

The Role of Interdisciplinary Connections in Developing A System of Professional Values for Future Specialists

Ernazarova M. J.

Faculty of Pedagogy

Chirchik State Pedagogical University

<https://orcid.org/0009-0001-6591-7480>

Abstract

This article analyzes, from a scientific-theoretical perspective, the pedagogical potential of interdisciplinary connections in shaping the system of professional values for future specialists. It establishes that, in the context of modern higher education, professional training is not limited to the acquisition of knowledge and skills within a single discipline; rather, it entails the development of values such as professional responsibility, integrity, cooperation, humanism, professionalism, reflexivity, social responsibility, and an awareness of professional identity. The study clarifies the concepts of interdisciplinary connections and integration, elucidating their role in shaping professional values through systemic, learner-centered, competence-based, and axiological approaches. Methods employed include the analysis of scientific literature, comparative analysis, systematization, generalization, and modeling. The results demonstrate that interdisciplinary connections facilitate not merely a mechanical combination of course content, but the creation of substantive, methodological, activity-based, and axiological links between diverse fields of knowledge. These links enable students to perceive professional situations holistically, compare differing viewpoints, make independent decisions, and manifest professional values in practical activities. Additionally, the article proposes an interdisciplinary model for developing the system of professional values for future specialists.

Keywords: Future specialist, professional values, interdisciplinary connections, integration of disciplines, professional competence, axiological approach, professional identification, higher education, integrative learning, reflection.

Introduction

РОЛЬ МЕЖПРЕДМЕТНЫХ СВЯЗЕЙ В СТАНОВЛЕНИИ СИСТЕМЫ ПРОФЕССИОНАЛЬНЫХ ЦЕННОСТЕЙ БУДУЩИХ СПЕЦИАЛИСТОВ

Эрназарова М. Ж.

Чирчикский государственный педагогический университет

Педагогический факультет

<https://orcid.org/0009-0001-6591-7480>

Аннотация

В статье с научно-теоретических позиций проанализированы педагогические возможности межпредметных связей в формировании системы профессиональных ценностей будущих специалистов. Обосновано, что в условиях современного высшего образования профессиональная подготовка специалиста не ограничивается усвоением знаний, умений и навыков в рамках отдельной дисциплины, а предполагает развитие таких ценностей, как профессиональная ответственность, честность, сотрудничество,



гуманизм, профессионализм, рефлексивность, социальная ответственность и осознание своей профессиональной идентичности. В исследовании уточнено содержание понятий межпредметных связей и интеграции, раскрыта их роль в формировании профессиональных ценностей на основе системного, личностно ориентированного, компетентностного и аксиологического подходов. Используются методы анализа научной литературы, сравнительного анализа, систематизации, обобщения и моделирования. Результаты показывают, что межпредметные связи обеспечивают не механическое объединение содержания учебных дисциплин, а создание содержательных, методологических, деятельностных и аксиологических связей между различными областями знаний, позволяющих студенту целостно воспринимать профессиональные ситуации, сопоставлять различные точки зрения, самостоятельно принимать решения и проявлять профессиональные ценности в практической деятельности. В статье также предложена межпредметная модель формирования системы профессиональных ценностей будущих специалистов.

Ключевые слова: будущий специалист, профессиональные ценности, межпредметные связи, интеграция дисциплин, профессиональная компетентность, аксиологический подход, профессиональная идентификация, высшее образование, интегративное обучение, рефлексия.

INTRODUCTION

Relevance of the Issue

Today, a primary objective of higher education is to train specialists who are competitive in the labor market, capable of independent thought, responsible in their professional practice, and aware of the social and ethical consequences of their work. Modern professionals are expected not only to master theoretical knowledge but also to apply it in diverse professional contexts, collaborate with representatives from various fields, analyze problems comprehensively, make responsible decisions, and reflect critically on their own performance. Professional values play a pivotal role in this process. The effectiveness of a specialist's work is largely determined not merely by "what they know," but also by the goals driving their actions, the criteria guiding their decision-making, and their attitude toward their professional practice.

