

Article

Producing Staged Videos for Teacher Education: Development and Content Validation of Video Scripts on the Topic of Handling Classroom Disruptions

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Abstract: Video-based teacher training has become an important component of teacher education. A special form of instructional videos is scripted videos, also known as staged videos. They can be used to accomplish several didactic objectives and visualise problematic situations, such as severe classroom disruptions caused by specific behavioural motives, which are very difficult to videotape in a real classroom. However, reservations exist due to limited authenticity, and thus content validity of staged videos. This paper describes the process of a theory-led script development as the key role for authentic and valid scripts. Therefore, we refine four crucial criteria, relevant, engaging, challenging, and realistic, for staged videos dealing with classroom disruptions. We show the content-validation process with reference to the applied theory-led criteria. A key output of this study is a manual for the development of scripted videos which will be perceived as authentic, and which reach the intended cognitive demands. An expert validation and two evaluative studies with data from 274 and 70 preservice teachers confirm the success of the final products.

Keywords: staged videos; teacher education; script development; professional vision; classroom disruptions; development of cases



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1. Introduction

A major challenge in teacher education lies in providing prospective teachers with learning opportunities that enable them to acquire practical skills and knowledge [1,2]. Video-based teacher training has emerged as an effective means of accomplishing this goal, and has become an important component of teacher education [3–9]. Classroom videos provide enough information to depict complex teaching situations in an authentic way, allowing preservice teachers to analyse dynamic teaching situations in detail and deal with practical issues without the acute pressure to act that they would face in the classroom [10]. Instructional videos thus offer the possibility to forge links between theoretical knowledge and specific practical requirements [11–14].

Classroom videos have great potential for use in the first phase of teacher education, particularly to foster the development of professional vision: the ability to identify relevant events in complex situations [15]. Because the relevant events in a given situation are often non-salient and therefore not immediately obvious, novice teachers have difficulties identifying them quickly [16]. The construct of professional vision also encompasses what is known as *reasoning*: the ability to interpret situations or events that have been identified as relevant based on theoretical principles. To support the interpretation, it is especially important to have theoretical knowledge about the individual motives of students' disruptive behaviour. Stürmer et al. [17] report that videos can enhance teachers' ability to interpret what they observe.

A special form of instructional videos are *scripted videos*, also known as *staged videos*. Rather than presenting examples of authentic situations, they depict fictional situations

that are scripted and filmed using actors [18]. One advantage of staged videos in teacher education is that they can be used to visualise situations for which authentic videos would be difficult or impossible to produce. These include situations involving issues of privacy, such as parent–teacher conferences [19], but also critical situations in the classroom, such as severe classroom disruptions [6].

The primary aim of staged videos is not to show real events in a classroom, but to develop specially designed video-based teaching materials that can accomplish a range of didactic objectives. Staged videos may therefore deviate from the completely authentic representation of events and instead present aspects of a situation in a clearer, more simplified, or idealised way [19]. Staged videos thus offer unique didactic potential in that they can reduce the complexity of teaching situations when needed to reduce the cognitive demands on learners [20,21]. Compared to authentic teaching videos, they also offer a wider range of possibilities to focus on different didactic goals. Staged videos offer the possibility to deal with specific topics, such as functional versus dysfunctional behaviours of teachers (by juxtaposing two different teaching processes in the same initial situation, [6,18]). They also offer diverse technical possibilities using cameras, lighting, and other technologies. For instance, when the topic is serious classroom disruptions, a staged video could zoom in to focus on students who are misbehaving or on the teacher to highlight non-verbal aspects of behaviour, such as facial expressions and gestures [22].

Because of the many benefits staged videos offer, they are now used widely in teacher education programs [3,4,18,22–26], yet some researchers have reservations, based mainly on assumptions about the lack of authenticity and thus content validity of staged videos [20,27,28]. Even if staged videos do not aim to reproduce real-life situations one-to-one, and even if they intentionally reduce the complexity of situations, they still have to be perceived as authentic and realistic by learners [29]. If they are not sufficiently authentic, learners will have difficulties engaging cognitively and emotionally with the content, and this will have a negative effect on their learning processes [4,30]. This highlights the tension that exists between desired authenticity and intended cognitive demands [20,31], which is one of the key challenges in the development of staged videos. The process of script development can play a decisive role in addressing this challenge.

