

HOW DO FUTURE TEACHERS ANALYSE AND INTERPRET A HISTORICAL CARTOON? EMPIRICAL RESEARCH USING THE EYE-TRACKING METHOD

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The author of the article deals with the topic of analysis and interpretation of a historical cartoon as a specific iconographic source. The aim of the empirical research was to determine the qualitative level of analysis and interpretation of a historical cartoon among students of social humanities teacher training programmes depending on the presented interpretation model (structured set of questions) and to evaluate its applicability in school practice from the perspective of future teachers. From the methodological point of view, a qualitative research approach with elements of quantification was chosen, including audio recordings, structured reflective interviews and the eye-tracking method aimed at exploring the participants' perceptual strategies. According to the results of the research, the students show a higher quality of interpretation in structured analysis than in unstructured analysis, because if the proposed interpretation model was used, the participants were able to better capture and clarify the historical context and connections, to understand the analogies and symbols depicted, and to reveal the possible views and attitudes of the cartoonist. The research shows the need to equip future teachers with adequate interpretive competences in order to develop them in their pedagogical practice in primary and secondary schools and to be able to create interpretation models for structured analysis and interpretation of iconographic sources in the teaching of social humanities.

Keywords: historical cartoon; iconographic sources; analysis and interpretation; eye-tracking; historical thinking competences; undergraduate teacher training;

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Autorka článku sa venuje téme analýzy a interpretácie historickej karikatúry ako špecifického ikonografického prameňa. Cieľom empirického výskumu bolo zistiť kvalitatívnu úroveň analýzy a interpretácie historickej karikatúry u študentov učiteľstva sociálne humanitných predmetov v závislosti od predloženého interpretačného modelu (štruktúrovaného súboru otázok) a vyhodnotiť jeho využiteľnosť v školskej praxi z pohľadu budúcich učiteľov. Z metodologického hľadiska bol zvolený kvalitatívny výskumný prístup s prvkami kvantifikácie, zahŕňajúci audiozáznamy, štruktúrované reflektívne rozhovory a metódu eye-trackingu zameranú na skúmanie percepčných stratégií probandov. Podľa výsledkov výskumu vykazujú študenti vyššiu kvalitu interpretácie v prípade štruktúrovanej analýzy ako u analýzy štruktúrovanej, pretože v prípade využitia navrhnutého interpretačného modelu dokázali probandi lepšie postihnúť a objasniť historický kontext a súvislosti, porozumieť zobrazeným analógiám a symbolom a poodhaliť tiež možné názory a postoje karikaturistu. Z výskumu vyplýva potreba vybaviť budúcich učiteľov adekvátnymi interpretačnými kompetenciami, aby ich mohli rozvíjať vo svojej pedagogickej praxi na základných a stredných školách a aby boli schopní sami vytvárať interpretačné modely pre štruktúrovanú analýzu a interpretáciu ikonografických prameňov vo výučbe sociálne humanitných predmetov.

Kľúčové slová: historická karikatúra; ikonografické pramene; analýza a interpretácia; eye-tracking; kompetencie historického myslenia; pregraduálne štúdium učiteľov;

Historical cartoon as a specific iconographic source

Nowadays, iconographic sources are gaining importance in historical research, and their analysis and interpretation represent a unique area of knowledge of events, developments and processes that took place in the past. Pictorial sources (photographs, cartoons, works of visual art, political and artistic posters, etc.) allow a more plastic view of history, opening up space for its multiperspective, multilayered evaluation. They represent the imaginative dimension of history and history studies, stimulating the imagination of the recipients.¹ They are a source not only for political history, but also for economic, social and everyday history. Moreover, for an audience that is conceived more broadly than just a community of specialised historians, they develop a whole spectrum of historical thinking competences (Kompetenzen historischen Denkens), based on the systematic reconstruction and deconstruction of concepts and consisting in a continuous process of the formation of the meaning of history (historische Sinnbildung).²

A specific iconographic historical source in this context is the historical cartoon. Cartoons have been part of human history since the earliest times: even in prehistoric art one can recognise certain elements distorting the physical characteristics and expressions of various persons. The development of cartoons in the present sense of the word came naturally much later and falls into the period of the Italian Renaissance, English satire in the 18th century, the political struggles in France in the 18th and 19th centuries, the World Wars and especially the Cold

¹ Bodo von Borries talks about the aesthetic-sensual moments of historical consciousness. BORRIES, von Bodo. *Imaginierte Geschichte. Die biographische Bedeutung historischer Fiktionen und Phantasien*. Köln, 1996, p. 185.

² SCHREIBER, Waltraud. Ein Kompetenz-Strukturmodell historischen Denkens. In *Zeitschrift für Pädagogik*, 2008, Vol. 54, No. 2, pp. 198-212.

War, bipolarly dividing the world into two irreconcilable blocs.³ In the post-1945 era, numerous cartoons were produced looking at identical events from completely different perspectives (for example, European integration, the Cuban Missile Crisis, the Vietnam War, nuclear armaments, the Berlin Wall and its fall, etc.).⁴

Cartoons are not factual, realistic depictions of historical events – on the contrary, their characteristic feature is that they are always “biased” in favour of a certain view of historical events, that they are based on confrontation, on contradiction, and represent the author’s subjective interpretation and the author’s specific evaluation of the depicted phenomenon. It is essential that historians, but also teachers of history and other social humanities at school, respect in source criticism and take into account in their interpretation the basic features characterising historical cartoons. The German author Hans-Jürgen Pandel defined four main features of historical cartoons:⁵

- condensation of information using visual means – the cartoonist resorts to the use of simplification, exaggeration of individual features and proportions, often physical defects (warts, double chin, crooked nose, bald head) allowing easy identification of the persons depicted;
- partiality, tendentiousness, bias – cartoons are usually expressions of hostility, antagonism, aggression, cynicism and scepticism;
- arousing a sense of pleasure – cartoons make it possible to “save” mental energy, as they briefly capture the depicted situation in all its complexity, replacing complex verbal argumentation and verbal criticism;
- social character, i.e. orientation towards the audience and effort to convince them of the truth or rightness of the opinion and attitude presented.