The OECD Learning Compass 2030 framework similarly emphasizes that the key outcomes of future education extend beyond knowledge and skills to encompass values, attitudes, and an individual's readiness for action. Within this framework, knowledge, skills, attitudes, and values are viewed as interconnected competencies.

From this perspective, structuring higher education content solely around discrete disciplines may limit a future specialist's holistic understanding of professional practice. In real-world professional settings, problems are rarely solved within the confines of a single discipline or field of knowledge; rather, they require the integration of pedagogical, psychological, social, ethical, communicative, technological, and other forms of knowledge.

Interdisciplinary connections serve as a pedagogical mechanism that addresses this need. R. Kh. Juraev and A. Zunnunov link the integration of disciplines in the educational process to



the interconnection of course content and the acquisition of knowledge as a unified system. Pedagogical research in Uzbekistan has also explored this approach, focusing on the didactic potential of interdisciplinary connections and integrative learning. S. Kh. Gayupova's study guide **General Pedagogy** also highlights the need for students to acquire not only pedagogical knowledge but also professional and personal qualities during their higher education. In the textbook **General Pedagogy** by S. B. Koraev and Sh. A. Abduzhalilova, published in 2024, innovative methods, educational content, professional interest, and student personal development are examined as interconnected components of the pedagogical process.

Extent of research on the problem

The issue of interdisciplinary learning and integration has been extensively studied in pedagogy, didactics, psychology, and the methodology of vocational education. Specifically, the methodological foundations of interdisciplinary connections have been examined in the research of B. S. Abdullaeva; issues regarding the integration of academic disciplines have been addressed in the works of R. Kh. Juraev and A. Zunnunov; and the potential of an integrative approach in professional training has been explored in a number of domestic studies.

International research highlights the impact of interdisciplinary learning on the development of students' high-level thinking, the synthesis of diverse perspectives, and the resolution of complex problems. A systematic review by Spelt et al. on interdisciplinary learning in higher education demonstrates that such learning enables students to connect different knowledge systems and organize their activities in alignment with educational goals.

Contemporary studies also link interdisciplinary learning to the formation of professional identity. Research by Dezutter and Burke Johnston has established that interdisciplinary courses help students refine their professional identities and enhance the effectiveness of their collaboration with representatives from various disciplines.

At the same time, the pedagogical systematization of the mechanisms underlying interdisciplinary connections—specifically regarding the formation of a professional value system among future specialists—requires further in-depth study.

Research Objective

The objective of this study is to provide a theoretical rationale for the pedagogical potential of interdisciplinary connections in the development of a professional value system for future specialists and to identify the structural components of an effective interdisciplinary model.

Research Tasks

To achieve this objective, the following tasks have been defined:

To clarify the pedagogical content of the concept of "professional values."

To analyze the nature of interdisciplinary connections and integration in higher education.

To identify the mechanisms by which professional values are formed through interdisciplinary connections.

To determine the pedagogical conditions influencing the formation of a professional value system. To propose a model for the formation of professional values based on interdisciplinary learning.



RESEARCH METHODOLOGY

The study is theoretical and analytical in nature. It involves an analysis of academic literature on pedagogy and contemporary international research.

The methodological framework of the study is based on systems, person-centered, competence-based, axiological, and integrative approaches.

Systems Approach

Within the framework of the systems approach, professional values are viewed not as a collection of separate, disconnected qualities, but as an integral system of interconnected components.

This system can be broadly categorized into the following components:

motivational-value;

cognitive;

emotional-axiological;

action-oriented (behavioral);

reflective.

The motivational-value component reflects the student's positive attitude toward the profession; the cognitive component encompasses their knowledge of professional values; the emotional-axiological component involves the internal acceptance of these values; the action-oriented component concerns their manifestation in practical situations; and the reflective component entails the evaluation of one's own professional views and actions.

