



EXPLORING TEACHER COMPETENCE, EFFICIENCY AND OPENNESS IN THE CONTEXT OF CURRICULUM REFORM IN ROMANIA

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Abstract: This study examines teachers' perceptions regarding the need for an educational platform to support teaching activities in the context of the 2025 curriculum reform in Romania, focusing on Informatics and Information and Communication Technology (ICT) at the high school level. A quantitative approach was employed, based on a questionnaire administered to 70 teachers. The instrument included multiple scales measuring efficiency, competence, openness toward new content, and affinity for technology. Data analysis involved correlation and regression to test six hypotheses. The results indicate that openness toward teaching new content and time allocated to lesson preparation are positively associated with both competence and efficiency. Additionally, affinity for technology and openness toward new content significantly predict competence, while openness toward digital platforms and new content predict efficiency. A weak relationship was identified between technological affinity and platform adoption. The findings support the need for structured, curriculum-aligned digital resources to assist teachers in adapting to ongoing educational reforms.

Key words: curriculum reform; educational platforms; teacher competence; teaching efficiency; ICT education

1. Introduction

Curriculum reforms are a constant feature of contemporary educational systems, reflecting the need to adapt teaching and learning processes to evolving societal and technological demands. In recent years, these reforms have increasingly emphasized competency-based approaches, student-centered learning, and the integration of digital technologies into classroom practices.

The success of such reforms depends largely on teachers, who act as key agents in translating policy into practice. Rather than being passive recipients, teachers actively interpret and adapt curricular changes based on their professional competencies, beliefs, and the resources available to them. Previous research highlights that teachers' attitudes toward reform, their level of preparedness, and access to adequate instructional materials significantly influence the effectiveness of implementation. Insufficient training or lack of structured support may lead to resistance or superficial adoption of new curricular requirements.

The 2025 curriculum reform in Romania introduces important changes, particularly in the area of *Informatics* and *Information and Communication Technology* (ICT) education at the high school level (Ministerul Educației și Cercetării, 2025). These changes emphasize competency development, the integration of digital tools, and the adaptation of content to a technology-driven society. While aligned with international trends, they also generate new challenges for teachers, who are required to update their teaching practices and incorporate new resources into their instructional design.

In this context, the increasing role of digital technologies highlights the potential of online educational platforms to support teaching activities. Such platforms can facilitate access to validated resources, support lesson planning, and contribute to teachers' professional development. However, their

Received April 2026.

Cite as: Haraseniuc, L. & Maier, M. I. (2026). Exploring Teacher Competence, Efficiency and Openness in the Context of Curriculum Reform in Romania. *Acta Didactica Napocensia*, 19(1), 94-101, <https://doi.org/10.24193/adn.19.1.8>

effectiveness depends on teachers' openness toward technology and the perceived relevance of these tools in relation to curricular requirements.

The present study aims to investigate teachers' perceptions and professional characteristics in relation to curriculum change, focusing on competence, efficiency, openness toward new content, and attitudes toward digital resources. Using a quantitative approach based on questionnaire data collected from teachers of Informatics, ICT, and related subjects, the study explores the relationships between these variables and examines the need for digital support solutions in the context of ongoing curriculum reform.

2. Literature Review

This section aims to study the existing literature regarding major changes in education and how they have been received, as well as regarding the solutions found in the literature to help teachers assimilate these changes.

2.1. Teachers' Attitudes Toward Curriculum Change

Curriculum reforms have been extensively studied by educational researchers, particularly in relation to teachers' attitudes toward change, which play a crucial role in successful implementation. Teachers are not passive recipients of reform, but active agents who interpret and adapt curricular changes based on their professional beliefs, competencies, and available resources.

A study conducted in Kosovo (Potera & Shala, 2019) highlights the polarization of teachers' attitudes toward a competency-based curriculum reform. While some teachers expressed positive views, others showed resistance, mainly due to insufficient training and lack of appropriate teaching materials. The study emphasizes that access to accurate information and adequate resources significantly influences teachers' openness toward reform.

Similar conclusions emerge from a pilot curriculum reform in Portugal (Ponte, Matos, Guimarães, Leal, & Canavarro, 1994), where teachers were required to adapt their instructional practices to new approaches. The findings indicate that inadequate support materials and insufficient training hinder effective implementation, forcing teachers to rely on self-developed resources. This situation increased workload and reduced the overall efficiency of the reform process.