According to Pandel, the danger and threat from the enemy are eliminated by ridiculing, humiliating and disparaging the adversary through the mockingly deformed depiction. Similarly, Gillian Rhodes highlights the fact that the cartoonist’s intention is usually to amuse, to be funny, although not all cartoons actually provoke laughter (for example, cruel Nazi propaganda cartoons of “typical” Jews).⁶ Ulrich Schnakenberg characterises cartoons as idealistic, moralistic and cynical.⁷ Michael Sauer accentuates their attempt to raise and provoke new questions, surprising judgements and unusual evaluations.⁸ Robert Stradling emphasises that it is important to realise that cartoons do not provide factual information and that the cartoonist does not aim at objectivity. The cartoonist has to have

³ RHODES, Gillian. *Superportraits: Caricatures and recognition. Essays in cognitive psychology.* Hove, 1996, pp. 21-33.

⁴ SCHNAKENBERG, Ulrich. *Die Karikatur im Geschichtsunterricht.* Schwalbach/Ts., 2012, pp. 23-50.

⁵ PANDEL, Hans-Jürgen – SCHNEIDER, Gerhard. *Handbuch Medien im Geschichtsunterricht.* Schwalbach/Ts., 2005, pp. 259-260.

⁶ RHODES, *Superportraits*, p. 13.

⁷ SCHNAKENBERG, *Die Karikatur im Geschichtsunterricht*, p. 13.

⁸ SAUER, Michael. *Bilder im Geschichtsunterricht. Typen. Interpretationsmethoden. Unterrichtsverfahren.* Seelze/Velber, 2000, p. 100.

a certain level of social skills to guess what the recipient is able to understand and what is (not) funny.⁹

An essential element in cartoons is the use of symbols and visual signs the decipherment of which requires a very good orientation in period-specific symbolism (for example, knowledge of mediaeval Christian iconography), a multi-disciplinary approach (the meaning of signs in visual art), and a deep knowledge of the historical, political and cultural context as well as historical myths and stereotypes spread at the time when the cartoon was created. Symbols used by cartoonists include, for example, expressions of personification, natural and meteorological phenomena, black and white opposites, visualisation of both verbal and non-verbal communication, or they may represent animal, material, national or more complex allegories.¹⁰ For example, symbols used to identify people and to depict their actions, decisions and feelings, to characterise the political or social situation, or to express both political pacts and conflicts may include a bear (clumsy, but strong), a fox (cunning), a dove (symbol of peace), a threatening storm (escalating international tensions), figures with raised chins and folded arms (dominance and haughtiness), with hunched backs (submission and subordination), German Michel breaking down the Berlin Wall in typical nightwear, etc.

The analysis, interpretation and criticism of the historical cartoon as a specific historical source is essential to the work of historians, history teachers, but also pupils and students studying and learning about history in a scholarly way. Currently, there are several generally constructed analytical-synthetic interpretation models that can be applied to specific iconographic material. Already in the 1970s, Erwin Panofsky published a structure and procedure for iconographic image analysis,¹¹ with other authors later building on it. Pandel recommended focusing the interpretation of historical cartoons on the time of their creation, the historical situation, the means of expression (symbols, metaphors), tendencies and intentions, and the cartoonist's attitudes.¹² Viliam Kratochvíl proposed a systematic procedure where the first step of the analysis is to capture the first impression and initial orientation (brainstorming), followed by a thorough description, clarification of meaning, organisation and evaluation (putting into context).¹³ A comprehensive model building on previous research was constructed in 2012 by Ulrich Schnakenberg, who defined five phases of analysis and interpretation in the following sequence:¹⁴

⁹ STRADLING, Robert. *Multiperspectivity in history teaching: A guide for teachers*, Strasbourg, 2003, pp. 81-82.

¹⁰ PANDEL – SCHNEIDER, *Handbuch Medien*, pp. 265-266.

¹¹ PANOFSKY, Erwin. *Sinn und Deutung in der bildenden Kunst*. Köln, 1978.

¹² LERNBOX Geschichte. *Das Methodenbuch*. (Ed. SAUER, Michael). Seelze/Velber, 2000, p. 53.

¹³ KRATOCHVÍL, Viliam. *Modely na rozvíjanie kompetencií žiakov. K transformácii vzťahu histórie a školského dejepisu*. Bratislava, 2004, pp. 76-77.

¹⁴ SCHNAKENBERG, *Die Karikatur im Geschichtsunterricht*, p. 103; quoted and modified in LABISCHOVÁ, Denisa. *Úloha didakticky štruktúrovaných analýz a interpretácie ikonografických prameňov v pregraduálnej príprave učiteľov spoločenských vied*. In *CIVILIA – odborná revue pro didaktiku spoločenských vied*. 2019, Vol. 10, No. 1, pp. 4-22.

- first impression (expressing spontaneous feelings, general impression, naming striking details, formulating hypotheses);
- establishing formal information (author, theme, date of creation, place of publication);
- description (systematic description of the cartoon, naming individual elements – objects, persons, symbols, differentiation of artistic means of expression and compositional principles such as perspective);
- historical context and analysis (identification of historical figures, naming of types, understanding the theme and content of the cartoon);
- interpretation and evaluation (summarising the main message of the image, naming the cartoonist's intentions, explaining the effect of the cartoon on the audience of the time, discussing the effect of the cartoon on the current audience, assessing the value of the cartoon as a historical source, evaluating the cartoon itself).

Cartoons are not only a valuable historical source for professional history; they are also of great importance as part of history education in the school environment and beyond. They develop critical thinking, a constructivist and multiperspective approach to the interpretation of history,¹⁵ as well as analytical and interpretive skills, and are the basis for inquiry-based learning.¹⁶ The significant motivational element should not be forgotten either – cartoons appeal to emotions, can be provocative, provoke laughter, and stimulate interest and curiosity. Cartoons allow productive and creative activities of pupils (learning by doing) – pupils can change the meaning, compare conflicting cartoons related to the same historical event, add captions, create questions, and search for other historical sources of textual, pictorial or audiovisual nature, statistics and maps.

Although cartoons have great potential for effective use in the teaching of history and other social humanities, research shows that their inclusion in teaching in the Czech environment is still rather rare, unlike, for example, in the UK or Germany. Moreover, cartoons mostly have only an illustrative function and are not used as independent sources of information for deeper research and interpretation.¹⁷ Given the relatively high autonomy of schools, a crucial role in the choice of didactic approaches and the inclusion of work with sources in teaching

¹⁵ STRADLING, Multiperspectivity, p. 81.

