Published in the USA
International Journal of Media and Information Literacy
Issued since 2016.
E-ISSN: 2500-106X
2026. 11(1): 35-47

DOI: 10.13187/ijmil.2026.1.35
https://ijmil.cherkasgu.press

Integration of Digital Education, Critical Thinking and Media and Information Literacy in School Education Programs of General Upper Secondary Schools in Slovakia

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Abstract

Digital and media environments have become an integral part of young people's everyday lives, which increases the importance of developing digital competences, critical thinking, and media and information literacy within formal education. This study focuses on analysing how these areas are integrated into school education programs of general upper secondary schools in Slovakia. The research is based on a qualitative content analysis of 82 school-level curricular documents from all regions of the Slovak Republic. The findings indicate that digital education is addressed more frequently than media and information literacy, with the emphasis placed mainly on basic user skills and the technical use of digital tools. Critical thinking appears relatively often in curricular documents, particularly within general educational aims; however, it is commonly formulated at a declarative level without clear methodological guidance or evaluation criteria. Media and information literacy is integrated mostly implicitly or marginally, which results in uneven conditions for the development of these competences among students. The study highlights the need for more explicit curricular anchoring of cross-curricular competences, stronger coordination at the school level, and clearer frameworks for their systematic development and assessment in general upper secondary education.

Keywords: digital education, critical thinking, media and information literacy, curricula, school education programs, general upper secondary schools.

1. Introduction

The digital technology proliferation has gradually changed the way in which education works on a daily basis. Learning is not restricted to the walls of institutions and learners come across information all the time, often not in some formal way of education. Access to online material is now a lot easier, and immediate, but trustworthiness ranges widely and isn't always simple to gauge. Thus, students work in an environment in which there is plenty of information, but it's of mixed quality and value. Education is thus being increasingly challenged not only to deliver the substance of cognate subjects. The ability to critically question media messages; evaluate the reliability of sources; detect persuasive or manipulative aspects and use digital tools thoughtfully has increasingly become associated with civic responsibility and participation in modern society (Head, Eisenberg, 2010; Lewandowsky et al., 2012; Lewandowsky, van der Linden, 2021; OECD, 2021; Tinák, Gálik, 2026).

From a theoretical and curricular perspective, these challenges are closely linked to the way digital education and cross-curricular competences are conceptualised within formal schooling. The digital continuum has become an essential component in the training of students for life in a

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society which is strongly influenced by technological development, digitalization of everyday lives operations, automation and dissemination of online communication means. Within the school context, digital education is frequently confined to learning basic user skills and using information and communication technologies, whereas in a wider framework it also covers training students for more advanced competences such as critical processing of information online, ensuring their own digital security or the ability to produce content, solving problems digitally, reflecting on social impact of technology use (Vuorikari et al., 2022).

It is this broader concept of digital education that is important for the development of digital literacy as a cross-curricular competence that goes beyond the scope of a single subject and should be applied in various areas of the educational process.

In the analysed school curricula, digital education often appears mainly in connection with subjects such as computer science or the technical support of teaching, with less attention paid to the systematic development of advanced digital competencies. In practice, this means that although schools in Slovakia use digital tools in teaching, there is only limited mention in the documents of how digital competences should be developed, coordinated, and assessed. This approach can lead to uneven development of digital competences among students, as the quality and intensity of digital education becomes dependent on the individual approach of teachers, the material equipment of the school, or its internal strategies.

The educational process in general upper secondary schools plays an important role in the students acquiring digital skills, develop critical thinking mindset, and gain media and information literacy. School education programs are fundamental curricular documents that reflect the pedagogical intentions of the school, its values and conceptual foundations, as well as the way in which educational goals are translated into individual subjects, content units, methods, and assessment methods. An analysis of these curricular documents therefore makes it possible to identify whether the cross-curricular competencies are embedded explicitly, implicitly, or not at all.

The aim of this study is to examine the extent and manner of integration of digital education, critical thinking, and media and information literacy into school education programs at general upper secondary schools in Slovakia. The research is based on a qualitative content analysis of 82 school curricula and examines several dimensions of curricular integration – from the content anchoring of competences, through teaching and assessment methods, to personnel and technical resources and mechanisms for coordination between subjects.