Axiological Approach

The axiological approach is a key methodological direction in research. The essence of forming professional values lies not merely in the student's acquisition of specific knowledge, but in their realization of the personal and professional significance of that knowledge and activity.

In an OECD study on integrating values and attitudes into the curriculum, values are defined as principles that guide an individual's decisions, choices, judgments, and actions.

Consequently, the process of forming professional values requires more than simply "conveying information about a value." The student must recognize and accept the value, express their attitude toward it, and demonstrate it through their actions.

Competence-Based Approach

The competence-based approach posits the inseparability of professional values, knowledge, skills, and attitudes. In the OECD framework, competence is also viewed as the ability to mobilize knowledge, skills, attitudes, and values when performing complex tasks.

Therefore, it is appropriate to view professional competence as a unified whole comprising these elements:

knowledge + skills + attitudes + values + experience + reflection. Research Methods

The study employed the following methods:

analysis of scientific and pedagogical literature;

comparative analysis;

content analysis;



systematization;

generalization;

pedagogical modeling;

theoretical synthesis.

The conceptual foundations of the study can also be linked to Biggs's theory of constructive alignment. This theory establishes the necessity of aligning educational objectives, learning activities, and assessment outcomes.

This principle is also significant for interdisciplinary learning: if the goal is to foster professional values, then the learning content, assignments, pedagogical methods, and assessment criteria must all be directed toward this outcome.

RESULTS

1. The pedagogical content of the concept of professional values

Professional values constitute a system of socially and professionally significant values that shape an individual's attitude toward a specific professional activity, as well as their professional decisions, actions, and goals.

Professional values may manifest in the following groups:

Группа профессиональных ценностей	Содержание
Профессиональная ответственность	Качественное и добросовестное выполнение профессиональных обязанностей
Честность и академическая честность	Приверженность истине, неприятие плагиата и фальсификации
Гуманизм	Признание ценности и уважение человеческой личности
Профессионализм	Постоянное совершенствование профессиональных знаний и квалификации
Сотрудничество	Эффективная работа в команде
Справедливость	Обеспечение беспристрастности в решениях и отношениях
Рефлексивность	Критическая оценка собственной деятельности и решений
Инновационность	Открытость нововведениям и поиск новых решений
Социальная ответственность	Осознание влияния профессиональной деятельности на общество
Саморазвитие	Стремление к непрерывному профессиональному развитию

Thus, professional values represent more than just a collection of moral concepts; they function as a system of internal criteria governing the mechanism by which a specialist makes professional decisions.



2. The relationship between interdisciplinary connections and the integration of disciplines

The concepts of "interdisciplinary connections" and "integration of disciplines" are closely related but not identical in content.

Interdisciplinary connections involve identifying substantive, methodological, and activity-based links between various academic disciplines and utilizing them within the educational process.

The integration of disciplines is the process of systematizing these connections at a higher level and forming new, holistic knowledge, activities, or competencies based on knowledge drawn from various disciplines.

The works of R. Kh. Juraev and A. Zunnunov on the integration of academic disciplines constitute a key theoretical foundation for studying this issue within pedagogical research in Uzbekistan.

From this perspective, the article proposes the following logical sequence:

Interdisciplinary connections → integrated content → integrative activity → professional situation → reflection → internalization of value → professional value.

This sequence makes it possible to link the formation of professional values not only to spiritual and educational activities but also directly to the content and activities of the educational process itself.

3. Mechanism for forming professional values through interdisciplinary connections

As a result of the research, a five-stage mechanism for forming professional values through interdisciplinary connections has been proposed.

Stage One: Content integration

At this stage, the content of several disciplines is combined around a specific professional issue. For example, in the training of future educators, the content of disciplines—
pedagogy + psychology + ethics + communication + information technology—
can be integrated within the framework of the issue: "the professional activity of the modern teacher."

Such integration allows the student to analyze professional activity not only based on pedagogical knowledge but also from psychological, ethical, and communicative perspectives.

Stage Two: Professional problem situation

The student is presented with a real or simulated professional problem.