¹⁶ LABISCHOVÁ, Denisa. Badatelsky orientovaná výuka – základní paradigma pro tvorbu moderní učebnice dějepisu. In *Sborník prací Pedagogické fakulty Masarykovy univerzity, řada společenských věd*, 2014, Vol. 28, No. 2, pp. 110-127; LABISCHOVÁ, Denisa. Analýza a interpretace historických pramenů v učebnicích dějepisu a v praxi. In *Komenský. Odborný časopis pro učitele základní školy*, 2017, Vol. 141, No. 3, pp. 12-17.

¹⁷ ČERNÍN, David – GRACOVÁ, Blažena – STEFAN, Michal – TOMEČEK, Slavoj. Dějepis mezi vědou a vyprávěním. Červený Kostelec, 2023; GRACOVÁ, Blažena. Poznatky z Výzkumu aktuální podoby výuky dějepisu na základních a středních školách. In *Historie a škola VI. Klíčové kompetence a současný stav vzdělávání v dějepise*, Praha, 2008, pp. 9-30; GRACOVÁ, Blažena. Karikatura jako zdroj paměti událostí a osobností totalitních režimů. (Výsledky empirických šetření u studující mládeže z let 2005 – 2001). In *Sborník prací Masarykovy univerzity, řada společenských věd*, Vol. 26, No. 2, 2012, pp. 217-333; LABISCHOVÁ, Badatelsky orientovaná výuka, pp. 110-127; LABISCHOVÁ, Úloha didakticky strukturované analýzy, pp. 4-22.

is played by teachers themselves.¹⁸ An essential prerequisite for teachers to abandon traditional transmissive and reproductive teaching and work with constructivist didactic methods is, in particular, their quality undergraduate specialised didactic training, leading to the systematic development of historical thinking and interpretive didactic skills related, among other things, to working with historical cartoons. For the above reasons, this article focuses on future teachers of social humanities and their level of skill in analysing and interpreting a particular historical cartoon. The research also includes their reflection on the developed structured set of questions (interpretation model) in terms of its suitability for didactic use in teaching in primary and secondary schools.

Research objectives and methodology

Two research objectives were set for the research presented in this study:

- to capture the quality of analysis and interpretation of the historical cartoon depending on the form of the questions asked (namely to find out whether there are significant differences between unstructured and structured analysis using the proposed interpretation model);
- to evaluate the suitability of the questions for the interpretation of iconographic material in school teaching from the perspective of future teachers of social humanities.

In terms of methodology, a qualitative research approach with partial quantification of data was chosen. The advantage of the qualitative approach lies primarily in a deeper understanding of the problem and addressing a greater number of aspects of the studied phenomenon than a quantitative study conducted on a large sample of respondents would allow. However, since qualitative research works with a relatively small research sample (24 subjects in this case), it is essential to ensure the validity of the study through the use of *triangulation*, a combination of multiple (three in this case) research methods. For this reason, from the methods of data collection and processing, the eye-tracking method was used in the presented research, as well as the analysis of audio recordings and a structured interview with participants in the post-test reflection phase. The research instrument, used in previous research in 2014 and 2015,¹⁹ was validated and then partially modified.

In addition to the research methods used quite often in social empirical research (structured interviews, analysis of audio recordings), the eye-tracking method was also applied in the presented research. This method seems to be very suitable for studying complex processes of visual perception and cognition

¹⁸ KRATOCHVÍL, Viliam. *Metafora stromu ako model didaktiky dejepisu*. Praha, 2019.

¹⁹ LABISCHOVÁ, Denisa. Možnosti využití metody eyetrackingu ve výzkumu kompetencí historického myšlení na příkladu analýzy ikonografického pramene – karikatury. In *Pedagogická orientace*, 2015, Vol. 25, No. 2, pp. 271-299; LABISCHOVÁ, Denisa. Analysis and interpretation of a historical photograph among future teachers of social science subjects: Research using the eyetracking method. In *Historical Encounters. A journal of historical consciousness, historical cultures, and history education*, 2024, Vol. 11, No. 1, pp. 60-77; LABISCHOVÁ, Úloha didakticky strukturované analýzy, pp. 4-22.

in relation to the observation, perception and interpretation of iconographic historical sources. It allows the researcher to track which elements of the image the subject focuses on, which ones receive the most attention, and which ones are overlooked. In combination with the analysis of audio recordings and reflective structured interviews, the researcher gains evidence-based information about the nature and quality of the participants' interpretative competencies regarding iconographic sources and is able to assess how well their competencies align with didactic recommendations and principles. These findings can then lead to emphasising specific specialised didactic innovations and, potentially, curricular changes.

With the exception of a few studies, the eye-tracking method had not been used practically in pedagogical and specialised didactic research, so its validated and thoughtful incorporation provides the main contribution and originality of the presented research. The method is based on the observation of mental processes linked to eye movements and on the targeted focus of human attention.²⁰ Not surprisingly, previous research had focused mainly on the processes of reading and its specific disorders such as dyslexia,²¹ on the development of reading literacy through teaching methods with different effectivity,²² on pupils' didactic strategies when working with verbal and iconic text,²³ on the construction of learning tasks in science subjects,²⁴ or on various mechanisms of online learning.²⁵

Technically, an eye camera was used to study eye movements during visual perception, cognition and interpretation. The camera is equipped with electronic software that allows continuous capture of static and dynamic processes, such as fixations, saccades and regressions. The static output is mainly the intensity and frequency of fixations, while the dynamic output is mainly gaze replay, i.e. the recording of the entire course of eye movements and focusing on individual

²⁰ DUCHOWSKI, Andrew. Eye tracking methodology, theory and practice, Clemson, 2007. ERDMANN, Elisabeth. Historical consciousness – historical culture: Two sides of the same medal? In Yearbook – Jahrbuch – Annales. International Society for the Didactics of History. 2007, Vol., No. 1, pp. 27-38.

²¹ JOŠT, Jiří. Oční pohyby, čtení a dyslexie. Praha, 2009.

²² METELKOVÁ SVOBODOVÁ, Radana – SVOBODOVÁ, Jana. Eyetracker jako pomocník při monitorování cesty ke čtenářské gramotnosti. In Didaktické studie, 2016, Vol. 8, No. 1, pp. 53-83. PANDEL, Hans-Jürgen, SCHNEIDER, Gerhard. Handbuch Medien im Geschichtsunterricht. Schwalbach/Ts., 2005.

²³ ČERVENKOVÁ, Iva – MALČÍK, Martin – GUZIUR, Jakub – SIKOROVÁ, Zuzana. Executive functions in comprehending the content of visual and textual information. In Proceedings Information and Communication Technology in Education. Ostrava, 2014, s. 53-60; KNIGHT, Bruce Allen – HORSLEY, Mike. A new approach to cognitive metrics: analysing the visual mechanics of comprehension using eye tracking data in student completion of high stakes testing evaluation. In HORSLEY, Mike et al. Current trends in eye tracking research. Berlin 2014, pp. 355-367.