The contribution of the study lies in the systematic mapping of the current state of implementation of key competences in school curriculum documents and in the identification of risks associated with a predominantly declarative and unsystematic approach to media education. At the same time, it provides recommendations for the creation of school concepts, methodological support for teachers, and the anchoring of the assessment of these competencies within curricular documents.

2. Materials and methods

The data source for this study was a dataset created as part of a comprehensive research project focused on content analysis of general upper secondary school curricula in Slovakia. This research covered a representative sample of general upper secondary schools and secondary vocational schools (Vrabec, Hladíková, 2025). Our study focuses exclusively on the general upper secondary school's segment.

The aim of the research strategy is to systematically map the presence, extent, and manner of integration of selected cross-curricular competencies in curricular documents and to identify patterns that recur in the analysed materials. The analysis focused on the integration of three key areas: digital education, critical thinking, and media and information literacy. Emphasis was placed not only on whether these areas appear in the documents, but especially on their explicitness, conceptual anchoring, methodological elaboration, evaluation strategies, and organizational conditions for their implementation.

The methodology is based on the assumption that curriculum documents reflect the pedagogical intentions of the school, its internal strategies, and values, while also providing a suitable basis for comparative reasoning and identifying differences between different types of schools. At the same time, school education programs do not provide direct evidence of the actual implementation of competencies in teaching, but they are an important indicator of school concepts, planning, and declared goals.

The analysed sample consisted of 82 school curricula from general upper secondary schools in all regions of the Slovak Republic. The process of content analysis of curricular documents took place during May and June 2025. The selection was carried out as purposive sampling, with the aim of covering regional diversity and minimizing the risk of geographical bias. The original research sample on which this study is based also included secondary vocational school curricula, allowing for a broader comparative analysis of the two basic types of secondary education. However, this article presents and interprets only the findings relating to general upper secondary schools. The reason for this is to provide a more detailed analysis of one type of school, as general upper secondary schools represent a specific curricular context with a different subject structure, graduate profile, and pedagogical expectations in relation to cross-curricular competencies. The sample designed in this way provides sufficient scope for identifying differences in the curricular integration of the competencies examined between general upper secondary schools with different educational concepts, internal subject structures, and pedagogical goals.

From a methodological point of view, the nature of the sample is also relevant in that it includes schools from different regions and contexts, thereby minimizing the risk of regional bias and increasing the validity of the conclusions in terms of the overall picture of the integration of the examined areas in general upper secondary education in Slovakia.

The analytical framework was based on the concept of cross-cutting competencies and the need to distinguish between formal declarations and actual curricular integration. For the purposes of content analysis, several dimensions were identified that enable the assessment of the quality of the integration of digital education, critical thinking, and media and information literacy in school education programs:

Content integration of competencies – the presence and specific anchoring of the areas examined in the objectives, thematic units, subjects, and graduate profiles.

Explicit and implicit integration – distinguishing whether competencies are named and methodically operationalized or whether they appear only indirectly in activities and general formulations.

Methods and didactic strategies – identification of pedagogical procedures through which competencies are to be developed (e.g., project-based teaching, discussion, teamwork, working with information sources).

Assessment and feedback – methods of assessing student performance in cross-curricular competencies and the existence of assessment criteria.

Staff and material resources – availability of specialist staff, IT infrastructure, digital support for teaching and learning.

Coordination and continuity – presence of mechanisms for linking cross-curricular competences development in subjects and grade levels (e.g., school strategy documents, methodological teams, school policy documents).

Risk and recommendation profiles – problems and deficits from the perspective of curricular anchoring, measures to be taken towards the systematic implementation of competencies.

This analytical framework enabled not only a descriptive analysis of the occurrence of competencies in documents, but also an interpretation of the quality of their integration in broader pedagogical and organizational contexts.

The content analysis was carried out through systematic study and analytical evaluation of relevant parts of school education programs (school objectives, graduate profile, subject characteristics, thematic plans, forms and methods of teaching, assessment, cross-curricular themes, school projects, and material and technical support). The identified statements and curricular formulations were interpreted in accordance with an analytical framework focused on the degree of explicit and implicit integration of digital education, critical thinking, and media and information literacy, as well as their methodological elaboration, assessability, and coordination at the school level.

