the training of competent primary and lower secondary school teachers capable of effectively carrying out their teaching duties in GSEIs. Accordingly, we have formulated the main objective of the model, which is to ensure the effective development of FMAT for PA in the context of II.

Achieving this objective involves carrying out a series of interrelated tasks:

- to develop, within the context of the modern educational environment, a system of psychological, pedagogical, artistic, methodological and professional knowledge necessary for carrying out professional activities;
- to develop the professional-pedagogical, musical-performance, methodological and project-planning skills necessary for organising and implementing the educational process with pupils in GSEI;
- to foster sustained professional motivation, a value-based attitude and readiness for future professional activity;
- to ensure the acquisition of practical experience in designing and implementing an integrated educational process aimed at the effective resolution of professional tasks by FMAT.

We classify the set of objectives of the PA of FMAT within the HEI environment we classify according to the following areas:

- a) educational objectives. Their main aim is to focus on the development of a system of integrated psychological, pedagogical, artistic, methodological and professional knowledge necessary for the successful performance of future PA;

b) developmental objectives. The main focus is on developing the professional and interdisciplinary competence of FMAT, their creative abilities, and their ability to think critically and integratively, as well as their capacity to design and organise the educational process effectively based on II;

c) educational objectives. These are designed to ensure the development of professionally significant personal qualities, which are reflected in a teacher's pedagogical culture, their values regarding the profession and their readiness to engage in innovative activities within GSEI, as well as their ability to develop themselves and achieve professional fulfilment.

The objective component of the model is directly and closely interlinked with the criteria and assessment component, as it directly determines the logic behind achieving the final outcome – the readiness of the teacher to engage in pedagogical activity, formed based on II readiness of FMAT for PA. If the expected outcome is not achieved, there is a need to refine or revise individual components of the proposed model. Thus, the objective serves as a system-forming factor of the designed model, as it defines its structural components, establishes interrelationships between them, fully ensures coordinated interaction and directs them towards achieving the predicted result.

The theoretical section presents the fundamental principles for developing the readiness of FMAT for professional practice based on the II, which are grounded in contemporary educational and scientific approaches and the principles governing the organisation of this process. The content of this section is determined by the interrelationship and interaction of key concepts and categories that constitute the theoretical and methodological foundation for developing readiness for PA. It is underpinned by the scientific principles of integrity, systematicity and consistency, didactic appropriateness, the interconnection of theory and practice, cultural appropriateness and creative self-expression.

Functionally, the theoretical module ensures the systematisation of definitions of a general and professional nature, as well as the integration of specific *theoretical* principles and scientific approaches – competence-based, systemic, person-centred,

activity-based, cultural, axiological, integrative and interdisciplinary — in conjunction with the relevant theories, methods and tenets of scientific knowledge from various academic disciplines in accordance with the II. In designing this module, account has been taken of the specific nature of FMAT's PA, its distinctive features, as well as the regulatory and organisational-methodological requirements for delivering MA lessons to pupils in GSEI.

The next component of the model is the procedural and organisational component, which ensures the implementation of the four stages of developing the readiness of FMAT for PA based on the principles of II: from the motivational-value-based, theoretical and practical-activity-based stages to the outcome-based and evaluative stage. In turn, each stage is aimed at motivating the individual towards music and arts education, acquiring basic theoretical knowledge, and participating directly in real and simulated pedagogical situations, leading to the acquisition of skills in identifying difficulties in PT and carrying out one's own corrective activities. These stages ensure the holistic logic of PT. This component of the structural-functional model contains pedagogical conditions that foster positive motivation and a value-based attitude among music educators towards interdisciplinary music-pedagogical activities, direct the content of specialist disciplines towards ensuring II, and create a favourable, practice-oriented educational environment based on II, and ensure students' creative self-realisation and their own reflective and evaluative activities within the HEI.

The model reflects the phased development of students' readiness, based on the lecturer's selection of effective forms of teaching organisation and practical methods. The specified forms of teaching (traditional and innovative) ensure diversity and flexibility in the educational process, whilst the methods of organising learning (active and interactive), which are specific ways in which the lecturer and students interact, create conditions for the integration of interdisciplinary knowledge and practical skills, and also serve to develop strategic and critical thinking in students.

The forms and methods of organising teaching in the process of developing the readiness of FMAT for PA based on II are presented in Table 2.2.

Table 2.2

**Forms and Methods of Organising Teaching in the Process of Developing
the Readiness of FMAT Based on the Principles of Interdisciplinary Integration**

Forms and methods	Curriculum content	Implementation features	Expected outcomes
Traditional forms	Lectures, seminars, practical sessions, various types of teaching practice	Systematisation of knowledge in music pedagogy, development of teaching skills, and gradual immersion in teaching practice	Acquisition of knowledge in the subjects studied, and the development of the ability to analyse and solve professional tasks whilst organising music-pedagogical activities
Innovative formats	Integrated lectures, training sessions, analysis and modelling of pedagogical situations, thematic round-table discussions, debates, interdisciplinary projects	Use of modern interactive technologies, multimedia resources and digital musical instruments; creation and implementation of creative and pedagogical projects	Development of creative potential, communication, organisational and artistic skills; fostering the ability to use innovative technologies in music education; enhancing independence and professional mobility
Active teaching methods	Discussion, case studies, project-based learning, creative tasks, analysis of musical works, modelling	Active involvement of music teachers in identifying, analysing and solving professionally-oriented tasks using interdisciplinary knowledge from musicology, pedagogy, psychology, music teaching methodology and digital technologies	Development of independence, critical and creative thinking; fostering the ability to integrate knowledge from various disciplines and apply it to solving professional tasks
Interactive methods	Discussions, debates, role-play and business games, small-group work, brainstorming, peer learning, analysis of pedagogical situations, reflective discussion	Organisation of peer-to-peer interaction, collaborative problem-solving and professional dialogue; emphasis on teamwork; simulation of music-teaching scenarios drawing on interdisciplinary knowledge	Development of communicative, social and professional competences; development of skills in teamwork, justifying one's own position, making collective decisions and engaging in professional reflection; development of skills and competences for organising a modern music lesson

The forms and methods of organising learning specified in the model ensure the integration of traditional and modern pedagogical approaches, creating favourable conditions for the comprehensive development of FMAT based on the principles of II. Their application is aimed both at the acquisition of professional knowledge and at the active development of managerial skills, creative potential, communication skills and professional mobility. This, in turn, contributes to the development of the readiness of FMAT for effective PA.

The criteria and assessment component of the model is designed to determine the extent to which the outcomes of the professional and pedagogical training provided by the FMAT, based on the II programme, meet current educational quality requirements as defined by the State Standards and the applicable regulatory framework. Its content covers the components of readiness, a system of criteria, indicators and diagnostic tools, by means of which the level of readiness of students specialising in 014.13 Secondary Education (Music) is assessed at various stages of professional and pedagogical training. An important component of this module is the definition of the expected outcomes of the implemented model, which are designed to ensure a positive and sustained dynamic in the development of music-pedagogical competence among FMAT for PA within the context of HEI.

Taking into account the results of contemporary scientific research, it is appropriate to identify four interrelated components of readiness (motivational-value-based, cognitive-professional, operational-activity-based and reflective-evaluative) and criteria for assessing the development of readiness in music teachers based on the principles of educational technology: motivational, content-related, practical and self-actualising. In accordance with these criteria, four levels of development of FMAT readiness for PA have been identified: low, medium, sufficient and high.

The criteria we have identified are closely interrelated and interdependent, which fully ensures the phased nature, integrity of the process and the dynamics of developing FMAT readiness for PA based on II.

Thus, the criteria-and-assessment component of the model is aimed not only at assessing the final outcomes of FMAT readiness for PA, but also at ensuring effective

feedback. Its implementation makes it possible to identify changes in the level of readiness in a timely manner, to adjust the educational process in accordance with the results obtained, and to ensure its management within the context of HEI. At the same time, this component helps to align the developed FMAT readiness for PA with current professional requirements and societal needs.

And the final structural component of the model is its outcome. It is precisely this outcome that defines the ultimate goal of the holistic professional preparation process – the developed readiness of FMAT for PA based on professional ethics. Such readiness is regarded as an integrative professional and personal quality of the future specialist, encompassing motivational and value-based orientations, professional knowledge, practical skills and abilities, creative abilities, the ability to establish and implement interdisciplinary links, as well as to reflect on one's own professional development.

The development of readiness is reflected in the ability of FMAT to plan and organise the educational process effectively, utilising the potential of II, to integrate content from both educational and artistic disciplines, to establish links between the arts and other academic subjects, to select effective methods, resources and innovative teaching technologies, and to create conditions for the creative, artistic, aesthetic and all-round development of pupils in GSEI. At the same time, the structural-functional model involves determining levels of readiness, which makes it possible not only to assess the results achieved but also to track the progress of students' acquisition of specialist knowledge, skills and competences, and, accordingly, their professional development. In our case, the outcome of the model serves as an integrated indicator of the effectiveness of the preparatory programme for the FMAT and, at the same time, as a benchmark for the further improvement of the educational process aimed at developing students' readiness for professional activity based on II.

Thus, the developed structural-functional model for fostering the readiness of students of the FMAT programme for professional activity based on II encompasses the main components of the process under study: the aim, objectives, scientific approaches and principles, the content of the programme, teaching methods and

resources, as well as the criteria and indicators for assessing the results achieved. Its content is aimed at resolving the contradiction between the current need to develop the readiness of students in the field of mechanical engineering for professional activity based on II and the insufficient theoretical and methodological development of the relevant process.

The structural blocks defined in the model are interrelated and interdependent, and are geared towards achieving the intended outcome – raising the level of preparedness of FMAT for PA based on II, involves the phased delivery of educational programmes using international education, which ensures the gradual development within the management units of the Ministry of Education and Science of motivational and value-based orientations, a system of professional knowledge, practical skills and competences, creative abilities and reflective readiness for the effective organisation and implementation of PA in the future.

Conclusions to the second chapter

An analysis of current research by Ukrainian and foreign scholars provides grounds for asserting that PT of FMAT is one of the priority areas for the development of higher teacher education and national education policy in every country. Studying international experience in the professional development of educators is an important prerequisite for improving the national higher education system and implementing innovative approaches aimed at modernizing teacher education, introducing modern teaching methods and tools, expanding FMATs' access to up-to-date knowledge and information resources, as well as developing educational programs focused on developing their professional competencies and enhancing their qualifications.

The issue of FMAT's readiness to engage in teaching activities is interpreted by scholars from various perspectives and within the framework of personal, operational-technological, functional, activity-based, and outcome-based approaches, which provides grounds for asserting that: the effective development of FMAT is based on the interaction of interrelated factors, among which the most decisive are the individual's motivational sphere, awareness of the pedagogical mission, an adequate

level of professional training, and methodological flexibility. These factors make it possible to view the readiness of FMAT for PA as a holistic, systemic construct, where the structural components are defined as the motivational-value, cognitive-professional, operational-activity, and reflective-evaluative components. The identified components are interrelated and interdependent and ensure the comprehensive nature of professional readiness for FMAT for PA based on Principle II. For each component, corresponding criteria (motivational, content-related, practical, and self-actualizing), indicators, and levels (high, sufficient, average, low) of students' readiness for PA at HEIs have been identified.

The implementation of the PT of FMAT's objectives is made possible by creating a supportive educational environment, purposefully organizing the educational process, and introducing specially developed pedagogical conditions aimed at ensuring the effectiveness of student learning. In accordance with the goals of the pedagogical process regarding the development of FMAT's readiness for PA based on II and the synthesis of scholarly research in this area, we have identified the following pedagogical conditions: fostering sustainable positive motivation and a value-based attitude among students toward interdisciplinary music- -pedagogical activities; orienting the content of professional disciplines toward ensuring II in the process of PT of FNAT; creating a practice-oriented educational environment based on II; and ensuring creative self-realization and supporting FMAT's reflective and evaluative activities in the process of PT), which are necessary for the effective conduct of the study. The implementation of these pedagogical conditions took into account the specific nature of the professional training of future music teachers and adhered to a number of pedagogical principles (integrity, systematicity and consistency, didactic appropriateness, the connection between theory and practice, cultural appropriateness, and creative self-expression) as well as various forms of instruction (in-person and distance learning). The implementation of pedagogical conditions that have a targeted impact on the development of specific components of professional readiness involved conducting lectures and practical classes, independent and individual student work, and the use of effective methods (verbal, visual, projection, modeling, the case method,

interactive methods, etc.) and tools (information and communication systems, the Internet, educational information processing tools, etc.) for organizing the learning process.

We view the developed FMAT's readiness for PA based on II, under the pedagogical conditions implemented in the educational process for students, as a complex, integrated personal and professional formation characterized by the future teacher's ability to holistically combine knowledge, abilities, skills, and experience from various fields of science, art, and pedagogy.

To provide a scientific rationale, design, and forecast the development of pedagogical processes and phenomena, the modeling method was applied as an effective means of understanding educational reality and an efficient tool for constructing and improving the educational process for students majoring in 014 Secondary Education (Music). Accordingly, a structural-functional model for developing FMAT's readiness for PA based on II was developed, consisting of four interrelated blocks: the goal-oriented, theoretical, procedural-organizational, and criterion-based assessment blocks. Each block performs specific functions, possesses integrative and specific characteristics, and is characterized by cause-and-effect relationships. The integrity of the model, the logical sequence of implementing specific stages, and the orientation of the educational process toward achieving the planned outcome are ensured by the close interaction of all components of its structural blocks.

The structural-functional model makes it possible to determine the levels of FMAT's readiness for PA based on II, evaluate the results achieved, and track the dynamics of students' acquisition of professional knowledge, abilities, and skills. The results achieved through the implemented model serve in this study as an integral indicator of the effectiveness of PT for FMAT in HEIs and as a benchmark for the further improvement of the educational process with the aim of fostering students' readiness for PA based on II.

The main results of the chapter are reflected in the author's scientific works:

Zhang G., 2024; Zhang G., 2024b; Zhang G., 2024d; Zhang G., 2024c.

CHAPTER 3

RESEARCH-BASED AND EXPERIMENTAL VERIFICATION OF THE EFFECTIVENESS OF THE PEDAGOGICAL CONDITIONS AND STRUCTURAL-FUNCTIONAL MODEL FOR DEVELOPING FUTURE MUSIC TEACHERS' READINESS FOR PROFESSIONAL ACTIVITY

3.1 Implementation of pedagogical conditions for developing the readiness of future music teachers for teaching activity

We conducted a pedagogical experiment (PE) with the aim of monitoring the level of FMAT's readiness for PA based on II, and assessing it according to the levels (high, sufficient, average and low) of readiness for the profession in HEI. The experimental study (ES) took place between 2023 and 2025 and was carried out in stages. Conducting the experiment in four stages involved setting objectives and employing effective forms and methods for its organisation. Overall, the study was organised in a manner characterised by mutual complementarity and temporal consistency.

During the first stage of the study (January–August 2023) – *the research and literature review stage* – we carried out the following tasks:

- we analysed the scientific, pedagogical and methodological literature relating to the topic of our research. However, its review and study continued until the completion of the dissertation;
- we examined the experience of PT of FMAT in HEI both in our country and abroad, and characterised the regulatory and legal framework governing the training of FMAT in HEI. Consequently, we identified contemporary approaches to the PT of FMAT for PA based on II;
- the categorical and conceptual framework, which is important for the research, has been identified and its content substantiated;
- the significance of II in PT of FMAT has been demonstrated;

- to develop the readiness of FMAT for PA in GSEI, the components, criteria and indicators of this process that are important for our study have been identified and defined (through an analysis of the scientific and methodological literature listed in the bibliography). At the same time, these were effectively utilised collectively to establish the baseline level of readiness for PA among undergraduate students;

- the research hypothesis was refined and the relevance of the chosen dissertation topic was confirmed;

- an experimental research framework was selected, comprising three HEIs, and the duration of the research procedures was determined;

- an educational programme of ER was developed to ensure the proper conduct of the diagnostic and formative stages of the experiment.

During the second stage of the research, namely the diagnostic stage (September 2023 – January 2024), we collected the necessary empirical data and carried out a thorough analysis of it in accordance with the objective of this stage – to comprehensively study the level of readiness of FMAT for PA based on the principles of II at the start of the PT. In section 2.1, we established that FMAT's readiness for PA reflects the extent to which students have developed the following:

- an interest in and motivation for artistic and pedagogical activities;
- fundamental knowledge of the history and theory of music and the specifics of their effective application in the process of modelling and resolving pedagogical situations;

- professional skills in integrating interdisciplinary and theoretical knowledge into PT;

- a personal commitment to self-development and self-improvement within the profession, and to self-fulfilment in their future professional activity as competent music teachers in GSEIs.

Consequently, the established FMAT's readiness for PA is a decisive factor in the professional and personal development of educators.

We focused the ER on developing and testing the research methodology itself. Thus, the criteria for assessing the established readiness of FMAT for PA based on II, as described in section 2.1, made it possible to:

- establish a set of assessment indicators to identify the levels of FMAT's readiness to carry out appropriate pedagogical activities in GSEI;
- to identify and establish the pedagogical conditions relevant to our study and to develop a structural-functional model for fostering the readiness of FMAT for pedagogical activity based on II, which served as an effective and results-oriented toolkit for fostering this readiness;
- to conduct a baseline experiment to diagnose the initial levels of FMAT's readiness for PA defined in section 2.1, in order to reveal each trainee's level of readiness for PA;
- to specify the means, methods and forms of PT of educators employed in the experiment in accordance with the outlined research objective;
- to justify and develop a programme of ER.

The tasks outlined above were successfully addressed using the criteria framework we developed, its indicators and the identified methodologies, which made it possible to assess the level of readiness of FMAT for PA on the basis of the II.

By «diagnostic stage of the ER», we mean a system of targeted diagnostic procedures aimed at a comprehensive study of the individual and professional characteristics of FMAT and at determining the level of their personal readiness to carry out teaching activities appropriately in GSEI. This system identifies both the current state of the readiness under investigation and determines appropriate methods for their further personal and professional development, taking into account the individual characteristics of students on the 014.13 Secondary Education (Music) programme.

To determine the level of FMAT's readiness for PA based on II, experimental data were collected at the diagnostic stage of the ER of the study at three HEIs: Mykhailo Kotsyubynskyi Vinnytsia State Pedagogical University (Vitalii Gazinskyi Department of Vocal and Choral Training, Theory and Methodology of Music

Education) (hereinafter VSPU), Volodymyr Hnatiuk Ternopil National Pedagogical University (Department of Musicology and Methods of Musical Art) (hereinafter TNPU) and Khmelnytskyi Academy of Humanities and Pedagogy (Department of Musicology, Instrumental Training and Methods of Music Education, Faculty of Humanities) (hereinafter KHAHP). The diagnostic assessment involved students pursuing a first (bachelor's) degree in the specialisation 014.13 Secondary Education (Music). At this stage, 37 students from the aforementioned universities took part in the ER. Specifically, the first group comprised 11 students from VSPU, the second group comprised 19 students from TNPU, and the third group comprised 7 students from KHAHP.

The assessment was carried out under the normal operating conditions of the HEIs. The aim of the diagnostic phase, which served as the starting point for our subsequent research, was to determine the FMAT's readiness level for PA in accordance with the established components: motivational-value, cognitive-professional, activity-operational and reflective-evaluative. Using the defined criteria, we assessed the level of readiness for professional practice among the students involved in the diagnostic phase of the assessment across all the specified components, and identified, for comparison, the individual readiness for professional practice among the bachelor's students in each of the three groups.

At the diagnostic stage, the assessment indicators were tested using a set of methodologies specifically adapted to our objectives, which we will subsequently utilise effectively during the formative stage of experimental research (see Tabl. 3.1). The methodologies listed in the table enabled us to determine the level of readiness of FMAT for PA with pupils in GSEIs.

Achieving the research objective and validating it requires a more detailed description of the methodologies proposed in Table 3.1. It is these methodologies that can demonstrate the effectiveness of the components and criteria for the FMAT's readiness for PA based on II, as selected and described in section 2.1, whilst determining the overall level of this readiness amongst students. Furthermore, when

assessing readiness levels, we took into account the requirements for conducting the methodologies with students. Accordingly, in the ER, we utilised:

Table 3.1

**Methodologies for Assessing FMAT's Readiness for Working with Pupils
in GSEIs**

No.	Components	Criteria	Method
1.	Motivational - value-based	Personality	Methodology by O. Bondarchuk and L. Karamushka «Determining the hierarchy of motives for the professional activity of teaching staff in educational institutions»; T. Ehlers' methodology «Motivation for Success» (<i>Appendix B</i>)
2.	Cognitive-professional	Knowledge-based	Author-developed tests to identify interdisciplinary knowledge, professional skills and teaching skills of FMAT, with a view to conducting effective future lessons with pupils at GSEI (tests compiled by G. Zhang) (<i>Appendix C</i>)
3.	Activity-based and operational	Activity-based	Assessment of FMAT's readiness for PA based on their performance in the interdisciplinary project «The Musical Space of the Modern Pupil» (author: G. Zhang) (<i>Appendix D</i>)
4.	Reflective-evaluative	Self-actualising	Diagnostic chart for self-assessment and reflection by music students preparing for future PA (author: G. Zhang) (<i>Appendix E</i>)

– the methods developed by O. Bondarchuk and L. Karamushka for determining the hierarchy of motives and identifying dominant groups of professional motives amongst teaching staff in educational institutions, and the method developed by T. Ehlers for assessing motivation for success and achievement and for avoiding failure, as a means of diagnosing the motivational and value-based component of established readiness (*Appendix B*);

– a test to assess the FMAT's professional and methodological interdisciplinary knowledge, skills and competences, with a view to conducting effective future lessons with pupils in GSEI, as a means of diagnosing the cognitive-professional component of the FMAT's readiness for PA (*Appendix C*);

- an assessment of the FMAT's readiness for PA based on the results of students' completion of the interdisciplinary project «The Musical Space of the Modern Pupil», as a means of assessing the activity-operational component of FMAT's readiness for PA (Appendix D);

- the author's methodology «Self-assessment and Reflection Chart for Music Education students preparing for future PA», as a diagnostic tool for the reflective-evaluative component of FMAT's readiness for PA (Appendix E).

Each methodology provides hierarchically defined and clearly structured numerical indicators ranging from high to low levels of individual development. Taken together, these indicators reveal FMAT's readiness to deliver effective MA lessons to pupils in GSEI. According to these methodologies, the maximum number of marks that students can obtain during the ER is 100. Depending on the number of marks obtained by the students, we determine the boundaries of their levels of preparedness on a 100-mark scale: high level – from 90 to 100 marks; sufficient level – from 75 to 89 marks; average level – from 60 to 74 marks; low level – 59 marks and below.

Therefore, at the diagnostic stage of the ER, to determine the level of readiness of FMAT for PA based on II – including interest in their future profession, awareness of its advantages and a cognitive need to acquire new interdisciplinary knowledge – students were asked to complete a test using the methodology «Determining the Hierarchy of Motives for the Professional Activity of Teaching Staff in Educational Institutions» by O. Bondarchuk & L. Karamushka and T. Elers' methodology «Motivation for Success» (see Appendix B).

The results of the testing carried out using the aforementioned methodologies to determine the level of development of the readiness of FMAT for PA in terms of the motivational - value component are presented in Table 3.2 (involving all 37 FMAT participants in the experiment).

An analysis of the level of FMAT's readiness formation for PA based on II principles according to the motivational and value-based component in accordance with the personal criterion, suggests that for almost a third of students (more than 20 %), professional motives predominate at high and sufficient levels of motivation for

success. However, the development of sustained motivation to carry out PA appropriately in the future requires that, whilst studying in HEI, they develop both professional and personal-value-based motivations, which would be reflected in a desire for active self-development, productive artistic, professional and intellectual activity, an awareness of the value of pedagogical work, as well as the effective planning and achievement of self-defined educational outcomes.

Table 3.2

The Level of FMAT's Readiness for PA in Terms of the Motivational-Value Component at the Diagnostic Stage of the ER

Level of development of the FMAT's readiness for PA, as assessed at, in terms of the motivational-value component							
High		Sufficient		Average		Low	
q-ty	%	q-ty	%	q-ty	%	q-ty	%
3	8.1	5	13.5	23	62.2	6	16.2

Separately, Table 3.2.1 presents the results obtained by students at VSPU (first group), TNPU (second group) and, respectively, KHAHP (third group).