²⁴ KEKULE, Martina. Výzkum pomocí oční kamery ve fyzikálním vzdělávání. In Scientia in educatione, 2014, Vol. 5, No. 2, pp. 58-73.

²⁵ JAMET, Eric. An eye-tracking study of cueing effects in multimedia learning. In Computers in Human Behavior, 2014, Vol. 32, No. 1, pp. 47-53; PERSAUD, Nadini – ELIOT, Matt. The development and refinement of student self-regulatory strategies in online learning environments. In HORSLEY, Mike et al. Current trends in eye tracking research. Berlin, 2014, pp. 391-405.

objects in the displayed image.²⁶ In the present study, data was selectively analysed based on a triple display of visualised data, namely:

1. *heat maps*, showing the intensity of gaze using a colour spectrum, similar to meteorology, i.e. areas with the highest intensity of gaze are highlighted in red, while areas with lower intensity are highlighted in blue;
2. *gaze opacity maps*, representing a kind of opposite of heat maps and resembling a photographic negative, i.e. areas of the most intense gaze are “visible” in light, while “blind” areas that have received minimum gaze from participants remain dark, even black;
3. *gaze plot maps*, capturing the trajectory of eye gaze, with the areas where participants’ gaze is more frequently fixed being marked with larger circles.

The practical phase took place in November 2022; the research sample consisted of 24 students of social humanities teacher training programmes (various subject combinations) at the Faculty of Education, University of Ostrava, 12 women and 12 men aged 20–23. The basic principles related to the ethics of research using human subjects as the research sample were respected, i.e. signing informed consent, anonymity and GDPR, sensitive handling of research data and secure storage.



Figure 1. Cartoon used in the research test.

(Source: https://www.reddit.com/r/PropagandaPosters/comments/8p56ss/wonder_how_long_the_honeymoon_will_last_satirical/).²⁷

²⁶ POPELKA, Stanislav – BRYCHTOVÁ, Alžběta – VOŽENÍLEK, Vít. Eye-tracking a jeho využití při hodnocení map. In *Geografický časopis*, 2012, Vol. 74, No. 1, pp. 71-87.

²⁷ For the purposes of the research test, the description was translated from the English original into Czech.

The research test was carried out in the eye-tracking research laboratory at the Faculty of Education, University of Ostrava. The research instrument was a comprehensive computerised test on the Tobii TX300 eye tracker using Tobii Studio software. All the participants involved were informed in advance about the objectives of the research and the course and conditions of measurement. Eye calibration, a trial test and verification that the participant was suitable for the eye-tracking research (for example, no eye defect, etc.) were performed. The total test time per student was a maximum of 10 minutes.

The basic element of the research test was a well-known cartoon from 1939, still widely used in history education, relating to the conclusion of the Molotov–Ribbentrop Pact on 23 August 1939 (Figure 1). It was created by the renowned cartoonist Clifford Kennedy Berryman, working for the American newspaper *The Washington Evening Star*. Analysing the cartoon, it is possible to observe how the pictorial component corresponds to the accompanying text. The pictorial part of the cartoon shows Hitler and Stalin at a wedding ceremony. Here Stalin is a happy bride, smiling somewhat naively, and Hitler a groom looking at his future bride somewhat reassuringly, as if he “was up to” other plans, of which the bride is as yet unaware. The wedding cake, the clothing and the adornments of the persons (for example, the bride’s veil) are decorated with symbols of both totalitarian regimes – swastikas and hammers and sickles. To understand the cartoon, the text on the cartoon is essential: “*Wonder how long the honeymoon will last?*”, referring to the fact that less than two years later, on 22 June 1941, the Soviet Union was invaded by Hitler’s Germany as part of Operation Barbarossa, ending the “marriage” representing the temporary power pact.

This specific cartoon was chosen for several reasons. Firstly, it is often included in history textbooks for primary and secondary schools, so future teachers should demonstrate a deep understanding of its content and possess solid skills in its analysis and interpretation. Secondly, this cartoon allows for a high degree of imagination, requiring knowledge not only of the historical situation that is depicted but also of persistent gender stereotypes, an understanding of the circumstances related to the beginning of the Second World War, and situating the drawing within the broader European historical context. Last but not least, the cartoon contains a significant topicality dimension, where one can look for obvious parallels to, for example, the current aggression in Ukraine or the violation of international political conventions by dictators, and it also corresponds to the generally accepted notion of historical consciousness as a concept involving the meaning line of past – present – future.²⁸ This makes the cartoon didactically usable not only for teachers of history, but also of civic education and social sciences.

The task of the teacher training students tested was to answer ten questions sequentially displayed on a monitor while continuously observing the cartoon without time limit. The test used in the 2015 research²⁹ was slightly modified based

²⁸ ERDMANN, Elisabeth. Historical consciousness – historical culture: Two sides of the same medal? In *Yearbook – Jahrbuch – Annales. International Society for the Didactics of History*, 2007, Vol., No. 1, p. 29.

²⁹ LABISCHOVÁ, Úloha didakticky strukturované analýzy, pp. 4-22.

on the validation and evaluation of the research instrument – the interpretation model. The questions concerning the historical figures depicted and the symbolism used were omitted, as the personalities of Hitler and Stalin as well as the swastika and hammer and sickle were sufficiently familiar to the respondents. On the contrary, a question concerning the current relevance of the cartoon was added.

Interpretation model consisting of questions structuring the analysis and interpretation of the cartoon (1 – unstructured analysis, 2–10 – structured analysis):

1. Explain the following cartoon.
2. Why are Hitler and Stalin depicted as a wedding couple?
3. Which character has the stronger position? How do you know?
4. Why did the author divide the roles of the bride and groom in this way?
5. What feelings do the expressions on their faces convey?
6. Which historical event does the cartoon refer to?
7. Which European countries were affected by this “marriage”?
8. Which of the newlyweds ended the “honeymoon” and how?
9. Is the cartoon still relevant? Explain.
10. What attitude to the situation does the cartoonist hold?

The first question was deliberately formulated in a very general, unstructured way, serving mainly to compare the qualitative level of unstructured and structured interpretation of the cartoon.

