

The Role of Public Mathematics Courses in The "Collaborative Training of Media Professionals on GIS Cooperation"

Chen Liang¹ and Lipu Zhang^{1,*}

¹College of Media Engineering, Communication University of Zhejiang, Hangzhou, 310018, China

*Corresponding Author. mathcuz.126.com

Abstract

This paper delves into the significance and impact of public mathematics foundation courses in the context of "collaborative training of media professionals in government-industry-research cooperation." As the media industry's demand for data analysis, decision-making, and innovation skills continues to grow, these courses play a vital role in equipping aspiring media professionals with essential mathematical knowledge and tools. By studying disciplines such as advanced mathematics, linear algebra, probability theory, and mathematical statistics, students can acquire expertise in data analysis and modeling techniques while fostering innovation and problem-solving abilities. Moreover, mathematics courses encompass content relevant to digital media, bolstering the quality and creativity of media productions. The inclusion of interdisciplinary learning and collaboration further strengthens students' overall competency and proficiency in cross-domain teamwork. The findings underscore the invaluable contribution of public mathematics foundation courses in instilling essential mathematical foundations, data analysis skills, and promoting interdisciplinary collaboration, which collectively establish a firm groundwork for aspiring media professionals to excel in the industry.

Keywords

Public Mathematics Foundation Courses, Data Analysis, Innovation Skills, Interdisciplinary Collaboration.

1. Introduction

The collaborative training of media professionals through government-industry-academia cooperation has become a highly discussed topic in the rapidly developing media industry. The goal is to cultivate media talents with diverse qualifications and interdisciplinary backgrounds to meet the challenges and needs of industry development. Current research aims to explore the theoretical framework and practical experiences of collaborative training in government-industry-research (GIS) cooperation, in order to promote media education and industry advancement.

Renowned scholars in China have made significant research contributions to the collaborative training of media professionals in GIS cooperation. Chi Yingzhi[1] emphasizes the importance of collaborative training and explores methods to create authentic media environments and foster collaborative innovation practices. Du Junfei[2] shares valuable experiences from the School of Journalism and Communication at Nanjing University, providing students with practical opportunities and high-quality educational resources through GIS cooperation. This includes establishing stable mechanisms and platforms for in-depth exchanges. Li Wenbing[3] proposes the concept of "GIS utilization" and explores new approaches to cultivating outstanding journalism talents. She suggests that through the establishment of experimental

bases and project research, the government, industry, and academia can provide opportunities for multidisciplinary knowledge and practical skills for journalism talents. Yu Yuemei's[4] research explores innovative pathways for media talent cultivation in the era of converged media, emphasizing the importance of close collaboration with the industry and interdisciplinary education.

The latest research emphasizes the interaction and sharing of resources in the collaborative training of media professionals in GIS cooperation. Li Wenbing's[5] research emphasizes the need to strengthen cooperation and communication among all stakeholders, and to establish effective cooperative mechanisms and sharing platforms to fully utilize and optimize resources. In summary, the collaborative training of media professionals through government-industry-academia cooperation plays a crucial role in the media industry. The insights and experiences shared by scholars contribute to the cultivation of talented individuals and the advancement of the industry as a whole. This collaborative approach allows for the development of interdisciplinary skills, practical expertise, and innovative thinking among students. It also promotes closer ties between academia and industry, leading to resource sharing and cooperative exchanges. Moving forward, we can expect further development in this area, resulting in a greater number of highly qualified professionals who will drive the growth and success of the media industry.

In today's society, the media industry is facing intense competition and the rapid advancement of technology. The emergence of the information age has resulted in a massive amount of data being generated and circulated. Media professionals must accurately analyze this data, make informed decisions, and create innovative content, making skills in data analysis, decision-making, and innovation in high demand.

Mathematics plays a crucial role in the education of media professionals as a fundamental discipline. While it may not always take center stage in the media industry, mathematics is essential. Firstly, mathematics equips students with the knowledge and tools necessary for data analysis and decision-making. Through studying advanced mathematics, linear algebra, probability theory, and mathematical statistics, students gain skills in data processing, analysis, and modeling. This enables them to understand and apply vast amounts of media data effectively. Mathematical foundations provide a solid footing for accurate data analysis and support informed decision-making.