Table 3.2.1

The Level of FMAT's Readiness for PA in Terms of the Motivational-Value Component at the Diagnostic Stage of the ER (for All Three Groups)

№ f/b	Groups	Number of	The level of development of the readiness of FMAT for PA in terms of the motivational and value-based component							
			High		Sufficient		Average		Low	
			n-er	%	n-er	%	n-er	%	n-er	%
1.	VSPU	11	1	9.1	1	9.1	7	63.6	2	18.2
2.	TNPU	19	2	10.5	2	10.5	12	63.2	3	15.8
3.	KHAHP	7	0	0	1	14.3	5	71.4	1	14.3

The figures in Table 3.2.1 show that students at Ternopil National Pedagogical University (21% – where the percentage is calculated based on the combined ‘high’ and «sufficient» levels) are more motivated to engage in PA than students at Vinnytsia State Pedagogical University (18.2%) and Khmelnytskyi Academy of Humanities and Pedagogy (14.3 per cent) respectively, which is 2.8 per cent higher than at VSPU and

6.7 per cent higher than at KHAHP. The results obtained using the specified methodologies reflect the existing problems in developing FMAT's readiness for PA based on II during their studies in terms of the motivational-value component.

Within the framework of the knowledge criterion (according to cognitive-professional component) and its associated indicators for developing FMAT's readiness for PA based on II, the students at the ER stage undertook an author-designed test to identify their independently acquired interdisciplinary knowledge, professional competences and methodological skills, with a view to conducting effective interdisciplinary MA lessons with pupils in GSEI in the future (Appendix B).

The assessment lasted one lesson (80 minutes), during which students demonstrated their knowledge and the skills they had acquired in solving relevant professional problems. The test tasks themselves consist of three levels of difficulty. The first level comprises open-ended tasks relating to an understanding of the conceptual and categorical framework, determining the level of FMAT's readiness for PA, and the methods and scientific approaches to this type of activity (20 minutes are allocated for answering two tasks).

The second level contains tests designed to assess whether students possess professional knowledge, skills and methodological competences of an interdisciplinary nature, relating to their readiness to conduct PA in GSEI (the duration for completing these tests is 20 minutes). The test tasks set for students do not assess the isolated knowledge of academic disciplines acquired in HEI, but rather the ability of FMAT to integrate this knowledge when addressing real-life professional and pedagogical situations within the educational process at GSEI.

At the third level, students tackled the proposed practice-oriented tasks (two case studies) and answered questions relating to them (60 minutes were allocated for completing the case studies). The content of the case studies reflects the specific nature of a PA of FMAT in teaching MA to school pupils and helps to define the teacher's role in organising and conducting MA lessons based on II in GSEI.

The test results (across the three levels of difficulty) are presented in Table 3.3.

Table 3.3

The Level of FMAT's Readiness for PA in Terms of the Cognitive-Professional Component at the Diagnostic Stage of the ER

Levels of readiness of FMAT for PA in terms of the cognitive-professional component							
High		Sufficient		Average		Low	
q-ty	%	q-ty.	%	q-ty.	%	q-ty.	%
3	8,1	6	16.2	23	62.2	5	13.5

Table 3.3.1 presents the results obtained for the three experimental groups of FMAT.

Table 3.3.1

The Level of FMAT's Readiness for PA in Terms of the Cognitive-Professional Component at the Diagnostic Stage of the ER (for All Three Groups)

No.	Groups	Number of participants	Levels of readiness of FMAT for PA in terms of the cognitive-professional component							
			High		Sufficient		Average		Low	
			q-ty	%	q-ty	%	q-ty	%	q-ty	%
1.	VSPU	11	1	9.1	2	18.2	6	54.5	2	18.2
2.	TNPU	19	2	10.5	3	15.8	12	63.2	2	10.5
3.	KHAHP	7	0	0	1	14.3	5	71.4	1	14.3

Based on the results of the testing carried out, we note that the students' interdisciplinary knowledge, professional competences and methodological skills for conducting appropriate PA are insufficiently developed. Thus, FMAT's performance on tasks of the first level of difficulty enabled us to assess their understanding of the conceptual and categorical framework within the context of arts and pedagogical education. The results of the second-level assessment were designed to require students to select one correct answer from four options and to compare their knowledge with that of their peers. Providing answers to the case study tasks at the third level of difficulty enabled the students to reflect on their own teaching practices and identify their strategic pedagogical capabilities and ability to establish interdisciplinary links

during lessons. Overall, the testing carried out made it possible to identify both general trends and individual differences in the respondents' answers.

From the figures in Table 3.3, we can conclude that the FMAT's readiness in the cognitive-professional component is insufficiently developed. This is supported by the relatively low percentages of students achieving high (3 students, or 8.1 per cent) and sufficient (6 students, or 16.2 per cent) levels. At the same time, we observe low percentages for these levels among students in the first and third groups (1 student, or 9.1 per cent, and no students in the third group, and 2 (18.2 per cent) in the first group and 1 (14.3 per cent) in the third group, respectively).

The greatest difficulties for the students were caused by open-ended questions designed to assess the correct understanding of the conceptual and categorical framework and its application in solving artistic and pedagogical tasks and performing professional functions (namely, during the planning, organisation and delivery of lessons, the assessment of pupils, etc.), as well as in solving case studies designed to reveal the specific nature of the PA of the MA. At the same time, a significant number of errors were observed in solving interdisciplinary test tasks classified as level two in terms of difficulty.

The results of the test assessing the level of FMAT's readiness for PA based on II, in terms of the cognitive-professional component, confirmed the importance of the targeted development of theoretical knowledge regarding the pedagogical integration of interdisciplinary approaches and the design skills required for the independent planning of MA lessons incorporating interdisciplinary links. The data obtained also confirmed the relevance of the issue of students maintaining a terminology glossary.

Using the activity-based criterion within the activity-operational component, we assessed FMAT's ability to effectively conduct practice-oriented activities aimed at developing skills in the design and delivery of integrated MA lessons, establishing content-related and methodological links between MA and other disciplines, selecting and applying appropriate teaching methods, forms and resources, organising pupils' interdisciplinary cognitive and creative activities, adapting pedagogical actions in

accordance with the educational context, and assessing and reflecting on the results of PA.

The assessment of FMAT's readiness for PA was based on the results of the students' completion of the interdisciplinary project «The Musical Space of the Modern Pupil», which integrated the three disciplines («Pedagogy», «Psychology» and «Digital Technologies in Professional Practice and Music Informatics») (Appendix D). The content of the project was structurally designed to help students develop integrated knowledge of pupils' age-related and individual psychological characteristics, their needs and motivation, as well as interpersonal and group interaction; skills in using digital tools to search for and process information, create presentations and implement the project; skills in organising interaction with pupils, motivating them to engage in activities, conducting pedagogical communication, preparing presentations, and reflecting on and evaluating the results of project-based activities.

The results of the students' work on the interdisciplinary project «The Musical Space of the Modern Pupil», which assessed the development of readiness levels in terms of the activity-operational component (author's methodology), are presented in Table 3.4.

Table 3.4

The Level of FMAT's Readiness for PA in Terms of the Activity-Operational Component at the Diagnostic Stage of the ER

Levels of readiness of FMAT for PA in terms of the activity-operational component							
High		Sufficient		Average		Low	
q-ty.	%	q-ty.	%	q-ty.	%	q-ty	%
0	0	2	5.4	23	62.2	12	32.4

According to Table 3.4.1, the results obtained from all three experimental groups are presented based on the data on FMAT's readiness for PA.

The analysis of the activity-operational component among FMAT, based on the activity criterion, revealed that 94.6 per cent (35 students) of the total number of participants in the experiment (37 students) were at the low and average levels, while

5.4% (2 students) were at the sufficient level. At the diagnostic stage, we did not identify a single student who had achieved a high level of readiness for PA.

Table 3.4.1

The Level of FMAT's Readiness for PA in Terms of the Activity-Operational Component at the Diagnostic Stage of the ER (for All Three Groups)

No. No.	Groups	Number of participants	Levels of the FMAT's readiness for PA in terms of the activity-operational component							
			High		Sufficient		Average		Low	
			q-ty	%	q-ty	%	q-ty.	%	q-ty	%
1.	VSPU	11	0	0	1	9.1	6	54.5	4	36.4
2.	TNPU	19	0	0	1	5.3	12	63.2	6	31.5
3.	KHAHP	7	0	0	0	0	4	57.1	3	42.9

We observe a high proportion of students at the low level of readiness in the second group, amounting to 31.6 per cent, which corresponds to 6 out of the 19 participants in the experiment. Thus, the results obtained confirm an insufficient level of readiness among FMAT to conduct PA based on II in terms of the activity-operational component.

The application of the self-actualisation criterion within the reflective-evaluative component is based on students' reflection on and self-assessment of their future PA and is also reflected in their self-assessment of the maintenance and content of their terminology glossary, with the aim of gaining a deeper understanding of the essence of music-pedagogical activity. To identify the level of readiness for self-education, self-improvement, self-analysis and self-control within the reflective-evaluative component, we utilised the author's methodology «Self-assessment and Reflection Card for PA of FMAT» (Appendix E). This methodology (to be completed by students after they have carried out an interdisciplinary music-pedagogical project), which is aimed at evaluating each statement proposed in the appendix, allows us to identify both shortcomings in the development of reflective-evaluative skills and to demonstrate ways of comprehensively improving them. Consequently, in this study, we consider

the reflective-evaluative competence of FMAT in the ER as a means of self-awareness, self-assessment and professional development.

The results of the test to determine the level of readiness of FMAT for PA in terms of the reflective-evaluative component are presented in Table 3.5.

Table 3.5

The Level of FMAT's Readiness for PA in Terms of the Reflective-Evaluative Component at the Diagnostic Stage of the ER

Levels of FMAT's Readiness for PA in Terms of the Reflective-Evaluative Component							
High		Sufficient		Average		Low	
q-ty	%	q-ty	%	q-ty	%	q-ty	%
1	2.7	5	13.5	24	64.9	7	18.9

Table 3.5.1 presents the results of the responses (their quantitative indicators) of FMAT from the three groups of students using this methodology.

Table 3.5.1

The Level of FMAT's Readiness for PA in Terms of the Reflective-Evaluative Component at the Diagnostic Stage of the ER (for All Three Groups)

No.	Groups	Number of participants	Levels of FMAT's Readiness for PA in Terms of the Reflective-Evaluative Component							
			High		Sufficient		Average		Low	
			q-ty	%	q-ty	%	q-ty	%	q-ty	%
1.	VSPU	11	1	9.1	1	9.1	7	63.6	2	18.2
2.	TNPU	19	0	0	3	15.8	13	68.4	3	15.8
3.	KHAHP	7	0	0	1	14.3	4	57.1	2	28.6

An analysis of the development of the reflective-evaluative component among FMAT revealed that 31 individuals, or 83.8 per cent, are at low and Average levels of readiness for PA, and only 5 (13.5 per cent) are at a sufficient level, whilst only 1 individual (2.7 per cent) is at a high level. It should be noted that, at the initial stage of

the study, the figures for students in the second group are significantly lower than those of their peers in the first and third groups (at the high, sufficient and Average levels). Thus, a high level of readiness was identified in 1 trainee teacher, representing 2.7 per cent. This level was identified specifically among FMAT in the first group and accounted for 9.1 per cent. At the same time, a low level of readiness for teaching practice was demonstrated by 2 (28.6 per cent) prospective teachers in the third group, whilst in the second group this percentage is lower, at 15.8 per cent (2 individuals). The results obtained indicate that MA candidates are insufficiently prepared to work with pupils, that is, that their reflective-evaluative component is not sufficiently developed.

Consequently, the level of FMAT's readiness for PA based on II was assessed separately for each of its components. The level of the respective component was therefore determined on the basis of the total score obtained by the trainee across the set of defined indicators. In accordance with the established ranges of total scores, we identified four levels of development for each component: high, sufficient, average and low.

We have developed a scale linking total scores to specific levels of readiness based on N. Dairi's approach (1979): a) a high level of readiness, ranging from 90 per cent to 100 per cent, corresponds to 5 marks; b) a sufficient level (from 75% to 89%) corresponds to 4 marks; c) an average level (from 50% to 74%) corresponds to 3 marks; d) a low level (from 0% to 49%) corresponds to 2 marks.

Analysis of the results obtained using the diagnostic methods we proposed, which were completed by MA undergraduates, made it possible to identify and assess the level of their readiness for PA. The data obtained formed the basis for identifying the specific number of marks scored by each student participating in the experiment across the readiness components and the corresponding levels of their development. This enabled us to establish and determine the final quantitative results of the diagnostic phase of the ER. The summarised results for all readiness components (for students in all three groups) are presented in Table 3.6.

Table 3.6

**Summary Results of FMAT's Readiness for PA Based on II Across All
Components at the Diagnostic Stage of the ER**

No.	Components	Levels of FMAT's Readiness for PA (for 37 Students)			
		High	Sufficient	Average	Low
		%	%	%	%
1.	Motivational-Value	8.1	13.5	62.2	16.2
2.	Cognitive-professional	8.1	13.5	62.2	16.2
3.	Activity-operational	—	5.4	62.2	32.4
4.	Reflective-Evaluative	2.7	13.5	64.9	18.9
Average		6.3	11.5	62.9	20.9

Tables 3.6.1, 3.6.2, and 3.6.3 present the summarised results of FMAT's readiness for PA based on II across all components for the first (VSPU), second (TNPU), and third (KHAHP) groups, respectively.

Table 3.6.1

**Results of FMAT's Readiness for PA Based on II Across All Components at the
Diagnostic Stage: First Group (VSPU)**

No.	Components	Readiness Levels of FMAT at VSPU (11 Students)			
		High	Sufficient	Average	Low
		%	%	%	%
1.	Motivational-Value	9.1	9.1	63.6	18.2
2.	Cognitive-Professional	9.1	18.2	54.5	18.2
3.	Activity-Operational	0	9.1	54.5	36.4
4.	Reflective-Evaluative	9.1	9.1	63.6	18.2
Average		6.8	11.4	59.1	22.8

Table 3.6.2

Results of FMAT's Readiness for PA Based on II Across All Components at the Diagnostic Stage: Second Group (TNPU)

N o.	Components	Readiness Levels of FMAT at TNPU (19 Students)			
		High	Sufficient	Average	Low
		%	%	%	%
1.	Motivational-Value	10.5	10.5	63.2	15.8
2.	Cognitive-Professional	10.5	15.8	63.2	10.5
3.	Activity-Operational	0	5.3	63.2	31.5
4.	Reflective-Evaluative	0	15.8	68.4	15.8
Average		5.3	11.9	64.5	18.4

Table 3.6.3

Results of FMAT's Readiness for PA Based on II Across All Components at the Diagnostic Stage: Third Group (KHAHP)

N o.	Components	Readiness Levels of FMAT at KHAHP (7 Students)			
		High	Sufficient	Average	Low
		%	%	%	%
1.	Motivational-Value	0	14.3	71.4	14.3
2.	Cognitive-Professional	0	14.3	71.4	14.3
3.	Activity-Operational	0	0	57.1	42.9
4.	Reflective-Evaluative	0	14.3	57.1	28.6
Average		0	10.7	64.3	25.0

The aggregated numerical results of the diagnostic phase of the ER confirmed that traditional training of students in HEIs does not fully ensure FMAT's readiness for effective PA. Thus, the aggregated results indicate the lowest levels of readiness among

FMAT in the activity-operational component, as a low level was observed in 32.4 per cent of students (that is, 12 out of 37), whilst none of the students achieved a high level of readiness in this component.

When examining the motivational-value and cognitive-professional components, we found identical figures across all levels: 8.1 per cent of students demonstrated a high level of personal motivation; 13.5 per cent – a sufficient level; 62.2 per cent – an average level; and 16.2 per cent – a low level. However, it should be noted that the latter figure is significantly lower among FMAT in the third group – 14.3 per cent (for the motivational-value component). This indicates that FMAT in this group are more motivated to carry out PA in GSEI. Accordingly, 21.6 per cent of students (8 individuals) are prepared for music-pedagogical activities in terms of the two components mentioned, which corresponds to the high and sufficient levels. Improvements in quantitative indicators (motivational and knowledge-based) are possible as FMAT progress from an intermediate level to a higher one. Therefore, it is necessary to find ways to increase students' motivation and equip them with the necessary knowledge to properly carry out PA in GSEI when working with schoolchildren.

At the same time, the activity-operational and reflective-evaluative components are insufficiently developed. Their significance lies in the students' acquired integrative music-pedagogical knowledge, abilities and skills, which ensure their holistic application of theoretical and practice-oriented knowledge in future PA, the ability to analyse, reflection and creative interpretation of musical works, and the selection and implementation of effective teaching methods and resources in accordance with the individual needs of learners. The results obtained for these components (94.6 per cent of FMAT and 82.8 per cent, respectively, are at the average and low levels) do not contribute to effective teaching practice, as they hinder the effective implementation of II in music lessons in GSEI. The high proportion of respondents at the low level for these components (42.9 per cent and 28.6 per cent) among third-group bachelor's students indicates their low readiness for PA based on II.

A qualitative and quantitative analysis of the results of the diagnostic phase of the ER suggests that FMAT's readiness for PA based on II stands at 17.8 per cent (based on the average percentage of 'high' and 'sufficient' levels). Based on the data obtained, ways to improve the readiness of FMAT for PA based on II were identified, and the starting points for designing and conducting the formative stage of the ER were outlined.

The third, formative stage of the study (February 2024 – June 2025) involved the experimental verification of the scientific hypothesis and the effectiveness of the conceptual and theoretical principles identified in the research, the modelling of the process of developing FMAT's readiness for PA based on II, the implementation within the educational process of higher education institutions of pedagogical conditions and a structural-functional model for developing the readiness of music teachers for professional activity, and the supplementation of educational components ('Pedagogy', 'Psychology' and 'Digital Technologies in Professional Practice and Music Informatics') with integrative teaching content, the development of an optional course entitled 'Interdisciplinary Dimensions of Music-Pedagogical Activity', and the conduct of the experiment itself.

During the fourth, generalisation and conclusion stage (July 2025 – October 2025), the results obtained were analysed and systematised, and conclusions were drawn regarding the dynamics of developing, within HEI, the readiness of music teachers for PA based on II. Also at this stage, mathematical data processing was carried out, general conclusions were drawn, a set of didactic and methodological materials was prepared, prospects for further scientific research were identified, and the text of the doctoral thesis was finalised.

Consequently, the research and experimental work carried out at all stages of the ER is aimed at addressing the main objective, namely developing the readiness of the FMAT for PA on the basis of II. In view of this, an important task of our further research is to justify the organisation and methodology of the formative stage of the experiment.

3.2. Organisation and methodology of the experiment

Today, the development of education requires music teachers who possess a high level of professional competence, are creative, skilled in teaching, and able to adapt to modern educational challenges, apply innovative and digital technologies in the educational process, integrate the content of various academic disciplines, and create a supportive, motivational, educational, and artistic environment that fosters the holistic development of pupils' personalities. At the same time, a modern music teacher must not only act as a conveyor of musical knowledge and performance skills, but also be an organiser of constructive interaction and capable of interdisciplinary integration, establishing and implementing meaningful and creative links between MA and other educational disciplines.

In this context, the PA of FMAT takes on particular relevance. We interpret the PT of FMAT in HEI to teach Music in GSEI as a purposeful and systematically organised process of preparing future specialists for musical and pedagogical practice, which involves the integration of music-pedagogical and psychological-pedagogical knowledge, skills and competences, as well as the mastery of computer-based technologies and pedagogical tools. The quality of this training largely determines the teacher's ability to create an educational environment that ensures the holistic and comprehensive development of the pupil's personality.

This highlights the importance of developing FMAT's readiness for PA in HEIs to conduct effective pedagogical activities with pupils in GSEIs based on the principles of II. The content of such preparation is aimed at developing the ability of future specialists to organise the educational process effectively, to select and apply appropriate teaching methods, forms and resources, to utilise modern digital technologies, and to take into account the age-related and individual psychological characteristics of pupils in secondary education. Therefore, the development within HEI of the readiness of Bachelor's degree students specialising in 014.13 Secondary Education (Music) for PA requires a timely solution.

At the same time, the development of FMAT's readiness for PA within the framework of PT in HEIs is a complex, structured, and multifaceted process. Its

effectiveness is determined by a combination of pedagogical conditions, factors, and elements. These ensure the link between the set objective and the achieved result, determining the effectiveness of students' preparation for PA based on II.

Defining the objective of ER provided the basis for establishing a working hypothesis, according to which the effectiveness of the purposeful development of FMAT's readiness for PA based on II depends on the comprehensive implementation of well-founded pedagogical conditions and the structural-functional model within the educational process in HEIs. In view of the above, in subsection 2.2 we identified and theoretically substantiated four pedagogical conditions which are closely interrelated and interdependent, forming a coherent system, and which are aimed at the effective development of students' readiness for PA:

- the development of sustained positive motivation and a value-based attitude among FMAT towards II in the process of PT;
- orienting the content of specialist disciplines towards ensuring II in the process of PT;
- creating a practice-oriented educational environment based on II;
- ensuring the creative self-realisation of future music teachers and supporting their reflective and evaluative activities during PT.

These pedagogical conditions fulfil a set of interrelated functions in the process of PT of young musicians, as they are aimed at ensuring the effective development of their readiness for PA:

- they orient the educational process towards achieving a specific outcome and ensure its alignment with the set objective;
- they facilitate the identification of optimal forms, methods and means of teaching, as well as ways of interaction between lecturers and students;
- they foster positive professional motivation and a sustained interest in the field of II as a key factor for future professional development;
- stimulate independent and reflective learning on the part of students;
- create an educational environment focused on professional and value-based self-determination and practice-oriented learning;

- ensure consistency between the individual components of the educational programme and the activities of those involved in the PA;
- help to determine the level of FMAT's readiness for PA and monitor the dynamics of its development, as well as to make timely adjustments to the educational process where necessary.

The combined implementation of these functions, carried out through the pedagogical conditions introduced into the educational process, ensures the effectiveness of students' learning and creates the necessary educational foundation for achieving the planned level of professional readiness of students for their future activities.

The application of these pedagogical conditions was carried out taking into account the specific nature of the programme and was aimed at developing students' readiness for professional activity, whilst ensuring adherence to a system of relevant pedagogical principles (*integrity, systematicity and consistency, didactic appropriateness, the link between theory and practice, cultural appropriateness, and creative self-expression*), as well as methods (*verbal, visual, practical, interactive, project-based, and stimulating-creative*) and forms (*lectures, practical sessions, individual and independent work, project-based activities, round-table discussions*) and resources (*teaching and learning materials, digital resources, the internet, interactive tools, creative resources*) for learning.

Consequently, the implementation of pedagogical conditions for Bachelor's degree students in the educational process makes it possible to outline the main directions of educational development and to assess their effectiveness in preparing students for pedagogical practice.

The third, formative stage of the research and experimental work, which lasted three semesters (from the start of the second semester – February of the 2023–2024 academic year – and throughout the third and fourth semesters of the 2024–2025 academic year), involved the direct implementation of the experiment. At this stage, the proposed research hypothesis was tested and the effectiveness of the identified conceptual provisions and the structural-functional model for developing the readiness

of future teachers for professional practice based on II was assessed. The structural-functional model for developing FMAT's readiness for PA based on II was assessed. The practical implementation of the structural-functional model in the educational process for higher education students was ensured through the introduction and consistent implementation of the proposed pedagogical conditions, aimed at developing the readiness of FMAT for future professional activity.

At the formative stage of the experiment, in accordance with the research objective, we focused primarily on the following tasks:

1. To introduce into the educational process for Bachelor's degree students specialising in 014.13 Secondary Education (Music) a structural-functional model for developing FMAT's readiness for PA based on II, which is theoretically substantiated and presented in section 2.3 (Fig. 2.3).
2. To conduct an experimental evaluation of the effectiveness of the identified pedagogical conditions and to determine their impact on the effectiveness of the methodology for developing FMAT's readiness for PA.
3. To monitor the effectiveness of implementing the identified pedagogical conditions within the educational process, the targeted application of which is aimed at ensuring an adequate level of FMAT's readiness for PA based on II.