At a larger scale, the curriculum reform in China (Law, 2014) illustrates the complexity of implementing systemic educational change. Although the reform promoted competency-based learning and modern teaching methods, its implementation faced challenges due to entrenched traditional practices and the strong influence of high-stakes examinations. These factors limited teachers' willingness to adopt innovative approaches.

Research conducted in the Czech Republic (Janik, Janko, Pešková, Knecht, & Spurná, 2018) indicates that many teachers adopt a neutral attitude toward curriculum reform rather than expressing clear support for it. This neutrality is frequently associated with insufficient understanding of reform principles and lack of involvement in the change process. Teachers in pilot schools, who were more actively engaged, demonstrated higher levels of acceptance.

Finally, a study from Turkey (Duman, Kural, Koroglu, Yilmaz, & Erdogan, 2014) highlights the importance of access to reliable information and the role of professional development in shaping teachers' perceptions. Participants reported difficulties in obtaining accurate information about reforms and expressed skepticism regarding their effectiveness, particularly in the absence of adequate infrastructure and consistent implementation strategies.

Overall, the literature suggests that teachers' attitudes toward curriculum reform are shaped by access to resources, quality of training, clarity of communication, and the degree of involvement in the reform process.

2.2 Supporting Teachers in Adapting to Curriculum Change

Given the challenges associated with curriculum reform, the literature emphasizes the need for structured support mechanisms to help teachers adapt to curricular change.

Teachers play a central role in the implementation of educational change, and their active involvement is essential for success (Potera & Shala, 2019). Providing timely, clear, and official information is critical, as teachers often rely on informal sources when such information is lacking. Additionally, effective implementation requires well-structured training programs supported by qualified instructors and relevant teaching materials.

Another important aspect is the opportunity for teachers to express their views and contribute to the reform process. Research shows that teachers are more open to change when they feel involved and when their feedback is taken into account (Ponte, Matos, Guimarães, Leal, & Canavarro, 1994). Moreover, reforms should be aligned with classroom realities and broader social contexts, as demonstrated by the Chinese case, where misalignment with existing practices limited the effectiveness of implementation (Law, 2014).

Reducing teachers' resistance to reform requires early access to information and opportunities for collaborative discussion (Janik, Janko, Pešková, Knecht, & Spurná, 2018). Transparent and continuous communication from official institutions can prevent misinformation and increase trust in the reform process (Duman, Kural, Koroglu, Yilmaz, & Erdogan, 2014).

In this context, digital technologies and online educational platforms emerge as valuable tools for supporting teachers. Research indicates that such platforms can enhance teaching efficiency, improve classroom management, and contribute to professional development by providing access to diverse and innovative resources. Teachers generally perceive these tools as useful and flexible, especially when they are aligned with curricular requirements. However, challenges remain, particularly regarding the quality and credibility of digital resources. This highlights the importance of developing reliable, curriculum-aligned platforms that can effectively support teachers in adapting to new educational demands.

3. The 2025 Curriculum Reform in Romania and Its Implications for Informatics and ICT Education

The 2025 curriculum reform in Romania emphasizes the development of key competencies, the integration of digital technologies, and a more flexible, student-centered approach to teaching and learning in line with the expected graduate profile (Ministerul Educației și Cercetării, 2023).

In the context of the 2025 curriculum reform, debates surrounding the teaching of Informatics in Romania highlight concerns that the predominant use of Python and predefined code structures may limit the development of algorithmic thinking and advanced problem-solving skills (SEPI, 2025). These discussions emphasize the need for curriculum-aligned digital resources that support both accessibility and academic rigor. As a result, the demands on teachers increase, particularly in terms of lesson preparation, continuous professional development, and the ability to select and use appropriate educational resources.

Despite these objectives, the implementation of the reform raises several challenges. Teachers may face difficulties related to limited access to structured, curriculum-aligned materials, as well as insufficient support in adapting to new content and methodologies. In this context, the need for accessible and reliable digital resources becomes increasingly evident.

Therefore, the present study aims to explore teachers' perceptions, professional characteristics, and openness toward digital solutions, in order to better understand how they can be supported in the process of adapting to curriculum change.