The interpretation model formed by questions No. 2–10, on the other hand, represented a structured process of analysis and interpretation of the cartoon. With the help of the proposed questions, the participants were guided to reflect more deeply on the depiction that is presented, on the cartoonist's intentions, on the historical and global context, and on the relation to current international political events. Question No. 2 prompts the participants to examine the connection between the marriage being entered into and the Molotov–Ribbentrop Pact, to which the cartoonist refers. Questions No. 3–5 require the involvement of historical imagination, an effort to capture significant analogies and aspects of the caricatured depiction, i.e. the more dominant position of Hitler's Germany represented by the depiction of Hitler as a groom smiling reassuringly at a happy and trusting bride, which is expressed primarily through facial expressions. Questions No. 6–8 were deliberately included in the second part of the test to relieve initial stress; they are aimed at more precise historical knowledge, namely identifying the historical event, defining the foreign policy and international context, and understanding the temporality in Germany's adherence to the non-aggression pact. Question No. 9 aims at understanding the analogies between the historical situation and current international political events, and the last question, No. 10, traces the intentions and opinions of the author-cartoonist, i.e. how he sees the conclusion of the power pact from his perspective, what position he takes towards it, how he evaluates it and what he intends to convey.

After the actual test, a reflection session with the participants was conducted, linked to the second research objective, i.e. to evaluate the applicability of the proposed interpretation model in primary and secondary school practice. The

students were engaged in structured interviews to identify any difficult or less understandable questions and to assess whether questions No. 2–10 had helped them to observe and analyse and interpret the cartoon in more depth.

Research results

Categorical system

The qualitative research approach in relation to the analysis of audio recordings capturing the participants' answers to the questions asked is based on open and axial coding, sorting and categorisation of research data to create a categorical system describing the phenomenon under study and its individual aspects. The categorical system proposed below is based on previously proposed categorical systems, namely both on the proposal applied in the 2014 and 2015 research, where the basis of the research test was a different cartoon (namely a cartoon by the British cartoonist David Low depicting the negotiations of the leaders of four European states during the Munich conference),³⁰ and on a draft categorical system created as part of the 2015 research, which also used a cartoon of Hitler's marriage to Stalin.³¹ The proposed categories and subcategories were largely retained in their original wording, with minor changes. Neither the *Geographical symbols* subcategory, which does not appear in the cartoon, nor the *Localisation* subcategory, which is not relevant in the context of the interpretation of Berryman's cartoon, were included in the system.

Category name	Subcategory name	Subcategory designation	Category description/content, examples
Historical personalities	Basic information about personalities	HP1	name, country of origin, political office (Reich Chancellor, General Secretary of the Party), dictator
	Description of appearance	HP2	individual look (moustache, hairstyle)
Symbols	Physical symbols	S1	swastika, hammer and sickle, wedding cake, wedding bouquet, wedding attire
	Psychological symbols	S2	non-verbal signs: dominance – submission (groom – bride), smile expressing feelings (joy, expectation, mockery)

³⁰ LABISCHOVÁ, Denisa. The influence of the didactic structuring of learning tasks on the quality of perception, analysis and interpretation of a historical cartoon. In *International Journal of Research on History Didactics, History Education and History Culture (JHEC)*, 2018, Vol. 39, No. 1, pp. 71-92.

³¹ LABISCHOVÁ, Úloha didakticky strukturované analýzy, pp. 12-13.

Historical event	Time	HE1	1939, before the Second World War
	Event designation	HE2	non-aggression pact, Molotov–Ribbentrop Pact
	Ideology and politics	HE3	Nazism, Communism
Wider historical context	Meaning and context	HC1	outbreak of the Second World War, demarcation of spheres of influence in Europe, agreement on the partition of Poland, invasion of the USSR on 22 June 1941, relevance to the present
	Cartoonist's attitude	HC2	irony, approval/rejection, detached view, criticism of imprudence and credulity, prediction of the temporary nature of the alliance

Table 1. Categorical system describing the analysis and interpretation of the historical cartoon. (Source: author).

Analysis of audio recordings

The methodological procedure for the analysis of the audio recordings was carried out in three phases. The first step was a verbatim transcription of the participants’ verbal responses to the individual test questions. This phase was followed by open and axial coding, and the different categories of the proposed categorical system were quantified. Specifically, the representation according to the occurrence of the individual codes in absolute frequencies was monitored. In the last phase, the representation of the individual codes and subcategories was compared for structured and unstructured analysis and the comparison was represented as a bar chart (Figure 1).

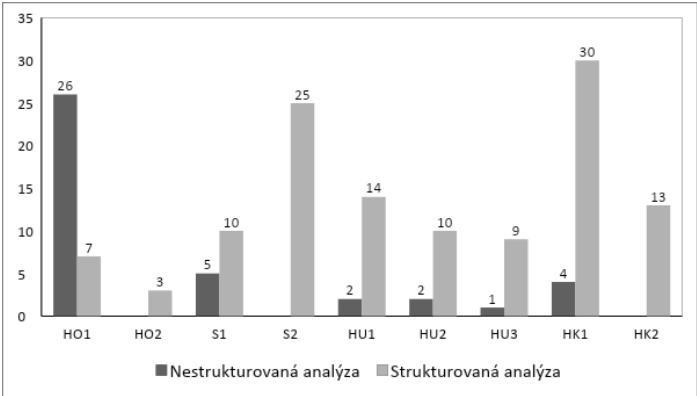


Chart 1. Comparison of absolute frequencies – representation of categories (by occurrence of codes) in the structured and unstructured analysis of the cartoon based on the analysis of the audio recordings of the participants’ verbal responses during the test. (Source: author).

Figure 1 shows a significant difference between the unstructured and structured analysis of the cartoon for all subcategories, except for subcategory HP1, i.e. basic information about the personalities depicted (mostly names). This is most likely due to the fact that the names of the persons were given by the participants in response to the first question and then not repeated for subsequent questions. In unstructured analysis, subcategories HP2, S2 and HC2 were not represented at all, while very low absolute frequencies of the individual codes were found for the other subcategories (ranging from 1 to 5).

The chart clearly shows that the structured interpretation model (structured analysis) yielded a much deeper perception of the cartoon. This is evident from the higher frequencies of the codes of the individual categories, with the exception of HP1. It is for this subcategory that the interpretation model was modified compared to 2015, as the newly modified model (2022) did not include a question asking directly for the names of the persons depicted, i.e. Hitler and Stalin. The relatively lower representation of the individual codes was also significant for HP2, related to the description of appearance. The participants focused on this only rarely (for example, Stalin's moustache caught their attention), probably also because the appearance features played a rather marginal role in the overall context of the cartoon.