The identification of the research problem, its subject, working hypothesis and main objectives formed the basis for the development of the Programme for developing students' readiness for professional activity in higher education institutions based on the principles of II. Its content involved the sequential implementation of the following stages:

- a) assessing the initial level of development of FMAT's readiness for PA based on II within the context of HEI;
- b) the introduction into the teaching process of a structural-functional model for developing readiness for professional practice among undergraduate students;
- c) reassessing the level of readiness following the completion of the formative assessment stage;

d) a comprehensive analysis of the results of the experimental work carried out with second-year students, their interpretation and generalisation, taking into account the effectiveness of the pedagogical conditions implemented to develop FMAT's readiness for PA based on II. At the start of the formative stage of the pedagogical educational programme, we carried out preparatory work, which involved:

- selecting and forming the control and experimental groups (CG, EG) and verifying their initial homogeneity according to specified criteria and indicators;
- defining the variable and constant conditions for conducting the experiment;
- clarifying the content, forms, methods and means of implementing pedagogical conditions in accordance with the aims and objectives of the study.

Thus, higher education students were involved in the formative stage of the educational experiment; at the start of the experiment, they were in their first year and subsequently continued their studies in their second year on the degree programme 014.13 Secondary Education (Music) at the experimental higher education institutions. Enrolment for the educational and professional programme took place in the 2023–2024 academic year. It is worth emphasising that all FMAT who participated in the formative stage had previously been involved in the diagnostic stage of the experiment.

At the start of the academic year (2023/2024), the educational process at VSPU under this programme was delivered to an academic group comprising 11 students. At Ternopil National Pedagogical University, 19 students belonging to a single academic group began their studies under this study programme, whilst at Khmelnytskyi Academy of Humanities and Pedagogy there were 7 students in a similar group.

During the formative stage, the number of participants remained unchanged. At the start of the first year, the experimental sample comprised 37 students, and by the end of the second year, its size remained the same. Based on a comparative analysis, the control group (CG) and experimental group (EG) were formed, which did not exhibit any significant qualitative differences in the main characteristics under study. The groups were formed from the general population in accordance with the principles of probability sampling. To ensure the representativeness of the sample, the cluster

sampling method was applied, in which the study groups of FMAT identified by us served as the sampling units (Tabl. 3.7).

Table 3.7

Distribution of FMAT between the Control Group (CG) and Experimental Group (EG) Based on the Results of the Initial Assessment at the Formative Stage of the Experiment

No.	Higher education institutions	Number of participants from among FMAT at the initial assessment	
		CG	EG
1.	Mykhailo Kotsyubynskyi Vinnytsia State Pedagogical University (VSPU)	11	–
2.	Volodymyr Hnatiuk Ternopil National Pedagogical University (TNPU)	–	19
3.	Khmelnyskyi Academy of Humanities and Pedagogy (KHAHP)	7	–
TOTAL (total number of students)		18	19

We determined the number of participants in the control and experimental groups taking into account the characteristics of the general population and the requirements for forming a representative sample. In doing so, we took into account that a smaller sample size is sufficient for a more homogeneous population, whilst an increase in its heterogeneity necessitates an increase in the number of participants (Johnson R. B., & Christensen L. B., 2012). As the population in our study is relatively homogeneous and comprises groups that are similar in terms of the main characteristics under investigation, there is no need to increase the sample size.

The sample of FMAT involved in the educational programme is representative, as all participants are studying at higher education institutions and are pursuing the specialism 014.13 Secondary Education (Music). At the same time, each academic group serves as an independent sub-population of students united by their shared study conditions at the HEI.

In parallel, at this stage, we carried out an initial assessment. Based on the results of this assessment, it was envisaged that appropriate adjustments would be made to the implementation of the programme where necessary. Furthermore, we systematised

information regarding the progress of the experimental work and refined the organisational and methodological principles, as well as the procedure for developing the ED programme itself.

At the time of the initial assessment (IA) during the formative phase of the experiment (the IA was conducted at the start of the second semester (February 2024) using the methodologies employed at the diagnostic stage of the ER), the research participants were already second-semester students in their first year of a Bachelor's degree programme. During the vocational training programme, they studied the content of the courses in the general and vocational training cycles, which ensured not only the relative homogeneity of the sample but also consistency in terms of key educational and professional characteristics.

This approach made it possible to ensure that the students' starting conditions for participation in the formative stage of the experiment were as similar and comparable as possible. The following criteria were taken into account when forming the groups:

a) group size: the number of participants in the control group (CG) and the experimental group (EG) was practically the same – the CG comprised 18 students, and the EG comprised 19;

b) the results of the IA: for each component of the students' readiness for the learning process based on II, both the numerical scores for each component and their average values (AV) were found to be similar for representatives of the CG and the EG, indicating the absence of significant differences between the groups at the initial stage of the study. The relevant results were established on the basis of an analysis of the data presented in Table 3.8.

The educational process for students in the Control Group was carried out within the framework of the traditional organisation of teaching and the approved syllabuses for each discipline. Whereas in the Experimental Group (EG), alongside the prescribed educational programme, the pedagogical conditions we had defined and the structural-functional model for developing FMAT's readiness for PA based on II were systematically integrated into the training content.

Table 3.8

Similarity of the Numerical Indicators of FMAT's Readiness for PA in the Control and Experimental Groups Based on the Results of the Initial Assessment

No. No	Components	Groups	Levels of readiness for PA								AV in marks
			High (5)		Sufficient (4)		Average (3)		Low (2)		
			q-ty	%	q-ty	%	q-ty	%	q-ty	%	
1.	Motivational-Value	CG	1	5.6	4	22.2	11	61.1	2	11.1	3.2
		EG	2	10.5	3	15.8	13	68.4	1	5.3	3.3
2.	Cognitive-Professional	CG	1	5.6	5	27.8	10	55.5	2	11.1	3.3
		EG	2	10.5	3	15.8	13	68.4	1	5.3	3.3
3.	Activity-Operational	CG	0	0	4	22.2	10	55.6	4	22.2	3.0
		EG	0	0	4	21.0	12	63.2	3	15.8	3.0
4.	Reflective-Evaluative	CG	1	5.6	4	22.2	10	55.5	3	16.7	3.2
		EG	1	5.3	4	21.0	12	63.2	2	10.5	3.2
Average		CG	1	5.5	3	16.7	11	61.1	3	16.7	3.1
		EG	1	5.3	3	15.8	13	68.4	2	10.5	3.1

The results of the experimental work, which we directed towards developing this readiness within the context of HEI, were compared with the corresponding indicators for students in the CG. This approach makes it possible to determine the effectiveness of the proposed pedagogical conditions and to establish the nature of their impact on the process of developing professional readiness in future teachers. The testing of the criteria-based assessment framework we developed to measure students' readiness for future teaching practice demonstrated its ability to objectively evaluate the results of the experimental research. The application of the specified toolkit ensured an unbiased assessment of the results obtained and made it possible to determine the levels of readiness for teaching practice based on II principles among Bachelor's degree students specialising in 014.13 Secondary Education (Music).

Consequently, throughout the formative stage of the experimental study, we adhered to the following key methodological principles:

– The reliability of the assessment results was ensured by comparing the outcomes of learners in the control group (CG) and the experimental group (EG) across all baseline characteristics. In particular, the number of participants in the CG and EG was almost identical, and the baseline quantitative indicators and levels of students' readiness for the final assessment at the baseline stage did not differ significantly. An additional factor in ensuring equal conditions for the study was the more or less equivalent professional and pedagogical competence of the lecturers who delivered the educational components of the «Secondary Education: Music» programme. To confirm this, we analysed the teaching component of the bachelor's degree programme in Music Arts and carried out a qualitative assessment of the pedagogical activities of lecturers from the higher education institution's departments involved in delivering the Music Arts programme;

– The variability in the content of the educational components within the EG involved the selection and use of teaching materials aimed at developing the readiness of future teachers for professional activity based on II. Throughout the formative stage, systematic monitoring was carried out of students' level of mastery of the teaching material and the progress in developing their readiness;

– The tasks defined for the formative stage were carried out through lectures, practical sessions, group work and extracurricular activities. The organisation of educational interaction between lecturers and students was based on targeted pedagogical support, which created the conditions for the consistent development of the readiness of FMAT for PA in GSEI.

During the formative stage of the educational programme, we ensured the practical implementation of the specified pedagogical conditions and integrated into the HEI's educational process the developed structural-functional model for fostering the FMAT's readiness for professional activity based on II, whilst students were studying the relevant topics in academic disciplines, namely «Psychology» (2nd semester), «Pedagogy» (2nd–3rd semesters), «Digital Technologies in Professional Practice and Music Informatics» (2nd–3rd semesters) (see the Study Programme «Secondary Education (Music)» at the first (bachelor's) level of higher education,

URL: https://tnpu.edu.ua/about/public_inform/akredytatsiia%20ta%20litsenzuvannia-/osvitni_prohramy/bakalavr/arts/014.13_2023.pdf), and their involvement in delivering the optional module «Interdisciplinary Dimensions of Music Pedagogy». Adjustments to the content of the subjects taught by three related departments (Musicology and Methods of Music Education, Psychology, and Computer Science and Methods of Teaching Computer Science), together with the targeted design of the elective module, created the conditions for the interdisciplinary development of music students' readiness for professional practice. At the same time, this helped to harmonise the content of the educational process and to eliminate identified discrepancies in students' knowledge relating to the development of their readiness for professional activity. URL: https://tnpu.edu.ua/about/public_inform/akredytatsiia%20ta%20litsenzuvannia-/osvitni_prohramy/bakalavr/arts/014.13_2023.pdf

The elective module «Interdisciplinary Dimensions of Music Education» was delivered to students during the third and fourth semesters of the 2024–2025 academic year in four logically coordinated stages: preparatory, motivational, practical-activity-based, and summative-reflective. Each stage involved the completion of specific tasks (Appendix E). During the preparatory stage, a range of organisational issues were resolved and an initial assessment was carried out to determine the students' level of readiness for practical activities in music pedagogy. The aim of the motivational stage was to foster in students a desire to develop readiness for practical activities, as well as to encourage a positive attitude towards conducting music lessons based on an interdisciplinary approach. The activity-based practical stage involved the targeted acquisition by students of new interdisciplinary knowledge, the development and refinement of personal and pedagogical skills and competences, as well as the development of professional abilities for their subsequent application in real-life teaching situations. During the summative-reflective stage, a repeat assessment was carried out; the results of which enabled us to obtain feedback, evaluate the effectiveness of the work carried out, and determine the level of development of the students' personal outcomes.

As part of the formative stage of experimental research, we implemented the following areas of work with FMAT undergraduates:

I. We asked FMAT to independently:

1) Solve case studies (examples of the proposed case studies are given in Appendix G based on the knowledge acquired in the subjects «Psychology», «Pedagogy» and «Digital Technologies in Professional Practice and Music Informatics»).

Thus, towards the end of the fourth semester, second-year students actively worked on practice-oriented tasks, which required significant time and cognitive effort on their part. In carrying out the case studies, the students drew on the professional knowledge and skills they had previously acquired, whilst independently searching for and analysing academic sources to expand the theoretical foundation necessary for the well-founded resolution of the proposed problem-based tasks. The effective completion of the case studies was facilitated by the knowledge gained whilst studying the educational modules covered in the second, third and fourth semesters. Working on practice-oriented case studies enabled students to realise the significance of the knowledge acquired at the higher education institution and the interdisciplinary skills developed in terms of their application in their future professional activity, and also helped to strengthen their motivation to independently seek effective ways of resolving problematic situations.

2) Write an abstract in line with the themes of the two sections of the 5th All-Ukrainian Scientific and Practical Online Conference involving higher education students and early-career researchers, ‘Art Education: Challenges and Prospects’ (November 2024, URL: https://www.facebook.com/story.php?story_fbid=1062297022358005&id=100057331523461&mibextid=wwXIfr&rdid=r3D2ufREoGXHWoQY#), organised by the Department of Vocal and Choral Training, Theory and Methodology at the Vitaliy Gazinsky Music Academy https://www.facebook.com/story.php?story_fbid=1062297022358005&id=100057331523461&mibextid=wwXIfr&rdid=r3D2ufREoGXHWoQY#

https://www.facebook.com/story.php?story_fbid=1062297022358005&id=100057331523461&mibextid=wwXIfr&rdid=r3D2ufREoGXHWoQY#

The research work carried out by the students on their chosen topics, a list of which is provided in Appendix G, was conducted under the academic and methodological supervision of lecturers from the graduating students' department. In the process of preparing abstracts on music-pedagogical issues, undergraduate students gained experience in logically structuring their own arguments, analysing problematic issues and describing the practical components of pedagogical activity.

Thus, the readiness of EG students for teaching practice based on an interdisciplinary approach had a positive impact on the development of their professional competence and provided the necessary foundation for the effective implementation of their future teaching practice.

II. An optional course developed by us, entitled «Interdisciplinary Dimensions of Music and Pedagogical Activity» (Appendix F), was introduced into the bachelor's degree programme in Music Education.

The content of the optional course, which was designed to facilitate students' independent study of the subjects «Psychology», «Pedagogy» and «Digital Technologies in Professional Practice and Music Informatics», was aimed at deepening students' knowledge of these professionally-oriented educational components and their practical application when modelling and resolving organisational and pedagogical situations that arise in the field of music education. We paid particular attention to developing the ability of music teachers to independently analyse problematic situations, make informed decisions, organise pupils' educational and musical-creative activities, skilfully use multimedia and software resources in lessons, and communicate effectively with all participants in the educational process.

Involving students in active participation in optional classes and the completion of practical tasks contributed to the development of their cognitive engagement and stimulated their desire to independently acquire professionally-oriented interdisciplinary knowledge and refine the relevant skills. Carrying out tasks related to the organisation of music and teaching activities, planning the educational process,

solving pedagogical problems and establishing equal interaction with pupils helped to prepare them for professional activity.

The educational tasks undertaken as part of the optional module were varied in nature, which created opportunities to take into account the individual educational needs and level of preparedness of the students in the experimental group. In the course of carrying out these tasks, students had the opportunity to work on challenging pedagogical and managerial situations relating to the organisation of music education, the delivery of music lessons, the preparation of creative events, the leadership of pupil groups, and interaction with pupils, their parents and colleagues.

The effectiveness of the proposed tasks depended to a large extent on the students, who approached the outlined problems creatively and demonstrated flexible thinking, initiative, perseverance, responsibility and good communication skills. At the same time, participation in the optional classes provided students with well-established, in-depth professional knowledge, developed their pedagogical and managerial skills, and refined their methodological skills for the practical application of these in the process of effectively organising pedagogical and musical activities. Each optional module was designed to encourage independent study among music education students and to develop their capacity for professional reflection and self-improvement. This approach helped music education undergraduates to recognise the need for continuous professional development and to foster a readiness for further self-directed learning throughout their professional development at the higher education institution.

III. The implementation of tasks aimed at preparing music students for professional activity was based on the interdisciplinary integration of the content of PT cycle disciplines, as stipulated by the Educational Programme «Secondary Education. Music Art» at the first (bachelor's) level of higher education (URL: https://tnpu.edu.ua/about/public_inform/akredytatsiia%20ta%20litsenzuvannia/osvitni_prohramy/bakalavr/arts/014.13_2023.pdf).

Interdisciplinary learning was implemented in the subjects outlined by us whilst studying topics relating to:

- the psychological foundations of the organisation of learning (Topic 4 «Activity» was supplemented with the question «The impact of learning activities on the personal development of the learner»; Syllabus for the subject «Psychology»);
- the psychological aspects of teacher–pupil interaction in MA lessons (Topic 5, «Communication», has been supplemented with the question «Styles of pedagogical interaction in managing a creative team»; Syllabus for the course «Psychology»);
- the structure of a teacher’s pedagogical communication (Topic 5, «A Teacher’s Pedagogical Proficiency», has been supplemented with the question «Pedagogical creativity, reflection and professional self-improvement of a FMAT’s; Syllabus for the academic discipline «Pedagogy»);
- digital recording, editing and processing of one’s own voice (Topic 6 «Pedagogical Communication as Interaction» has been supplemented with the question «Multifaceted organisation of dialogical communication with learners in a blended learning environment»; Syllabus for the course «Pedagogy»);
- styles of pedagogical interaction in managing a creative team (Topic 4 «Multimedia Technologies» has been supplemented with the question «Computer technologies and their role in creating multimedia MA content»; Syllabus for the course «Digital Technologies in Professional Practice and Music Informatics»);
- social media as a tool for publishing content (Topic 7, «The Global Internet», has been supplemented with the question «Digital platforms and social media in the professional practice of music teachers»; Syllabus for the course «Digital Technologies in Professional Practice and Music Informatics»).

Thus, from a psychological perspective, interdisciplinarity in the educational process for Music Education undergraduates serves as an effective means of constructing group identity; from a pedagogical perspective, it acts as an effective tool for educational influence and an important means of shaping students’ worldview; from the perspective of computer-based pedagogical technologies, it is a comprehensive means of developing their media literacy and digital intercultural communication. Such an interdisciplinary approach is based on the interpenetration of the content of the disciplinary topics we have outlined, which enables students to see

the multifaceted nature of the teaching profession, to grasp its connection with social processes and cultural practices, to reflect pedagogically on the subject of MA as a phenomenon of communication between cultures and generations, and consequently to significantly change their approach to structuring a MA lesson. The knowledge, abilities and skills acquired by FMAT on the basis of II enable them to structure a lesson as a cultural dialogue – between the past and the present, between the composer and the listener, and between different cultures. Consequently, music teachers' readiness to deliver music lessons effectively in general secondary schools ensures the depth and substance of music-pedagogical activity, contributing to the formation of a new model of pedagogical expertise that corresponds to contemporary trends in arts education and the current needs of a multicultural society.

In order for the educational process to fulfil its fundamental function – preparing pupils for further education – it is essential to establish effective pedagogical conditions that ensure the integrity, systematic nature and consistency of this process. Interdisciplinarity plays an important role in this context, as it involves the integration of musical and pedagogical knowledge, skills and competences, developed within various educational components, into a coherent system of professional training. Consequently, the experimental work within the framework of a formative experiment was aimed at verifying the effectiveness of the pedagogical conditions proposed and thoroughly substantiated in section 2.2, which had been implemented in the educational process of the higher education institution. In accordance with their theoretical rationale, these conditions were intended to ensure the high-quality development of students' readiness for PA and to positively influence the process of their professional development.

The introduction of the first pedagogical condition – the development of sustained positive motivation and a value-based attitude among music students towards interdisciplinary music-pedagogical activities – made it possible to expand the content of lectures with problem-based and motivational questions that are important for developing students' readiness for professional activity. The content of the «Psychology» module (2nd semester) was supplemented with the following questions:

1. Motivational prerequisites for the professional self-determination of music students (lecture on Topic 21).
2. Age-related characteristics of the development of cognitive motives and interests (lecture on Topic 22).
3. The role of the teacher in shaping the motivational and value sphere of students' professional self-determination (lecture on Topic 23).

During practical sessions on the relevant lecture topics of the «Psychology» module, the concepts of «age-related and individual psychological characteristics of pupils», «internal and external motivation», «motives for learning», «pedagogical communication», «barriers to communication», «empathy», «value-based attitudes towards learning», «reflection» and others, and the psychological conditions for their formation and development in learners were identified.

The content of the lecture topics for the «Pedagogy» module (3rd semester) was expanded to include a number of additional issues:

1. Motivation for learning and personal development in Music Education (lecture on Topic 6).
2. The nature and significance of the interdisciplinary approach in music education (lecture on Topic 7).
3. Self-assessment and pedagogical reflection as means of professional growth (lecture on Topic 8).

In the process of organising and conducting practical sessions on the specified lecture topics, the content of the concepts «professional motivation», «value-based attitude towards pedagogical activity», «interdisciplinary music and pedagogical activity», «professional reflection», «professional self-development» and others were explored and deepened; their interrelationship within the framework of music teachers' readiness for pedagogical activity was also clarified.

For the module «Digital Technologies in Professional Practice and Music Informatics», we have identified the following additional topics to be included in the course content:

1. Digital tools as a means of increasing music students' interest in music education (lecture on Topic 12).
2. The role of digital technologies in fostering cognitive activity and positive motivation among students (lecture on Topic 18).
3. Fostering a value-based attitude among music students towards the use of modern technologies in music education (lecture on Topic 20).

During practical and seminar sessions on the relevant lecture topics, students were introduced to concepts important for their future professional development, namely: «motivation to use digital technologies», «readiness to implement digital innovations», «digital professional competence» and others, which helped students realise the significance of computer-based technologies for their future professional development and fostered positive motivation to master and apply them in practice.

Alongside classroom sessions, the teacher training students took part in two optional sessions, each lasting 4 hours, on the topics «A teacher's professional motivation as a factor in the effectiveness of teaching» and «The value orientations of a modern teacher as the basis for readiness for professional development» (Appendix F). Active participation in the optional sessions contributed to the students' deeper understanding of the role of motivational and value-based guidelines in a teacher's professional activity, the search for personal resources for professional development and self-fulfilment, and an awareness of the importance of motivation in shaping FMAT's readiness to work with pupils in GSEI.

At the same time, an optional practical session entitled «Designing and Creating an Individual Career Development Path» (6 hours) was held. During this motivational session (aimed at encouraging self-directed learning), a range of teaching methods was employed, including demonstrations, storytelling, the search for optimal solutions, discussions and the simulation of professional scenarios.

At the same time, each semester of the «Pedagogy» and «Psychology» modules concluded with the writing of an essay in which students reflected on their own progress in developing individual readiness for professional activity and identified further directions for personal and professional development. Essay topics (for the

«Pedagogy» module – ‘ The teaching profession and my professional development: from perceptions to the need for a conscious choice», «Me as a future teacher: the development of professionally important qualities and pedagogical competences», «Motivation for teaching as a component of my personal readiness for the profession», «My pedagogical readiness for the teaching profession: achievements, difficulties and prospects for development», etc.; the subject «Psychology» – «Me as a Person: Psychological Self-Awareness and Its Significance for Future Teaching Practice», «Motivation for Professional Development: My Personal Dynamics», «Interpersonal Interaction and Communicative Competence: my psychological resources for professional development», «Psychological readiness for professional development: self-analysis, personal changes and prospects for development», etc.) was designed to enable students to reflect on their own motivation and self-awareness in the role of a primary school teacher.

The implementation within the educational process of the second pedagogical condition-which involved orienting the content of specialist disciplines towards ensuring psychological readiness in the process of PT of FMAT – was achieved through a set of interrelated measures:

- involving students of the MA programme in optional activities aimed at gaining practical experience in the proper organisation of educational activities;
- the use of the SWOT analysis method during teaching sessions in the professional disciplines we have identified, with the aim of fostering readiness for PA and, consequently, developing analytical, predictive and managerial skills and competences in students.

Thus, as part of the implementation of the second pedagogical condition, during the practical sessions of the optional module «Interdisciplinary Dimensions of Music Education» (organised in a blended format: combining classroom and out-of-classwork activities), students were presented with a set of thematic questions for discussion and independent study, aimed at developing and improving their readiness for teaching practice based on an interdisciplinary approach.

This facilitated a thorough understanding by the students of the material covered within an interdisciplinary context, the establishment of interconnections between the content of specialist disciplines, and the integration of acquired knowledge, skills and competences in the process of carrying out professionally-oriented tasks. This approach ensured that the readiness developed in FMAT was directed towards solving complex tasks in music and pedagogical practice.

We shall describe each optional session that effectively developed the practical readiness of music education students for professional activity based on interdisciplinary approaches.

Practical session No. 1 on the topic «The work of a music teacher through the lens of pedagogy and psychology» (Appendix F). Four hours were allocated for this session. The aim of this practical session was to develop the practical readiness of music education students for professional activity based on the principles of music education by combining and applying in practice the knowledge, skills and competences acquired whilst studying the psychological, pedagogical and specialist artistic disciplines of the teacher training programme.