4. Methodology

This section outlines the methodological framework used to investigate teachers' perceptions and attitudes regarding curriculum change and the integration of digital educational resources. It presents the research design, the characteristics of the participants, the data collection instrument, and the statistical procedures applied in the analysis. The methodological approach was selected to ensure the reliability and validity of the findings and to provide empirical evidence for testing the proposed research hypotheses.

4.1. Research Design

The study employs a quantitative, cross-sectional research design aimed at examining the relationships between teachers' professional characteristics and their attitudes toward curriculum change and digital resources. The research is guided by six hypotheses (H1–H6), which explore associations and predictive relationships between variables such as competence, efficiency, openness toward new content, affinity for technology, and openness toward digital platforms.

4.2. Research Instrument

Data were collected using a structured questionnaire consisting of eight sections, available in an online repository (Haraseniuc & Maier, 2025a). The first section gathered demographic and professional information, including age, gender, teaching experience, educational level, and lesson preparation time, as well as items related to openness toward teaching new content and the use of digital resources. Sections 2–7 included items corresponding to six scales designed to measure key constructs used in the hypothesis testing: teaching efficiency, self-confidence, affinity for technology, competence, adaptability, and openness toward continuous learning; each of these sections represents a validated questionnaire taken from the ResearchCentral platform. The final section included an item regarding participants' consent for the use of their responses for scientific purposes.

All participants were informed about the anonymity of their responses and the purpose of the study. The questionnaire was distributed online, and participation was voluntary and anonymous. Data were collected over a defined period (1st of December 2025 – 21st of January 2026), with respondents completing the questionnaire independently.

4.3. Participants

The study sample consists of 70 teachers of informatics-related subjects, including Informatics, ICT, and Robotics, teaching at the pre-university level. The selection of participants reflects the focus of the study on subjects directly impacted by the recent curriculum changes. The participants were recruited through teacher groups on Facebook, as well as through direct messages sent to teachers known personally to the researchers. The demographic characteristics of the study participants are presented in Table 1 which summarizes gender, age, teaching environment, school level, teaching qualification, and professional experience.

Table 1. Demographic characteristics of the sample

Gender	female: 85.17% male: 14.29%
Age	under 30 years: 11.43% 31–40 years: 2.86% 41–50 years: 45.71% 51–60 years: 31.43% over 60 years: 8.57%
Teaching environment	urban: 88.57% rural: 2.86% both urban and rural: 8.57%
School level	primary: 8.57% lower secondary: 60% upper secondary: 84.29%
Teaching qualification	first teaching degree: 70% second teaching degree: 8.57% permanent teaching certification: 12.87% no teaching qualification: 8.57%
Experience	less than 5 years: 11.43% 5–10 years: 5.71% 11–20 years: 15.71% 21–30 years: 51.43% 31–40 years: 11.43% over 40 years: 4.29%

4.4. Data Analysis

Data analysis was conducted using statistical methods aligned with the research hypotheses (Magdaş, 2018), using *jamovi* software (The jamovi project, 2025). An excel file containing all 70 responses that were used in this analysis can be accessed at (Haraseniuc & Maier, 2025b).

First, the internal consistency of the scales was assessed using Cronbach's Alpha (Cronbach, 1951), confirming acceptable to high reliability for all measured constructs. Subsequently, correlation analysis was used to examine relationships between variables, particularly in testing hypotheses related to associations (H1, H2). Multiple linear regression analysis was employed to identify predictive relationships between variables, supporting the testing of hypotheses H3, H4, H5, and H6. Statistical significance thresholds were applied consistently to determine the validity of the results.

4.5. Research Hypotheses

Based on the theoretical framework and the context of the current curriculum reform, the study proposes the following research hypotheses:

H1. Teachers who demonstrate greater openness toward teaching new content exhibit higher levels of perceived efficiency and competence, and allocate more time to lesson preparation.

H2. Teachers who invest more time in lesson preparation demonstrate higher levels of competence and greater openness toward learning new content.

H3. Teachers who are more open to using online platforms with digital educational resources exhibit higher levels of teaching efficiency.

H4. Affinity for technology use and openness toward teaching new content are significant predictors of teacher competence.