Another valuable instrument for the qualitative interpretation of the research data is the analysis of the specific answers given by the responding teacher training students to the individual questions in the interpretation model. Here, too, significant differences between the unstructured and structured analysis of the presented cartoon became apparent. If the participants were only asked a general, unstructured question prompting them to "explain" the cartoon, they were usually unable to interpret this specific iconographic source. Answers were limited to the names of the two dictators (Hitler 16 times, Stalin 10 times), the depicted event, "wedding", was also mentioned (7 times) without capturing the historical situation and a clear parallel between the temporary power alliance crucial in modern history (Molotov–Ribbentrop Pact) and the short-lived marriage ironically depicted in the cartoonist's drawing. The responding participants were often at a loss when examining the cartoon:

I don't really know how to understand this cartoon. I've never been interested in that sort of thing. (female student K.)

Only two participants showed an effort to analyse and interpret the cartoon more thoughtfully in the first, unstructured question (in 2015 the result was similar, with three students attempting to explain the situation in a more complex way). They both mentioned the names of Hitler and Stalin, noticed the recurring Nazi and Communist symbols (swastika, hammer and sickle), as well as the text referring to the temporary nature of the marriage, and captured the historical significance, i.e. the caricatured depiction of the Molotov–Ribbentrop Pact.

The structured analysis (questions No. 2–10 of the interpretation model) shows much more sophisticated answers to the individual aspects of the cartoon. Question No. 2 prompted the participants to reflect on why the two dictators are depicted as a wedding couple. It therefore aimed to clarify the analogy between

marriage and a historical fact (the 1939 non-aggression pact). The participants identified this parallel in eleven cases:

It is the alliance signed in 1939 by Ministers Ribbentrop and Molotov. (male student A.).

Other teacher training students, however, were not sufficiently inspired by the question and gave rather vague or even misleading answers:

It's two leaders doing bad things, it's an ironic connection. (female student K.).

Question No. 3 referred to certain gender stereotypes contained in the cartoon. Firstly, there is the ironically viewed traditional division of female and male roles, which is meant to represent dominance and submission, i.e. a somewhat not quite equal position in the relationship between Nazi Germany and the Soviet Union (Hitler is depicted as a more dominant, rational groom who has planned and pragmatically thought out several steps ahead; Stalin, on the other hand, as a naively trusting and strongly enamoured bride expecting "joyful tomorrows"). Most participants stated that Hitler has a stronger position simply because he is portrayed as a man:

In European culture, the male position is stronger. (male student F.)

Hitler is depicted as a man, leading Stalin to the altar. He is leading him, so he has more power. (male student A.)

Since this question led mostly to a mere stereotypical statement about the roles of men and women in society, it was appropriate to include also question No. 4, aiming to capture the intentional stereotypical division of gender roles in relation to the real historical context (the invasion of the USSR on 22 June 1941, which ended the temporary alliance). Although most of the participants failed to identify the historical context in question, six of them answered more accurately:

They wanted to divide Europe together, which Hitler broke later. (male student J.)

The bride is seen as more naïve and doesn't mind being led, and that's how it was here because Stalin trusted Hitler. (female student A.)

The following question, No. 5, presents the connection between the non-verbal features captured by the cartoonist and their meaning in relation to the psychological aspects of the situation. Based on the facial expressions of the two persons, the participants were asked to guess their feelings. Most of the responding students answered the question in the same way – they mentioned emotions such as joy, happiness, contentment, friendship, but their interpretation mostly lacked the effort to name more obvious political and historical contexts, which appeared rather rarely:

They look happy, it's their wedding day. They look content. (female student K.)

Hitler is looking at Stalin in this way ... as if he is subjugating him. (male student D.)

Stalin looks excited in the picture, as if unaware of the consequences. Hitler looks mischievous. (male student A.)

Stalin looks happy, Hitler is already plotting, thinking about next steps. He's thinking ahead. (female student A.)

Question No. 6 focused directly on the specific naming of the historical event. More often than in the 2015 research, the participants were able to mention the Molotov– Ribbentrop Pact of August 1939 (11 times), the vague designation

“before the Second World War” was given in eight cases, “in 1939” occurred twice, and three participants could not answer at all.

The following question, No. 7, also required knowledge of historical events – it focused on the international political context, i.e. identifying the European countries most affected by this “marriage”. Approximately half of the participants correctly mentioned Poland (13), followed by the Baltic States (2), Finland (1), and six future teachers expressed the belief that the pact had affected subsequent international political events throughout Europe.

Similarly, an adequate answer to question No. 8 required an appropriate level of historical knowledge. The students answered which of the newlyweds ended the “honeymoon” and how (i.e. the answer to the cartoonist’s question in the cartoon text). Eleven participants responded essentially correctly, with the name Operation Barbarossa being mentioned once. Three students “guessed” that the alliance was ended by Stalin, and the remaining participants failed to respond at all.

It was Hitler who betrayed the USSR and Stalin in 1941 and attacked the Soviet Union. (male student M.)

The next question focused on the topicality dimension of the historical cartoon. The intention was to find out to what extent the participants were aware of the topicality of the cartoon or, more precisely, its relevance to current international political relations, and to what extent they found parallels with current events, global alliances, their violations and political conflicts in Europe. A somewhat surprising finding is that future teachers of social humanities were only superficially and with difficulty aware of the links to today’s social developments. Nine of the responding students categorically stated that the cartoon depicts an event in history without any close relation to the present:

This is more a matter of the past, as those forms now operate on different principles. (male student M.)

I don’t think the cartoon is relevant today, because Germany and Russia are working together. (female student E.)

However, some participants found parallels with current events in Europe, most often in relation to the war in Ukraine or Russian-Belarusian relations. An analogy was also found in one case between the Molotov–Ribbentrop Pact and the trust of some voters in the promises of populist politicians:

It’s still relevant. I could compare it to the attack on Ukraine. (male student Z.)

It reminds me of Lukashenko’s relationship with Putin. (male student A.)

It could be relevant, because there are still naive people here. Some voters might be like Stalin, and Hitler could represent politicians promising things they don’t actually want to deliver. (female student A.)

