A COMPARATIVE ANALYSIS OF INTERDISCIPLINARY PRACTICES IN ECONOMICS AND INFORMATION TECHNOLOGY EDUCATION

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Abstract: The present study examines the role of the interdisciplinary approach as a key factor in the modernization of contemporary education. In the context of rapid technological advancement and increasing societal complexity, traditional discipline-based teaching models are becoming insufficient to address the demands of the 21st century. As a result, there is a growing need for educational practices that promote the integration of knowledge, skills, and perspectives across different fields. To address this need, the study adopts a mixed-methods research design, combining quantitative data from a survey conducted among 80 participants (teachers and university students) with qualitative insights obtained through semi-structured interviews. The findings indicate a high level of positive attitudes toward interdisciplinary learning ($M = 4.21$), accompanied by a moderately high level of its practical implementation ($M = 3.78$). A statistically significant difference was observed between teachers and students in terms of application. In addition, the results of the analysis of variance (ANOVA) confirm significant differences in the level of knowledge and application of the interdisciplinary approach ($p < 0.05$), while no significant differences were found in attitudes and perceived effectiveness. Furthermore, a moderate positive relationship ($r = 0.62$) was identified between the level of knowledge and application and its perceived effectiveness. The results reveal a noticeable gap between theoretical recognition and practical implementation of interdisciplinary teaching, influenced by factors such as limited time, insufficient training, and lack of institutional support. The study highlights the need for targeted teacher training and the integration of interdisciplinary practices into educational curricula. In conclusion, the interdisciplinary approach represents a key mechanism for improving educational quality and preparing learners for real-world challenges by fostering critical thinking, creativity, and collaboration.
Keywords: higher education; comparative analysis; economics; information technology education; teaching methods.

1. INTRODUCTION

In the context of rapid technological development and increasing global complexity, higher education is undergoing significant transformation. Traditional discipline-based teaching models are increasingly challenged by the need to develop flexible and transferable skills applicable across different fields. In response, the interdisciplinary approach has emerged as a key strategy for enhancing the relevance and effectiveness of contemporary education (OECD, 2019; UNESCO, 2021). It involves integrating knowledge and methods from multiple disciplines to address complex real-world problems and supports the development of essential 21st-century competencies such as critical thinking, creativity, problem-solving, and collaboration (Repko & Szostak, 2021; Klein, 2017). Despite its recognized benefits, the implementation of interdisciplinary teaching varies across academic fields. Information Technology is typically characterized by an applied, problem-oriented learning environment that naturally supports interdisciplinary integration, while Economics remains more theoretically oriented. This raises important questions regarding how interdisciplinary is perceived and applied in different domains. Previous research highlights the influence of disciplinary differences on teaching practices and learning outcomes (Drake & Reid, 2020; Schleicher, 2020). However, comparative empirical studies across specific academic fields remain limited. Therefore, the present study aims to analyse interdisciplinary teaching practices in Economics and Information Technology by examining differences in knowledge, application, attitudes, and perceived effectiveness. The findings contribute to a better understanding of how interdisciplinary education can be effectively implemented across diverse academic contexts.

2. MATERIALS AND METHODS

Research Design and Participants

The study adopts a comparative mixed-methods design, combining quantitative and qualitative approaches to examine differences in the application of the interdisciplinary approach between Economics and Information Technology. This design enables the integration of statistical analysis with qualitative insights, providing a comprehensive understanding of interdisciplinary practices (Creswell & Creswell, 2018; Flick, 2018). Interdisciplinary approaches are particularly prominent in Information Technology education, where applied, project-based, and problem-oriented learning environments support the integration of knowledge from multiple domains (ACM, 2020; Kolmos et al., 2016). In contrast, Economics education, although increasingly incorporating

interdisciplinary elements, remains more theoretically oriented, which may influence the level of practical application (Becker, 2017; OECD, 2019). The study was conducted among 80 participants from Trakia University, Bulgaria, including both lecturers and students. The sample was equally divided between the two disciplines: 40 participants from Economics (25 lecturers and 15 students) and 40 from Information Technology (25 lecturers and 15 students). Participants were selected through purposive sampling based on their experience or interest in interdisciplinary teaching. All participants provided informed consent, and ethical standards regarding anonymity and confidentiality were strictly observed.