Because staged videos do not directly mirror or duplicate reality, having a clear theoretical frame of reference for the video scripts is of fundamental importance [19]. Piwovar et al. [18], building on Kim et al. [32], formulated four criteria that are crucial for the quality of staged videos and that should be taken into account in script development: the cases presented in staged videos should be *relevant*, *realistic*, *engaging*, and *challenging*. In the following, we present how these criteria can be described in the context of staged videos for teacher education:

- Relevant:*

 - Cases should be matched with learners' skills.
 - Cases should be aligned with the instructional goals and objectives. They should fit the content but also the level of intended analysis (e.g., noticing information, interpreting information, deriving decisions).
 - Cases should be set in a realistic and relevant environment (for teaching videos, this is usually a classroom but may also be a lab, staff room, or similar setting).
- Realistic:*

 - Cases should seem realistic and authentic. It may be helpful to use authentic material (such as existing classroom videos or observational video recordings).
 - Authenticity can be increased by including some non-pertinent features (or by leaving out some relevant information).
 - Content should be disclosed gradually: information should not be presented at once but over a longer period and through a variety of interactions.

- *Engaging:* Cases should be described in sufficient detail to enable learners to deal with complex situations and problems.
- Cases may depict multidimensional situations that can be interpreted in a variety of ways.
- It should be possible to obtain information from a variety of sources.
- *Challenging:* Cases should be varied in their level of difficulty. This can be achieved, for instance, by varying the information provided.
- The ambiguity of the information and ambivalence of the situations depicted may play a role.
- Cases may be included that deal with less common situations or with atypical courses of events.

There are several articles dealing with the development and production of staged videos (predominantly for use in teacher or medical training) (e.g., [22,28,33,34]). Dieker et al. [21] and Piwowar et al. [18] described the entire process of producing staged videos in a very detailed, step-by-step approach. In all these articles, however, script development is only touched on as a sub-topic and is therefore relatively superficially. However, as noted above, script development plays a central role in the staged video quality. Staged videos are time-consuming and expensive to produce, and once completed they are virtually impossible to change.

In the following, we describe the individual steps in the theory-led development of four scripts for staged videos dealing with classroom disruptions. Therefore, we specify typical disruptive behavioural profiles based on McClelland's differentiated descriptions of basic human motives.

We illustrate how the four criteria developed by [18,32] (relevant, realistic, engaging, and challenging) were incorporated and how the scripts were content-validated prior to video production with reference to these criteria.

Developing Scripts for Staged Videos on Handling Classroom Disruptions

In this paper, we describe the process of script development for staged videos on handling classroom disruptions in order to implement them in a digital self-learning environment created to support the development of professional skills in preservice teachers. The digital environment was designed around fundamental theories and aspects of classroom management [35–38], and it focuses on different causes of disruptive behaviour [38,39]. There are two teaching-goals for preservice teachers in the digital environment: first, to learn classroom management strategies for dealing with the class as a whole (*class focus*, [37,40]), and second, to develop the ability to recognise individual motives for disruptive behaviour and to acquire functional strategies for handling such behaviour (*individual focus*, [37,41–45]). The disruptions addressed in the self-learning environment include minor, short-term, and less salient disruptions as well as more serious and long-term disruptions. As described in the introduction to this paper, a clear theoretical framework is crucial for the development of staged videos. In the following, therefore, we present the theoretical models that are fundamental to the self-learning environment and thus to the development of scripts, followed by a description of the individual steps of script development.

2. Theoretical Framework for Staged Video Scripts on Handling Classroom Disruptions

2.1. Classroom Management

Classroom management is a basic requirement for teaching and includes all of the activities involved in maintaining social order in the classroom [35,37]. Dealing with disruptions is a key challenge in classroom management [38]. One of the main difficulties lies in the need to focus on demands in two areas simultaneously: the class and the individual (see, e.g., [37,44]). Class focus refers to the learning group as a whole and

involves stabilising and maintaining the primary vector of action through the use of techniques such as group activation or monitoring [36]. Individual focus refers to the behaviour of individual students and involves preventing or intervening in disruptions caused by students' behaviour. While novice teachers often get caught up in individual events, expert teachers are better able to maintain class focus and thus ensure a smooth class flow [46].