H5. Openness toward online educational platforms and openness toward teaching new content are significant predictors of teaching efficiency.

H6. Teachers with a higher affinity for technology use demonstrate greater openness toward using online platforms with digital educational resources.

5. Results and Discussion

The analysis of responses reveals several consistent trends.

First, a large proportion of teachers (50%) reported insufficient access to updated and curriculum-aligned teaching materials. Many teachers (38.57%) noted that the resources currently available are outdated or only partially aligned with the new curricular requirements, forcing them to invest substantial effort into adapting them.

Second, the study findings indicate a high reliance on digital resources. All teachers reported frequent use of online materials, including educational websites, shared resources, and informal platforms. The Internet represents the primary source of documentation when it comes to teaching new content: teachers mentioned the Internet as the most frequently used tool in the documentation process preceding the teaching of new content (95.71%), followed by online platforms (75.71%), artificial intelligence (70%), online courses (60%), and textbooks (54.29%). However, this reliance on online materials should be accompanied by concerns regarding the credibility, quality, and curricular alignment of these resources.

Third, teachers expressed a predominantly positive attitude toward the integration of digital platforms in teaching. Most teachers considered a platform containing digital materials designed to support the classroom teaching of new content to be very useful (78.57%) or useful (21.43%). The main advantages of using such an online platform include enhanced efficiency in lesson planning, greater student engagement, and improved access to a wide range of instructional materials. At the same time, the importance of usability, clarity, and alignment with official curricular documents should be emphasized.

Another significant result is the strong demand for centralized and validated resources. A large number of teachers reported during the period of national debates that the fragmentation of available materials increases workload and uncertainty. Consequently, there is clear interest in a platform that provides structured, verified, and curriculum-aligned content, including lesson plans, teaching materials, and methodological guidance.

Finally, the results suggest that prior experience with digital tools and participation in training programs positively influence teachers' openness toward educational platforms. Teachers who had previous exposure to digital technologies reported greater confidence and willingness to integrate such tools into their practice.

5.1. Hypothesis Testing

H1. Teachers who demonstrate greater openness toward teaching new content exhibit higher levels of efficiency, competence, and allocate more time to lesson preparation. This hypothesis was grounded in the assumption that teaching new content requires additional planning and preparation, which in turn is associated with higher levels of professional competence and efficiency. The correlation analysis supports this hypothesis. Openness toward teaching new content shows a moderate positive correlation with teaching efficiency ($r = 0.427, p < 0.001$) and perceived competence ($r = 0.400, p < 0.001$). Additionally, a statistically significant, albeit weaker, positive correlation was identified with the time allocated to lesson preparation ($r = 0.312, p = 0.009$). These results indicate that teachers who are more receptive to introducing new content tend to be more efficient, more competent, and invest more time in instructional preparation. Therefore, **H1 is confirmed**.

H2. Teachers who allocate more time to lesson preparation exhibit higher levels of competence and greater openness toward learning new content. This hypothesis is based on the assumption that engagement in preparatory activities - such as searching, selecting, and structuring new information - reflects and supports both professional competence and openness toward continuous learning. The correlation analysis provides support for this assumption. Time allocated to lesson preparation shows a moderate positive correlation with perceived competence ($r = 0.394, p < 0.001$) and with openness toward learning new content ($r = 0.352, p = 0.003$). These results indicate that teachers who invest more time in preparatory activities tend to perceive themselves as more competent and demonstrate a higher degree of openness toward acquiring new knowledge. Therefore, **H2 is confirmed**.

H3. Teachers who are more open to using online platforms with digital educational resources exhibit higher levels of teaching efficiency. This hypothesis is grounded in the broader context of digitalization, where technological solutions are often associated with increased efficiency across various domains. Extending this premise to education, it was assumed that teachers who are more open to digital tools - specifically online educational platforms - would demonstrate higher levels of teaching efficiency. However, the statistical analysis did not fully support this assumption in its original form. While no significant direct correlation was identified between openness toward online platforms and efficiency, regression analysis revealed a weak but statistically significant relationship. Regression analysis showed that openness toward online platforms explains approximately 5% of the variance in teaching efficiency. This result suggests that teachers who are more open toward adopting digital platforms tend to report slightly higher teaching efficiency, although the relationship is relatively weak and the predictive effect remains limited. Therefore, **H3 is only partially confirmed**.