Particular attention was paid during the session to developing the students' ability to establish interdisciplinary links, analyse pedagogical situations comprehensively, select appropriate methods for resolving them, and apply the knowledge gained to practical music teaching. Accordingly, the focus was on developing the professionally relevant qualities of future teachers (analytical and critical thinking, communication skills, the capacity for pedagogical reflection, creative problem-solving in professional contexts, independence in making pedagogical decisions, and readiness for interdisciplinary collaboration) took place whilst addressing a pedagogical situation related to their future music-teaching practice (see Appendix F). This situation was analysed from the perspectives of various disciplines – «Psychology», «Pedagogy» and «Digital Technologies in Professional Practice and Music Informatics». The development of readiness involved work in small groups, where the students compared different approaches to solving the pedagogical problem, justified their own decisions and identified the advantages of using II.

Consequently, this session served to analyse the pedagogical and psychological aspects of a music teacher's work and to establish interdisciplinary links between the relevant educational components of the teacher training programme in this area.

Practical session No. 2 on the topic «Interdisciplinary Lesson Planning for MA» (Appendix F) involved the EG students spending four hours studying both the theoretical foundations of lesson planning (its forms, methods and approaches) and undertaking practical work on structuring and analysing lessons. The aim of the session was to help higher education students develop an understanding of the principles of interdisciplinary lesson planning, to develop their ability to integrate interdisciplinary approaches with the content of other educational components, and to teach students to select effective methods, forms and types of activity, and to design the lesson itself in a value-oriented manner, thereby promoting pupils' creative development, the formation of a holistic worldview, and the application of acquired knowledge in various contexts.

Preparation for teaching practice was achieved by involving each trainee in the practical part of the session. Accordingly, the trainees modelled a lesson segment on the topic «Ways to increase pupils' motivation to learn in MA lessons», developed various motivational and pedagogical scenarios that frequently arise during the learning process, carried out motivational role-play simulations of interaction with pupils, and selected effective teaching and educational methods and techniques aimed at motivating schoolchildren to learn. A mandatory requirement was the application of knowledge from «Pedagogy», «Psychology» and «Digital Technologies in Professional Practice and Music Informatics».

Consequently, the multifaceted development of lesson segments, drawing on knowledge from various educational components, and their collective discussion contributed to the implementation of an individualised approach to preparing MA students for their profession.

Practical session No. 3 on «The Significance of the Case Method in the Professional Training of FMAT» (Appendix H). During this optional session, which lasted 6 academic hours, students gained an in-depth understanding of this method and

its practical application. The aim of the session was to familiarise students with the theoretical foundations of the case study method and to develop practical skills in its application when addressing professional and pedagogical situations in MA lessons.

During the session (2 hours), the students studied the history of the method's development, familiarised themselves with its structure and the role that teaching cases play amongst modern pedagogical technologies. Preparation for professional practice also took place through a discussion of the question: «Why does MA require both the reproductive and aspects of problem-based and situational learning?», which fostered the development of critical thinking and the formation of communicative, creative and reflective competences through interdisciplinary interaction.

The highlight of the session was the students' independent preparation and presentation of a case study on the topic: «Digital technologies in music lessons: their potential and prospects», utilising elements of music pedagogy (4 hours). During this work, the students developed methodologically sound tasks and selected appropriate forms, methods and means of music teaching. As a result, they presented their own case studies, which combined knowledge of pedagogy (motivation, organisation of pupil interaction), psychology (individual and age-related characteristics of pupils, emotional and imaginative perception of music) and information technology (the use of digital resources, audio and video clips, and the presentation of an interdisciplinary case study via a multimedia presentation). They analysed these cases collectively and systematically identified their strengths and weaknesses, as well as the appropriateness and effectiveness of implementing each case study in music lessons with pupils at general secondary schools.

Consequently, the practical sessions in the optional module conducted in this way helped to develop the bachelor's students' readiness for professional practice, in particular their ability to define the main areas of focus in lessons, select appropriate teaching methods, techniques and resources, and plan and organise the educational process taking into account the learning outcomes. As a result, the MA trainees were able not only to deepen their professional knowledge but also to gain practical experience of applying it in conditions approximating real-life teaching practice.

Practical session No. 4 on the topic «Pedagogical reflection by trainee teachers» (Appendix F), allocated 4 hours, enabled participants to identify the essence of the reflective processes involved in the professional development of teacher trainees, to develop an understanding of their role in working with pupils, and to cultivate the ability for self-analysis, self-assessment and reflection on their own pedagogical experience. The aim of the session was to develop in EG students the ability to engage in pedagogical reflection, self-analysis and self-assessment of their own pedagogical practice.

During this practical session, the EG students undertook scenario-based tasks (examples are given in Appendix F) to gain an understanding of the role of pedagogical reflection in their own professional development. Students analysed their own professional actions, assessed their chosen approaches and identified possible effective ways of improving them.

A joint discussion of the results of the proposed situational tasks, developed in accordance with the MI, enabled the EG students to realise the significance of reflection as a mechanism for professional development, to evaluate their own actions and decisions, and to identify areas for further professional self-improvement. Particular attention was paid to developing the skills to carry out self-analysis, to assess the results of professional activities adequately as a whole, to critically reflect on decisions made, to identify alternative ways of resolving them, and to predict future consequences. Through the teacher's organisation of this type of optional activity, the students acquired basic skills in reflective practice, whilst the completion of the tasks contributed to the development of their ability to consciously analyse their own professional behaviour, identify the causes of difficulties and errors, and seek constructive ways to overcome them. Thus, the practical session helped to develop the students' readiness for professional practice and revealed avenues for further professional self-development and self-improvement.

The outcome of the optional sessions was a test (2 hours), which served as a means of assessing the knowledge acquired by the students regarding the development of their readiness for professional practice based on II. The assessment involved

subject-specific testing and the completion by undergraduates of a written test comprising questions on both theoretical and practical topics, designed to assess the level of the students' preparedness for professional practice.

The third pedagogical condition (the creation of a practice-oriented educational environment based on MI) was implemented through practical sessions, the completion of situational tasks by students, the simulation of professional scenarios, and their involvement in various types of practice-oriented activities. Whilst studying the academic disciplines involved in the experiment – «Pedagogy», «Psychology» and «Digital Technologies in Professional Practice and Music Informatics» – the students in the experimental group had the opportunity to immerse themselves in the educational environment. We ensured the creation of this environment by:

- by having students solve situational and problem-based tasks related to organising pupils' learning activities in music lessons;
- by supporting their motivation to learn;
- working in pairs and small groups;
- role-playing professional scenarios, discussions and independent work by students;
- making effective decisions and analysing their own professional actions.

FMAT were presented with problem-based interdisciplinary tasks (case studies) (see Appendix F), which required thorough consideration and comprehensive analysis from both theoretical and practical perspectives.

In the process of solving these tasks, lecturers guided the students' activities towards developing the ability to independently plan and organise lessons based on the principles of MI, to discuss the proposed problem situations in a reasoned manner, to make well-founded pedagogical decisions in both typical and non-standard situations, taking into account the age and individual characteristics of secondary school pupils, and to carry out peer assessment and reflection on the results of their own work.

Furthermore, the case studies proposed by the lecturers were successfully resolved by the music teachers during a group optional session in the form of a round-table discussion on the topic «Contemporary approaches to the implementation of

interdisciplinary integration in the professional activity of music teachers» (6 hours), which took place in three stages (Appendix F). During the first stage, issues were discussed concerning the significance of interdisciplinary knowledge and the potential of interdisciplinary integration in the professional training of music and psychology teachers, in particular their role in ensuring the integrity of musical and psychological-pedagogical training, and in developing the ability to establish connections between the content of various educational components («Pedagogy», «Psychology», «Digital Technologies in Professional Practice and Musical Informatics») and applying the acquired knowledge to solve practice-oriented pedagogical tasks.

The second stage of the round-table discussion focused particularly on the direct resolution of a case study, the content of which involved simulating a professional scenario that required the students to apply their knowledge of musical and artistic, psychological and pedagogical, and digital and information disciplines in an integrated manner. The content of the case study and the associated tasks were provided to the undergraduates in advance so that they could work on them independently in two small groups. The team presentation on solving the eight tasks in the case study comprised several specific, sequential steps: analysis of the proposed pedagogical situation, identification of the educational problem, establishment of interdisciplinary links, creative selection of possible ways to solve the case study tasks, reasoned justification of the proposed pedagogical solutions, and providing answers to questions from members of the other team. The public discussion of the results fostered professional communication, critical thinking and the ability to defend one's own position regarding the evaluation of pedagogical solutions with alternative content amongst the FMAT.

The final stage involved the mutual evaluation of the results obtained during the round-table discussion and a reflective discussion of these, during which the students were able to assess the effectiveness of the interdisciplinary connections used and the possibilities for their application in future teaching practice.

Consequently, following a successfully organised group discussion and constructive feedback, the students' work during the optional session and round-table discussion focused on creating a practice-oriented educational environment based on II

principles, and on ensuring the readiness of the FMAT to conduct effective pedagogical practice in the future.

The fourth pedagogical condition – «ensuring creative self-realisation and supporting the reflective and evaluative activities of the FMAT during the educational process» – was directed, in the educational process of the EG students, towards creating favourable conditions for stimulating their creative activity, developing their ability to independently plan and solve professionally-oriented tasks based on II, as well as fostering in students the skills of self-analysis, self-assessment and reflective understanding of the results of their own professional and pedagogical activities.

The addition to the content of the «Psychology» course included in the ER (content module 6, a practical session corresponding to the topic of Lecture No. 21, «The Psychology of Upbringing and Self-Education», semester 3) involved identifying the students' independently acquired gnostic and research skills through the resolution of problem-based tasks, which provided opportunities for their creative self-realisation, self-assessment and reflective analysis of the results of their completed activities. The students' independent resolution of the tasks set out in the case study helped to stimulate their self-directed learning, within the framework of which a sustained motivation to improve their own readiness for professional activity was formed, their cognitive abilities were developed, and their needs for professional self-development and self-improvement were actualised.

At the same time, efforts were made to encourage students' self-directed learning during the optional module sessions. As part of this programme (6 hours), students developed their own individual learning pathways (an example of their design and creation is provided in Appendix F), aimed at deepening their knowledge and improving their practical skills in the use of digital technologies and musical informatics tools in the Music and Music Education programme. An important role in this process was played by the lecturer, who, by providing individual consultations and methodological guidance where necessary, guided the students' activities towards the independent planning, organisation and analysis of the digital learning environment, selecting appropriate digital resources and software, creating and developing music-

related content, and making effective use of digital technologies in the process of teaching music.

Individual learning objectives were developed with the help of online group support via the Moodle platform, where students in the experimental group discussed challenging issues, exchanged experiences of using digital tools, received advice and recommendations from lecturers and fellow students, and collaboratively found ways to resolve difficulties that arose whilst designing their own learning pathways. This organisation of educational activities during the optional module helped to develop students' digital autonomy and their ability to independently search for, critically select, analyse and evaluate digital resources in line with their professional needs.

During the self-directed learning process, each student created their own portfolio, in which they recorded the results of their individual and creative work (self-developed digital learning materials, multimedia presentations, interactive exercises, music and information projects, certificates of conference attendance and completion of online courses, etc. materials) that attested to their professional and digital growth. The portfolio was systematically updated with new outputs from self-directed learning and served as a means of accumulating, organising and reflectively analysing individual professional achievements.

The effective delivery of practical and optional sessions facilitated students' active construction of their own teaching experience, the development of their capacity for self-organisation, and the fostering of a need for continuous professional self-development, creative self-expression and the refinement of musical and information competences, which together prepared them for professional activity based on information and communication technologies.

Consequently, the implementation within the educational process and optional classes for students of the 'Music' specialisation (014.13 Secondary Education: Music) of the specified pedagogical conditions and the structural-functional model we developed contributed to the formation of their readiness for future professional activity. We shall demonstrate the effectiveness of the proposed methodology for developing the readiness of music art students for professional activity in the following

section, based on the results of our experimental research and their mathematical and statistical analysis.

3.3 Results of the experimental study and their analysis

The theoretical and methodological foundations, the structural-functional model, the pedagogical conditions, criteria, indicators and levels of formation of FMATs' readiness for PA based on II, as defined in the previous sections, formed the basis for conducting an experimental test of their effectiveness. Therefore, to ensure the proper organisation and conduct of the experimental research, we identified a set of fundamental tasks, the fulfilment of which would facilitate the actual assessment of the level of FMAT for PA readiness. Their essence lies in the scientific justification and experimental verification of the following propositions:

a) to ensure equal starting conditions in HEIs for the development of students' readiness in the CG and EG for PA;

b) to introduce, into the educational process for students of the 014.13 Secondary Education (Music) programme (EG), an original methodology for developing readiness for pedagogical activity (whilst studying the subjects «Psychology», «Pedagogy» and «Digital Technologies in Professional Practice and Music Informatics», and their participation in the optional module «Interdisciplinary Dimensions of Music Pedagogy»):

c) to implement, in the educational practice of EG students, pedagogical conditions that ensure the effective development of readiness for professional practice;

d) to conduct an experimental evaluation of the effectiveness of the developed structural-functional model for fostering the readiness of EG students to effectively conduct PA with GSEI pupils;

e) to assess the level of FMAT EG students' readiness to organise and implement professional and organisational work at GSEI in accordance with the defined criteria – motivational, content-related, practical and self-actualising;

f) carry out a comparative analysis of the results of the developed readiness for PD among students in the control group and the experimental group, summarise the results obtained, determine their reliability using statistical methods, and draw conclusions from the ER.

Thus, to confirm the homogeneity of the experimental groups, a preliminary assessment of the level of developed readiness using the FMAT for PA in GSEI was carried out, and an initial assessment was organised using the diagnostic methods specified in the study. Analysis of the tabular data (see Table 3.8), obtained at the start of the ER training phase, showed that participants in the CG and EG were in roughly the same organisational and pedagogical conditions. Undergraduate students were pursuing higher education at the HEIs designated for the ER (VSPU, TNPU, KHAHP) and were studying according to identical curricula. The baseline indicators (numerical values, percentages and standardised scores) were similar, and the differences between the groups were not statistically significant. This provides grounds for asserting that, at the initial stage of the formative study, the CG and ER bachelor's students were characterised by a similar level of developed readiness for PA.

At the same time, the academic and teaching staff involved in the experiment possessed the relevant competences and delivered the PT of FMAT in accordance with the approved syllabuses for the academic disciplines «Psychology», «Pedagogy» and «Digital Technologies in Professional Practice and Music Informatics». The content of these subjects did not undergo any arbitrary or significant changes during the experiment, which made it possible to minimise the influence of extraneous factors on the research results.

Thus, an analysis of the IC results from the formative stage and the characteristics of the ED participants made it possible to establish the relative homogeneity of the CG and EG. The discrepancies identified between them were insignificant and did not pose any substantial obstacles to the further conduct of the experiment. Consequently, the initial conditions for developing FMAT's readiness for PA did not differ between the groups; therefore, the groups can be considered comparable.

Under the specified experimental conditions, the FMAT in the CG continued to develop and deepen their professional and interdisciplinary knowledge, abilities and skills through the traditional organisation of the educational process at the HEI. In contrast, for students in the EG, alongside their studies under the prescribed EPP, a specially developed Programme for developing students' readiness for PA based on II was implemented, a key component of which was the systematic introduction of specific pedagogical conditions and a structural-functional model.

The proposed organisation of the PT involved both the acquisition by FMAT students of the necessary body of psychological, pedagogical and professional knowledge, and the purposeful development of a motivational and value-based attitude towards pedagogical activity, the development of professional and creative thinking, and the ability to integrate knowledge from the academic disciplines included in the ER («Psychology», «Pedagogy», «Digital Technologies in Professional Practice and Music Informatics») into the process of solving psychological-pedagogical and music-pedagogical tasks. At the same time, great importance was attached to equipping bachelor's students with the skills to apply the outcomes of Phase II when planning, organising and properly implementing the educational process at the GSEI, as well as to stimulating the need for professional self-development and the continuous improvement of pedagogical skills.

This approach facilitated the mutual reinforcement of psychological-pedagogical, music-theoretical and digital training, ensuring the development of FMATs' readiness for PA. At the same time, we regarded II as a means of developing holistic professional experience, the ability to establish links between knowledge, skills and methods of activity, to transfer them to new pedagogical situations and to apply them creatively in PA. This ensured the consistency, systematic nature and integrity of the process of developing FMAT readiness for pedagogical activity.

In the study, the developed FMAT readiness for PA, based on II, was regarded as an integrated construct, the structure of which encompasses interrelated components: motivational-value, cognitive-professional, activity-operational and reflective-evaluative. We linked the assessment of FMAT's readiness for PA to its

criteria and levels. The criteria (motivational, content-related, practical and self-actualising) helped us to verify whether the results obtained were consistent with the set objective. At the same time, the level-based approach (ranging from low, average to sufficient and high levels) enabled us to examine the process of developing the established readiness of higher education students, which serves as a transition from a simpler to a more complex level of such readiness (see section 2.1).

In order to assess the development of FMATs' readiness for PA at the final stage of the experiment, a set of specially selected diagnostic methods, adapted to the aims of the educational experiment, was used (Silkova, O. V., Lobach, N. V., 2018, pp. 180–183). The diagnostic set comprised questionnaires, surveys of students, testing using appropriate methods, as well as tasks aimed at determining the level of cognitive need, the characteristics of intrapersonal motivation for PA, and the readiness of GSEI teachers to perform their professional duties in the field of professional and organisational work. The maximum number of marks for the individual diagnostic procedures was 10 marks for Appendix B, 30 marks for Appendix C, 30 marks for Appendix D, and 30 marks for Appendix E, giving a total of 100 marks.

The total score was used to differentiate the levels of readiness (Table 3.9). This systematic approach made it possible to quantitatively determine the extent of the experimental influence on the development of PA readiness for each participant and to facilitate a subsequent comparison of the results between the CG and EG.

The assessment of the effectiveness of the identified pedagogical conditions aimed at development of FMATs' readiness for PA involved comparing the diagnostic results we obtained at the start and at the end of the formative intervention. The comparison of results obtained at different stages of the study formed the basis for determining the nature and statistical significance of the observed dynamics.

The assessment was based on quantitative characteristics of the development of specific components of learners' readiness to effectively carry out PA in GSEI. Determining the trends in the relevant indicators for participants in the CG and EG involved a comparative analysis of the results obtained. Upon completion of the formative stage of ER, a reassessment of FMAT's readiness for PA was carried out

using diagnostic procedures (see Table 3.1), the content and structure of which corresponded to the instruments used during the diagnostic stage. This approach made it possible to track changes in the levels of readiness among FMAT and to determine the nature of the observed trends.

Table 3.9**Levels of developed readiness (FMAT) for PA**

No.	Readiness levels	Key characteristics of readiness levels	Assessment scale
1.	High	High motivation of FMAT students towards music education; conscious application of knowledge, practical skills and interdisciplinary competences when solving practice-oriented tasks; capacity for reflection, creative exploration, professional self-development and achieving high learning outcomes.	From 90 to 100 marks
2.	Sufficient	FMAT's sustained interest in professional self-development; the ability to independently apply acquired knowledge and skills in PA; sufficiently developed skills in planning and delivering MA lessons based on II; well-developed reflection and self-assessment; a commitment to professional self-improvement.	75 to 89 marks
3.	Average	A conscious desire to apply knowledge in PA; insufficiently developed, consistent professional needs; inconsistent use of an interdisciplinary approach when addressing educational challenges; reliance on ready-made examples and models; motivation for professional self-improvement; a need to deepen and broaden professional knowledge.	60 to 74 marks
4.	Low	Minimal development of skills required for musical and pedagogical practice; lack of creative activity and the use of creative teaching methods in lessons; low levels of professional motivation and sustained interest in teaching; underdeveloped reflective and self-assessment skills regarding one's own pedagogical activity; minimal desire for self-education and professional self-development.	59 marks and below

Given that the CG comprised 18 students and the EG 19, the comparative analysis was based on average values (AV, in marks) and the percentage distribution of participants according to their levels of readiness. To carry out the initial (IC) and final (FC) assessments, we applied data collection methods and mathematical statistics. Their use helped to establish the statistical significance of the changes identified during the experiment, ensure the objectivity of the results obtained, and facilitate their

subsequent interpretation. The effectiveness of FMAT training in HEIs was assessed according to the established levels (low, average, sufficient and high) of readiness for PA.

Data on the dynamics of the motivational and value-based component of readiness among students in the first and second groups are presented in Table 3.10, which shows the IC and FC results obtained at the formative stage of ER.

Table 3.10

Results of assessing the development of the motivational-value component of readiness for FMAT for PA based on II

Group, number of participants	Stage ER	Numerical indicators of the levels of development of the motivational-value component of readiness								AV
		High (5)		Sufficient (4)		Average (3)		Low (2)		
		No.	%	No.	%	No.	%	No.	%	
CG (18 people)	IC	1	5.6	2	11.1	13	72.2	2	11.1	3.1
	FC	2	11.1	5	27.8	10	55.5	1	5.6	3.4
ER (19 people)	IC	1	5.3	2	10.5	14	73.7	2	10.5	3.1
	FC	7	36.8	3	15.8	9	47.4	0	0	3.9

The numerical data obtained indicate the formation of a specific level of readiness in the EG and CG in terms of the motivational-value component. However, across all levels of readiness development and based on the results obtained, which correspond to AV, the performance indicators in the EG are significantly higher than those of students in the CG, who were educated within the framework of traditional teaching.

This is evidenced by the data presented in the tables. Thus, the IC scores in both groups were roughly the same: in the CG, a high level was recorded in 5.6 per cent of participants, a sufficient level in 11.1 per cent, an average level in 72.2 per cent, and a low level in 11.1 per cent. In the EG, the corresponding figures were 5.3 per cent, 10.5 per cent, 73.7 per cent and 10.5 per cent. Thus, at the initial stage, the average level of development of the component prevailed in both groups, and the AV was 3.1 points. At the follow-up, noticeable positive changes were observed, particularly in the EG. In

the CG, the proportion of participants with a high level rose to 11.1 per cent, and those with a sufficient level to 27.8 per cent, whilst the proportion at the average level fell to 55.5 per cent and those at the low level to 5.6 per cent. In the EG, the trend was more pronounced: 36.8 per cent of participants demonstrated a high level, 15.8 per cent a sufficient level, and 47.4 per cent an average level, whilst no participants were recorded as having a low level. The EV in the EG rose from 3.1 to 3.9 points, i.e. an increase of 0.8 points (compared with the AV in the CG, where the increase was 0.3 points), indicating a positive trend in the development of the motivational-value component and more significant changes compared with the CG.

Consequently, we attribute the high FMAT scores in the EG to their greater interest in arts and teaching activities, their aspiration for professional and personal self-development, their need to acquire professional values, and their ability to adequately support the artistic development of GSEI pupils.

The changes in the scores shown in Table 3.10 are illustrated in the diagram (see Fig. 3.1).

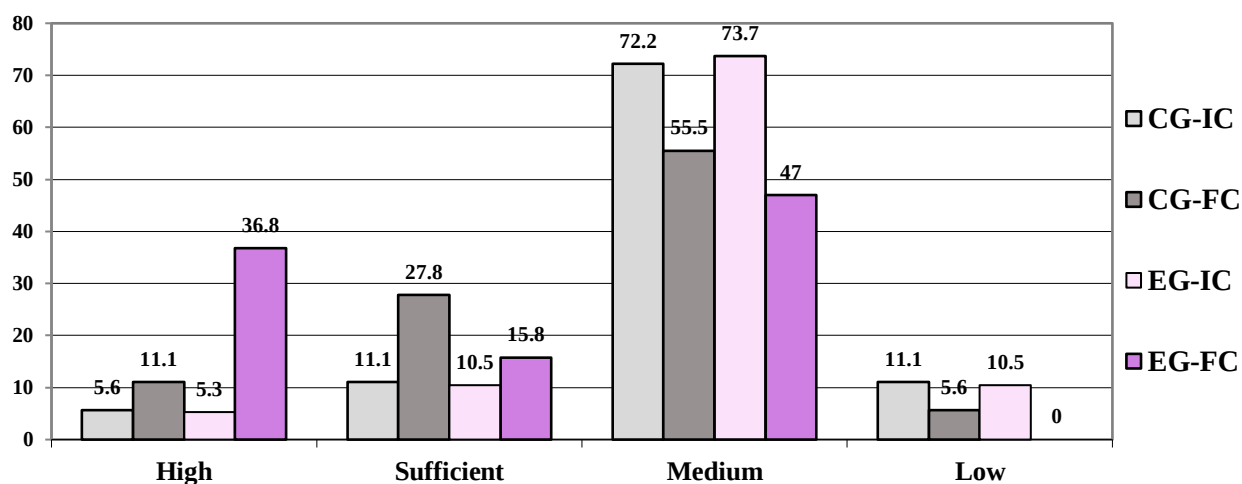


Fig. 3.1 Changes in the indicators of the level of development of the motivational-value component of readiness FMAT for PA based on II.