Data processing took place in several steps. In the first phase, individual school education programs of general upper secondary schools were analysed and elements related to the examined competencies were identified in terms of content integration, didactic strategies, evaluation, and organizational conditions of implementation. In the second phase, the findings were synthesized into thematic areas according to the dimensions under study, with an emphasis on identifying recurring patterns of competence integration and capturing differences in the degree of their explicitness and conceptual anchoring. In the third phase, a qualitative interpretation of the

findings was carried out, with the aim of identifying the dominant trends in the curricular treatment of the areas studied and formulating implications for the development of school concepts and curricular documents.

The interpretation of the findings was based on the qualitative logic of analysis, in which it is essential not only to record the occurrence of certain elements in the documents, but also to identify their meaning, context, and degree of methodological elaboration. The conclusions therefore aim to identify the most significant patterns of integration of the areas examined in general upper secondary school's curriculum documents and to formulate recommendations for a more direct anchoring of cross-curricular competences, their coordination and evaluation within the school curriculum.

3. Discussion

From a curriculum standpoint, it is therefore important that digital education not be seen only as a technology skill or as an aid to teaching, but rather as both a package of knowledge, competencies and attitudes which enable people to operate in the digital environment critically, securely and responsibly (Castañeda, Villar-Onrubia, 2023; Martínez-Bravo, et al., 2022). Meanwhile, digital education provides the opportunity to promote the development of other important skills, especially critical thinking and media literacy – increasingly significant in a world of media (European Commission, 2022). Critical thinking is referred to as one of the most common crosscutting skills in strategy and curriculum documents adopted by the educational field.

In general, it is associated with the ability to analyse information, argue logically, identify biases, assess the credibility of sources, and reflect on one's own cognitive processes (McGrew et al., 2018). In the school context, critical thinking is often formulated as an intention to develop independent and analytical thinking in students, to encourage discussion, creative problem solving, and the ability to verify information (Ilomäki, et al., 2023; Wineburg, McGrew, 2019).

The findings of the content analysis show that critical thinking appears relatively often in the analysed school documents, but its curricular anchoring is mainly declarative in nature. The analyzed documents often mention critical thinking as a goal or value that is part of the graduate profile, while specific methodological procedures, forms of assessment, or descriptions of teaching activities that would systematically develop critical thinking are less common. Such "implicit integration" poses a significant risk because it leaves the implementation of critical thinking to the individual decisions of teachers, thereby reducing the chance of its consistent development across subjects (Ballaera et al., 2021; Lombardi et al.,2021; Murphy et al., 2025). Both the professional literature and the practice of curriculum design repeatedly point out that the development of critical thinking requires not only its declarative inclusion in educational goals, but also its operationalization into specific performance standards, learning tasks, and assessment criteria. If critical thinking remains only a general goal, there is no mechanism to verify whether it is actually developing in students. It is important to examine how teachers integrate critical thinking skills into existing instruction across subjects and grades, and the effectiveness of these educational strategies may be weakened if students are only provided with a single course or one-time workshop (Breakstone et al., 2021).

We thus call for a shift of critical thinking from being an idea to the activities around its teaching and learning, which ought to be included in curricular documents and school development plans. Media and information literacy is a constellation of competencies that people need in order to explore the media and information environment effectively, understand and critically evaluate the content they receive, comprehend how it is created, decipher the complex means by which it can be manipulated, used in creating messages or information (UNESCO 2013; UNESCO 2021). In the context of digital communication and algorithmic content provision as it is prevalent today, media and information literacy is bound up with critical thinking; the two competences reinforce one another in terms of being able to act with regard to information, and in terms of opposing informational risks such as disinformation, propaganda, hoaxes or commercial manipulation (Wuyckens et al., 2022).

Media and information literacy often appears only indirectly in the analysed school curricula, or in connection with individual activities (e.g., working with sources, using media as a teaching aid), without clear naming and systematic anchoring. This situation can lead to media education not being planned as a strategic part of the educational process but remaining a marginal activity dependent on the individual abilities and interests of teachers.

