

WHAT MAKES A GOOD INSTRUCTIONAL VIDEO? THEORETICAL VS. EMPIRICAL APPROACH TO UNDERSTANDING WHAT STUDENTS AND TEACHERS LIKE ABOUT INSTRUCTIONAL VIDEOS

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Abstract

Although there is a heightened awareness of reading promotion in schools, the results of the IEA study PIRLS are not developing positively in Germany: The number of children who need to achieve sufficient reading competence in elementary school to transfer to secondary school is increasing. However, the popularity of reading in leisure time has slightly increased for primary school children since 2012. So, purely motivational issues are not driving the poor results. Instead, there is a significant increase in the use of online videos and their creation. If we ask what incentive videos offer, a connection to Comenius' and Pestalozzi's ideas of didactics that make everything accessible to all with all senses up to modern cognitive psychology becomes possible, which suggests based on the theory of dual coding to use different sensory channels for the provision of information simultaneously. Data from media use studies illustrate that students' reception practices and preferences have changed toward multimodality in convergent media. To understand the object of reading strategies, we conducted an exploratory study with a secondary school to ask how students and teachers evaluate the quality and effectiveness of instructional "explainer videos" on the *SQ5R* method. Therefore, we first evaluated the criteria of research for good educational videos and transferred them into a semi-standardized questionnaire on three selected explainer videos that were examined according to these criteria by content analysis. Afterward, the students evaluated the videos. Three qualitative interviews with German teachers about the teacher's criteria complement the view of the school perspective. The results of the explorative study show, that even serious, offered explainer videos by no means satisfy all relevant criteria themselves and that aesthetic categories and exemplary foundation seem to be essential for the students. Furthermore, it becomes clear that teachers need more theoretical knowledge to be responsible for the fact that freely available multimedia offers beyond those provided by textbook publishers can be insufficiently assessed from a professional point of view. Therefore, teachers tend to stick to written text-based formats or videos provided by textbook publishers. Given the increasing use of *Open Educational Resources* (OER), this theoretical deficit is glaring and reinforces the remoteness of schools from the real world, measured against the students' learning conditions.

Keywords: *Digital mediatization, open educational resources, educational videos, reading literacy, theoretical knowledge of teachers.*

1. Introduction and relevance of the topic

Even the current OECD PISA study on pupils' reading literacy performance in an international comparison cannot satisfy those responsible for education: The results still show significant educational disparities.

In 30 education systems, more than half of students performed below baseline proficiency level 2 in reading. In 21 countries and economies, at least 30% of students performed at proficiency Level 1a; in 9 countries and economies, at least 30% of students performed at proficiency Level 1b; and in 10 countries and economies, at least 10% of students performed at proficiency Level 1c. (OECD, 2023, p. 98)

That means these students have only rudimentary reading comprehension and need more contextual knowledge to appropriately classify and evaluate text statements. Pupils from educationally disadvantaged backgrounds, in particular, remain at a disadvantage. In addition to financial resources, there needs to be more official support services that can motivate and guide independent work outside of

school. Pupils from these social groups need not only the fundamental educational aspiration that allows them to recognize learning as meaningful and worthwhile but also comprehensible and attractive offers for a resumption of the content and tasks presented at school.

Although school materials promise seriousness, they are often of no help to lower-achieving pupils from socially disadvantaged social groups because they represent and reproduce the incomprehensible educational language milieu and are therefore bypassed (Schnoor, 2018). Digital media offerings, which are now available to all school groups, are more attractive in terms of youth culture and accessible in everyday language. For Germany, two current cohort surveys are available for the group of 12-year-olds of interest here (MPFS, 2023, 2022), the data used below.

Almost everyone (96%) – including pupils from educationally disadvantaged homes – has their private smartphone at secondary school (after grade 4), at least in Germany. Other digital devices can also be used at home. Moving image content, such as videos, attracts young people. YouTube usage increased by a further six percentage points to 82% in 2022 (MPFS, 2023, p. 12). On the other hand, written media, such as books, are only used by 35% or fewer young people outside of school (MPFS, 2022, p. 13).

Nevertheless, schools in Germany still need to be convinced to use digital media. The situation has improved somewhat with the problems of class attendance during the coronavirus pandemic, as digital online lessons have become necessary. However, this digitalization in the classroom needed to be more sustainable. Even in 2023, daily to multiple weekly internet use in the age group of pupils in this study is still only 47%. Moreover, they do not use digital media at school to offer such simplified media content. Only around 21% of this cohort do so at school (MPFS, 2022, p. 58) – but 38% use this medium at home (MPFS, 2022, p. 38).