Secondly, mathematics is not merely a tool but a discipline that cultivates logic and abstract reasoning skills. These skills are vital for fostering innovation in media professionals. The media industry requires constant innovation in content and form to meet the ever-evolving and diverse audience needs. By studying mathematics, media practitioners can enhance problem-solving, creativity, logical thinking, and adaptability to complex issues. These skills enable them to propose unique solutions and ideas to meet the industry's demands.

The rise of digital media technology further underscores the importance of mathematics in the education of media professionals. Mathematics courses now include topics such as digital signal processing, image processing, and data compression. This integration helps media practitioners better understand and utilize digital media technology, enhancing their technical and creative abilities to produce high-quality media works.

In the information age, the media industry places increasing importance on skills in data analysis, decision-making, and innovation. Mathematics foundation courses provide media professionals with the necessary knowledge and tools to tackle challenges and achieve success. Therefore, studying the role of mathematics in the education of media talents holds significant theoretical and practical significance.

2. Mathematics Plays A Foundational Role in The Development of Media Talents.

Mathematics, as a fundamental discipline, provides essential knowledge and tools for data analysis and decision-making in the media industry. In the media industry, a large amount of data is generated and accumulated, including user behavior data, market trend data, social media data, etc. The analysis and interpretation of this data are crucial for media professionals as they provide insights into audience demographics and market demands, enabling the formulation of relevant strategies and decisions.

Firstly, statistical analysis and probability theory in mathematics play a crucial role in data analysis. Media professionals need to master statistical principles such as sample selection, hypothesis testing, regression analysis, etc., to understand the distribution, correlation, and trends in the data. The application of probability theory helps them evaluate and quantify uncertainties and make corresponding risk decisions. For example, in market research, by analyzing the collected data using mathematical statistical methods, media professionals can accurately predict the preferences and demands of the target audience, thus formulating more targeted marketing strategies.

Secondly, linear algebra and matrix operations in mathematics are essential for data processing and model building. The media industry often involves large-scale datasets and complex models, such as recommendation algorithms, user profiling, sentiment analysis, etc. By studying linear algebra and matrix operations, media professionals can process data, extract features, and optimize models to obtain more accurate and reliable results. For example, in recommendation algorithms, through mathematical modeling and optimization methods, personalized recommendation services can be implemented to enhance user experience and satisfaction.

In addition, mathematical logical thinking and analytical skills are crucial for decision-making. Media professionals need to analyze data and situations to identify the essence and key factors of the problem, and make effective decisions based on these analysis results. Mathematical logical thinking helps them extract key elements from complex information and engage in reasonable reasoning and argumentation. At the same time, mathematical analytical skills enable them to understand causal relationships between data and consider the overall impact of various factors in decision-making. For example, in media placement decisions, through mathematical analysis and logical reasoning, media professionals can identify target audiences, choose appropriate media channels, and optimize advertising placement strategies to achieve optimal marketing results.

In conclusion, mathematics provides the necessary foundation of knowledge and tools for data analysis and decision-making for media professionals. From statistics, probability theory to linear algebra and logical thinking, mathematics provides a solid foundation for understanding and applying a large amount of media data, helping to improve the accuracy of data analysis and the reliability of decision-making. Therefore, emphasizing the learning and cultivation of mathematical foundations is essential and important in the cultivation of media talents.

3. Mathematics Plays A Crucial Role in Fostering Innovation Capabilities in Media Professionals.

Mathematics is not just a tool; it has its own unique value and influence, playing a crucial role in fostering innovation capabilities in media professionals. The logical thinking and abstract reasoning abilities of mathematics can help media professionals develop the ability to think deeply, identify the essence of problems, and creatively solve them.