In the curricular and pedagogical context, media and information literacy should be understood as a cross-cutting competence that can be developed in various subjects (e.g., language education, social sciences, history, civics, computer science), but it requires coordination and conceptual management (Rojas-Estrada et al., 2024). Shortcomings have been identified precisely in the area of systematization, as the explicit inclusion of media and information literacy in the content and objectives of several subjects is not common. The absence of a clear anchor also weakens the possibilities for assessment, as there are no defined expected outcomes or criteria by which to monitor the development of competencies.

One of the key problems in the development of cross-curricular competencies in the school environment is the issue of their curricular integration (López-Rocha, 2020; Sagardia et al., 2018). Transversal competences such as digital education, critical thinking, and media and information literacy are transdisciplinary in nature – they do not belong exclusively to one area of education and cannot be developed in isolation. Effective integration therefore requires a clear definition of competences in curricular documents, their interconnection with the curriculum and activities in several subjects, methodological support for teachers, and coordination mechanisms at the school level (Eyal, Te'eni-Harari, 2023).

The research makes an important distinction between explicit and implicit integration of the competencies under study. Explicit integration means that competencies are named in documents, assigned to specific subjects or activities, and accompanied by indicators that allow their fulfilment to be monitored. Implicit integration is characterized by the fact that the competencies are present in activities or general formulations but are not directly identified and operationalized. It is precisely the dominance of implicit integration that is interpreted as a risk factor, as it weakens the possibilities for systematic development of competencies and contributes to their fragmentation.

Coordination across subjects and levels of education is also a key aspect (Cohen et al., 2024; Tonse, 2025). If cross-curricular competencies are developed in individual subjects without mutual coordination, there is a risk of redundancy (the same simple activities are repeated) or, conversely, gaps (some competencies are not covered at all). We therefore consider it important to recognize the need to create school strategies and conceptual frameworks that would unify the development of digital and media education and ensure its continuity. Evaluation is also part of such a framework – without defined criteria and evaluation tools, the development of competencies remains at the level of formulations.

It follows from the above that the quality of the integration of digital education, critical thinking, and media and information literacy into school curricula is not determined solely by the presence of these concepts in documents, but above all by the degree of their explicitness, methodological elaboration, coordination, and the possibility of evaluation. It is precisely these dimensions that form the analytical core of this scientific study and at the same time provide a framework for interpreting the findings in its other parts.

The results of the content analysis suggest that the competencies examined – digital education, critical thinking, and media and information literacy – are unevenly represented in school curricula and often mainly at a declarative level. This trend is particularly pronounced in the case of critical thinking and media and information literacy, which are often mentioned as general school objectives or as part of the graduate profile, but without clear methodological elaboration and evaluation. The findings thus point to a persistent curricular problem: although the competencies have been given "key" status, their translation into specific learning outcomes and pedagogical practices remains limited.

From a curriculum design perspective, the difference between declaration and operationalization is fundamental. Skills, if not explicitly related to the content and practices of subject areas individually, risk becoming disconnected objects of knowledge with their expend development the burden of individual stances (Fosco, Schussler, 2025; Marcotte, Gruppen, 2022). In practical terms, this means that the same learning targets may be met in wildly diverging ways from one school, department or classroom to another. It seems evident, consequently, that cross-curricular competences need to be addressed in a more systematic manner, with planning that is clear and coherent and closely associated with the assessment process (Okojie, et al., 2022; Højgaard, Solberg, 2023).

Digital education is most prominent in the analysed curriculum documents, but its content is often limited to technological aspects. High schools in particular mention digital technologies as a means of supporting teaching and as a domain of the subject of computer science. At the same time, the broader research sample of the original analysis showed that in vocational education,

digital education is more often linked to a practical context, which represents an important contrast to the general upper secondary school's environment. However, even in the case of vocational schools, digitization may remain limited to adaptation to work processes without more thorough development of broader digital competencies.

The findings thus point to the need to shift digital education from the technical use of tools to competence-oriented development, which also includes critical work with information, digital security, digital ethics, the ability to navigate the digital information environment, and developing students' abilities to evaluate online information (Yang, 2021). Without such a shift, schools may promote technological skills, but they will not sufficiently develop digital responsibility and critical digital participation.