Transitions between different "activity structures" [47], such as class discussions, group work, or individual work, are especially critical for disruptions, because the primary vector of action is unstable and therefore vulnerable to disruptive events [46]. Expert teachers are also much more successful at controlling such transitional processes than novice teachers [46,48]. For instance, experts more often use verbal and non-verbal signals to control transitions [46].

A key precondition for using appropriate intervention strategies to deal with disruptive events is that teachers recognise events that are critical to disruptions and understand the causes of the disruptions.

2.2. Causes of Classroom Disruptions

Classroom disruption levels differ significantly between teachers and classes. Classroom disruptions may occur due to boredom or to a program of action that is not firmly established [38]. General disruption prevention strategies can be used to reduce disruptions, yet if a student engages in a disruptive behaviour repeatedly, the teacher must develop individualised strategies for dealing with it. This requires that teachers have the capacity to recognise the motives that may underlie the behaviour. Disruptive behaviour in the classroom, like all other behaviour, can be traced back to basic needs. According to McClelland, there are three basic human needs, which in turn are driven by approach or avoidance motives: (a) the need to exercise control over oneself or a situation, or to prevent a loss of control, (b) the need to have social connection or to avoid social exclusion, and (c) the need to meet performance expectations or avoid failure.

Based on McClelland's differentiated descriptions of basic human motives, researchers have distinguished five disruptive behavioural profiles that occur frequently in the classroom [38]:

Dominant behaviour (power motive, approach-oriented): The dominant behavioural profile describes students who aggressively refuse to comply with the teacher's requests or follow rules because they do not recognise the teacher's professional authority. This profile is manifested in verbal and nonverbal dominant behaviour or in provocation of the teacher [49,50].

Reactant behaviour (power motive, avoidance-oriented): The reactant behavioural profile occurs when students' decision-making is restricted by institutional constraints or by the teacher's claim to authority [51]. Their motivation for engaging in reactant behaviour is based on the idea of defending their own freedom and autonomy because they perceive it as important and legitimate [52]. Reactant behaviour can be triggered by (felt as unjustified) reprimands or petty rules.

Seeking peer recognition (affiliation motive, approach-oriented): Peer recognition is important for all students and shapes their identity [53]. The search for recognition becomes disruptive when peers' behavioural norms do not fit the behavioural expectations of the classroom [38].

Devaluation of the teacher (achievement motive, approach-oriented): Some students, who have an unrealistic or unstable self-concept, react to their own failure by blaming the teacher [54]. They criticise the teacher for being incompetent or unfair, no matter how competent the teacher may be. Students who fit this profile do not handle criticism well themselves.

Avoiding challenges (achievement motive, avoidance-oriented): Students with a weak academic self-concept and low self-efficacy often do not think they are capable of accomplishing tasks. To protect their self-worth and avoid being seen as incompetent when they fail as they expect to do, they often disparage or withdraw from tasks or expectations in the classroom [55].

Clinically relevant disruptive behaviours pose a particular challenge. Students who display such behaviours have great difficulties accessing their own self-regulatory capacities. In such cases, teachers should know and be able to clearly identify how they can interrupt dysfunctional behavioural chains through their own behaviour and thus support these students' learning in the best way possible [39].

In addition to the typical disruptive behaviours described above with reference to basic human motives, there are also two clinically relevant profiles that occur frequently in the classroom:

Attention deficit hyperactivity disorder (ADHD): A diagnosis is made based on the criteria of inattention, hyperactivity, and impulsivity, which are often very conspicuous in the classroom [56]. The symptoms are high motor activity, frequent distractions, interruptions of classmates and teacher, and an approach to tasks that is unmethodical and lacking in goal orientation [57]. The more students with ADHD have to self-regulate and work without concrete supervision for a quick reward, the more extreme their behaviour becomes [58].