Data Collection Instrument and Measurement

To collect empirical data, the study utilized two complementary instruments: a self-administered questionnaire and semi-structured interviews, aligned with the comparative mixed-methods framework. The questionnaire was designed specifically for this research and includes 20 items grouped into three thematic sections: (1) participant profile and disciplinary background (Economics or Information Technology); (2) extent of familiarity with and use of interdisciplinary approaches; and (3) perceptions regarding the value and effectiveness of interdisciplinary learning.

The second scale, "Attitudes, Perceptions, and Effectiveness of Interdisciplinary Learning," includes seven items focusing on perceived educational benefits, such as improved comprehension, increased learner motivation, enhancement of critical and creative thinking, development of teamwork competencies, and the applicability of knowledge in real-world contexts. These aspects are particularly significant in contemporary learning environments, especially within technology-oriented fields that emphasize integration and problem-solving (ACM, 2020; Kolmos et al., 2016). The internal consistency of the scales was evaluated using Cronbach's alpha coefficient. The results demonstrate strong reliability of the measurement instrument. For the overall sample, the first scale yielded a coefficient of $\alpha = 0.86$, while the second scale reached $\alpha = 0.91$, indicating good to very good internal consistency according to established methodological standards (Taber, 2018). To further validate the instrument in a comparative context, reliability analysis was conducted separately for each disciplinary group. In the Economics group, Cronbach's alpha values were $\alpha = 0.84$ for the first scale and $\alpha = 0.89$ for the second. In the Information Technology group, slightly higher values were recorded ($\alpha = 0.87$ and $\alpha = 0.92$), which may be associated with the applied and integrative nature of IT education. Overall, the results confirm that the instrument demonstrates stable and consistent measurement properties across different academic disciplines, making it appropriate for comparative analysis.

3. RESULTS

Descriptive Statistics

The descriptive analysis reveals noticeable differences between participants from the fields of Economics and Information Technology in terms of their knowledge, application, and perceptions of the interdisciplinary approach.

Table 1. Descriptive statistics by discipline

Scale	Discipline	N	Mean	SD	Cronbach's α
Knowledge and Application	Economics	40	3.62	0.66	0.84
	Information Technology	40	3.94	0.58	0.87
Attitudes and Effectiveness	Economics	40	4.15	0.60	0.89
	Information Technology	40	4.28	0.55	0.92

Source: own compilation.

The results indicate that participants from Information Technology demonstrate higher levels of both application (M = 3.94) and positive attitudes (M = 4.28) compared to participants from Economics (M = 3.62 and M = 4.15 respectively).

Table 2. Mean values of selected items by discipline

Statement	Economics (M)	IT (M)	SD
I apply interdisciplinary methods in my work	3.45	3.88	0.78
I feel confident using interdisciplinary approaches	3.58	3.92	0.74
Interdisciplinary learning improves understanding	4.20	4.35	0.59
It enhances student motivation	4.10	4.30	0.63
It develops critical thinking	4.22	4.40	0.56

Source: own compilation.

Participants from the field of Information Technology consistently report higher levels of application and confidence in using interdisciplinary approaches compared to their counterparts from Economics. This finding can be explained by the inherently applied and problem-oriented nature of IT education, where interdisciplinary integration is often embedded in project-based and collaborative learning environments (Kolmos et al., 2016; Prince & Felder, 2006). In such contexts, students and educators are more frequently engaged in tasks that require the combination of knowledge from multiple domains, including programming, data analysis, and business applications (ACM, 2020). In contrast, although participants from Economics demonstrate slightly lower levels of practical application, they still report high levels of perceived effectiveness of interdisciplinary learning. This suggests that while interdisciplinary approaches are positively valued across both disciplines, their actual implementation may be influenced by disciplinary traditions and teaching practices. Similar patterns have been identified in previous research, indicating that more theoretically oriented fields tend to adopt interdisciplinary methods at a slower pace compared to applied disciplines (Becker, 2017; Drake & Reid, 2020). Despite these differences, both groups exhibit similarly high evaluations of the benefits of interdisciplinary learning, particularly in relation to improved understanding, increased motivation, and the development of higher-order thinking skills. This finding aligns with broader research in education, which emphasizes the universal value of interdisciplinary approaches for fostering critical thinking, creativity, and problem-solving abilities across disciplines (OECD, 2019; Klein, 2017; Repko & Szostak, 2021).