Media and information literacy appears to be the most undervalued competency area in the analysed school curricula. Its weak presence can be interpreted as the result of several factors, primarily the absence of explicit curricular requirements, the traditional understanding of media as a supplement to teaching rather than as a separate subject of education, as well as the lack of methodological frameworks and teacher preparedness (European Commission, 2023; Goodman, 2021).

This may indirectly point to the risk that without systematic media education, schools are giving up one of their key functions in a digital society. Today, the media environment is the primary channel for socialization, the formation of values and political attitudes, while algorithmic content selection mechanisms can reinforce polarization and cognitive biases (Lebid et al., 2021) If media literacy is not an integral part of curriculum documents, students may be left to learn spontaneously "from the internet," which increases the likelihood of accepting manipulative narratives and misinterpretations (Novikov, Fedorov, 2022; Shevchenko et al., 2021; Luo et al., 2022).

A key common finding of the analysis is the dominance of implicit integration of cross-curricular competencies. Although competencies appear in documents, they are rarely clearly elaborated in such a way as to enable monitoring of their development and ensure continuity and coordination across subjects. This fact has practical implications: if a competency is not precisely planned, its development is random; if it is not coordinated, gaps arise; if it is not evaluated, it loses priority.

In light of the above, three related areas have been identified that need to be strengthened: (1) explicit curricular anchoring, (2) school coordination, (3) evaluation and feedback. These areas are a prerequisite for ensuring that digital education, critical thinking, and media literacy do not remain merely "ideals" of educational goals but are actually reflected in pedagogical practice.

Although the presented study focuses exclusively on general upper secondary schools, the interpretation of the findings can be supplemented by a contextual framework resulting from a broader research sample analysed in the original review (Vrabec, Hladíková, 2025). This also included secondary vocational schools, which allows some of the findings to be perceived as part of broader systemic trends in secondary education. The broader sample shows that the differences between school types are not primarily reflected in the declared importance of the competencies under investigation, but rather in the degree of their clarity, coordination, and assessment. While vocational schools have greater potential to link digital competences to a practical context, general upper secondary schools have favourable conditions for the interdisciplinary development of critical thinking and working with resources. However, both types of schools continue to face a common curricular problem: the dominance of implicit integration, the absence of assessment tools, and limited mechanisms for coordinating cross-curricular competencies at the school level.

4. Results

In the Slovak general upper secondary education system, general upper secondary schools are profiled as schools providing general education with an emphasis on preparing students for university studies. In terms of the competencies examined (digital education, critical thinking, and media and information literacy), this type of school appears to be naturally suited to their systematic development, as the general educational nature of general upper secondary schools allows for the expansion of cross-curricular topics across subjects, the promotion of analytical thinking, and the development of argumentation in various disciplines.

However, content analysis shows that the integration of the examined competencies in general upper secondary school's curriculum documents is often uneven and, in many cases, based on declarative formulations rather than clearly operationalized curriculum goals. Digital education appears in the documents mainly through the subject of computer science or through general

statements about the use of digital technologies in teaching. Critical thinking is relatively common in these documents, but mainly as part of the graduate profile or general school objectives. Media and information literacy is the least visible compared to digital education and critical thinking, and in many documents, it is not clearly named.

These trends imply that although there is consensus about the importance of these competences, their curricular embedding in secondary education is often very scattered. This may lead to competencies being learner-dependent (on certain teachers or subject committees) and that a lack of coherence can exist on the school level.

Digital education in general upper secondary school curricula

Digital education is overwhelmingly discussed in relation to computer studies, or the use of digital tools for teaching. In documents, there is often a reference to the equipment (computer classrooms, interactive white boards, internet access) that are made available as well as efforts to integrate digital technologies into teaching. Nevertheless: what this typically entails is the provision of equipment and organisational possibilities, only rarely with explicit commitments as to which digital competences pupils should acquire beyond learning basic computer skills.