The second clinically relevant profile requiring special support is *conduct disorder*, which is characterised by severe outbursts of anger, a lack of impulse control, low tolerance for frustration, and other behaviours that deviate significantly from social norms [59]. Anti-social behaviour can result in major classroom disruptions. Students with this profile have difficulties interpreting other people's actions and feelings and tend to take comments from others as an attack [60]. They also face challenges in evaluating the consequences of their own actions. They may react inordinately aggressively to situations that arise unexpectedly.

These profiles of typical disruptive behaviours in the classroom were derived from theory and formed the basis for describing "focal students" in the scripts. The development of these scripts is detailed in the section below.

2.3. Steps of Script Development

Based on the theoretical models and preliminary considerations presented above, we developed scripts for four hours of classes in the subjects of mathematics, German, and political science in grades 9–11. The scripts were developed based on authentic lesson outlines that we received from teachers. These outlines included the lesson topic, an introduction, various stimuli, questions and correct answers, and the expected correct and incorrect answers of the students.

For each session, we first created a sketch of the class consisting of a seating chart, and current student names were assigned. The latter were obtained from a list created by preservice teachers in their practical semester. It is important in this step to represent diversity and avoid stereotypes (and this becomes even more important later, in the assignment of students to the disruptive behaviour categories). In the following step, we developed the lesson out of the lesson outlines. We used the points from the lesson outlines to generate various activity structures [47] and used these structures to subdivide the lessons into meaningful sequences. Because our focus was on dealing with classroom disruptions, we constructed various transitional phases between different activities, as transitions are disruption-critical by nature [46]. Each lesson was divided into five different activity structures and transitions (see Figure 1). For each activity structure/transition, a rough lesson plan was developed using the lesson outlines provided.

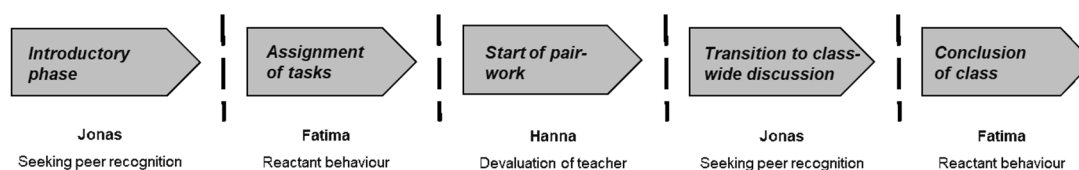


Figure 1. Example of Script Structure for a Class in German (on Short Stories).

In the next step, we conceptualised the classroom disruptions for each of these sequences. First, all the disruptions affected the entire class and related to more general classroom management strategies. To conceptualise the disruptions, we asked two teachers to create a list of frequent disruptive situations that were non-salient but nevertheless lasting in their impact on the flow of class (e.g., two students sitting together whispering).

Second, we created a “focal student” for each sequence who embodied one of the disruptive profiles outlined in the previous section. The disruptions emanating from these focal students were relatively complex and embedded in longer-lasting interactions with their classmates or teacher. To describe the interactions more realistically, focal students generally appeared in several sequences. As a result, the disruptions arose and escalated slowly. This was also important because we wanted to avoid encouraging quick judgments or suggesting that clear judgments can be made about underlying motives or even clinically relevant disruption patterns based on brief excerpts or a few sentences. We developed the disruptions by the focal students, on the one hand, based on theoretical work underlying the models for dealing with classroom disruptions discussed above. On the other hand, we referred to the literature on school-related problems of children and adolescents with ADHD or conduct disorder to derive teaching situations that are particular problems for the children and adolescents affected [57,60]. We drew on problematic behaviours described in the literature and also incorporated the ICD-10 and DSM-V diagnostic guidelines [61]. In addition, we asked psychologists and psychiatrists from a Child and Youth Psychiatric Service to provide examples of problematic behaviour in the classroom context.

This led to the creation of a basic framework for a teaching process, the structure of which is visualised in Figure 1, with an example.

In a final step, the sequences of disruptions, interactions, and dialogues that had only been outlined in draft form up to that point were developed into a script. This meant creating a scene for each sequence in which the dialogues that had been summarised in bullet points were translated into direct speech. To ensure that the language and manner of speaking were as authentic as possible, we drew on the classroom observations by a project staff member.