For example:

A teacher needs to work with a gifted but socially withdrawn student in the classroom. How can this situation be resolved from pedagogical, psychological, and ethical perspectives?

In this situation, the student does not simply look for a "correct answer." Instead, they use values such as:

humanism;

fairness;

pedagogical responsibility;

an individualized approach;

professional ethics,



as criteria for making a decision.

Stage Three: Collaborative activity

When completing interdisciplinary tasks in small groups, the student learns to listen to other points of view, justify their own opinion, and reach a collective decision.

This fosters professional values such as cooperation, tolerance, communicative competence, and mutual respect.

Stage Four: Reflection

After completing the task, the student answers the following questions:

What decision did I make?

What values influenced this decision?

What other solutions were possible?

Whose interests are affected by my decision? What are the strengths and weaknesses of my decision from a professional perspective?

Reflection is a crucial means of transforming professional values from an external requirement into an internal conviction.

Research on professional identity also shows that reflection fosters a student's awareness of their professional self.

The fifth stage is the manifestation of the value in practice.

To determine the extent to which a professional value has been internalized, one must assess the student's behavior in real-world activities rather than their knowledge of the value.

For example:

Giving the correct answer to the question "What is responsibility?" does not fully demonstrate the development of professional responsibility.

Instead,

the question posed is: "Is the student capable of making a responsible decision in a professional situation?"

Consequently, when assessing professional values, it is advisable to use situational tasks, case studies, portfolios, reflective journals, project work, and observational criteria.

4. Interdisciplinary learning and professional identity

The formation of professional values is closely linked to the process of professional identity formation.

Professional identity is an individual's awareness of themselves as a member of a specific professional community. Alongside the question "What kind of professional will I become?", the questions "What kind of professional do I **want** to become?" and "What kind of professional **should** I be?" are also important.

Modern research views professional identity as a complex process involving knowledge, values, motives, experience, and beliefs.

Interdisciplinary courses allow students to compare their own profession with others. A study by Dezutter and Burke Johnston found that collaboration among students from different fields in interdisciplinary courses fosters a better understanding of one's own professional identity and enhances the effectiveness of interdisciplinary cooperation.

Thus,



interdisciplinary connections → understanding other professions → recognizing the boundaries of one's own profession → defining the professional "self" → internalizing professional values

form a corresponding mechanism.

This is particularly important for educators, physicians, lawyers, psychologists, engineers, and professionals in other fields involving high social responsibility.

DISCUSSION

Research findings indicate that it is insufficient to entrust the formation of professional values to a single "educational event" or to just one academic discipline. Professional values must be reflected in all components of the educational process:

goal → content → method → activity → interaction → assessment → reflection.

This idea aligns with Biggs's concept of constructive alignment, according to which educational goals, learning activities, and assessment must be consistent with one another.

If the goal of higher education is to prepare a specialist who embodies professional values, then this goal must be reflected:

in course syllabi;

in learning assignments;

in seminars and practical classes;

in independent study;

in practical application;

in assessment criteria

...should be reflected.

Three levels of interdisciplinary connections

According to research findings, interdisciplinary connections in the formation of professional values can be organized at three levels.

The first level is a connection based on content.

Topics from different disciplines are linked together.

The second level is integration through activity.

A single practical task is carried out using knowledge from various disciplines.

The third level is axiological integration.

A problem is analyzed from the perspectives of various disciplines, and its professional-ethical significance is determined.

The third level is particularly important. It is at this stage that the student moves from the question "What do I know?" to the question "For what purpose should I use the knowledge I possess?"