In some curriculum documents, digital education is also linked to the development of working with information sources, searching for information, creating presentations, or using digital tools to support project-based teaching. Nevertheless, we consider it important to point out that higher levels of digital competences (e.g., digital security, the ability to critically evaluate online content, problem solving in the digital environment, digital ethics) appear only rarely or implicitly in general upper secondary schools' documents. In terms of curricular quality, the prevailing model is one in which digital education represents a "supporting infrastructure" for teaching, rather than a clearly structured area of competence with defined goals and assessment.

Critical thinking as part of the graduate profile and school objectives

Critical thinking is a frequent concept in the analysed curricula, especially in the graduate profile section or in the school's objectives. The documents enshrine support for analytical thinking, independence, argumentation, and problem-solving skills. Such formulations may indicate that high schools perceive critical thinking as an integral part of general education.

However, the analysis shows that critical thinking is often defined only in general terms in the documents, without being assigned to specific subjects or thematic areas and without a formal description of methodological procedures that would ensure its systematic development. As a result, critical thinking appears in general upper secondary school's curriculum documents more as a value statement than as a pedagogically planned competence. The research therefore points to the need for its operationalization, for example through the specification of teaching tasks focused on argumentation, source analysis, or working with different interpretations.

Media and information literacy: marginal and implicit integration

Media and information literacy is the least explicit in high school curricula. It appears rather indirectly in documents – for example, in connection with working with information sources, using teaching materials from the online environment, or research tasks. However, the concept of media literacy or media education is absent in many cases or appears only sporadically.

This situation is problematic in terms of the current information environment, as high school students – as a target group that intensively uses digital and social media – are exposed to an increased risk of manipulation, misinformation, and information overload. If media and information literacy is not explicitly anchored in documents, there is also no framework for its systematic development and evaluation. The findings therefore suggest that media and information literacy is the "weakest link" in the triad of competencies examined.

Teaching methods and didactic strategies

In terms of didactic approaches, the analysed school education programs often emphasize the effort to apply activating methods and develop competence-oriented teaching. The documents mention the use of discussion, group work, project tasks, and problem solving, which are considered appropriate tools for developing critical thinking in pedagogical theory and practice. In the context of general upper secondary schools, such methods are naturally associated with social science subjects, language education, and natural science disciplines, where the interpretation of knowledge, argumentation, and analytical work with sources are expected.

Although the methods mentioned are referred to quite often in the documents, their inclusion is in many cases mainly descriptive and declarative in nature. The methods are articulated in the general didactic principles of the school; however, this is seldom connected to

explicit learning-goals or an operationalisation of trans-disciplinary competencies. This resonates because school curricula tend to project the image of "school" as a setting conducive for active learning, however, no detailed methodological guidelines on how to systematically implement such strategies are provided empirically. Of special importance is the topic of media and information literacy, for which concrete didactic tools would need to be developed (e.g. analysis of media texts, source checking, comparison of frameworks and reflection on persuasive means). But the studies indicate that such practices are not well enough articulated and integrated in a systemic way within general upper secondary school curricula. Media education thus remains largely implicit and scattered across individual activities, without a clear didactic concept.

Assessment and feedback in the area of cross-curricular competences

Assessment is a key element of the curricular implementation of competences, as it allows for verification of whether the set educational goals are being met and provides both students and teachers with feedback on the level of outcomes achieved. In the context of cross-curricular competences, however, assessment is methodologically more demanding than the assessment of factual knowledge, as it requires a clear definition of performance standards, criteria, and appropriate tools.

Research results indicate that in high school curriculum documents, assessment is most often presented in the traditional framework of subject performance assessment (e.g., written assignments, oral examinations, testing). Transversal competences, like critical thinking or media and information literacy, are only indirectly tested – for instance by reference in general objectives the independent individual work activity argue skills working with sources. Explicit references to tools for assessment mentioned within the documents aren't so frequent, initially related to critically analysing information and media to safe use in digital environment. This scenario indicates that, albeit the relevance to develop dimensions across domains, assessment has not explicitly been structured in a systematic manner to support them. If competences are not unambiguously evaluated, it contributes to their underestimation in practical training. In this context, it is possible to implicitly point to the need to expand assessment frameworks to include forms that would allow the development of cross-curricular competences to be captured, for example through portfolios, project outputs, rubrics, and formative assessment.