To determine whether the observed differences between the two disciplinary groups are statistically significant, an independent samples t-test was conducted. This method is widely used in comparative educational research to assess differences between two independent groups and to establish whether such differences are likely due to chance or reflect meaningful variation in the data (Field, 2022). The application of inferential statistical analysis allows for a more rigorous interpretation of the results and strengthens the validity of the conclusions drawn from the study.

Table 3. Comparison between Economics and IT

Scale	Discipline	Mean	SD	t	p
Knowledge and Application	Economics	3.62	0.66	-2.41	0.018*
	IT	3.94	0.58		
Attitudes and Effectiveness	Economics	4.15	0.60	-1.56	0.123
	IT	4.28	0.55		

Source: own compilation.

The results indicate a statistically significant difference in the level of knowledge and application of the interdisciplinary approach ($p = 0.018$), with participants from Information Technology demonstrating higher scores compared to those from Economics. This finding reflects the applied and practice-oriented nature of IT education, where interdisciplinary integration is often embedded in real-world problem-solving, project-based learning, and collaborative environments (Kolmos et al., 2016; ACM, 2020). Such educational settings encourage the active use of knowledge across domains, leading to higher levels of confidence and practical implementation.

In contrast, although participants from Economics report slightly lower levels of application, the difference in attitudes and perceived effectiveness between the two groups is not statistically significant ($p = 0.123$). This

suggests that interdisciplinary learning is highly valued across disciplines, regardless of differences in teaching traditions or curricular structure. Similar findings have been reported in the literature, where positive perceptions of interdisciplinary education are consistently observed even in more theoretically oriented fields (Becker, 2017; Drake & Reid, 2020). Moreover, the universal recognition of its benefits—such as improved understanding, motivation, and development of higher-order thinking skills—is well documented (OECD, 2019; Klein, 2017; Repko & Szostak, 2021).

Analysis of Variance (ANOVA)

To further examine the differences between disciplinary groups, a one-way analysis of variance (ANOVA) was conducted. This method allows for a more robust comparison of group means and provides additional insight into the variability of responses within and between disciplines (Field, 2022).

Table 4. ANOVA results for key variables

Variable	F	p
Knowledge and Application	5.81	0.018*
Attitudes and Effectiveness	2.41	0.123

Source: own compilation.

The ANOVA results confirm the findings of the t-test, indicating a statistically significant difference between disciplines in terms of knowledge and application of the interdisciplinary approach ($F_{(1,78)} = 5.81$, $p = 0.018$). Participants from Information Technology demonstrate higher levels of engagement and practical use, which can be attributed to the interdisciplinary nature of IT-related tasks and the integration of diverse skill sets such as programming, data analysis, and systems thinking (Lunt et al., 2008; ACM, 2020). On the other hand, no statistically significant differences were observed in attitudes and perceived effectiveness ($F_{(1,78)} = 2.41$, $p = 0.123$), suggesting that both Economics and IT participants share similarly positive perceptions regarding the value of interdisciplinary learning. This aligns with previous research emphasizing that the perceived benefits of interdisciplinary education are broadly recognized across academic fields, even when implementation levels differ (Schleicher, 2020; UNESCO, 2021). These findings highlight an important distinction between perception and practice. While interdisciplinary approaches are widely appreciated, their actual application appears to depend on the specific characteristics of each discipline, including curriculum design, teaching methods, and the degree of integration of real-world problem-solving tasks. This supports the argument that successful implementation of interdisciplinary education requires not only positive attitudes but also structural and pedagogical support tailored to the needs of different academic domains (Fullan, 2013; Repko & Szostak, 2021).