Firstly, logical thinking in mathematics forms the foundation for cultivating innovation capabilities. In the process of learning mathematics, media professionals need to learn how to

apply rigorous logical reasoning and proof methods to solve problems. This training in logical thinking helps them to clarify the cause-and-effect relationships between problems, infer deeper conclusions, and gain new insights and inspirations. Moreover, mathematics trains people to analyze various aspects and possibilities of a problem, rather than just sticking to surface phenomena. This way of thinking is significant for media professionals in their innovative work, such as creating news reports, planning marketing campaigns, or developing new media products.

Secondly, the abstract reasoning ability of mathematics can stimulate the creativity of media professionals. Concepts and principles in mathematics often require abstraction and concretization. By applying the abstract thinking of mathematics to the media field, media professionals can unleash their creativity and innovative awareness. For example, in advertising design, media professionals can create unique graphics and effects by utilizing geometric knowledge from mathematics to attract audience attention. In content creation, the abstract reasoning ability of mathematics helps media professionals to critically think about storylines, character relationships, and emotional expressions, enabling them to produce more creative and high-quality works.

Furthermore, the thinking approach of mathematics encourages media professionals to maintain flexibility and innovation when facing challenges. Mathematics requires constantly examining and questioning existing theories and methods, and being willing to explore new approaches and ideas. This open-minded thinking enables media professionals to keenly observe industry trends and changes in audience needs, enabling them to adjust strategies, innovate content, and develop new business models in a timely manner.

In summary, mathematics not only provides the necessary tools for data analysis and decision-making to media professionals but, more importantly, the logical thinking and abstract reasoning abilities of mathematics are the key to cultivating their innovation capabilities. This way of thinking is crucial for innovation and development in the media industry, as it helps them identify problems, solve them, and create unique solutions and ideas. Therefore, emphasizing the cultivation of mathematical literacy in the training of media talents not only contributes to their success in data analysis and decision-making but also stimulates their innovation potential and drives progress in the entire industry.

4. Mathematics Provides An Important Platform for Media Talents

The acquisition of mathematical knowledge can promote interdisciplinary learning and collaboration for media talents. Through cooperation with other disciplines such as cultural media studies and computer science, it cultivates the comprehensive abilities and interdisciplinary collaboration skills of media professionals, enabling them to better address the increasingly complex and diversified challenges in the media industry.

Firstly, collaboration between mathematics and cultural media studies enhances the humanistic literacy and cultural sensitivity of media professionals. Mathematics and cultural media studies have unique and complementary perspectives and methods. By combining the knowledge and skills of both, media professionals can better understand and interpret the impact of cultural phenomena on the media industry. For example, in the cultural and creative industries, media professionals can use statistical analysis and numerical models from mathematics to predict and evaluate the audience and market potential of cultural products, enabling targeted promotional and marketing activities.

Secondly, collaboration between mathematics and computer science enhances the technical skills and digital literacy of media professionals. In the digital age, computer science plays a crucial role in the media industry. Through collaboration with computer science, media professionals can learn and apply knowledge and methods from computer science, such as data

mining, machine learning, artificial intelligence, to process and analyze massive media data, improving the accuracy and efficiency of data analysis and decision-making. Moreover, they can collaborate with computer science students and experts to develop and optimize various media applications, software, and technological tools, providing better user experiences and services. Furthermore, collaboration between mathematics and other related disciplines broadens the horizons and thinking approaches of media professionals. As a discipline of abstract thinking and logical reasoning, mathematics helps media professionals approach and solve problems from different perspectives and levels. Through collaboration with other disciplines, media professionals can communicate and collaborate with people from different backgrounds and professions, gaining in-depth knowledge and methods from various fields, fostering cross-disciplinary integration, and thus gaining broader and more profound opportunities for thinking and innovation.

In conclusion, mathematics is of significant importance for interdisciplinary learning and collaboration. Through collaboration with other disciplines such as cultural media studies and computer science, mathematics cultivates the comprehensive abilities and interdisciplinary collaboration skills of media professionals. In the media industry, comprehensive abilities and interdisciplinary collaboration skills are crucial for addressing challenges and driving innovation. Through collaboration between mathematics and other disciplines, media professionals can approach problems from multiple perspectives and dimensions, acquire more diverse knowledge and skills, enhance work efficiency and quality, and better meet user and market demands.