Comprehensive insight into the situation depicted and capturing the cartoonist’s intentions and opinions were required by the last question in the research test. The aim of this test question was to find out to what extent social humanities teacher training students are able to understand the specificity of the historical cartoon as an artistic genre, characterised by quite obvious one-sidedness in the evaluation of the socio-political situation that is depicted. The research results

clearly show that the teacher training students are not very accustomed to the procedure of analysis and interpretation of historical cartoons and were mostly limited to one-word statements, saying that it is probably irony, mockery of dictators, general ridicule of the situation, approval or rejection:

The cartoonist wanted to show who was inferior and who was superior by depicting them as bride and groom. (female student K.)

Judging from the question below, how long will the honeymoon last, it is an ironic view. (male student A.)

The cartoonist wanted to ridicule the two dictators and make light of history. (male student M.)

A complementary research method was the statistical measurement of the average time spent by the participants answering the individual questions, using an eye tracker (Table 2). It should be noted that the participants were not limited in the length of their answers and it was up to them to decide how much time they would spend answering the individual test questions. The aim of the presented research was to capture the quality of analysis and interpretation of the historical cartoon, not to determine the speed with which the participants dealt with the questions asked.

Question number	1	2	3	4	5	6	7	8	9	10
Time (s)	32.8	22.7	23.1	25.1	20.4	16.7	22.0	18.9	28.5	24.4

Table 2. Average time to answer individual test questions (in seconds). (Source: author).

The table shows that the participants spent an average of 23.5 seconds on each question, the shortest time was spent thinking about question No. 6 (16.7 seconds), and the longest time was spent answering question No. 1 (32.8 seconds). The gradual decline in attention evident in previous research was not found.

Analysis of visualised data

In addition to the analysis of the audio recordings, the visualised data obtained from the eye tracker measurements was also exported and analysed. Three views were used, namely heat maps, gaze opacity maps and gaze plot maps. The proposed interpretation model for structured analysis of the cartoon shows that not all answers to the test questions require a thorough observation of all details of the image. Careful and detailed observation is expected especially for questions No. 1–5 and No. 10, where a close relationship between the depiction and the semantic plane is evident. On the other hand, questions No. 6–9 are more oriented towards knowledge of historical events and historical context, and answers are not directly linked to direct observation of pictorial information.

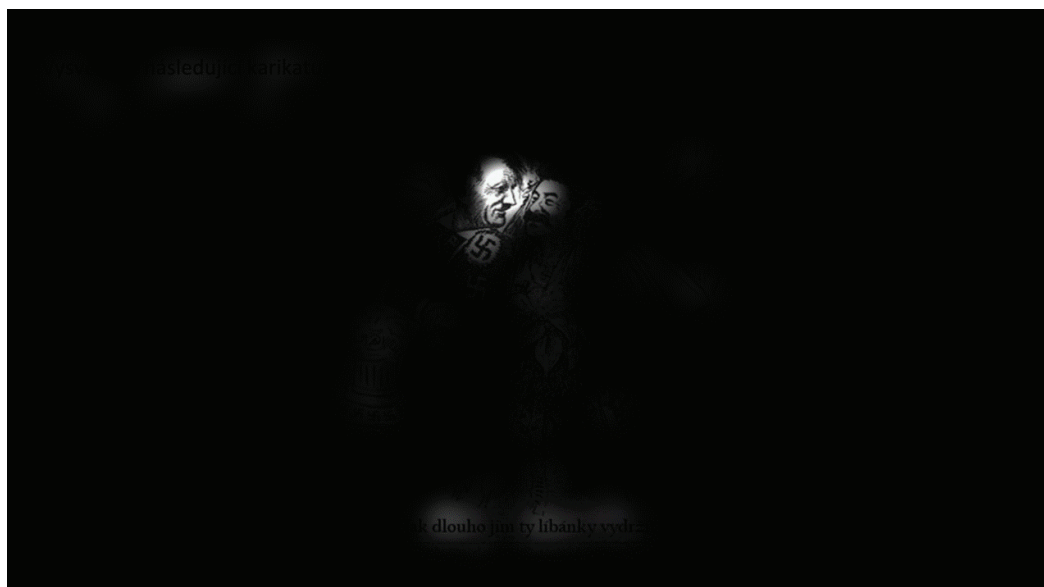


Figure 2. Gaze opacity map (male student M.) – question No. 1. (Source: author).

Která postava má silnější pozici? Podle čeho jste to poznali?

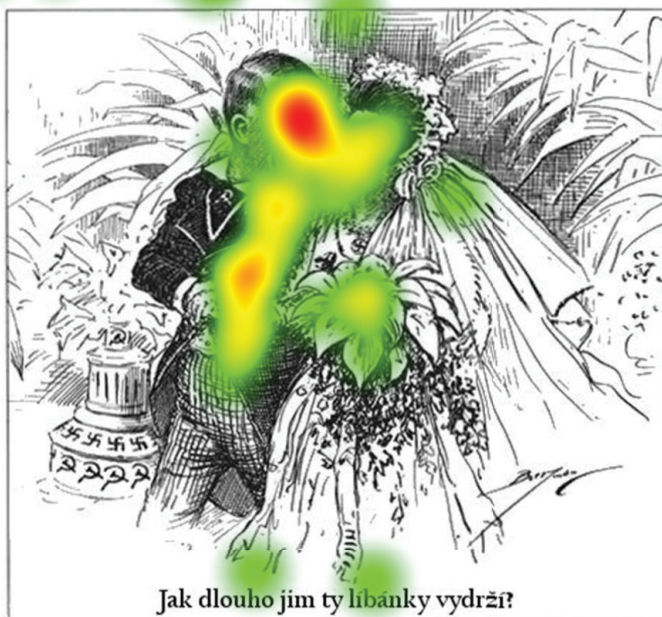


Figure 3. Heat map (female student N.) – question No. 3. (Source: author).



Figure 4. Gaze plot (female student E.) – question No. 10. (Source: author).



Figure 5. Gaze plot (male student A.) – question No. 10. (Source: author).

Figure 2 clearly shows that in unstructured analysis the participants resorted only to a very superficial observation of the cartoon. Their gaze was focused almost exclusively on the faces of the two personalities, while other details were ignored. Gaze opacity maps make it possible to observe where the “blind spots” of a particular iconographic material are. In this case, it is basically the entire image field, with the exception of the faces of Hitler and Stalin, and partly also the caption “Wonder how long the honeymoon will last?”. The visualised data correlates with the verbal responses of the participants, who gave only basic information, i.e. the names of the persons and the term “wedding”, without explaining the broader historical context.