For the main actors, we also described non-verbal aspects in detail, including facial expressions, gestures, and intonation, and how both the teacher and individual students moved through the room (proxemics). It was also important to specify the behaviours of all the students who were not the focus of the scene (e.g., whether student X is still taking an active part in the class, whether he or she reacts disapprovingly or approvingly to the disruption caused by focus student Y, what he or she expresses non-verbally through facial expressions and gestures). These behaviours must be conceptualised in a consistent way over the entire course of the class.

To keep the different levels of classroom events in mind during the writing process and to ensure that they fit together well, we wrote the first version of the script in table form (see Figure 2), with each column representing a different level of events.

INTRODUCTORY PHASE

Tenth-grade German class
 Topic: Film genres and identifying gender representation in film
 16 students

VIDEO EXCERPT 1 – Start of the class session (Focus of Ilias: dominant behaviour)

Description of the situation	Orientation of classroom activity	Actions of focal student	Actions of other students
Ms. Sahin wants to start class and holds up cards with the names of different film genres on them. She looks around the room uneasily. Standing behind her lectern, she shifts her weight back and forth from one foot to the other.	Ms. Sahin (hesitantly): "For the start of this class I thought we could do this: Jot down the names of the genres and choose two and explain why you do or don't like it. Who can give me an example?"	Ilias (groaning loudly with his arms crossed): "Oh no, not again!" Ilias pulls out his math book and puts it on the table. He doesn't make any effort to be inconspicuous.	<i>Simultaneously:</i> Louise keeps dropping her notebooks and picking them up nonchalantly. Rasul is digging around in his bag for his papers. Finn is looking out the window absent-mindedly, with his chin resting on his hand.

Figure 2. Excerpt from a Script in Table Form.

It has been argued that script development plays a crucial role in the production of high-quality staged videos and that it must be guided by clear criteria. The previous section described the theoretical framework for script development in detail. In the following, we summarise the measures undertaken to meet the criteria proposed by Piwowar et al. [18] and Kim et al. [32] in the scripts.

- | | |
|------------------|--|
| <i>Relevant</i> | <ul style="list-style-type: none"> • We designed the cases for the staged videos closely following the theoretical principles that the preservice teachers had been taught in their learning environment. This ensured that the cases fit their abilities and were aligned with the objectives for teaching and learning. • The cases referred to both levels of analysis formulated in the learning objectives: the recognition of minor, less salient disruptions, and the theory-based interpretation of causes underlying more serious and long-term disruptions. • We conceptualised the most realistic and relevant settings possible for the action to unfold (by creating seating plans, assigning current names to the students, selecting class-level-specific lesson content in line with current school curricula). |
| <i>Realistic</i> | <ul style="list-style-type: none"> • We used authentic material wherever possible (actual lesson outlines, actual disruptions reported by teachers, problematic behaviour described by school psychologists). • In addition to the focal events that relate directly to the disruptions, classes were conceptualised to include many simultaneous events and distractions, just like in a real classroom. • Disruptions by focal students arose slowly, and the students in question usually became the focus of attention at several points during the lesson, so not all relevant information was presented at once. |
| <i>Engaging</i> | <ul style="list-style-type: none"> • We tried to describe each situation as comprehensively and in as much detail as possible. We also incorporated complex situations with many things taking place at the same time. • Different dimensions of these situations (group and individual focus) can and must be evaluated. • Relevant information can be obtained from various sources (student behaviour, reactions of teacher and classmates, descriptions of non-verbal aspects). • Multiple students in different classes and class sessions display the same disruptive profiles, revealing different facets of context and different manifestations of the same underlying causes and motives for the disruption. |

- Challenging*
- We incorporated different levels of difficulty into the cases by varying the amount and clarity of the information available.
 - The same was true for the conspicuousness of the smaller disruptions (e.g., whispering quietly versus getting up and opening a window), but also for the number of disruptions taking place simultaneously.
 - First, with the disruptions caused by the focal students, we incorporated behaviours and statements that differed in how clear and obvious they were. Some of the students in question acted in a very prototypical way and their behaviour closely followed the theoretical explanations, whereas this was less true for others.
 - Second, there was variation in the length and number of interactions in which the focal students were involved and thus also in the amount of relevant information.