The reliability of the results obtained during the ER was determined using methods of mathematical statistics. The statistical analysis was based on the methodology used for analysing the results of pedagogical research (Kyveryalg, A. A., 1980).

The statistical validation of the results of the experiment was carried out using Fisher's F-test. To determine the statistical significance of the observed differences, the critical values of the F-test (F_{krit}) presented in statistical tables were used (Kyveryalg, A. A., 1980, p. 278). The statistical testing procedure involved comparing the tabulated (critical) value F_{krit} with the calculated empirical values F_{emp} . The latter were determined on the basis of quantitative data characterising the level of development of each component of FMAT for PA readiness in the CG and EG. Thus, for each group, the corresponding empirical values – F_{emp-CG} and F_{emp-EG} – were established, after which they were compared with the critical value.

An important prerequisite for the calculations was determining the number of degrees of freedom. Based on the sample sizes, this figure was 17 for the CG, as $18-1 = 17$, whilst for the EG it was 18 ($19-1$). We used the values obtained in the process of selecting the corresponding tabulated values of F_{krit} and the subsequent assessment of the statistical significance of the results.

Given that the number of degrees of freedom ranges from 17 to 18 (which corresponds to the sample sizes of the CG and EG), the standardised F_{crit} values are specified within the range of 1.9–2.2. Therefore, if the values of F_{emp-CG} and F_{emp-EG} calculated by us fall within the range of 2.2 to 1.9, this will indicate the statistical significance of the ER results obtained.

The values of F_{emp-CG} and F_{emp-EG} were calculated in accordance with Formula 3.1 (Kyveryalg, A. A., 1980, p. 277), in which the ratios are determined in terms of the greater and lesser variances of the samples under investigation.

$$F_{emp} = \frac{\sigma_1^2}{\sigma_2^2} \quad (3.1)$$

where σ_1^2 is the greater variance, and σ_2^2 is the lesser variance.

Formula 3.2 was used to determine the variances.

$$\sigma^2 = \frac{\sum f(x_i - \bar{x})^2}{N} \quad (3.2)$$

In doing so, the following were taken into account:

f – the number of participants in the CG and EG who demonstrated the corresponding level of readiness for PA;

$(x_i - \bar{x})$ – the deviation of the numerical value for each level of readiness (5, 4, 3, 2) from the mean score (AV).

The variable N corresponded to the total number of individuals in the respective CG or EG for which the variance was calculated.

Based on the results of the calculations, the values of the variance of the indicators of the developed motivational-value component of readiness FMAT for PA based on II were determined, which enabled a further comparison of the indicators for the CG and EG:

- in the CG, $\sigma_{12} = 0.5802$, whilst $\sigma_{22} = 0.4320$; therefore, $F_{\text{emp-EG}} = 1.35$;
- in the EG, $\sigma_{12} = 0.8310$, whilst $\sigma_{22} = 0.4099$, which made it possible to calculate $F_{\text{emp-EG}} = 2.02$.

Thus, a comparison of the empirical and critical values of Fisher's criterion, carried out to verify the reliability of the results obtained in developing the motivational-value component of readiness using the FMAT for PA based on II, revealed certain differences between the CG and the EG. In particular, for the CG, a value of $F_{\text{emp}} = 1.35$ was established, which is lower than the critical range $F_{\text{krit}}(1.9–2.2)$. In contrast, in the EG, the value of $F_{\text{emp}} = 2.02$ falls within the critical range, confirming the statistical significance and reliability of the study's results.

The summarisation and organisation of the statistical indicators obtained during the study of the level of development of the and 'cognitive-professional' components of readiness for the FMAT for PA enabled the results to be systematised and presented in Table 3.11.

A quantitative analysis of the results obtained demonstrates a high level of readiness for PA among 31.6 per cent (6 out of 19) of EG students, which is 26.3 per cent higher than among IC students. At the same time, 15.8 per cent of FT students (3 students) demonstrated a sufficient level of readiness, representing a 5.3 per cent

increase in the category compared with the FC. Furthermore, in the EG, there was a decrease in the number of students with average (-21.1 per cent) and low (-10.5 per cent) levels. Furthermore, the results obtained in the CG were not as significant: the increase in the high level was 5.5 per cent (which is 20.8 per cent less than in the EG). The low-level indicator was not particularly noticeable, standing at 5.5 per cent.

Table 3.11

Results of assessing the level of development of the cognitive-professional component of readiness for the FMAT for PA based on II

Group, number of participants	Stage ER	Numerical indicators of the levels of development of the cognitive- professional component of readiness								AV
		High (5)		Sufficient (4)		Average (3)		Low (2)		
		No.	%	No.	%	No.	%	No.	%	
CG (18 people)	IC	1	5.6	2	11.1	13	72.2	2	11.1	3.1
	FC	2	11.1	6	33.3	9	50.0	1	5.6	3.5
EG (19 people)	IC	1	5.3	2	10.5	14	73.7	2	10.5	3.1
	FC	6	31.6	3	15.8	10	52.6	0	0	3.8

Thus, the analysis of the quantitative indicators set out in Table 3.11 provides grounds for concluding that there is a certain level of development in the readiness of FT in the EG and CG in terms of the cognitive-professional component. At the same time, a comparison of the results across all defined levels and indicators corresponding to AV (the increase in AV in the EG compared with the CG is 0.3 points) demonstrates the superiority of the quantitative values in the EG. In particular, the results of the EG students were higher than those of the CG students, whose training was carried out within the framework of a traditional educational model.

This growth is attributable to the fact that, whilst attending optional classes and studying supplementary topics in the academic disciplines ('Psychology', 'Pedagogy' and 'Digital Technologies in Professional Practice and Music Informatics', the FMAT of EG students gained a deeper understanding of the subject-specific conceptual

framework, acquired a more thorough understanding of how to apply theoretical material in the process of modelling pedagogical situations, and mastered effective methods of using an interdisciplinary approach to solving professional tasks; this ensured the systematic improvement of subject-specific knowledge based on II and the conscious development of their own readiness for PA. To illustrate the dynamics of the indicators presented in Table 3.11, the corresponding results are shown graphically in the diagram (Fig. 3.2).

The statistical calculations carried out made it possible to determine the variance indices of the level of development of the cognitive-professional component of readiness for MA for PA based on II amongst bachelor's degree students, separately for participants in the CG and EG. The results of the calculations showed that in the CG, the value of the first variance was $\sigma_1^2 = 0.5833$, and that of the second was $\sigma_2^2 = 0.4320$, resulting in an empirical value of the Fisher's F-test of $F_{\text{emp-CG}} = 1.35$. In the EG, the corresponding values were $\sigma_1^2 = 0.7978$ and $\sigma_2^2 = 0.4099$, yielding an F_{emp} value of $F_{(\text{emp})-\text{EG}} = 2.00$.

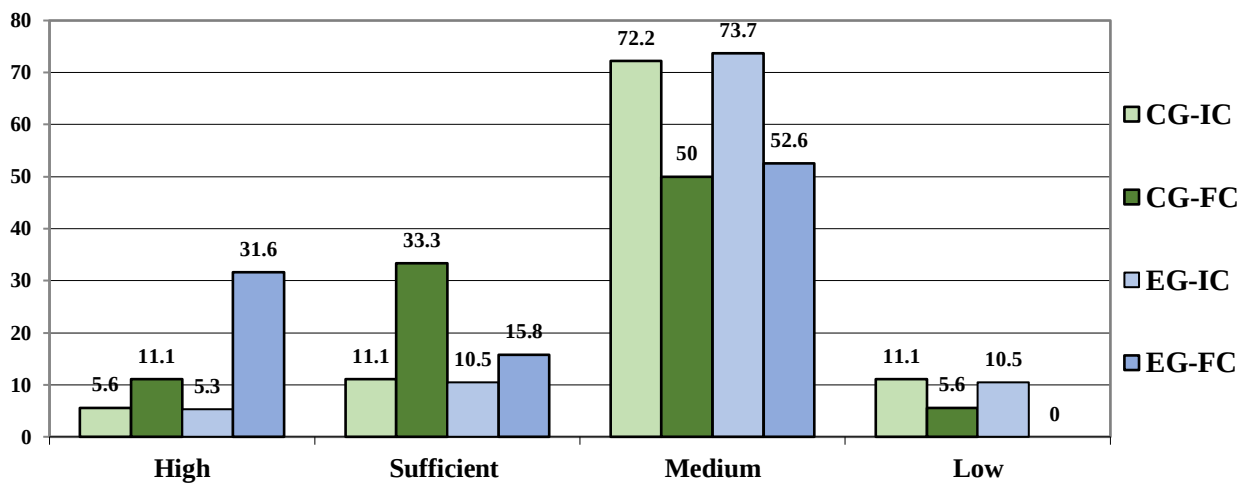


Fig. 3.2 Changes in the indicators of the level of development of the cognitive-professional component of readiness for PA based on II.

A comparison of the calculated empirical values with the critical value F_{krit} , which lies within the range 1.9–2.2, showed that for CG, the value $F_{\text{emp-CG}} = 1.35$ is

below the established critical range. By contrast, the value $F_{\text{emp-EG}} = 2.00$ meets the specified criterion, which provides grounds for considering the results obtained in EG to be statistically significant. The quantitative indicators of the dynamics of the development of the operational-activity component of readiness, FMAT for PA based on II, are summarised and presented in Table 3.12.

A comparative analysis of the data presented in Table 3.20 reveals positive trends in both experimental groups. It is worth noting that in the EG, positive trends were recorded for high-level indicators, with the rate of increase across various criteria ranging from 0 per cent to 26.3 per cent (an increase of 26.3 per cent), whilst in the CG this increase amounted to 11.1 per cent (from 0 per cent to 11.1 per cent). In the ‘sufficient’ level category, the number of students in the EG remained stable (4 students, or 21.1 per cent); however, the number of students in the ‘average’ and ‘low’ level categories decreased significantly (by 10.5 per cent and 15.8 per cent respectively). Although the percentage of low-level students in the CG fell by 16.6 per cent, one low-level student remained in this group (it should be noted that there were no such students left in the EG by the end of the ER formative stage). It is important to note that in the EG at the FC stage, the AV difference was 0.2 points higher than the AV in the CG at this stage of the study (3.7 and 3.5 points respectively).

Table 3.12

Results of assessing the development of the operational-activity component of readiness for FMAT for PA based on II

Group, number of participants	Stage of ER	Numerical indicators of the levels of development of the operational-activity component of readiness								AV
		High (5)		Sufficient (4)		Average (3)		Low (2)		
		No.	%	No.	%	No.	%	No.	%	
CG (18 people)	IC	0	0	4	22.2	10	52.6	4	22.2	3.0
	FC	2	11.1	7	38.9	8	44.4	1	5.6	3.5
EG (19 people)	IC	0	0	4	21.1	12	63.1	3	15.8	3.0
	FC	5	26.3	4	21.1	10	52.6	0	0	3.7

Thus, the quantitative shifts identified during the study were accompanied by corresponding qualitative changes in the development of indicators of the operational-activity component of readiness for the FMAT for PA based on II. This positive trend was most clearly evident amongst EG students, which was attributed to the purposeful and methodologically sound combination of traditional and problem-based active teaching methods employed within the optional course. Consequently, at the final stage of the study, there was an increase in the number of FMAT who demonstrated the ability to integrate theoretical knowledge and music-pedagogical methodologies into practical activity. They also acquired practical skills in selecting appropriate methods and techniques. An important outcome was the acquisition of the ability to adapt these methods and techniques promptly to specific pedagogical situations. The diagram shown in Fig. 3.3 allows us to track and compare the dynamics of changes in the indicators of the operational-activity component of readiness for PA among FMAT in the CG and EG.

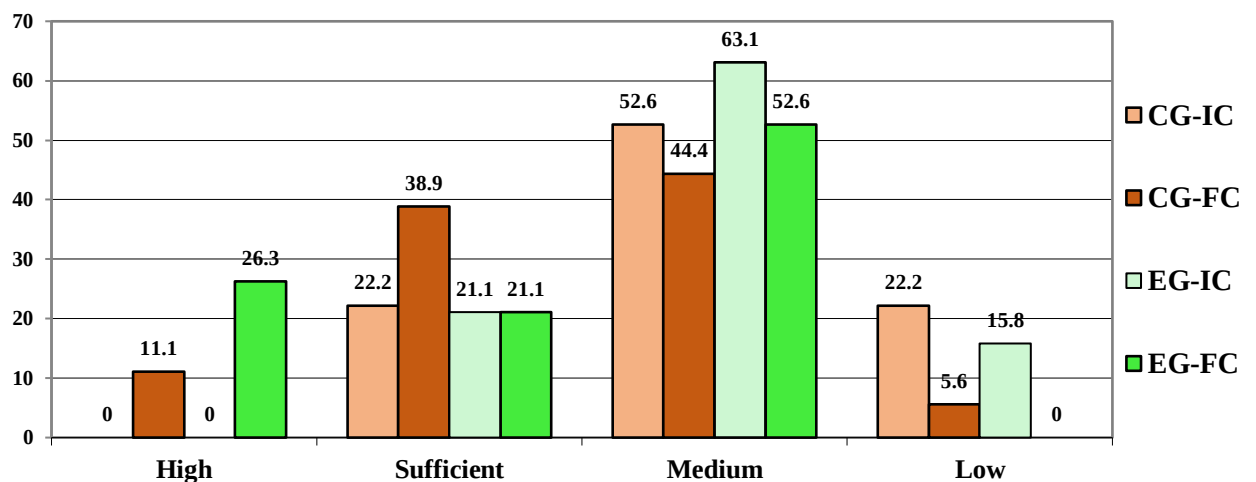


Fig. 3.3 Changes in the indicators of the levels of the FMAT's operational-activity component of readiness for PA based on the second stage of development

The statistical calculations carried out confirm the reliability of the results obtained regarding the level of development of the operational-activity component of FMAT readiness in the CG and EG. Thus, for the CG, $\sigma_{12} = 0.5802$ and $\sigma_{22} = 0.4444$,

so $F_{\text{emp-CG}} = 1.32$; for EG, $\sigma_{12} = 0.7202$, whilst $\sigma_{22} = 0.3656$, which enabled the calculation of $F_{\text{emp-EG}} = 1.97$.

Thus, $F_{\text{emp-CG}}$, with a numerical value of 1.32, falls outside the range of the standardised theoretical $F_{\text{krit}}(1.9\text{--}2.2)$, whilst the calculated $F_{\text{emp-EG}}$, with a value of 1.97, confirms the reliability of the research findings.

Table 3.21 summarises the quantitative results obtained for all levels of development of the reflective-evaluative component of readiness for FMAT in the CG and EG for PA based on II.

An analysis of the data presented in Table 3.21 provides grounds for noting a significant positive trend in the development of the reflective-evaluative component of readiness for FMAT for PA based on II. In the EG, this indicator reached 26.3 per cent, whilst in the CG it stood at 5.6 per cent, demonstrating a comparative increase of 20.7 per cent.

Table 3.12

Results of assessing the development of the ‘ ’ and ‘reflective-evaluative’ components of readiness for FMAT in CG and EG for PA based on II

Group, number of participants	Stage ER	Numerical indicators of the levels of development of the reflective- evaluative component of readiness								AV
		High (5)		Sufficient (4)		Average (3)		Low (2)		
		q-ty	%	q-ty	%	q-ty	%	q-ty	%	
CG (18 people)	IC	0	0	4	22.2	11	61.1	3	16.7	3.0
	FC	1	5.6	5	27.7	11	61.1	1	5.6	3.3
EG (19 people)	IC	0	0	4	21.1	12	63.1	3	15.8	3.0
	FC	5	26.3	4	21.1	10	52.6	0	0	3.7

With regard to the reflective-evaluative component of readiness for PA among FMAT, a positive trend was clearly evident for both the average and low levels in both groups. In particular, in the EG, the proportion of participants at the average level decreased from 63.1 per cent (at IC) to 52.6 per cent (at FC), a decrease of 10.5 per

cent, however, at the low level, the decrease was from 15.8 per cent to 0 per cent (a decrease of 15.8 per cent), respectively, confirming a reduction in the number of individuals at the average level (from 12 to 10) and the complete elimination of the low level (from 3 to none) of readiness in this component. In the CG, there was no decrease in the corresponding indicator for the intermediate level, which remained at 0 per cent; however, for the low level, the decrease was significantly smaller (from 16.7 per cent to 5.6 per cent) and amounted to -11.1 per cent. As for the sufficient level, the figures remained virtually unchanged. We attribute this to a smooth transition of students from the low to the average level, and subsequently from the average to the sufficient and high levels.

It should be noted that changes also occurred in the AV indicators. An increase of 0.4 points was observed among EG students (3.7 points) compared with CG students (3.3 points) at the FC, which confirms the higher level of readiness for PA among EG students.

Fig. 3.4 presents the dynamics of the development of FMAT's readiness for PA in the CG and EG, specifically with regard to the reflective-evaluative component.

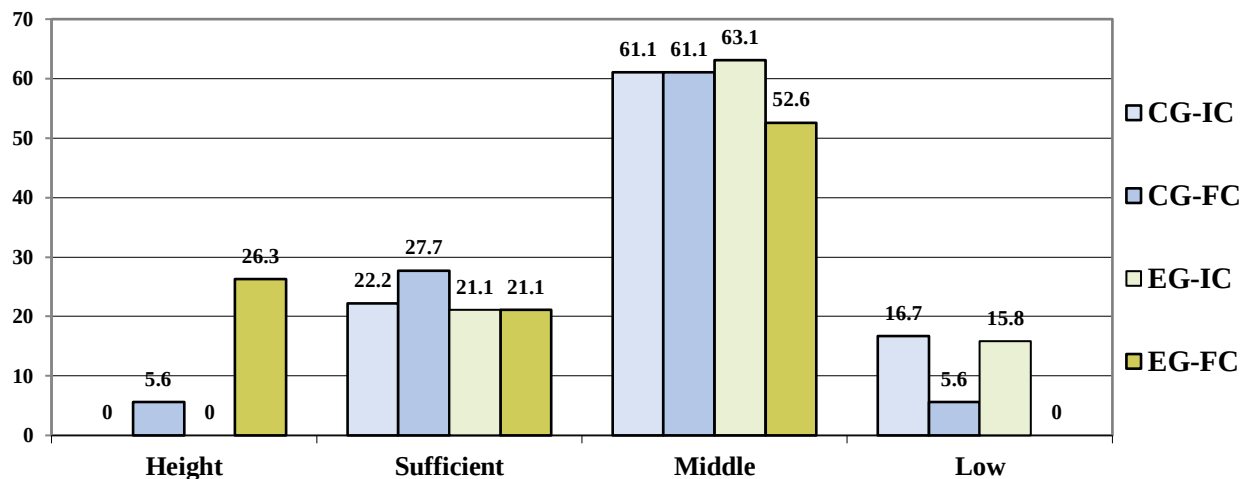


Fig. 3.4 Results of the assessment of the dynamics of the development of the reflective-evaluative component of the FMAT's 's readiness for PA based on II

The reliability of the results obtained regarding the development of the reflective-evaluative component of FMAT's readiness for PA based on II was

determined by applying the F-test (Fisher's test) and comparing the corresponding indicators in the CG and EG groups. The results obtained show the following:

– in the CG, the value of σ_1^2 is 0.4444, and that of σ_2^2 is 0.3858; accordingly, $F_{\text{emp}} - \text{CG} = 1.15$;

– in the EG, the value of σ_1^2 is 0.7202, whilst σ_2^2 is 0.3656; accordingly, $F_{\text{emp}} - \text{EG} = 1.97$

A comparison of the empirical and theoretical values of the F-test suggests that $F_{\text{emp}} - \text{CG} = 1.15$ falls short of the established range of critical values for the F-test (1.9–2.2). At the same time, $F_{\text{emp}} - \text{EG} = 1.97$ falls within the specified range and indicates the statistical significance of the results obtained regarding the development of the reflective-evaluative component of readiness.

The summarised results of the study on the level of development of the FMAT's readiness for professional and organisational work with students in GSEI are presented in Table 3.13.

Table 3.13

Summary of findings on the level of development of the FMAT's readiness for PA based on II

Group, number of participants	Stage of ER	Numerical indicators of readiness levels								AV
		High (5)		Sufficient (4)		Average (3)		Low (2)		
		No.	%	No.	%	No.	%	No.	%	
CG (18 people)	IC	0	0	3	16.7	12	66.6	3	16.7	3.0
	FC	1	5.6	6	33.3	10	55.5	1	5.6	3.4
EG (19 people)	IC	0	0	3	15.8	13	68.4	3	15.8	3.0
	FC	5	26.3	4	21.1	10	52.6	0	0	3.7

The summary indicators presented in Table 3.13 demonstrate a positive trend in the levels of FMAT's readiness for PA based on II. In particular, by the end of the ER, there was a significant increase in the proportion of participants who demonstrated high and sufficient levels of this readiness:

- we observed a high level of readiness among EG undergraduates, which rose by 26.3 per cent (from 0 per cent to 26.3 per cent) and by 5.6 per cent among CG students (from 0 per cent to 5.6 per cent);
- the sufficient level among EG students increased by 5.3 per cent (from 15.5 per cent to 21.1 per cent), whilst in the CG it was recorded at 16.5 per cent (from 16.7 per cent to 33.3 per cent);
- a downward trend was observed in the average level of readiness, which stood at 15.8 per cent in the EG (from 68.4 per cent to 52.6 per cent) and at 11.1 per cent in the CG (from 66.6 per cent to 55.5 per cent);
- the quantitative indicators characterising a low level of readiness decreased. In the EG, the decrease was 15.8 per cent (from 15.8 per cent to 0 per cent), and in the CG, it was 11.1 per cent (from 16.7 per cent to 5.6 per cent).

These positive results can be attributed to the inclusion of FMAT in interdisciplinary topics within the academic disciplines ‘Psychology’, ‘Pedagogy’ and ‘Digital Technologies in Professional Practice and Music Informatics’, as well as in the optional module ‘Interdisciplinary Dimensions of Music and Pedagogical Activity’. This had a positive impact on:

- fostering a positive attitude amongst students towards the FMAT profession, motivating the development of necessary personal and professional qualities, and enhancing their value-based and professional orientation;
- the development in FMAT of professional-conceptual and creative-methodological thinking, and an understanding of the importance of integrating interdisciplinary knowledge when solving educational problems;
- developing knowledge on the implementation of interdisciplinary links in the process of teaching MM and addressing professional and pedagogical tasks;
- developing the skills to consciously reflect on and evaluate one’s own professional activity in order to re-examine personal and professional growth and development.

The results of FMAT’s readiness for PA based on II, obtained in the CG and EG, are presented graphically in Fig. 3.5.