4. DISCUSSION

The findings of the present study confirm the importance of the interdisciplinary approach as a key component of contemporary higher education, while also revealing significant differences in its application across academic disciplines. The comparative analysis between Economics and Information Technology highlights that, although interdisciplinary learning is positively perceived in both fields, its practical implementation varies considerably. The results indicate that participants from Information Technology demonstrate significantly higher levels of knowledge and application of the interdisciplinary approach. This can be explained by the applied and problem-oriented nature of IT education, where interdisciplinary integration is often an inherent part of the learning process. In such environments, students and educators frequently engage in project-based activities that require the combination of technical, analytical, and domain-specific knowledge (Kolmos et al., 2016; ACM, 2020). These findings are consistent with previous research emphasizing that interdisciplinary practices are more naturally embedded in technology-driven and engineering-related fields (Prince & Felder, 2006; Lunt et al., 2008). In contrast, participants from the field of Economics report lower levels of practical application, despite demonstrating similarly positive attitudes toward interdisciplinary learning. This suggests that, although the value of interdisciplinarity is widely recognized, its integration into teaching practice may be influenced by disciplinary traditions and curriculum structures. Economics education has traditionally emphasized theoretical models and analytical frameworks, which may limit opportunities for interdisciplinary application in everyday teaching (Becker, 2017; Drake & Reid, 2020).

Interestingly, the absence of statistically significant differences in attitudes and perceived effectiveness between the two groups indicates a shared recognition of the benefits of interdisciplinary learning. Both Economics and IT

participants acknowledge its contribution to improved understanding, increased motivation, and the development of critical thinking and problem-solving skills. This aligns with broader educational research, which highlights the universal relevance of interdisciplinary approaches for fostering 21st-century competencies (OECD, 2019; Klein, 2017; Repko & Szostak, 2021). The results also point to an important distinction between perception and practice. While interdisciplinary learning is widely appreciated, its successful implementation depends on structural and pedagogical factors, including curriculum design, institutional support, and teacher preparedness. As noted by Fullan (2013), educational innovation requires not only positive attitudes but also systemic change and adequate resources. Similarly, Schleicher (2020) emphasizes that modern education systems must support teachers in adopting flexible and integrative teaching approaches. Furthermore, the findings suggest that interdisciplinary competence is more strongly developed in contexts where it is actively practiced, as observed in the IT group. This supports the theoretical perspective that interdisciplinary skills are not only conceptual but also experiential, developing through continuous engagement with real-world problems (Repko & Szostak, 2021). In summary, the study demonstrates that while interdisciplinary education is widely valued across disciplines, its practical realization varies significantly. These differences highlight the need for discipline-specific strategies that support the effective integration of interdisciplinary approaches, particularly in fields where traditional teaching models still dominate.

5. CONCLUSIONS

The present study highlights the significant role of the interdisciplinary approach in contemporary higher education, while also demonstrating that its implementation varies across academic disciplines. Through a comparative analysis between Economics and Information Technology, the findings reveal that although both groups share highly positive attitudes toward interdisciplinary learning, meaningful differences exist in its practical application. Participants from the field of Information Technology exhibit higher levels of knowledge and application of interdisciplinary approaches, which can be attributed to the applied and integrative nature of IT education. In contrast, participants from Economics, despite recognizing the value of interdisciplinary, report lower levels of implementation, suggesting that traditional disciplinary structures may still influence teaching practices.

The results confirm that positive perceptions alone are not sufficient to ensure effective implementation. Instead, interdisciplinary teaching requires supportive institutional frameworks, appropriate curriculum design, and targeted professional development for educators. These findings reinforce the idea that interdisciplinary competence is developed not only through theoretical understanding but also through active engagement and practice. In conclusion, the interdisciplinary approach represents a crucial element in the modernization of higher education. However, its successful implementation requires a context-sensitive approach that takes into account the specific characteristics of different academic disciplines. By addressing these differences, educational institutions can create more effective, engaging, and future-oriented learning environments that better prepare students for the complexities of the modern world.

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