The structured analysis allowed for a much more thorough focus on the different zones of the image (cartoon) within visual perception. For example, in answering question No. 3, female student N. was clearly looking for specific details that could help her to provide a more sophisticated answer. The sequence of individual saccades, fixations and regressions during visual perception in answering question No. 10 (estimating the cartoonist’s attitudes) is shown in Figure 4. The order of individual fixations is numbered here and the intensity of fixations is represented by the size of the circles (the larger the circle, the higher the intensity of the gaze). It is possible to observe that female participant E., while reading the question instructions (fixations 1–72), also fixed her gaze on different parts of the picture (the cake with symbols of totalitarian regimes, the wedding bouquet), but she watched Hitler and Stalin for the longest time. The differences in the intensity of individual fixations were not significant for female student E. A different perception strategy was chosen by male student A. (Figure 5), who concentrated his gaze on the central part of the cartoon, focusing mainly on the faces, where the fixations with the greatest intensity were measured.

As the research findings suggest, the visualised data of this cartoon is of rather complementary importance (with audio recordings of the participants’ verbal responses being particularly important). In 2014 and 2015, the most significant differences between unstructured and structured analysis in terms of perceptual quality were shown in the answers to the question “Name the symbols used in the cartoon”.³² It is worth considering whether to keep this question for further research of a similar focus.

Reflection

Since the participants in the presented research were social humanities teacher training students, reflection was an integral part of the research. The reflection was aimed at identifying any potentially difficult or less comprehensible test questions forming a coherent interpretation model for cartoon analysis and interpretation. Furthermore, the final reflection focused on research objective No. 2, which was to evaluate the suitability of the questions for the interpretation of iconographic material in school teaching from the perspective of future teachers.

The results of the structured reflective interviews showed that none of the test questions were incomprehensible to the participants. The most difficult,

³² LABISCHOVÁ, Úloha didakticky strukturované analýzy, p. 17.

according to the students, were the explanation of the reasons for the division of the role of the bride and the groom, the evaluation of whether the historical situation depicted is related to the present day and, last but not least, the capturing of the cartoonist's attitude.

Most participants (21) also expressed the conviction that the proposed interpretation model facilitates deeper analysis and interpretation of the cartoon and is therefore also applicable in school practice – in teaching social humanities in primary and secondary schools:

The questions helped me think about what the cartoonist meant in the first place. (male student D.)

The questions showed me a new perspective on the picture. I wouldn't have thought of it before. (male student M.)

I didn't think at first, but the questions helped me discover things I wouldn't have seen from my first impression. (male student A.)

Conclusion

The historical cartoon as a specific iconographic source can be used to learn about various aspects of the past, including not only the dimension of political history, but also social, economic, cultural and everyday history. In addition to the procedures of source criticism, on which the work of the professional historian is based, analytical and interpretive procedures, requiring an interdisciplinary view and a multiperspective approach, are also suitable for working with historical cartoons. The development of historical thinking and inquiry-based learning competences based on the scientific investigation of professional history is one of the current trends in the specialised didactics of history and other social humanities at school. Structured interpretation models containing a well-thought-out and graded set of questions are very suitable for understanding iconographic historical sources.

The aim of the presented research, building on a similar survey in 2015, was to determine the qualitative level of analysis and interpretation of a historical cartoon among social humanities teacher training students using the presented set of questions. The aim was also to evaluate whether the participants considered the proposed interpretation model as suitable for developing the interpretation skills of primary and secondary school pupils. In order to meet the research objectives, a qualitative research approach with elements of quantification was chosen, namely the analysis of audio recordings, structured reflective interviews, as well as the eye-tracking method, which has been rarely used in similar research so far and which allows one to monitor the participants' perceptual strategies, their selective focus on different areas of the perceptual field, as well as the course of fixations, saccades and regressions.

The results of the research show that the qualitative level of analysis and interpretation of a historical cartoon among future teachers is relatively low. In unstructured analysis, the participants were completely at a loss as to how to approach the explanation of the cartoon, mentioning only the names of the personalities and naming the situation that was depicted (wedding), without finding

an analogy with the historical reality, i.e. with the temporality of the Molotov–Ribbentrop Pact. The symbolism used was completely omitted and, judging from the visualised data, there was also no thorough observation of the picture field. Most of the image was practically ignored, with gaze focused only on the faces of the two dictators. None of the responding students reflected on the cartoonist's attitude and intentions.

In contrast, the structured analysis and interpretation of the cartoon using the interpretation model led to a deeper understanding of the iconographic source in question. In answering the questions asked, the teacher training students were able to capture the international political context much better, finding parallels between the depicted marriage of Hitler and Stalin with the conclusion of the alliance and the subsequent invasion of the Soviet Union in June 1941, at least partially also identifying the cartoonist's views and intentions. Probably the weakest result was recorded for the question relating to finding connections with contemporary events in Europe.

Comparing the presented research findings with the results of the 2015 research,³³ it can be observed that there are no significant differences between the results of both studies. The primary outcome is the confirmation of the conclusions from the older research. In both cases, a higher qualitative level of interpretation of the iconographic historical source was confirmed in the case of structured analysis compared to unstructured analysis. It is crucial, therefore, that working with iconographic sources in educational materials for university students be adequately didactically guided and directed. At the university attended by the students participating in this study, the formation of these competencies is an integral part of undergraduate training and their development is included especially in the specialised didactic subjects of history and civic education. The relatively low level of interpretation of the cartoon in unstructured analysis is likely due to the fact that the participants were bachelor's degree students who had not yet completed specialised didactics and only possessed skills acquired in specialised subjects. Further research could therefore focus on comparing interpretative skills before and after completing subjects where working with iconographic sources is practised.

The modification of the research test compared to 2015 can be seen as a positive development, especially the expansion of the set of questions to include a topicality question on the relationship of the historical cartoon to contemporary events in Europe. The inclusion of a reflective interview with the participants after the completion of the research phase was also appropriate, as it made it possible to capture subjective evaluations of the set of questions.

The research findings suggest that undergraduate teacher training should be more focused not only on developing interpretation skills in relation to iconographic material, but also on linking more closely knowledge of history to processes and events in contemporary society.

The research also suggests that only teachers with analytical and interpretive competences can guide and direct pupils' understanding of iconographic sources

³³ LABISCHOVÁ, Úloha didakticky strukturované analýzy, pp. 4-22.

in primary and secondary school teaching. Therefore, systematic specialised didactic training in this field is already necessary during future teachers' undergraduate studies. Therefore, it is desirable to innovate the curriculum of teacher training degree programmes at universities.

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