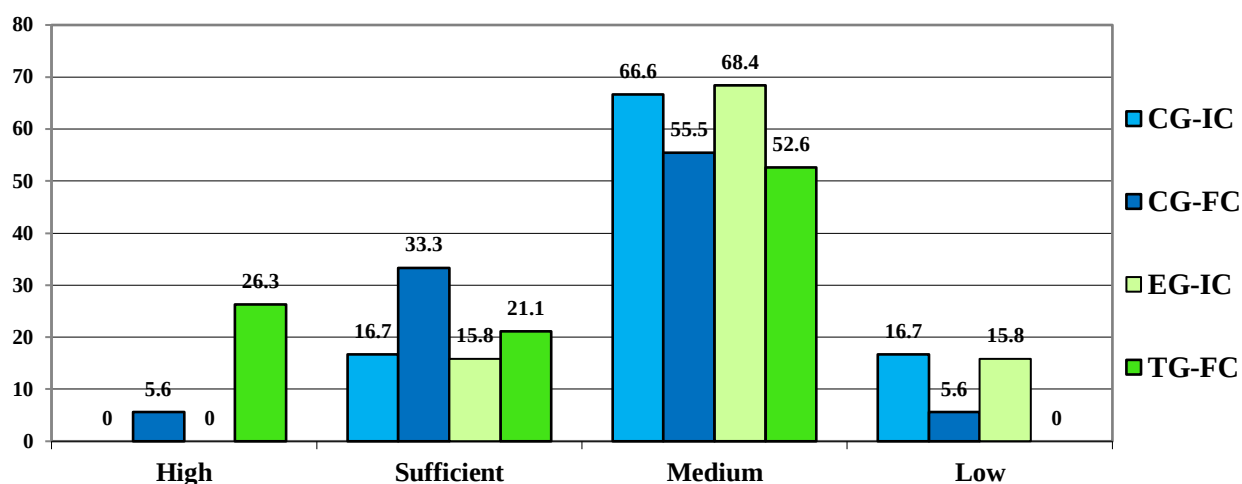


Fig. 3.5 Results of the dynamic changes in the indicators of FMAT's readiness for PA based on II

The reliability of the results regarding FMAT's readiness for PA based on II was demonstrated by the results of the statistical analysis of the individual data points. In particular, in the CG, the variances were: $\sigma_1^2 = 0.4598$ and $\sigma_2^2 = 0.3333$; accordingly, the empirical value of the F-test was $F_{emp-CG} = 1.37$. In the EG, the corresponding values were $\sigma_1^2 = 0.7202$ and $\sigma_2^2 = 0.3357$, with $F_{emp-EG} = 2.14$.

Thus, F_{emp-CG} , with a numerical value of 1.37, falls outside the range of 1.9–2.2 for the standardised value of the theoretical F-test, whilst F_{emp-EG} , with a value of 2.14, confirms the reliability of the established numerical results.

We therefore note that the assessment of the readiness of teachers in the EG (19 participants) and CG (18 participants) at the formative stage (IC and FC) was carried out using the methods of the diagnostic stage (ER). A comparative analysis of the data obtained during the experimental work (based on the percentage indicators of readiness levels and AV (in marks)) clearly confirms consistent positive results and effective progress across all components of FMAT's readiness for PA based on II.

Based on the average results of FMAT's readiness for PA based on II, we conclude that by the end of the ER, both the numerical and percentage indicators for AV, as well as the number of participants themselves, had increased in terms of high and sufficient levels of development of the motivational-value and cognitive-professional components of readiness for future teaching practice. At the same time,

the aforementioned indicators for the development of the operational-activity and reflective-evaluative components of readiness, as well as the number of participants at the average and low levels, decreased, as confirmed by the F-test (1.32 and 1.97, and 1.15 and 1.97 respectively). Changes in the indicators of the development of each component of FMAT's readiness for PA based on II are presented in Tables 3.18–3.21 and illustrated in the diagrams in Figures 3.1–3.4.

An analysis of the data revealed a positive trend: in the EG, there was an increase in the proportion of FMAT with high and sufficient levels, accompanied by a simultaneous decrease in the number of those with average and low levels, which together amounted to +26.3 per cent, +5.3 per cent, -15.8 per cent and -15.8 per cent respectively. In the CG, the corresponding changes were +5.6 percentage points, +16.6 percentage points, -11.1 percentage points and -11.1 percentage points, respectively. The reliability of the results obtained regarding the level of FMAT readiness for PA based on II was confirmed by the results of statistical analysis of the experimental data. In particular, the empirical value of the F-test for the CG ($F_{\text{emp-CG}} = 1.37$) does not exceed the established range of critical values of 1.9–2.2 (it falls outside this range as it is lower), whereas the value of $F_{\text{emp-EG}} = 2.14$ obtained for the EG indicates the statistical significance of the results identified during the experiment (falling within the range of 1.9 to 2.2).

The positive changes identified in the ER confirm the hypothesis put forward, the successful completion of the defined research tasks and the achievement of the set experimental objective.

Conclusions to Chapter Three

The pedagogical experiment, which took place between 2023 and 2025, involved the sequential implementation of interrelated tasks at the exploratory, descriptive, formative and generalising-summary stages. This structure ensured the logical sequence of research procedures, the collection of initial empirical data, the

implementation of specified pedagogical conditions, and the establishment of the dynamics of the formatio of FMAT's readiness for PA based on II.

During the literature review stage, scientific, pedagogical and methodological literature was analysed; domestic and international experience regarding the professional training of FMAT in higher education institutions was summarised; the regulatory and legal framework governing their professional training was characterised; the conceptual framework of the study was refined; and the significance of the second stage of professional training for FMAT was substantiated. During the descriptive stage, conducted at three higher education institutions, 37 students pursuing a first-cycle (bachelor's) degree in the specialisation 014.13 Secondary Education (Music) were involved. The assessment was carried out using a set of complementary methods aimed at determining the levels of development of the motivational-value, cognitive-professional, activity-operational and reflective-evaluative components of readiness. The results of the diagnostic phase revealed a predominance of average and low levels of development of the readiness under study: a high level was found in 6.3 per cent of the participants, a sufficient level in 11.5 per cent, a average level in 62.9 per cent, and a low level in 20.9 per cent. The results obtained confirmed an insufficient level of FMAT's readiness for PA based on II and highlighted the need to improve the content, forms, methods and means of their physical training, as well as to introduce specifically defined pedagogical conditions and a structural-functional model for its development.

The formative stage of the research-experimental work lasted for three semesters. It involved the same 37 students who, at the start of the experiment, were in their first year and subsequently continued their studies in their second year. Based on the results of the IC and a comparative analysis of baseline characteristics, a CG comprising 18 individuals and an EG comprising 19 individuals were formed. The consistency in the number of participants ensured that the results of the IC and FC could be correctly compared. The IC results demonstrated that the indicators of the development of all structural components of readiness were similar in the TC and CG, which provided grounds for considering the groups comparable in terms of baseline

characteristics. Participants studied the same PT specialism and mastered the relevant educational components. At the same time, in the CG, the educational process was carried out in accordance with the current syllabuses, whilst in the EG, specific pedagogical conditions and the structural-functional model 'FMAT's readiness for PA based on II were systematically implemented.

This formative influence was based on four interrelated pedagogical conditions. The educational components «Psychology», «Pedagogy» and «Digital Technologies in Professional Practice and Music Informatics» – supplemented with integrative teaching content – served as the systemic means for their implementation, alongside the introduction of the optional course «Interdisciplinary Dimensions of Music and Pedagogical Practice». The content of the optional course was structured into preparatory, motivational, practical-activity and summative-reflective stages. This sequence ensured a gradual transition for students from recognising the importance of interdisciplinary interaction and developing motivation to the practical application of integrated knowledge, skills and competences, and the reflective analysis of results.

The methodological toolkit encompassed various forms, methods and means of teaching, selected in accordance with the content of the pedagogical context, the specific nature of the programme and the level of preparedness of the students. Particular attention was paid to practice-oriented tasks, the simulation of professional situations, the application of integrated knowledge, self-assessment and professional reflection.

Throughout the formative stage, systematic monitoring of the FMAT's educational activities was carried out, along with analysis of the results of academic and practice-oriented tasks, assessment of the assimilation of the learning material, and reflective evaluation and adjustment of specific organisational and methodological aspects. This ensured feedback between pedagogical interventions and the performance outcomes of the study participants.

The FC results demonstrated a positive trend in FMAT's readiness for PA based on II in both groups; however, this trend was more pronounced in the EG. In the EG, the number of students at the high level increased from 0 per cent to 26.3 per cent, and

those at the sufficient level from 15.8 per cent to 21.1 per cent. At the same time, the proportion of students at the average level decreased from 68.4 per cent to 52.6 per cent, and those at the low level from 15.8 per cent to 0 per cent. The average readiness score rose from 3.0 to 3.7 points. Positive trends were also observed in CG, although they were less pronounced: the proportion of students with a high level of readiness increased to 5.6 per cent, and those with a satisfactory level to 33.3 per cent, whilst the proportion with an average level fell to 55.5 per cent and those with a low level to 5.6 per cent. The average score rose from 3.0 to 3.4 points. Positive changes were observed across all structural components of readiness. In particular, in the EG, professional motivation increased, psychological, pedagogical and subject-specific knowledge deepened, practical skills in their application improved, and the capacity for professional reflection and self-assessment increased.

Fisher's F-test was used to verify the reliability of the results obtained. In the EG, the empirical values for the four individual components were 2.02, 2.00, 1.97 and 1.97 respectively, and fell within the specified critical range of 1.9–2.2. The CG scores – 1.35; 1.35; 1.32 and 1.15 – did not reach the established critical range. The results of the statistical analysis confirmed the presence of statistically significant changes in the specified components in the EG.

Thus, the results of the research and experimental work demonstrated a positive trend in FMAT's readiness for PA based on II. The most significant changes were observed in the EG, where the proportion of candidates with high and sufficient levels increased, whilst the number of candidates with average and low levels decreased. The positive trend across all identified components and the results of the statistical analysis confirmed the effectiveness of the proposed system for assessing FMAT's readiness for PA based on II.

The main results of the chapter are reflected in the author's scientific works:

Zhang G., 2022a; Zhang G., 2023; Zhang G., Sun J., & Sun Y., 2023; Zhang G., 2023a; Shevel B., Palaguta I., Marushko L., Barkasi V., & Zhang G., 2025.

GENERAL CONCLUSIONS

The dissertation proposes a comprehensive solution to the research problem, which consists of the theoretical generalization and justification, development, and experimental verification of the identified pedagogical conditions and the structural-functional model for developing FMAT's readiness for PA based on II. As a result, the experimental research we conducted allowed us to formulate the following conclusions.

1. Based on an analysis of psychological, pedagogical, and scientific-art-historical sources, methodological literature, and literature devoted to the study of pedagogical technologies – including information-communication and digital technologies – the characteristic features and conceptual foundations for developing FMAT's readiness for PA based on II have been identified. The relevance of the research problem has been revealed, which is linked to contemporary transformational and fundamental processes in the field of education, the European integration orientation of Ukraine's education system, the updating of the curriculum for the MA in GSEI, the increased emphasis on competence-based approaches in educators' activities aimed at high professional outcomes, and the need for FMAT professional training in higher education institutions (HEIs) capable of effectively operating in the changing conditions of the school educational environment. The meanings of the concepts fundamental to our study— «training», «professional training of FMATs», «readiness», «FMATs' professional readiness for PA», «professional competence», and «pedagogical activity»—have been clarified. It has been determined that FMAT's professional readiness for PA based on II is a complex, integrative personal-professional construct that is formed during long-term training and direct pedagogical activity. For FMAT's, professional readiness is characterized by a future specialist's ability to effectively perform educational, formative, developmental-organizational, communicative, methodological, diagnostic-prognostic, reflective, and culture-forming functions in GSEI. Accordingly, in this study, interdisciplinarity was viewed as a leading trend in the development of modern science and education, whereas II in the system of higher music-pedagogical education is a purposeful, pedagogically

organized process involving the interpenetration and synthesis of various types of knowledge, skills, and modes of activity, aimed at forming professionally integrated competencies of FMAT. It has been determined that the effective development of FMAT's readiness for PA based on II is ensured by the implementation of competency-based, systemic, person-centered, activity-based, cultural, axiological, and integrative approaches. Their implementation is based on the principles of integrity, systematicity, and consistency; didactic expediency; the connection between theory and practice; cultural appropriateness; and creative self-expression.

2. The structure for developing FMAT's readiness for PA based on II has been specified and consists of four interrelated components: motivational-value-based, cognitive-professional, operational-activity-based, and reflective-evaluative. The motivational-value component reflects the development of positive professional motivation, students' value-based attitudes toward music education, and an awareness of the significance of II and the importance of professional self-development. The cognitive-professional component encompasses the system of necessary psychological-pedagogical, music-theoretical, methodological, and technological knowledge, as well as the ability to apply them in an integrated manner in pedagogical activity. The operational-activity component characterizes the development of practical skills in applying integrated knowledge and modern pedagogical technologies to solve professional-pedagogical tasks. The reflective-evaluative component ensures the student's ability to engage in reflection, conduct a balanced self-assessment of the results of their own activities, and pursue self-correction, self-improvement, and professional self-actualization. In accordance with these defined components, criteria and indicators of their development have been established: motivational, content-related, practical, and self-actualizing. To assess the effectiveness of developing readiness, indicators, criteria, and levels (high, sufficient, average, and low) were defined, which enabled a comprehensive diagnosis of the development of the studied readiness and facilitated the identification of its dynamics during the course of the research and experimental work.

3. The pedagogical conditions for developing FMATs' readiness for PA based on II have been theoretically substantiated and experimentally validated. These conditions include: fostering stable positive motivation and a value-based attitude among FMATs toward interdisciplinary music-pedagogical activities;

aligning the content of professional disciplines to ensure II in the process of professional training; creating a practice-oriented educational environment based on II; ensuring creative self-realization and supporting FMAT's reflective and evaluative activities in the process of professional training. The implementation of the identified pedagogical conditions was carried out taking into account the specifics of PT for FMAT at three HEIs – VSPU, TNPU, and KHAHP – the identified pedagogical principles, full-time and distance learning formats, and the specific set of forms, methods, and means of organizing the educational process selected for our study. The pedagogical conditions were integrated into lectures and practical classes, as well as into students' independent and individual work, during the design, modeling, and solution of case studies and practice-oriented tasks. An important means of implementing these pedagogical conditions was the elective course «Interdisciplinary Dimensions of Music Pedagogical Activity», the content of which was structured according to preparatory, motivational, practical-activity, and summative-reflective stages, as well as the educational components «Psychology», «Pedagogy», «Digital Technologies in Professional Activity and Music Informatics», in which individual topics were substantively enriched with integrative material; taken together, this contributed to ensuring the systematic nature of interdisciplinary interaction. Based on the method of pedagogical modeling, a structural-functional model for developing FMAT's readiness for PA based on II was developed. The model consists of four interconnected blocks: the goal-oriented, theoretical, process-organizational, and criteria-assessment blocks. The goal-oriented block defines the purpose and objectives of developing readiness; the theoretical block covers methodological approaches, principles, and content foundations; the procedural-organizational block defines the stages, pedagogical conditions, forms, methods, and means of implementing the educational process; and the criteria-and-assessment block ensures the definition of

criteria, indicators, levels, and outcomes of readiness development. The integrity of the structural-functional model is constituted by the logical interrelationships between all its blocks, the sequence of implementing the stages, and the focus on achieving the defined result—the development of FMAT’s readiness for PA based on II.

4. The effectiveness of the identified pedagogical conditions and the structural-functional model was experimentally verified. The research and experimental work was carried out from 2023 to 2025 and encompassed the scientific-exploratory, diagnostic, formative, and generalizing-summative stages. During the diagnostic stage, 37 students pursuing a first (bachelor’s) degree in the specialty 014.13 Secondary Education (Music) were enrolled at three experimental HEIs. The results of the initial assessment revealed an insufficient level of FMAT’s readiness for PA based on II, which required targeted pedagogical intervention, updating the content of physical education, and implementing pedagogical conditions specifically tailored to the subject. During the formative stage, a control group (CG) of 18 students and an experimental group (EG) of 19 students were formed. The baseline characteristics of the groups were comparable, which ensured the possibility of a valid comparison of the results. In the CG, the educational process was carried out in accordance with the current curricula, while in the EG, specific pedagogical conditions and a structural-functional model were systematically implemented. A comparative analysis of the results showed positive trends in the development of readiness in both groups; however, the changes were more pronounced in the EG. Specifically, in the experimental group, the proportion of students with a high level of readiness increased by 26.3%, and those with a sufficient level by 5.3%, while the proportion of students with an average level decreased by 15.8% and those with a low level by 15.8%. The average readiness score rose from 3.0 to 3.7 points. Positive changes were also observed in the CG, although the percentage changes were less pronounced. Thus, the application of a comprehensive system of pedagogical conditions and a structural-functional model in the EG yielded significantly higher numerical indicators than in the CG. This is evidenced by the growth among EG students in professional motivation and a value-based attitude toward music education, the deepening of their

psychological, pedagogical, and professional knowledge, the improvement of their practical skills and the integrated application of these skills, and the development of their capacity for professional reflection, self-assessment, self-correction, and creative professional self-actualization. The reliability of the obtained results was verified using Fisher's F-test. The results of the statistical analysis confirmed statistically significant changes in the specified components in the EG, since the empirical values (2.02; 2.00; 1.97; and 1.97) for the four specified components fell within the established critical range of 1.9 to 2.2. In the CG, the corresponding values of 1.35, 1.35, 1.32, and 1.15 did not reach the critical range. Thus, the results of the pedagogical experiment confirmed the effectiveness of the well-founded pedagogical conditions and the developed structural-functional model for fostering FMAT readiness for PA based on II. The positive trends across all structural components (an increase in the number of EG participants with high and sufficient levels and a decrease in those with average and low levels), combined with the results of the statistical analysis, demonstrated the feasibility of the proposed system and its pedagogical and practical effectiveness. Thus, the research objective has been achieved, and the defined tasks have been completed.

We see prospects for further research in the continued study of the possibilities for integrating artistic-pedagogical, psychological, cultural, and digital components of FMAT's PT.

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APPENDICES

APPENDIX A

Methodological Recommendations for Improving the Effectiveness of the Educational Process in Developing the Readiness of Future Military Management Specialists for Professional Activity Based on Artificial Intelligence in the Study of Professional Disciplines

Improving the effectiveness of the educational process aimed at developing the readiness of future military management specialists for professional activity based on artificial intelligence (AI) in the study of professional disciplines requires the systematic integration of its content-related, methodological, practical, and motivational components. Therefore, it is important to ensure not only the acquisition of the required body of professional knowledge by students, but also the development of their ability to apply this knowledge in simulated and real-life professional situations, make well-founded decisions, and act independently and responsibly.

To enhance the effectiveness of the educational process in higher education institutions (HEIs), it is advisable to follow the methodological recommendations outlined below.

1. Ensure the purposeful integration of the content of professional disciplines.

When planning the educational process, it is necessary to identify interdisciplinary links and ensure continuity in the development of professional competencies. Theoretical material from different professional disciplines should be consistently connected with the tasks of the future professional activities of military management specialists, demonstrating the practical relevance of the knowledge acquired. Particular attention should be paid to topics that directly contribute to developing readiness for professional activity and the ability to use the capabilities of AI in professional practice.

2. Use problem-based and practice-oriented learning.

An effective means of developing readiness for professional activity is the use of problem situations, practical assignments, case studies, professional tasks, analysis

Continuation of Appendix A

of specific situations, and simulation of elements of future professional activities. Such tasks should involve not merely reproducing educational material, but rather its analysis, comparison, evaluation, and application to solving professional problems.

3. Actively integrate the capabilities of AI into the educational process.

AI-based approaches can be effectively used to organize information search and structuring, prepare educational materials, create professionally oriented situations, generate possible solutions to problem-based tasks, analyze the results obtained, and critically evaluate them. At the same time, students should be taught not only how to use AI tools, but also how to verify the accuracy and reliability of AI-generated information, identify potential errors and limitations in generated outputs, comply with the principles of academic integrity, and use digital technologies responsibly.

4. Combine traditional and innovative teaching methods.

It is advisable to combine lectures, practical and seminar classes with interactive methods, including discussions, brainstorming, small-group work, role-playing and business simulations, project-based learning, case analysis, and educational simulations. Such a combination promotes students' cognitive engagement and creates conditions for developing their experience in making independent professional decisions.

5. Create conditions for individualized learning.

The use of digital technologies and AI makes it possible to take into account students' levels of preparedness, learning pace, and individual educational needs. Teachers should provide tasks of varying levels of complexity, individual and group learning pathways, additional materials for independent study, and opportunities for timely and targeted feedback.

6. Strengthen the practical component of professional training.

Developing readiness for professional activity requires systematic engagement of students in tasks that are as close as possible to the conditions of their future professional practice. During practical classes, it is advisable to simulate typical

Continuation of Appendix A

professional situations in which students are required to independently identify a problem, search for relevant information, substantiate possible courses of action, use appropriate AI tools, and present the results obtained.

7. Enhance the digital and professional competence of teachers.

The effectiveness of AI integration largely depends on the readiness of teaching staff to use modern digital tools in accordance with specific didactic objectives. Therefore, systematic professional development of teachers, exchange of pedagogical experience, and the development of a bank of professionally oriented tasks and methodological materials incorporating AI are advisable.

Thus, improving the effectiveness of the educational process aimed at developing the readiness of future military management specialists for professional activity based on AI requires a comprehensive approach in which digital technologies are integrated into the content of professional training, practical activities, the assessment system, and students' independent learning. An important outcome of such an approach should be not only the development of professional knowledge and skills, but also the ability of future military management specialists to independently use modern AI tools, critically evaluate the information obtained, make well-founded professional decisions, and adapt to changes in the professional environment.

APPENDIX B

METHODOLOGY “DETERMINING THE HIERARCHY OF MOTIVES FOR THE PROFESSIONAL ACTIVITY OF PEDAGOGICAL WORKERS IN EDUCATIONAL INSTITUTIONS”

(Methodology by O. I. Bondarchuk and L. M. Karamushka
(Bondarchuk, O. I., Pinchuk, N. I., & Rozhdestvenska, D. B., 2012).

Purpose of the methodology. The purpose of the methodology is to determine the hierarchy of motives for the professional activity of a pedagogical worker and to identify the dominant groups of professional motives.

Instructions

Below are the motives for professional activity. Please rank them according to their personal significance to you.

In the “Rank” column of the table, enter the number corresponding to the level of personal significance of the motive:

- 1 – the most significant motive for you;
- 2 – a significant motive for you;
- 3 – a less significant motive for you.

Professional activity means an opportunity for me to:

No.	Motive	Rank
1	To pursue a career	
2	To fulfill one’s responsibility to society by improving the quality of teaching and education	
3	To obtain greater material resources and benefits for the educational institution	
4	To implement one’s own ideas more effectively in order to enhance professional activity in accordance with modern requirements	
5	To avoid unpleasant consequences from management in case the quality of professional activity does not meet modern requirements	
6	To enhance one’s personal image as a teacher	
7	To monitor the quality of the educational process in accordance with modern requirements	
8	To promote self-actualization in professional activity	

Continuation of Appendix B

No.	Motive	Rank
9	To organize professional activity in accordance with modern requirements	
10	To ensure the spiritual and cultural development of all participants in the educational process	
11	To gain recognition through the implementation of new approaches in professional activity	
12	To influence the younger generation and prepare them for life in modern conditions	
13	To retain one's position	
14	To plan work in accordance with modern requirements	
15	To ensure personal growth, self-improvement, self-education, and spiritual enrichment	

Processing of Results

For the analysis, the ranking results are grouped into five categories of motives.

1. Social motives: 2, 10, 12

No. 2 – to fulfill one's responsibility to society by improving the quality of teaching and education;

No. 10 – to ensure the spiritual and cultural development of all participants in the educational process;

No. 12 – to influence the younger generation and prepare it for life in modern conditions.

2. Prestige-related motives: 1, 6, 11

No. 1 – to pursue a career;

No. 6 – to enhance one's personal image as a teacher;

No. 11 – to gain recognition through the implementation of new approaches in professional activity.

3. Pragmatic motives: 3, 5, 13

No. 3 – to obtain greater material resources and benefits for the educational institution;

No. 5 – to avoid unpleasant consequences from management;

Continuation of Appendix B

No. 13 – to retain one's position.

4. Professional motives: 7, 9, 14

No. 7 – to monitor the quality of the educational process;

No. 9 – to organize professional activity in accordance with modern requirements;

No. 14 – to plan work in accordance with modern requirements.

5. Professional and personal development motives: 4, 8, 15

No. 4 – to implement one's own ideas aimed at enhancing professional activity;

No. 8 – to promote self-actualization in professional activity;

No. 15 – to ensure personal growth, self-improvement, self-education, and spiritual enrichment.

Interpretation of Results

For each group of motives, the total rank score is calculated. The lower the sum of the ranks, the greater the significance of the respective group of motives for the respondent.

The lowest total rank score indicates the dominance of the respective motivational orientation.

For the study of future teachers' readiness for project-based activities, it is particularly important to identify the predominance of professional motives and professional and personal development motives, as these reflect an orientation toward professional self-improvement, the implementation of one's own ideas, and the development of professional competence.