5. The Integration of Mathematics with Media-Related Courses.

The integration of mathematics courses with media-related content is of significant importance. Integrating mathematics courses with media technology helps students understand and apply mathematical techniques, thereby enhancing the quality and creativity of media works.

Firstly, mathematics courses can cover content related to media technology, such as data analysis and statistics. Data plays an extremely important role in the media industry. Through mathematics courses, students can learn and master methods and techniques for collecting, organizing, analyzing, and presenting data. For example, students can learn how to use statistical principles to analyze audience characteristics and interests, enabling better marketing strategies and optimizing content creation. Additionally, mathematics courses can also include foundational knowledge of data visualization, allowing students to understand how to present data in graphical ways to effectively communicate information and ideas.

Secondly, mathematics courses can cover content related to graphics and geometry, which are crucial in the media industry. Students can learn and apply geometric principles from mathematics, such as linear algebra and transformation geometry, to design and optimize layouts, visual effects, and image processing. For example, in graphic design, students can use mathematical principles of proportion and symmetry to create aesthetically appealing layouts and graphics, enhancing visual effects and user experience. Moreover, students can learn three-dimensional geometric knowledge from mathematics, such as perspective projection and spatial transformations, to design content and experiences in virtual reality and augmented reality.

Additionally, mathematics courses can also cover content related to algorithms and programming. In the modern media industry, algorithm and programming skills are important for handling and analyzing big data, developing new media products, and implementing automated processes. Through mathematics courses, students can learn and understand the principles and mechanisms of algorithms, such as sorting algorithms and search algorithms. They can also learn and master programming languages and tools like Python and MATLAB to

implement applications and innovations based on mathematical techniques. For example, students can write code to perform tasks like image processing, video editing, and data visualization, enhancing the quality and creativity of media works.

Therefore, by covering content related to media technology, mathematics courses help students understand and apply mathematical techniques, thereby enhancing the quality and creativity of media works. Through the study of data analysis and statistics, students can better handle and utilize data for precise content creation and marketing. Through the study of graphics and geometry, students can design visually appealing visual effects and image processing. Through the study of algorithms and programming, students can implement automated processes and develop innovative media technologies. Integrating mathematics courses with media technology not only helps students develop mathematical thinking and skills but also cultivates their practical application abilities and innovation awareness in the media industry.

6. Conclusion

Research results have shown that public mathematics foundation courses play an important role in the collaborative cultivation of media talents in the government, industry, academia, and research sectors. By collaborating with other disciplines such as cultural media studies and computer science, media talents can cultivate comprehensive abilities and interdisciplinary collaboration skills, providing effective solutions to address challenges in the media industry.

Combining mathematics with media talents also requires attention to future development directions and trends. Firstly, it is necessary to strengthen interdisciplinary collaboration and innovate educational models. The development of the media industry is closely related to the continuous evolution of technology. Mathematics courses need to have more in-depth cross-disciplinary integration with other subjects to jointly cultivate talents with media technology and innovation capabilities. Secondly, attention should be given to the introduction of practice and practical cases. By collaborating with industry enterprises and incorporating practical cases into mathematics courses, students can have a better understanding of the practical applications of mathematical knowledge in the media industry. Additionally, emphasis should be placed on cultivating innovative thinking and entrepreneurial spirit, encouraging students to explore and practice media innovation and entrepreneurship.

In conclusion, mathematics plays an important role in the collaborative cultivation of media talents in the government, industry, academia, and research sectors. Through collaboration with other disciplines, students can develop comprehensive abilities and interdisciplinary collaboration skills, enhancing the quality and creativity of media works. Future research should focus on interdisciplinary collaboration and educational model innovation, the introduction of practice and practical cases, and the cultivation of innovative thinking and entrepreneurial spirit. This will further promote the role of public mathematics foundation courses in cultivating media talents and contribute to the innovation and development of the media industry.

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