Material, technical, and personnel conditions

The integration of digital education and media literacy is significantly influenced by the material and technical equipment of the school and its personnel capacities. School education programs at the general upper secondary schools often mention the existence of technical facilities such as computer classrooms, interactive whiteboards, multimedia aids, and internet access. From the perspective of the formal curriculum framework, digital technologies are presented as a natural part of teaching, with their use in various subjects being declared.

Findings suggest that technical equipment alone is not sufficient unless it is accompanied by a systematic pedagogical concept, methodological support for teachers, and well-thought-out development of digital competences. The documents rarely contain specific information on the professional development of teachers in the field of digital and media literacy, on training, workshops, or systematic capacity building. This again reinforces the risk that the integration of cross-curricular competencies will depend on the individual abilities and motivation of specific teachers.

At the same time, a trend can be identified whereby the staffing of digital education is often associated primarily with IT teachers or internal ICT coordinators, while media literacy is less frequently considered an area requiring specialized competences and methodological guidance. Such a narrow understanding can lead to media and information literacy remaining outside the systematic focus of the school.

Coordination and continuity of competence development within the school

The coherence and continuation of cross-curricular competence integration are quality-absorbing features. If digital education and critical and media literacy are consolidated without horizontal coordination among different subjects, there is a complex possibility that the students are exposed to an isolated set of activities, with no gradual development of their competence. School strategies, methodological plans, and responsibilities are hardly defined or coordinated explicitly through high school curriculums. Some documents refer to project days, theme weeks or interdisciplinary activities but not always in relation to clearly articulated goals in the field of developing media, information and digital literacy. Coordination is often implicit, relying on the

presumption that single subject teachers will acquire interdisciplinary skills "naturally" in their own subjects. But this method won't necessarily maintain evenness or quality.

5. Conclusion

The aim of this study was to analyse the extent and manner of integration of digital education, critical thinking, and media and information literacy into school curricula at general upper secondary schools in Slovakia. Research conducted through qualitative content analysis of 82 school curricula shows that the integration of the examined competencies is uneven and often predominantly indirect.

Based on the results of the content analysis of school education programs, several recommendations can be formulated for the more systematic integration of digital education, critical thinking, and media and information literacy into curricular documents and subsequently into teaching practice. The key problem is primarily the lack of methodological development and the absence of coordination and evaluation mechanisms relating to competencies. For this reason, our recommendations are primarily aimed at strengthening explicit integration, creating school strategies, and supporting the professional development of teachers:

Strengthening the explicit integration of competencies within curricular documents. The first recommendation is to move from predominantly declarative and mediated formulations to the explicit curricular anchoring of the competencies under review. This means, in particular:

– Clearly identifying digital education, critical thinking, and media and information literacy as cross-cutting competencies at the level of school goals and graduate profiles,

– Linking these competencies to specific subjects, thematic units, and learning outcomes,

– Providing examples of activities that are designed to develop these competencies.

Implicit integration creates room for flexibility, but at the same time weakens systematicity and assessability. The clear anchoring of competencies provides the basis for a coordinated approach and reduces the risk that the development of competencies will remain a matter of random individual initiatives.

Develop policies and coordination methods for schools. The second guideline focuses on the reinforcement of school-based coordination of cross-curricular competence development. The study found no provision in the reviewed documents for mechanisms to ensure continuation and systemic foundation of competency development from one grade/subject area to another. In a practical way, this means:

– Establishing an internal school development plan with regard to digital and media education;

– Defining competency targets for each grade (principle of progression);

– Initiating collaborative work between subjects (e. g. joint projects and interdisciplinary tasks);

– Setting up a post/collaborative team responsible for the coordination of cross-curricular competencies.

These are the steps that can be taken to prevent competencies from being treated as single entities and taught separately.

Expanding didactic approaches and methodological support for teachers. The analysis shows that although schools often declare the use of activating methods (projects, discussion, group work), these methods are less often linked to specific competence outcomes. From a practical viewpoint, therefore, it would be recommendable to:

– Define methodologically how individual subjects can acquire digital competences, critical mind and media education,

– Support teachers in working with media content (analysis of media texts, verification of information, critical reading),

– Develop the ability of teachers to implement activities focused on detecting manipulation, argumentation, and critical evaluation of sources.