“ACHIEVEMENT MOTIVATION”***(T. Ehlers’ methodology)****(Kokun, O. M., ... & Tkachenko, V. V., 2012)*

You will be presented with 41 questions. For each question, please answer “Yes” or “No.”

Test Material (Questionnaire Items)

1. If there is a choice between two options, it is better to make the choice quickly rather than postpone it until later.
2. If I notice that I cannot complete a task 100%, I become easily irritated.
3. When I work, it feels as though I am putting everything at stake.
4. If a problematic situation arises, I usually make a decision among the last people to do so.
5. If I have nothing to do for two days in a row, I become restless.
6. On some days, my achievements are below average.
7. I am more demanding of myself than of others.
8. I am more friendly than other people.
9. If I give up a difficult task, I later harshly criticize myself because I know I would have succeeded at it.
10. During the work process, I need short breaks to rest.
11. Diligence is not my main characteristic.
12. My achievements at work are not always consistent.
13. Another job appeals to me more than the one I am currently engaged in.
14. Criticism motivates me more strongly than praise.
15. I know that my colleagues consider me a business-oriented person.
16. Overcoming obstacles contributes to making my decisions more decisive.
17. It is easy to manipulate my ambition.
18. If I work without inspiration, it is usually noticeable.
19. When carrying out a task, I do not count on the help of others.

Continuation of Appendix B

20. Sometimes I postpone until tomorrow what I should do today.
21. One should rely only on oneself.
22. There are few things in life that are more important than money.
23. If I have to complete an important task, I think of nothing else.
24. I am less ambitious than many other people.
25. At the end of a vacation, I am usually glad that I will soon return to work.
26. If I am in the right frame of mind for work, I do it better and more professionally than others.
27. I find it easier and more comfortable to communicate with people who are capable of working persistently.
28. When I have no work to do, I feel uneasy.
29. I have to perform responsible work more often than others.
30. If I have to make a decision, I try to make it as well as possible.
31. Sometimes my friends consider me lazy.
32. My successes depend to some extent on my colleagues.
33. It is pointless to oppose the will of a manager.
34. Sometimes you do not know what kind of work you will have to perform.
35. If things do not go well for me, I become impatient.
36. Usually, I pay little attention to my achievements.
37. If I work together with others, my work is more productive than that of others.
38. I do not finish many of the things I start.
39. I envy people who are not overloaded with work.
40. I do not envy those who strive for power.
41. If I am confident that I am on the right path, I will go to extreme lengths to prove that I am right.

T. Ehlers Questionnaire Scoring Key**Scoring:**

Award 1 point for a "Yes" answer to questions:

2–5, 7–10, 14–17, 21, 22, 25–30, 32, 37, 41

Award 1 point for a "No" answer to questions:

6, 13, 18, 20, 24, 31, 36, 38, 39

The answers to questions 1, 11, 12, 19, 23, 33–35, and 40 are not taken into account.

Continuation of Appendix B

Then calculate the total number of points.

Interpretation of the Achievement Motivation Test (Ehlers)

The higher the total score, the higher the level of achievement motivation.

- 1–10 points – low motivation for success
- 11–16 points – average level of motivation for success
- 17–20 points – moderately high level of motivation for success
- 21 points or more – very high level of motivation for success

APPENDIX C

TEST ASSESSMENT

25 test tasks consisting of 3 levels of difficulty

(compiled by H. Zhang)

Instructions: You are invited to complete 20 test tasks aimed at identifying interdisciplinary knowledge, professional skills, and methodological abilities necessary for conducting effective Music Education (ME) classes with students in general secondary education institutions (GSEIs) in the future.

Read each statement carefully and write your answer to the question provided (for the first-level tasks), and choose one correct answer from the options provided in the second- and third-level tests.

The test assessment lasts **80 minutes**.

The **first level** of the test tasks contains questions related to the conceptual and categorical framework of the professional training of future music teachers, as well as the fundamental principles of pedagogical activity. It consists of 5 open-ended test tasks, each worth 6 points.

The second level consists of tasks focused on interdisciplinary knowledge related to the readiness of future music teachers to carry out professional activities in general secondary education institutions. It includes 15 test tasks, each worth 3 points.

The third level consists of practice-oriented questions concerning the implementation of professional activities and the teacher's role in their organization. It includes 5 test tasks, each worth 5 points.

Level One

Version 1

1. How do you understand the term “readiness of a future music teacher for professional activity”? Provide a definition of this concept.
2. What underlies the structure of a future music teacher's readiness for professional activity? Characterize the components of this structure.

Continuation of Appendix C

3. How are the concepts of “readiness,” “competence,” and “professional competence” of a future music teacher interconnected?
4. What criteria and indicators can be used to determine the level of a future music teacher’s readiness for professional activity? Describe why you have chosen these particular criteria and indicators.
5. What is the significance of knowledge, skills, abilities, and personal qualities in developing a future music teacher’s readiness for professional activity based on an interdisciplinary approach?

Instructions: Complete 5 open-ended tasks concerning the conceptual and categorical framework of the pedagogy of art and music education, aimed at integrating information, pedagogical, and artistic-performance competencies.

Each task is worth 6 points, for a total of 30 points.

Version 2

1. Explain the essence of the concept of “digital competence of a music teacher.” Characterize its main components and explain how it is related to pedagogical competence and artistic-performing competence in the educational process.

Maximum – 6 points.

2. Explain the concept of “pedagogical activity” in the context of arts education. Define its main purpose, key functions, and the role of digital tools in planning, organizing, and assessing students’ educational activities.

Maximum – 6 points.

3. Explain the meaning of the concept “artistic-performing competence of a future music teacher.” Name the main components of this competence and substantiate the importance of digital technologies for its development and implementation in pedagogical practice.

Maximum – 6 points.

4. Characterize the concept of “digital educational tools” and their pedagogical purpose in music education. Provide examples of digital tools and explain what pedagogical tasks they make it possible to accomplish when teaching music.

Continuation of Appendix C

Maximum – 6 points.

5. Explain the relationship between the concepts of “competence,” “professional competence,” and “integrative competence” of a future music teacher. Substantiate why effective pedagogical activity in a digital educational environment requires the integration of information, pedagogical, and artistic-performing competences.

Maximum – 6 points.

Assessment Criteria for Each Task – 6 Points

6 points – the concept is defined accurately and comprehensively; its main characteristics, relationships, and practical significance are explained; relevant examples are provided.

5 points – the answer is correct and sufficiently complete, but some aspects are discussed in less detail.

4 points – the main meaning of the concept is understood correctly, but the characterization or argumentation is incomplete.

3 points – a general definition is provided, but relationships and practical application are discussed superficially.

1–2 points – a fragmentary answer with significant conceptual inaccuracies.

0 points – no answer or an answer that does not correspond to the content of the task.

Second Level

Interdisciplinary Multiple-Choice Test Tasks

Instructions: The following 15 tasks integrate the content of three disciplines: “Psychology», «Pedagogy», «Digital Technologies in Professional Activity and Music Informatics». All situations have been adapted to the future professional activity of a music teacher in general secondary education institutions.

1. A music teacher is planning a lesson for sixth-grade students using a multimedia presentation and audio recordings. Which approach best demonstrates the teacher’s professional readiness?

Continuation of Appendix C

- A.** Use as many musical fragments as possible regardless of the lesson objectives.
- B.** Take into account the students' age-related characteristics, define the pedagogical objective, and select digital tools according to the content of the lesson.
- C.** Build the entire lesson around watching video recordings.
- D.** Allow students to independently choose any musical materials.

Correct answer: **B.**

2. Seventh-grade students demonstrate low interest in listening to classical music. Which teacher action would be the most pedagogically appropriate?

- A.** Force students to listen to all the works without discussion.
- B.** Increase the number of assessed tasks.
- C.** Relate the musical material to students' experiences and interests, use accessible digital resources, and organize a discussion of their emotional perception of the work.
- D.** Completely replace classical music with contemporary popular music.

Correct answer: **C.**

3. During a fifth-grade lesson, the teacher plans to conduct a rhythmic exercise using an interactive digital service. What should be taken into account first?

- A.** Only the technical capabilities of the service.
- B.** The age-related characteristics of attention and perception, as well as the students' level of musical and practical preparation.
- C.** The maximum amount of time students can work with a digital device.
- D.** The number of musical effects available in the service.

Correct answer: **B.**

4. During a group singing activity, one student sings out of tune and, as a result, refuses to sing. What is the most professional teacher response?

- A.** Publicly point out the student's lack of musical ability.
- B.** Ignore the situation.
- C.** Support the student, identify the cause of the difficulty, and offer an appropriate way for the student to participate in the performance.
- D.** Exclude the student from the group performance.

Continuation of Appendix C

Correct answer: **C**.

5. The teacher shows students a video recording of a musical performance. Which task best combines digital technologies with the development of musical perception?

- A.** Watch the video without any further discussion.
- B.** Memorize the performer's name.
- C.** Identify the performance characteristics, means of musical expression, and emotional impression, and then justify one's opinion.
- D.** Watch the video several times without a specific purpose.

Correct answer: **C**.

6. The class includes students with different levels of vocal and music-theoretical preparation. How should work using computer-oriented technologies be organized?

- A.** Give all students identical tasks of the highest level of difficulty.
- B.** Provide differentiated tasks according to students' abilities and ensure access to appropriate digital resources.
- C.** Allow students with a lower level of preparation not to complete the tasks.
- D.** Work only with students who demonstrate a high level of musical ability.

Correct answer: **B**.

7. After students perform a vocal exercise, the music teacher records the performance and asks the students to listen to the recording, identify their strengths, and determine aspects that need improvement. Which competences are integrated into this activity?

- A.** Only technical competence.
- B.** Pedagogical mastery, psychological reflection, and the use of digital technologies.
- C.** Only musical-performing competence.
- D.** Only the competence to assess learning outcomes.

Correct answer: **B**.

8. During a song performance, one student begins laughing at a classmate's mistake. What is the most appropriate teacher action?

Continuation of Appendix C

- A.** Ignore the situation.
- B.** Stop the singing and give the offending student a negative grade.
- C.** Restore an atmosphere of mutual respect, explain the importance of support, and organize the performance again without humiliating the participants.
- D.** Ask the student who made the mistake not to sing anymore.

Correct answer: **C.**

9. The teacher asks students to create a small music project using a digital audio editor. Which option best promotes creativity and independence?

- A.** The teacher creates the musical product, while students only listen to it.
- B.** Students copy a ready-made music file according to a specific model.
- C.** Students create their own musical product according to defined criteria and present it to the class.
- D.** Students use the software without a defined purpose or criteria.

Correct answer: **C.**

10. The music teacher uses an interactive music test to assess students' knowledge of the means of musical expression. What is the most professional way to use the test results?

- A.** Assign grades and finish working on the topic.
- B.** Compare students' results and identify the best student.
- C.** Analyze common errors and adjust subsequent explanations and practical activities accordingly.
- D.** Increase the number of tests regardless of the results.

Correct answer: **C.**

11. During a music lesson, students work with digital devices for an extended period of time. Which teacher decision is the most appropriate?

- A.** Continue digital work until all planned tasks have been completed.
- B.** Balance digital activities with listening, singing, movement, and practical musical activities in accordance with the students' age-related capabilities.
- C.** Completely отказаться from digital technologies.

Continuation of Appendix C

D. Replace practical music-making with digital exercises.

Correct answer: **B.**

12. During a distance music lesson, a student feels embarrassed about performing a vocal task in front of classmates. Which teacher action best corresponds to a psychologically appropriate approach?

A. Force the student to perform the task in front of the whole class.

B. Publicly explain the reason for the student's refusal

C. Offer a safe form of individual performance, support the student, and gradually involve them in joint activities.

D. Excuse the student from all practical tasks.

Correct answer: **C.**

13. A music teacher selects musical video material from the Internet for use in a lesson. Which actions demonstrate professional readiness?

A. Choose the first search result.

B. Verify the reliability of the source, the relevance of the material to the educational objective and students' age, and compliance with digital ethics and copyright requirements.

C. Choose the video with the highest number of views.

D. Use only short videos regardless of their content.

Correct answer: **B.**

14. After conducting a music lesson, the music teacher analyzes students' participation, the quality of their performance, their emotional responses to musical works, and the effectiveness of the digital resources used. What professional ability does the teacher demonstrate?

A. Pedagogical reflection.

B. Digital literacy exclusively.

C. Musical-performing mastery only.

D. The teacher's controlling function.

Correct answer: **A.**

Continuation of Appendix C

15. A music teacher conducts a lesson in a general secondary education institution: takes into account students' age-related and individual characteristics, creates a psychologically comfortable environment, uses digital technologies for listening to and analyzing music, organizes practical music-making, provides constructive feedback, and reflects on their own professional activity. What most fully characterizes this activity?

- A.** Technical readiness to use digital tools.
- B.** Musical-performing readiness without a pedagogical component.
- C.** Integrated professional readiness of a music teacher for pedagogical activity in a general secondary education institution.
- D.** Psychological readiness to work with students without using digital technologies.

Correct answer: **C.**

Answer Key

1 – B; 2 – B; 3 – B; 4 – B; 5 – B; 6 – B; 7 – B; 8 – B; 9 – B; 10 – B; 11 – B;
12 – B; 13 – A; 14 – A; 15 – B

Logic of Interdisciplinary Integration

Each task combines at least three components of the professional readiness of a music teacher:

- a) Pedagogical component – teaching methods, pedagogical mastery, communication, assessment, and reflection;
- b) Psychological component – age-related and individual characteristics, motivation, attention, emotional perception, and psychological safety;
- c) Technological component – digital resources, multimedia, audio editors, online testing, digital assessment, and media literacy.

The tasks presented do not assess isolated knowledge from the three disciplines. Instead, they assess the ability of a music teacher to integrate knowledge and skills from these areas when addressing real professional and pedagogical situations in a GSEI.

APPENDIX D

DIAGNOSTIC TOOLKIT FOR DETERMINING THE LEVEL OF FORMATION OF FUTURE MUSIC TEACHERS' READINESS FOR PROJECT-BASED ACTIVITIES

The diagnostic toolkit is aimed at determining the level of formation of future music teachers' readiness for project-based activities. The main diagnostic tool is the interdisciplinary project task "The Musical World of the Contemporary Student", which involves the integration of the content of the courses "Psychology", "Pedagogy", and "Digital Technologies in Professional Activity and Music Informatics".

1. Diagnostic Task

Students are asked to develop and present an interdisciplinary music-pedagogical project for students of a general secondary education institution.

In the process of completing the project, students are expected to:

1. Identify a relevant music-pedagogical problem;
2. Formulate the aim and objectives of the project;
3. Identify the target age group and take into account its psychological characteristics;
4. Develop a project implementation plan;
5. Select appropriate musical material;
6. Identify and justify the digital tools to be used;
7. Create a digital educational product;
8. Develop learning tasks for students;
9. Conduct a fragment of the project;
10. Present the project results;
11. Carry out self-assessment and reflection.

2. Structure of the Diagnostic Procedure

Continuation of Appendix Д

N	Component	Criterion	Main Indicators	Maximum Score
1.	Motivational-Value	Personal	interest in project-based activities; awareness of their professional value; commitment to professional self-development	25 points
2.	Cognitive-Professional	Knowledge-Based	knowledge of the stages and principles of project-based activities; interdisciplinary integration; age-related characteristics of students; possibilities of digital technologies	25 points
3.	Activity-Operational	Activity-Based	project planning and organization; use of digital technologies; organization of students' activities; use of musical material; presentation; reflection	50 points
	Total			100 points

3. Assessment of Project-Based Activity Results

The results are assessed using a **100-point scale**. Each indicator is evaluated by an expert according to the level of its manifestation.

Performance Level	Characteristics	Percentage of the Maximum Score
Low	The task is completed fragmentarily or not completed; the student requires substantial assistance.	0–49%
Intermediate	The main tasks are completed, but significant shortcomings remain and some assistance is required.	50–69%
Sufficient	The task is completed independently; the student demonstrates the necessary knowledge and skills, with some minor shortcomings.	70–89%
High	The task is completed independently, creatively, and appropriately, demonstrating the integrated application of knowledge and skills.	90–100%

4. Determining the Level of Readiness Formation

The following scale is proposed for interpreting the overall results:

Score	Level of Readiness Formation
0–49	Low
50–69	Intermediate
70–89	Sufficient
90–100	High

5. Assessment Rubric

No.	Indicator	Maximum Score
1	Interest and motivation for project-based activities	10
2	Awareness of the professional value of project-based activities and commitment to self-development	15
3	Knowledge of the essence, stages, methods, and principles of project-based activities	10
4	Knowledge of the principles of interdisciplinary integration and students' age-related characteristics	7
5	Knowledge of the possibilities of digital technologies in music-pedagogical activities	8
6	Project planning and organization	10
7	Use of digital technologies and creation of a digital product	10
8	Organization of students' activities and pedagogical interaction	8
9	Creative and pedagogically appropriate selection and use of musical material	7
10	Presentation of project results	5
11	Self-assessment and professional reflection	5
12	Ability to integrate interdisciplinary knowledge	5
Total		100

6. Indicator “Ability to Integrate Interdisciplinary Knowledge”

Of particular importance for the study is the **indicator** “Ability to Integrate Interdisciplinary Knowledge”, which reflects the student's ability to integrate psychological, pedagogical, digital, and music-pedagogical knowledge when solving a single professional problem.

Level of Manifestation	Characteristics
Low	The content of the courses is used fragmentarily or in isolation; interdisciplinary integration is practically absent.
Intermediate	A formal or partial relationship between the content of the courses can be observed.
Sufficient	The student meaningfully combines knowledge from at least two courses and partially integrates the content of the third.
High	Knowledge and modes of activity from all three courses are organically integrated to solve a single professional-pedagogical problem.

Continuation of Appendix Д

Conclusion. The proposed diagnostic toolkit provides a comprehensive assessment of the level of formation of the motivational-value, cognitive-professional, and activity-operational components of future music teachers' readiness for project-based activities and enables a separate assessment of their ability to integrate interdisciplinary knowledge.

APPENDIX E

SELF-ASSESSMENT AND REFLECTION MAP OF THE FUTURE MUSIC TEACHER'S PROFESSIONAL ACTIVITY

Purpose: To identify the level of formation of the future music teacher's reflective and evaluative skills, particularly the ability to conduct self-analysis, self-assess the results of professional and project-based activities, identify difficulties, determine ways of professional improvement, and achieve creative self-realization.

Recommendations for the Instructor on the Use of the Methodology:

The methodology is recommended for administration after students have completed an interdisciplinary music-pedagogical project. Before completing the map, students should recall the stages of project development and implementation, their own contribution to the work, the difficulties encountered, the results obtained, and feedback from other participants.

Instructions. Assess each statement according to the extent to which it describes you when performing professional or educational-professional tasks, particularly during the preparation and implementation of an interdisciplinary project.

Select one response option:

3 points – completely agree; 2 points – mostly agree; 1 point – partially agree; 0 points – disagree.

Statements

No.	Statement	0	1	2	3
1	I can objectively assess my own readiness for professional activity as a music teacher.				
2	After completing a professional task, I analyze what was done successfully and what needs improvement.				
3	I can identify the causes of difficulties that arise when performing music-pedagogical tasks.				
4	I am able to critically assess the quality of my own music-pedagogical activity.				
5	I take my own mistakes into account when planning subsequent professional activities.				
6	I can assess how effectively I use my musical, pedagogical, and creative abilities.				

Continuation of Appendix E

7	After completing a project, I analyze whether the result corresponds to the stated aim.				
8	I can determine my own contribution to the outcome of a group music-pedagogical project.				
9	I am able to accept constructive criticism regarding the results of my activities.				
10	I use feedback from others to improve my professional activity.				
11	I can independently identify my professional strengths and weaknesses.				
12	I strive to improve my professional skills after analyzing the results of my activities.				
13	I set specific goals for my professional self-development.				
14	I independently determine ways to overcome identified professional difficulties.				
15	I strive to use new approaches and technologies to improve my music-pedagogical activity.				
16	I am able to creatively reinterpret my own pedagogical experience.				
17	I can predict the outcomes of my professional activity.				
18	I analyze how well the methods I have chosen correspond to the age-related and individual characteristics of students.				
19	During project-based activities, I analyze the effectiveness of the digital technologies I use.				
20	I can assess how successfully I organized interaction among participants in a music project.				
21	I recognize the importance of reflection for the professional development of a music teacher.				
22	I regularly analyze my own professional progress.				
23	I strive to transform the results of self-analysis into specific actions aimed at professional improvement.				
24	I am able to independently determine prospects for my further professional development.				

Response Sheet

No.	Score	No.	Score	No.	Score	No.	Score
1		7		13		19	
2		8		14		20	
3		9		15		21	
4		10		16		22	
5		11		17		23	
6		12		18		24	

Data Processing

The maximum possible score is 72 points.

For a more detailed analysis, the statements are divided into four indicators.

1. Self-analysis of professional activity

Statements 1–6.

Maximum – 18 points.

This indicator characterizes the student's ability to analyze their own professional actions, identify strengths and weaknesses, and recognize the causes of difficulties.

2. Self-assessment of project-based activity results

Statements 7–12.

Maximum – 18 points.

This indicator characterizes the ability to assess one's own contribution, the quality of project implementation, the effectiveness of pedagogical methods, and the ability to accept external evaluation.

3. Professional self-development

Statements 13–18.

Maximum – 18 points.

This indicator reflects the ability to set professional goals, overcome difficulties, and improve professional and creative skills.

4. Reflective forecasting and self-realization

Statements 19–24.

Maximum – 18 points.

This indicator characterizes the ability to forecast further professional development, creatively reinterpret professional experience, use digital tools, and determine prospects for professional self-realization.

Determining the Level

High level – 54-72 points

Continuation of Appendix E

The student demonstrates a well-developed ability to systematically conduct self-analysis and objectively assess their own professional activity. They are aware of their professional capabilities and limitations and independently determine ways to improve them. After completing project-based activities, they are able to critically evaluate the results, identify difficulties, and formulate specific goals for further professional development. They demonstrate a strong commitment to creative professional self-realization.

Intermediate level – 30-53 points

The student is able to perform individual reflective actions, assess the results of their own activities, and identify certain difficulties. However, self-analysis is predominantly situational. The student requires assistance in identifying the causes of professional difficulties and planning further professional development. The desire for self-realization is present but is not always accompanied by specific actions.

Low level – 0-29 points

The student has insufficiently developed self-analysis and self-assessment skills. They do not always recognize their professional difficulties and their causes and tend to rely primarily on external evaluation. They experience difficulties in identifying prospects for professional development and using the results of reflection to improve their own activities.

Note: The content of the assessment map is based on the approaches developed by Ukrainian scholars (Bondarenko L. A., 2021; Kolesnikova Ye. S., 2025).

APPENDIX F

PROGRAMME OF THE ELECTIVE COURSE “Interdisciplinary Dimensions of Music-Pedagogical Activity”

1. Aims and Objectives. The elective course “Interdisciplinary Dimensions of Music-Pedagogical Activity” was developed for Bachelor’s degree students majoring in Specialty 014 Secondary Education (Music Art). Its purpose is to enhance students’ professional training and develop their readiness for future pedagogical activity based on interdisciplinary integration.

The course content is based on the integration of knowledge and skills acquired through the study of Psychology, Pedagogy, Digital Technologies in Professional Activity and Music Informatics, as well as professionally oriented music-pedagogical disciplines.

The main aims of the course are to:

- deepen interdisciplinary knowledge required for future music-pedagogical activity;
- develop the ability to integrate psychological-pedagogical, methodological, and digital knowledge when solving professional tasks;
- develop readiness to organize and conduct Music Art lessons based on interdisciplinary integration;
- apply acquired knowledge in simulated and real pedagogical situations;
- develop independence, initiative, flexibility of thinking, and responsibility in professional decision-making;
- encourage professional self-development and self-education.

The main objectives are to develop students’ ability to analyze pedagogical situations, model Music Art lessons, select appropriate digital and multimedia tools, communicate constructively with students, parents, and colleagues, solve pedagogical and organizational problems, and engage in professional reflection and self-assessment.

2. Methods of Implementing the Elective Course

Continuation of Appendix F

The course employs a combination of theoretical, practical, interactive, motivational, and reflective methods.