The small study presented here combines two things: on the one hand, the content is about letter-supported literacy skills – namely, the acquisition of the *SQ5R* method (Pauk, 1984) – and, on the other hand, the selection and evaluation of YouTube instructional "explainer videos."

2. Justification for the object of research

Videos initially offer the incentive of primary youth cultural acceptance as a format of current mediatization. Simschek and Kia (2017, p. 17) speak of a "megatrend" of the current young generation. Didactically, a connection to Comenius' and later Pestalozzi's ideas of "teaching all things to all men" (Comenius, 1967, p. 5) is also possible. That also corresponds to the findings of modern cognitive psychology, which, based on the theory of dual coding, suggests using different sensory channels to provide information simultaneously. Data from media usage studies show that students' reception practices and preferences have changed toward multimodality in convergent media. Based on research on information processing and dual coding, the educational psychologist Mayer (2001) has developed his *cognitive theory of multimedia learning*, which suggests that the limited capacities of a sensory learning channel can be expanded by combining different channels when processing information. Multimodally coded video settings, such as the explainer videos currently available on YouTube, are suitable for translating complex contexts in educational language. They have an inclusive effect.

There is no uniform definition of what is meant by an "explainer video." Broad definitions define it as a short video production that explains content or facts (Brehmer & Becker, 2017, p. 1). Arnold and Zech (2019, p. 9) refer specifically to use in the education sector, a time frame of up to five minutes, and a target group-specific adaptation in form and content. According to Kulgemeyer (2020, p. 2449), this is also one of the seven core ideas for the effectiveness of explainer videos. Explainer videos, as they are understood in the present study, are publicly accessible free of charge (*Open Education Resources* OER). Their authors comment on the subject matter and justification of the topic ("what" and "why") and present a systematized support for the acquisition or application of a competence ("how") (Neumeister & Vogt, 2015, p. 568).

In contrast to professional instructional films (cf. Wolf, 2020, p. 18), laypersons in explainer videos convey information in a low-threshold manner for a broad audience and without direct curricular and didactic justification, but rather with a practical everyday orientation. On the other hand, they go beyond a video tutorial purely demonstrating the actions because the justification for acquiring the technology plays a vital role in the explainer video (cf. Wolf, 2020, p. 17). Technically, a variety of forms are possible: a demonstrative screencast, various laying techniques, stop-motion films, or a drawn whiteboard style were differentiated by Arnold and Zech (2019).

The 5-step reading method, also known internationally as *SQ5R*, serves as the object of the reception of the explainer videos examined here. It consists of *S* for Survey, *Q* for Question, *5R* for Read, Record, Recite, Review, and Reflect (Pauk, 1984). Systematic reading strategy support remains relevant for pupils throughout their school years, as reading comprehension is the basis for educational acquisition in all subjects. It is, therefore, particularly important for pupils in the general middle and lower ability

range. In the German curricula of the intermediate secondary school ("Realschule"), the systematic and reflective acquisition of reading skills in the national language up to the end of year ten is embedded (MSB, 2020, p. 20). The revision of the German curricula in 2022, in particular, attached greater importance to the reflection of learning processes among pupils:

The requirements for the skills for strategy application and the current state of research in this area were taken into account in the further development of the standards and the standard formulations. In the case of reading, for example, attention was paid to the fact that cognitive and metacognitive reading strategies should be mastered by pupils throughout the entire reading process (before, during, and after reading) with a view to the reading objectives. At the level of strategies, it was also considered that students must be increasingly familiarized with digital text production and reception. (KMK, 2022, pp. 17-18, own translation)

3. The study: What are good explainer videos? – Methodological considerations

Reading strategy development and digital selection skills were presented as relevant contents of the "Realschule." As central comparative and mandatory performance assessments in several subjects take place in grade 8 in Germany, which require reading skills, and the systematic teaching of reading strategies already takes place in grade 6, an evaluation already makes sense there following the corresponding national language lessons. Based on various scientific criteria catalogs for the evaluation of explainer videos (Kulgemeyer, 2020; Ebner & Schön, 2017; Marquardt, 2016), our study created its research instrument that should be understandable and easy to use for teachers and learners. The question was to what extent a connection can be recognized between the scientific criteria and assessments of good explainer videos and the reception impressions of the teachers and students concerned about three given explainer videos. The survey instrument created for the students is a standardized questionnaire consisting mainly of closed statements with predefined answers. The questionnaire is divided into five sections, which were formulated in a way that was understandable for the selected group of people: (1) personal details, (2) evaluation of explainer video 1 (EV 1), (3) evaluation of explainer video 2 (EV 2), (4) evaluation of explainer video 3 (EV 3), (5) conclusion. Reliable and interpreted items were used to record the impressions of reception, which were surveyed in the following subscales using a four-point Likert scale. The operationalization of the categories was primarily based on Nagel and Oppermann (2018) and Krämer and Böhrs (2017):