An important aspect is also methodological support for teachers in the area of media and information literacy, which appears to be the least developed in the documents. Without systematic methodological guidance, media literacy may remain a marginal and underdeveloped area.

Visibility and expansion of the assessment of cross-curricular competences. One of the main problems with the integration of competences is the absence of their assessment. If competences are not directly assessed, the motivation to develop them systematically is weakened.

In practice, this means providing:

– Assessment criteria and benchmarks on cross-curricular competences to be added to curricular documents,

– Greater application of formative assessment (assessment for learning), portfolios, project outcomes and self-assessment,

– Rubrics/assessment grids allowing students' critical thinking or media literacy to be assessed.

Evaluation, in our view, is a critical aspect of media literacy as it enables us to know whether students can differentiate between fact and opinion, judge the credibility of sources, and spot errors of logic and manipulation.

Step by step enhancement of media and information literacy. Given that media and information literacy appears to be the most marginalized area in the analysed curricula, it needs to be given special attention. Research suggests that media education should be understood as both a protective and a developmental competence. Practical recommendations include:

– Explicit integration of media and information literacy into multiple subjects (language subjects, social science subjects, computer science) (UNESCO, 2021),

– Implementation of projects focused on critical evaluation of information, factchecking, and media analysis,

– Development of digital safety and responsible behaviour in the online space.

The findings of the authors support the view that media literacy should not be just a supplementary topic, but part of systematic curriculum planning.

Overall, the findings of the analysis point to several recurring patterns in the curricular integration of the examined competencies. Digital education is most visible in general upper secondary school curricula, but it often remains limited to the technical provision of teaching, the use of digital tools as teaching aids, and the development of basic user skills. More advanced dimensions of digital competencies – especially digital security, digital ethics, and critical work with information in the online environment – are less prominently anchored in the documents. Critical thinking is relatively frequent in curricular documents, but it most often appears in the context of general school objectives or graduate profiles, while its methodological operationalization and assessment frameworks remain limited. Media and information literacy is the least formally integrated area of competence, which signals a risk of insufficient preparation of students to navigate a complex and often information-risky digital environment.

The results also indicate a more general curricular problem: the systematic development of cross-curricular competences is not well served, because subject coordination was limited, progressive planning had not been developed over each academic year and there were hardly any assessment opportunities. Therefore, the implementation of digital education and the development of students' critical thinking and media literacy in practice can rely on a teacher's individual ways which undermines the uniformity and equity of educational opportunities across schools.

In the context of the broader research framework of the original analysis of general upper secondary schools (Vrabec, Hladíková, 2025), it can also be stated that the identified weaknesses – the dominance of implicit integration, the absence of assessment tools, and limited coordination – are potentially systemic in nature and likely extend beyond the scope of a single type of school. This points to the need to strengthen strategic planning of cross-curricular competences at the school level, expand methodological support for teachers, and supplement curricular documents with explicit outcomes and assessment criteria that will enable effective monitoring of the development of students' digital, media, and critical competences.

Although content analysis of school education programs provides a relevant picture of the curricular anchoring of the competencies under investigation, several limitations need to be considered.

First, school education programs are formal curricular documents that may not directly reflect actual implementation in teaching. There may be a difference between the declared goals of the school and everyday teaching practice, which may vary depending on the quality of school management, the professional competencies of teachers, or material conditions.

Second, qualitative content analysis is an interpretive method that, despite its systematic analytical framework, involves a certain degree of research judgment. Although the research worked with clear dimensions (explicitness/implicitness, methods, evaluation, coordination), it is

possible that some elements of competencies may be embedded in documents with non-standard formulations or in sections that are not always directly comparable.

Third, the study is centred on documents circulating during a certain time frame and fails to capture any schools' dynamic strategy developments or innovative practices. The future research thus needs to concentrate on triangulation such as interviews with teachers, in lesson observation, teaching materials analysis, or the measurement of learner outcomes.

6. Acknowledgements

Funded by the EU NextGenerationEU through the Recovery and Resilience Plan for Slovakia under the project No.09103-03-V04-00370.

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