Model for the formation of professional values based on interdisciplinary connections

Based on the research, the following model can be proposed:

GOAL: Formation of a system of professional values

METHODOLOGICAL APPROACHES: Systems-based + learner-centered + competence-based + axiological + integrative

CONTENT: Pedagogical knowledge

psychological knowledge



professional ethics

communication knowledge

digital competencies

practical knowledge

PEDAGOGICAL CONDITIONS

alignment of course content;

identification of common professional issues;

integrative tasks;

professional scenarios;

project-based activity;

reflection;

connection to practice. PEDAGOGICAL TECHNOLOGIES

Case study

Problem-based learning

Project-based learning

Debate

Role-playing

Portfolio

Reflective journal

STEAM/STEM elements

Digital collaboration

ACTIVITIES

Inquiry → analysis → integration → decision-making → practical application → reflection

OUTCOME

A future specialist who recognizes and embraces professional values and is capable of demonstrating them in professional practice.

Criteria for the formation of professional values

Based on the proposed approach, the level of professional value formation can be assessed according to the following criteria:

Критерий	Показатели
Мотивационный	Интерес к профессии, наличие профессиональной цели
Когнитивный	Знание и объяснение содержания профессиональных ценностей
Аксиологический	Принятие профессиональных ценностей как личных убеждений
Деятельностный	Применение ценностей в реальных профессиональных ситуациях
Рефлексивный	Анализ и оценка собственных профессиональных решений

В соответствии с ними можно выделить три уровня:

Low level

The student has a general understanding of professional values but struggles to relate them to professional practice.



Medium level

The student understands the essence of professional values and strives to apply them in various situations, yet their decisions lack consistency.

High level

The student embraces professional values as personal convictions, makes decisions independently and responsibly in complex professional situations, and reflects critically on their own practice.

These criteria can subsequently serve as a methodological basis for comparing experimental and control groups in experimental research.

Limitations of the interdisciplinary approach

At the same time, it is incorrect to assume that interdisciplinary learning is automatically effective. The interdisciplinary approach in itself does not guarantee the formation of professional values.

For example, a 2016 study by Stull and Blue involving 864 healthcare students found that short-term interprofessional training did not automatically lead to improvements in professional identity or attitudes toward other professions.

This leads to an important methodological conclusion:

A key factor in the formation of professional values is not the mere presence of interdisciplinary learning, but the way it is designed.

Therefore, interdisciplinary connections must be grounded in the following elements:

a clear professional goal;

carefully developed tasks;

real-world professional situations;

reflective practice;

peer assessment;

links to practical application.

Recent studies from 2026 also highlight the link between professional identity and skills such as "crossing disciplinary boundaries," integrating diverse knowledge systems, and engaging in reflection within interdisciplinary learning. Consequently, interdisciplinary connections should be organized as a systemic pedagogical process leading from the integration of content to the integration of activity, and subsequently to the formation of professional values.

CONCLUSION

Based on the theoretical analysis conducted, the following conclusions have been drawn.

First, in modern higher education, the professional training of a future specialist should not be limited to the development of knowledge and skills. Values, attitudes, a sense of responsibility, a moral stance, and professional identity—which define a specialist's professional practice—are also crucial components of educational outcomes. Modern OECD educational concepts define competence as an integration of knowledge and skills with values and attitudes.

Second, interdisciplinary connections offer significant pedagogical potential for fostering professional values. They enable students to examine professional issues from the perspectives of various disciplines and fields of knowledge, compare different viewpoints, and formulate holistic solutions.



Third, it is essential to distinguish between the concepts of interdisciplinary connections and the integration of disciplines. Interdisciplinary connections represent the links between disciplines, whereas integration entails combining these links into a unified body of content and activity.

Fourth, an effective mechanism for fostering professional values should be organized based on the following sequence: knowledge — problem situation — activity — collaboration — reflection — practical manifestation of values.

Fifth, interdisciplinary learning facilitates the development of professional identity. Collaborating with representatives from various disciplines and professions helps students recognize their professional role, understand their profession's place in society, and refine their professional values.

Sixth, the effectiveness of interdisciplinary learning depends not on a simple mechanical combination of disciplines, but on the alignment of content, activities, methods, assessment, and reflection around a shared goal. Thus, the use of interdisciplinary connections in the formation of the professional value system of future specialists can be regarded as a key pedagogical condition for strengthening the competence-based, axiological, and person-oriented content of higher education.

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