- First impressions of the explainer video (clarity of the topic, appropriateness of length and style)
- Content of the explainer video (understanding of content and terminology)
- Didactics and methodology of the explainer video (relation of topic, attention, and estimated relevance)
- Technique of the explainer video (evaluation of visual and auditory impressions)
- Assessment of the effectiveness of the explainer video (liking, novelty, understanding of the method presented, function of the video in the classroom)

In addition to 26 quoted student surveys as a mirror of three grade 6 classes in a secondary school, the three German teachers of these classes were interviewed in partially standardized focused individual interviews about their lessons using the three explainer videos. The three explainer videos selected for the student survey were evaluated according to the same categories. The interviews were transcribed and analyzed according to Mayring (2014) using the qualitative content analysis method. Three German explainer videos were selected for the German pupils and the teachers, which largely met the previously developed criteria, with scope and technical correctness being particularly important.

- EV 1: *Deutsch: 5-Schritt-Lesemethode* (kapiert.de, 2016)
- EV 2: *Texte lesen und verstehen. Lesen mit der Fünf-Schritt-Methode* (Vieweber, 2021)
- EV 3: *Die 5-Schritt-Lesemethode – Leseverständnis mit System* (Habenicht & Berkel, 2021)

All three videos are freely accessible as OER on YouTube, one video (EV 1) was created by a publishing house. EV 1 and the EV 3 have high five-digit reception figures on the Internet and are more professionally produced. EV 2 is more complex, narrative, and metacognitively reflective but produced much more amateurishly. This authenticity – including the green blackboard as a background in the school's style – makes it appear severe and appropriate for pupils.

4. Results

Overall, the students (n = 26) and teachers (n = 3) confirmed the scientifically described criteria in many respects. Even reputable explainer videos offered by publishers only meet some relevant criteria. However, the subjective reception impressions are particularly relevant in this study. That is because they

determine the acceptance and, therefore, the metacognitive and practical effectiveness of the offer. Aesthetic categories and exemplary substantiation, preferably embedded in a story ("storytelling"), play an important role, especially for the students. However, they did not choose based on the individual criteria. All three videos even received identical mean scores. Only when asked which video they would recommend, does EV 2 emerge as the favorite – even though there are also some points of criticism. Students criticized the music, length, and lack of color.

Although the three teachers interviewed (T 1 to T 3) also concluded that the video with the laying trick technique (EV 2) is the most attractive, they remain strongly oriented towards arguments for declarative knowledge transfer in their assessment. Where are terms used correctly? However, the argumentation shows that they also intuitively understand a continuous link between the presentation method and the skills and processes taught in student-friendly language as the main criterion. T 2 formulates this as follows:

T 2 – male (154-158): Yes, I think the fact that the subject matter was tied into a story is quite positive, as I just said, and I think that's definitely quite appealing for a sixth-grade class. And although it was, I think, seven or eight minutes long, it didn't seem that long to me, and I think my pupils will also find it entertaining because of the integration into the story.

5. Discussion

The comments from teachers and pupils show that the systematically surveyed criteria are not decisive when viewed individually but that the interplay of all characteristics creates a coherent picture, whereby the didactic design is more relevant than technical arguments. A fit with the media habits of the pupils, with their interests in narratives and conveying meaning, a direct, age-appropriate approach with an authentic voice makes minor deficits – such as the disturbing professionalism of the soundtrack and technical simplicity – fade into the background.

The students criticized the second video for its monotony of color and the background music, and the length of over 7 minutes was also a negative factor. Nevertheless, it was the video that most pupils would have recommended. It permanently linked the questions of "what," "how," and "why." It is also possible that the positive recommendation is identifiably linked to the male explainer voice – because most of the responding pupils in the quoted survey are boys (n = 20). The voices in the other videos should be read as female. However, it is still being determined whether humans or machines are providing the sound, especially in EV 1 from the publishing house Westermann (kapiert.de).

The teachers responded positively in principle to the explainer videos and are also developing ideas for integrating them into lessons. The criteria-based evaluation in the interview and the comparative analysis have helped them to favor a more authentic and layman-like video presentation, even though only low reception figures are recorded on the Internet, and no publisher claims any seriousness in the background.

More in-depth theoretical knowledge and experience with digital teaching materials as a subject of university education seems necessary to make teachers more confident in their independent assessment of the selection and use of videographic OER.

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