3. Stages of Implementing the Elective Course

The implementation of the elective course consisted of four logically interconnected stages: preparatory, motivational, practice-oriented activity, and final-reflective.

3.1. Preparatory Stage. The aim of this stage was to create the organizational, content-related, psychological, and pedagogical prerequisites for the course.

Students were introduced to the aims, objectives, content, and expected outcomes of the course. Previously acquired professional knowledge was actualized, interdisciplinary links among psychological, pedagogical, digital, and music-methodological knowledge were identified, and educational materials and practice-oriented tasks were prepared. Initial diagnostic assessment was conducted to determine students' level of readiness for pedagogical activity based on interdisciplinary integration.

3.2. Motivational Stage. The aim of this stage was to develop students' positive attitude towards interdisciplinary integration and their awareness of its importance for the professional activity of a Music Art teacher.

Students explored the practical significance of interdisciplinary knowledge, the use of psychological and pedagogical knowledge in music education, and the potential of digital technologies in Music Art lessons. Problem-based questions, discussions, analysis of pedagogical situations, role-playing, and examples of interdisciplinary professional practice were used to stimulate students' cognitive activity, initiative, and motivation for professional development.

3.3. Practice-Oriented Activity Stage. This was the central stage of the course and focused on the practical application of knowledge from psychology, pedagogy, digital technologies, and music methodology.

Students completed pedagogical and organizational cases, analyzed problem situations related to Music Art lessons, modeled professional interactions with

Continuation of Appendix F

students, parents, and colleagues, developed lesson fragments, completed creative and research tasks, and worked individually and in groups.

Particular attention was paid to case-based learning. Case tasks required students to integrate knowledge from different educational components, independently search for relevant information, analyze problems, identify possible solutions, and substantiate their decisions. This contributed to the development of pedagogical-organizational, communicative, methodological, and digital skills.

3.4. Final-Reflective Stage *The final stage aimed to determine the outcomes of the elective course and support students' awareness of their achievements, difficulties, and further professional development needs.*

Repeated diagnostic assessment, analysis of practical and creative tasks, self-assessment, peer assessment, and reflective discussion were conducted. The final results were compared with the initial diagnostic indicators to identify changes in students' readiness for future pedagogical activity based on interdisciplinary integration.

4. Requirements for the Content of the Elective Course

The content of the course should ensure an integral combination of theoretical, practical, research, and reflective components of professional training.

The main requirements are: *interdisciplinarity* (integration of psychological, pedagogical, digital, methodological, and music-pedagogical knowledge); *professional orientation* (direct connection with the future work of a music art teacher); *practice orientation* (application of knowledge to authentic and simulated pedagogical situations); *problem-based character* (tasks requiring analysis, alternative solutions, and professional decision-making); *variability* (tasks of different levels of complexity adapted to students' educational needs); *independent learning* (independent search, selection, and critical analysis of professional information); *digital orientation* (appropriate use of digital, multimedia, and music software tools); *communicative orientation* (development of professional interaction with students, parents, and

colleagues); *creative and reflective character* (development of initiative, flexible thinking, self-analysis, and professional self-improvement).

5. Expected Learning Outcomes

Upon completion of the elective course, students are expected to:

- understand the role and significance of interdisciplinary integration in Music Art teaching;
- possess relevant psychological-pedagogical, methodological, and digital knowledge;
- integrate knowledge from different educational components when solving professional tasks;
- analyze and model pedagogical situations;
- plan and organize students' educational and music-creative activities;
- appropriately use digital and multimedia tools in accordance with pedagogical objectives;
- communicate constructively with students, parents, and colleagues;
- demonstrate independence, initiative, responsibility, and flexibility in professional tasks;
- engage in self-analysis and professional reflection;
- demonstrate readiness for continuous self-education and future pedagogical activity based on interdisciplinary integration.

5. ORGANIZATIONAL AND CONTENT FOUNDATIONS FOR IMPLEMENTING THE ELECTIVE COURSE

5.1.Types of Educational Activities and the Number of Hours Allocated

No.	Types of Educational Activities	Number of Hours
1.	Total workload of the elective course	70
2.	Sessions conducted in blended learning format	6
3.	Classroom group sessions	32
4.	Independent study	26
5.	Final assessment: credit (pass/fail). Final diagnostic assessment	6

5.2. Content of the Elective Course Sessions

Course Topics and Types of Classes

Continuation of Appendix F

No.	Topics	Group Sessions	Practical Sessions	Independent Study
1.	Introductory session. Initial diagnostic assessment of the level of students' readiness for pedagogical activity	4	–	–
2.	Professional motivation of a teacher as a factor in the effectiveness of pedagogical activity	4	–	2
3.	Value orientations of the modern teacher as a basis for readiness for pedagogical activity	4	–	2
4.	Designing an individual trajectory of professional development	2	2	2
5.	Interdisciplinary design of a Music Art lesson	2	2	2
6.	The significance of the case method in the pedagogical training of future Music Art teachers	2	4	2
7.	Digital technologies in the organization and delivery of Music Art lessons	2	4	2
8.	Pedagogical situations and professional decision-making in the work of a Music Art teacher (blended learning; practical session conducted online)	2	4	2
9.	Pedagogical reflection in the professional training of future Music Art teachers	2	2	2
10.	Designing an individual trajectory of professional development (blended learning; practical session conducted online)	2	2	2
11.	Contemporary approaches to implementing interdisciplinary integration in the professional activity of Music Art teachers (round-table format)	2	2	4
12.	Credit (pass/fail assessment)	–	2	4
13.	Final session. Final diagnostic assessment	4	–	–
Total		82		

Note: Group Sessions – group-based classes; Practical Sessions – practical classes; Independent Study – students' independent work.

5.3. Independent Study within the Elective Course

No.	Type of Independent Study	Number of Hours
1.	Preparation for practical classes and the round-table discussion	22
2.	Preparation and writing of conference abstracts	4
3.	Preparation for the credit (pass/fail assessment)	4
Total		30

5.4. Essay Topics

1. The Teaching Profession and My Professional Development: From Initial Perceptions to the Need for a Conscious Career Choice.

Continuation of Appendix F

2. My Development as a Future Teacher: Formation of Professionally Important Qualities and Pedagogical Competencies.
3. Motivation for Pedagogical Activity as a Component of My Personal Readiness for the Teaching Profession.
4. My Readiness for Future Pedagogical Activity: Achievements, Challenges, and Development Prospects.
5. Myself as a Person: Psychological Self-Knowledge and Its Significance for My Future Pedagogical Activity.
6. Motivation for Professional Development: My Personal Dynamics.
7. Interpersonal Interaction and Communicative Competence: My Psychological Resources for Professional Development.
8. Psychological Readiness for Future Pedagogical Activity: Self-Analysis, Personal Changes, and Development Prospects.

5.5. Examination Questions for the Elective Course**“Interdisciplinary Dimensions of Music-Pedagogical Activity”**

1. Explain the essence of the concept of interdisciplinary integration in the professional activity of a Music Art teacher.
2. Characterize the role of psychological, pedagogical, methodological, and digital knowledge in the professional training of a future Music Art teacher.
3. What is meant by a future Music Art teacher’s readiness for pedagogical activity? Characterize its main components.
4. Substantiate the importance of professional motivation in developing a future Music Art teacher’s readiness for pedagogical activity.
5. Characterize the value orientations of a modern teacher and their significance for professional activity.
6. Explain the significance of professional reflection in the development of a future Music Art teacher.

Continuation of Appendix F

7. Characterize pedagogical interaction as a component of the professional activity of a Music Art teacher.
8. What psychological characteristics of students should be taken into account when organizing music-educational activities?
9. Explain the essence of a pedagogical situation and characterize the main stages of its analysis.
10. Characterize the specific features of professional pedagogical decision-making in the activity of a Music Art teacher.
11. Explain the essence of the case method and its potential in the professional training of future Music Art teachers.
12. Provide an example of a pedagogical situation in a Music Art lesson and suggest interdisciplinary approaches to resolving it.
13. Characterize the role of digital technologies in organizing and conducting Music Art lessons.
14. What digital and multimedia tools are appropriate for use in Music Art lessons? Substantiate your choice.
15. Explain the possibilities of using music software in students' educational and creative activities.
16. Characterize the principles of interdisciplinary lesson design in Music Art.
17. Develop an algorithm for preparing and conducting a Music Art lesson based on interdisciplinary integration.
18. Characterize ways of organizing students' music-creative activities, taking into account their individual and age-related characteristics.
19. Explain the significance of communicative competence in the professional activity of a Music Art teacher.
20. Characterize the specific features of professional interaction between a Music Art teacher and students, parents, and colleagues.
21. What is an individual trajectory of professional development? Characterize the main stages of its design by a future teacher.

Continuation of Appendix F

22. Explain the significance of self-education and professional self-development in the formation of a future Music Art teacher.
23. Characterize the potential of students' research activities in developing readiness for future pedagogical activity.
24. How are professional reflection and self-assessment of pedagogical activity carried out? Provide examples.
25. Develop your own model of interdisciplinary training for pedagogical activity of a Music Art teacher, identifying the knowledge, skills, digital tools, and professional qualities required for its implementation.

5.6. Educational and Methodological Support of the Elective Course**Recommended Literature**

- Huzhanova, T. S., Fedoryk, V. V., Kushnir, L. O., Ortikova, N. V., & Kononenko, O. I. (2023). Professional competence as an indicator of a student's psychological readiness for professional activity. *Perspectives and Innovations of Science. Series: Pedagogy, Series: Psychology, Series: Medicine*, 418–428. <https://eprints.zu.edu.ua/36594/1/%D0%93%D1%83%D0%B6%D0%B0%D0%BD%D0%BE%D0%B2%D0%B0%202.pdf>
- Dykyi, O. V., Ulianova, H. O., & Kibik, O. M. (2025). The role of interdisciplinary approaches in modern science. *Inclusive Economy*, 3(09), 49–55.
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- Kominarets, T., Fomin, V., Bieloliptseva, O., Tkachenko, M., Malykhin, A., & Pryshliak, O. (2022). Strategic Tasks of Contemporary Education: Formal, Nonformal, Informal. *Revista Romaneasca Pentru Educatie Multidimensionala*, 14(4), 394-407.
- Yan, L. (2022). Professional training of future Music Art teachers in multicultural realities. *Image of the Modern Teacher*, 6(201), 65–67.

Continuation of Appendix F***Instructional and Methodological Materials Supporting the Elective Course***

Lesson presentations, demonstration posters and tables, situational tasks, and practical work worksheets.

Material and Technical Resources for the Elective Course

A video projector, projection screen, and laptop.

APPENDIX G

Topics for Conference Abstracts “Art Education: Challenges and Prospects” for Music Art Students

1. The Role of Music Art in Developing Students’ Creativity.
2. Modern Methods of Teaching Music Art in General Secondary Education Institutions.
3. Interactive Technologies in Music Art Lessons.
4. Digital Technologies as a Means of Enhancing Students’ Cognitive Activity in Music Art Lessons.
5. The Use of Multimedia Tools in the Music Education Process.
6. Interdisciplinary Integration in Music Art Lessons as a Means of Developing Students’ Creative Abilities.
7. The Interdisciplinary Approach in the Professional Training of Future Music Art Teachers.
8. Psychological and Pedagogical Foundations of Organizing Students’ Musical Activities.
9. Age-Related and Individual Psychological Characteristics of Students in the Process of Music Education.
10. Students’ Motivation for Musical Activity as a Pedagogical Issue.
11. Teacher–Student Interaction in Music Art Lessons.
12. Developing Students’ Communication Skills through Music Art.
13. Music-Creative Activity as a Means of Students’ Personal Development.
14. Project-Based Learning in Music Art Lessons.
15. The Case Method in the Professional Training of Future Music Art Teachers.
16. Problem Situations in Music Art Lessons and Ways of Addressing Them Pedagogically.
17. Student Reflection as a Means of Enhancing the Effectiveness of Music Education.
18. Creative Tasks as a Means of Developing Students’ Interest in Music Art.
19. The Use of Modern Online Resources in School Music Education.
20. Music Art as a Means of Students’ Emotional Development and Self-Expression.
21. Developing Students’ Value-Based Attitudes toward Music Art.
22. National and Patriotic Education of Students through Ukrainian Music Art.
23. Ukrainian Music Culture in the Content of Contemporary Music Education.
24. The Role of the Music Art Teacher in Creating a Creative Educational Environment.
25. Professional Qualities of a Future Music Art Teacher: A Student’s Perspective.

APPENDIX H

PROBLEM-BASED TASKS

Problem-Based Task 1 “My Professional Profile”

Imagine that you are at the initial stage of your professional development as a future Music Art teacher. Effective pedagogical activity requires not only musical knowledge and performance skills but also communication skills, emotional stability, organizational skills, responsibility, pedagogical tact, and the ability to engage in reflection and professional self-development.

Tasks:

1. Identify 5–7 professionally important qualities required of a Music Art teacher.
2. Assess the level of development of each quality in yourself on a scale from 1 to 5.
3. Identify three qualities that require the greatest development.
4. Analyze the reasons for the insufficient development of the identified qualities.
5. Develop an individual plan for improving these qualities during the upcoming academic semester.
6. Reflect on the following question: “What am I already doing for my professional self-development, and what do I need to change?”

Expected outcome: development of self-analysis and self-assessment skills, professional goal setting, and planning of personal and professional self-development.

Problem-Based Task 2 “Self-Education of a Future Teacher”

A future Music Art teacher often encounters situations that require not only professional knowledge but also the ability to control emotions and behavior, regulate attitudes toward students, and critically evaluate the results of their own professional activity.

Continuation of Appendix H

Problem Situation. After conducting a trial lesson fragment, a student received critical feedback from the instructor. The student believes that their preparation was sufficient and therefore reacts negatively to the feedback and sees no need to change their approach.

Tasks:

1. Identify the psychological problem that has arisen in the described situation.
2. Analyze the possible reasons for the student's negative perception of criticism.
3. Suggest ways of transforming critical feedback into a resource for professional development.
4. Identify the self-development qualities necessary for the student to overcome this situation.
5. Formulate three specific steps the student should take to improve their pedagogical activity.
6. Draw a conclusion about the role of self-reflection and self-assessment in the professional development of a future teacher.

CASE STUDIES**Case Study 1****“The Teacher Who Is Afraid of Making Mistakes”**

Situation. A second-year student majoring in Music Art is actively preparing for teaching practice. She has a good command of musical material and responsibly completes academic tasks; however, she constantly feels anxious when conducting trial lessons. After each lesson, she focuses mainly on her mistakes and believes that she is insufficiently prepared to work with students. As a result, the student avoids active participation in pedagogical activities and increasingly doubts her professional abilities.

Tasks for Students:

1. Analyze the psychological factors that may influence the student's behavior.

Continuation of Appendix H

2. Identify the components of professional readiness that require further development.
3. Propose a self-analysis algorithm for the conducted lesson that would help the student objectively evaluate her own performance.
4. Develop a brief self-development program aimed at increasing confidence in her pedagogical abilities.
5. Identify ways of using positive experiences and mistakes as resources for professional development.
6. Formulate a reflective conclusion from the student's perspective: "What have I learned about myself as a future teacher?"

Cognitive and research component: independent search for information on professional self-development, analysis of psychological factors influencing pedagogical activity, and justification of the proposed approaches to professional self-improvement.

Case study 2**"From Learning Motivation to Professional Self-Development"**

Situation. A second-year student performs successfully academically, but his professional activity is limited to completing compulsory academic assignments. He rarely participates in additional projects, shows little interest in pedagogical research, and does not independently explore new methods of teaching Music Art. When asked about his professional prospects, the student responds: "First, I will finish my studies, and then I will think about what kind of teacher I want to become."

Tasks for Students:

1. Identify the main problem in the student's professional development.
2. Analyze the possible reasons for the insufficient motivation for professional self-development.
3. Identify internal and external motives that may stimulate professional self-development.

Continuation of Appendix H

4. Develop an individual trajectory of the student's professional self-development for one academic semester.
5. Suggest at least five types of self-educational activities that a future Music Art teacher could undertake.
6. Identify criteria by which the student could assess their professional progress at the end of the semester.
7. Draw a conclusion: How does self-development contribute to readiness for future pedagogical activity?

Cognitive and research component: independent search for information on professional motivation and self-development, analysis of the problem, comparison of possible professional development strategies, and justification of an individual self-development trajectory.



МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ВІННИЦЬКИЙ ДЕРЖАВНИЙ ПЕДАГОГІЧНИЙ УНІВЕРСИТЕТ

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24.06.2026 № 06/56

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REFERENCE

on the implementation of the findings of the dissertation research
ZHANG Gege «Formation of Future Music Teachers' Readiness for Professional Activity Based on Interdisciplinary Integration»,
submitted for the award of a Doctor of Philosophy degree in the specialization
011 Educational, Pedagogical Sciences

The findings of Zhang Gege's dissertation research were implemented in 2023–2025 into the educational program of the Vitalii Gazinsky, Department of Vocal and Choral Training, Theory, and Methods of Music Education at the Mykhailo Kotsyubynsky Vinnytsia State Pedagogical University as part of the training of students pursuing a first (bachelor's) degree in the specialty 014 «Secondary Education (Music)».

The content of this dissertation was presented in accordance with the structure of the work, which comprises three interrelated chapters: the theoretical foundations for developing future music teachers' readiness for professional practice; a justification of the pedagogical conditions for developing this readiness based on interdisciplinary integration; and a research-based and experimental evaluation of the effectiveness of the proposed pedagogical conditions. The results of the research conducted by the graduate student confirmed that the comprehensive implementation of pedagogical conditions and the application of a structural-functional model during students' study of the course «Developmental and Educational Psychology» (EC of PT.01.2), «Computer-Based Technologies in the Professional Practice of Specialists» (PT.03) and «Fundamentals of Pedagogical Mastery» (EC of PT.02.2) In accordance with their substantive enrichment through a set of integrated instructional and methodological measures, these measures contributed to the purposeful development – based on interdisciplinary integration – of the motivational-value, cognitive-professional, activity-operational, and reflective-evaluative components of future music teachers' readiness to work in general secondary education institutions. In evaluating and interpreting the results of the dissertation research, the criteria (motivational, substantive, practical, self-actualizing) and levels (high, sufficient, average, low) of students' readiness for their future profession were taken into account. Based on the results obtained, the department's faculty concluded that it is advisable to continue using the theoretical, methodological, and practical materials from this study in the educational process of training students.

A report on the results of implementing the materials from Zhang Gege's dissertation, «Developing the Professional Readiness of Future Music Teachers Based on Interdisciplinary Integration», was discussed and approved at a meeting of the Vitaly Gazinsky Department of Vocal and Choral Training, Theory, and Methods of Music Education (Minutes No. 14 dated June 24, 2026).

Vice Rector for Research



Alla KOLOMIETS

Yevgen Gromov (0432) 61-80-72



Від «28» 08 2026 р. № 47/25 22-33 На № _____ Від « » _____ 20 р.

REFERENCE

on the implementation of the findings of the dissertation research

ZHANG Gege

**«Formation of Future Music Teachers' Readiness for Professional Activity Based
on Interdisciplinary Integration»,**

*submitted for the award of a Doctor of Philosophy degree
in the specialisation 011 «Educational, Pedagogical Sciences»*

The issue of preparing future music teachers for their professional careers is now taking on particular significance in the context of the modernisation of education, which involves the integration of knowledge, skills and methods from various educational disciplines. Contemporary arts and pedagogical practice requires specialists capable of implementing an interdisciplinary approach, establishing links between music and other fields of knowledge, and using integrated teaching methods to develop the creative potential of learners. In this regard, there is a need to improve the content, forms and methods of professional training for future music teachers, aimed at preparing them for teaching practice based on interdisciplinary integration. Consequently, the topic of this doctoral research is relevant both to the contemporary system of arts and teacher education and to the training of competitive specialists who can effectively carry out their professional activities in the current context of educational integration.

Consequently, the key findings of Zhang Gege's doctoral research during the 2023–2025 academic years were incorporated into the educational programme for students of Department of Musicology and Music Education Methods at the Volodymyr Hnatiuk Ternopil National Pedagogical University (from the first to the fourth semester).

The teaching materials developed by the PhD student were utilised in the educational process for trainee music teachers through the implementation of the pedagogical conditions she had identified, which were directly aimed at preparing students of the 014 Secondary Education (Music) programme for their future professional practice.

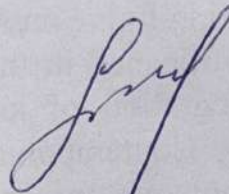
The main conceptual foundations of the doctoral research were incorporated into the students' educational process and implemented during the professional training modules, based on interdisciplinary integration. Their use was designed to systematically develop the readiness of future music teachers for professional practice. Accordingly, during the learning process, the undergraduates in the experimental group learnt to integrate knowledge, skills and methods from various educational disciplines,

to establish interdisciplinary links, and to reflect on their own skills with a view to comprehensively and effectively solving professional tasks. The implementation of the study's conceptual provisions helped students develop a holistic vision of their future professional practice and a readiness to apply an interdisciplinary approach in their music teaching practice.

The introduction of the components of the structural-functional model developed by Zhang Gege into the educational process for Bachelor's degree students in musical arts received favourable feedback and positive impressions from the lecturers involved in the experiment, which attests to the appropriateness of its use in higher education institutions.

The findings of Zhang Gege's doctoral research, «Formation of Future Music Teachers' Readiness for Professional Activity Based on Interdisciplinary Integration», were discussed and unanimously approved at a meeting of the Department of Music (Minutes No.1 dated 1 September 2026).

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№ 467 від 28.08.2026 р. На № від

REFERENCE

on the implementation of the findings of the dissertation research

ZHANG Gege

«Formation of Future Music Teachers' Readiness for Professional Activity Based on Interdisciplinary Integration»,

*submitted for the award of a Doctor of Philosophy degree
in the specialisation 011 «Educational, Pedagogical Sciences»*

A reference was issued to Zhang Gege stating that, the results of her doctoral research were incorporated into the teaching programme of the Department of Musicology, Instrumental Training and Music Education Methodology within the Faculty of Humanities, with the aim of preparing future music teachers for professional practice based on interdisciplinary integration between 2023 and 2025, at the Khmelnytskyi Humanitarian-Pedagogical Academy.

In the course of the research and experimental work, individual components of the structural-functional model developed by the postgraduate student were tested, as well as pedagogical conditions and teaching materials aimed at developing the motivational-value, cognitive-professional, operational-activity and reflective-evaluative components of future music teachers' readiness for professional practice.

In particular, during the implementation of the research findings, materials were utilised concerning the development of future music teachers' readiness for professional practice in general secondary education institutions, based on interdisciplinary integration. Particular attention was paid to developing positive motivation and value orientations among students towards artistic and pedagogical activities, deepening their knowledge of pedagogy, psychology and music teaching

methodology, as well as preparing them to apply integrated knowledge when carrying out professional tasks.

The main provisions of the doctoral research were implemented in the educational process for students through the updating of the content of academic disciplines, the design and delivery of integrated lectures and practical sessions, the completion of interdisciplinary, professionally-oriented tasks, and the critical analysis of pedagogical situations. Considerable attention was paid to the introduction of teaching materials aimed at developing the components of future music teachers' readiness for professional practice, as identified in the research. At the same time, pedagogical conditions were tested to ensure the development of professional reflection, the capacity for self-education, self-improvement and creative self-realisation among future specialists during their preparation for professional practice in general secondary education institutions.

The results obtained demonstrated the practical significance of the structural-functional model, pedagogical conditions and teaching materials developed by the postgraduate student for future music teachers. Their use in higher education institutions contributed to enhancing the practical orientation of the educational process, deepening students' interdisciplinary knowledge, developing professional competence and fostering readiness for the effective implementation of music teaching activities in secondary schools.

The findings of Zhang Gege's doctoral research, entitled «Formation of Future Music Teachers' Readiness for Professional Activity Based on Interdisciplinary Integration», were discussed and approved at a meeting of the Department of Musicology, Instrumental Training and Music Education Methodology at the Khmelnytskyi Humanitarian-Pedagogical Academy (Minutes No. 1, 27 August 2026).

**Vice-Rector for Scientific Work of the
Khmelnytskyi Humanitarian-
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