H4. Affinity for technology use and openness toward teaching new content are significant predictors of teacher competence. To test this hypothesis, a multiple linear regression analysis was conducted, with teacher competence as the dependent variable and affinity for technology use and openness toward teaching new content as independent variables. The results indicate that the model explains approximately 40% of the variance in perceived competence ($R^2 = 0.40$), with a statistically significant overall effect ($p < 0.001$). This suggests that both predictors contribute meaningfully to explaining differences in teachers' perceived competence. These findings support the assumption that teachers who are more comfortable with technology and more open to introducing new content tend to exhibit higher levels of professional competence. Therefore, **H4 is confirmed**.

H5. Openness toward online educational platforms and openness toward teaching new content are significant predictors of teaching efficiency. To test this hypothesis, a multiple linear regression

analysis was conducted, with teaching efficiency as the dependent variable and openness toward online platforms and openness toward teaching new content as independent variables. The results indicate that the model explains approximately 22% of the variance in teaching efficiency ($R^2 = 0.22$). This suggests that the combined effect of the two predictors contributes meaningfully to explaining differences in perceived efficiency. These findings support the assumption that teachers who are more receptive both to pedagogical innovation (i.e., teaching new content) and to digital tools tend to exhibit higher levels of efficiency in their professional practice. Although the bivariate correlation between openness toward platforms and efficiency was not statistically significant, the variable became significant within the multiple regression model when combined with openness toward teaching new content. Therefore, **H5 is confirmed**.

H6. *Teachers with a higher affinity for technology use demonstrate greater openness toward using online platforms with digital educational resources.* This hypothesis aimed to examine whether familiarity and comfort with technology translate into a greater willingness to adopt digital educational platforms. The statistical analysis does not support this assumption. Although the regression results indicate a statistically significant relationship ($p = 0.004$), the explanatory power of the model is extremely low, with affinity for technology accounting for only 1% of the variance in openness toward using an online platform ($R^2 = 0.01$). This suggests that, despite statistical significance, the practical relevance of the relationship is negligible. Therefore, the results do not provide sufficient support for the hypothesized effect, and **H6 receives only limited support**, as the effect size is negligible despite statistical significance.

Overall, the results of the hypothesis testing provide substantial support for the proposed research model, confirming most of the relationships between key variables related to teachers' professional behavior and attitudes. The findings highlight the importance of openness toward new content, time invested in preparation, and engagement with digital tools as relevant factors associated with competence and efficiency. At the same time, the results also reveal that not all assumed relationships are equally strong, emphasizing the need to consider both statistical significance and practical relevance. These outcomes offer a solid empirical foundation for further discussion regarding the role of digital platforms in supporting teachers in the context of ongoing curriculum reform.

6. Conclusions and Future Work

This study provides empirical evidence regarding the role of teachers' professional characteristics in the context of the 2025 curriculum reform in Romania, with a focus on Informatics and ICT education. The findings highlight that openness toward teaching new content, time invested in lesson preparation, and engagement with digital and pedagogical innovation are key factors associated with higher levels of competence and teaching efficiency.

The results confirm that teachers who are more receptive to curricular change tend to be both more competent and more efficient, while also allocating more time to preparation. Additionally, the combined influence of technological affinity and openness toward new content significantly contributes to the development of competence. However, the relationship between technological affinity and the adoption of digital platforms was found to be weak, suggesting that platform use is influenced by factors beyond technical skills, such as perceived usefulness and alignment with curricular needs.

In the context of ongoing curriculum reform, these findings underline the need for structured support mechanisms that facilitate teachers' adaptation to new requirements. In particular, the development of reliable, curriculum-aligned educational platforms can play a significant role in supporting lesson preparation, improving teaching efficiency, and fostering professional development.

Future research may extend this study by exploring additional factors influencing teachers' adoption of digital tools, as well as by examining the long-term impact of educational platforms on teaching practices and student outcomes. In this context, a future direction of the project involves the development of a digital platform containing educational resources aligned with the new curriculum

for informatics-related subjects, designed to support teachers in lesson planning, content delivery, and the integration of modern teaching approaches.

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