The criteria and their implementation will be taken up again in the discussion. The following section describes the steps taken to validate the content.

3. Content Validation

The process of developing the scripts on the topic of handling classroom disruptions was completed with a test of content validity. This was performed in two steps:

1. The scripts were checked by experts for their pedagogical–psychological, technical, and didactical correctness; plausibility; and authenticity.
2. The scripts were evaluated with regard to the criteria challenging, realistic, and engaging from Piwovar et al. [18] and Kim et al. [32] in a study with preservice teachers. The criterion relevant refers mainly to measures relating to the framework or setting and was therefore not part of the study. The implementation was presented in “steps of script development”.

3.1. Expert Validation

A total of ten experts examined the scripts for accuracy, plausibility, consistency, and authenticity, looking at how they described the behavioural profile of the focal students, classroom management, and the progression of the class sessions. The experts had different fields of professional expertise:

- Two psychologists (with the Berlin Child and Youth Psychiatric Service) checked the scripts to ensure that the behavioural profiles typical for disruptions, and especially the two clinically relevant profiles, ADHD and conduct disorder, were presented in a technically accurate manner.
- Five experts in classroom management (educational researchers whose research focuses on this topic) reviewed the descriptions with regard to individual and class focus. They were also asked to assign the appropriate disruptive behavioural profile to each focal student. They were given the descriptions of all disruptive behavioural profiles in advance so that they could do so.
- Three subject teachers examined the accuracy of the lessons in terms of both subject matter and subject teaching methodology, as well as the consistency and authenticity of the interactions. In order to ensure a realistic language style and authentic direct speech, they also discussed the scripts with students in the respective age group.

All experts were asked to provide concrete information on each scene as well as general feedback. The feedback was discussed by the experts and project team in a joint workshop. The group considered suggestions and drafted changes in the scripts, and they then implemented these changes in several rounds of revision. All five classroom management experts identified the disruptive behavioural profiles correctly in 17 of the 20 scenes. The scenes that were not identified correctly by all the experts were revised comprehensively during and after the workshop.

3.2. Study with Preservice Teachers

After the scripts were revised, they were tested in a study with preservice teachers to determine whether they fulfilled the aforementioned criteria of Piwovar et al. [18] and Kim et al. [32]: *challenging*, *realistic*, and *engaging*.

For the criterion *relevant*, it is crucial to align the lesson content with the objectives for teaching and learning and to situate the cases in an authentic setting. The section above on the steps of script development described how this was accomplished in detail. The criterion *relevant* was therefore not further investigated in this study.

3.2.1. Sample

The participants were recruited online. All German universities offering teacher training programs were contacted and asked to forward the link to participate in the study to their students. Payment for participation depended on the amount of work the participants did. If they worked on all four scripts, they received a EUR 50 voucher. If they worked on two scripts, their name was entered into a raffle to win one of 80 EUR 30 vouchers.

The sample consisted of a total of 274 bachelor's and master's students from different German universities. The students were in their fifth semester on average ($SD = 3$), and 69.7% were in a bachelor's program.

In planning and conducting the study, the project team adhered to the American Psychological Association's Ethical Principles of Psychologists and Code of Conduct [62].

3.2.2. Structure of the Study

The participants were first asked to read a theoretical text on a digital reader to acquire theoretical knowledge on 'classroom management' and 'dealing with classroom disruptions'. This reader also provided a description of the seven disruptive behavioural profiles that occur in the scenes. After reading these texts, the participants were asked to work through the scripts, scene by scene. The scripts were presented in random order.

3.2.3. Instruments

Challenging: The cases were designed to vary in their degree of difficulty. The measures used to achieve this variation were described above in the steps of script development. In the present study, we examined how easy or difficult it was for preservice teachers to recognise the behavioural profiles. After each scene, we asked which of these behavioural profiles best described the focal student. Participants could always choose from among all the disruption-typical profiles.

Realistic: The cases were designed to appear as authentic as possible despite the dramatization and condensed presentation of didactic teaching goals. The students were therefore asked how authentic they felt the scripts were. A five-point Likert scale adapted from Deng et al. [4] was used for participants' ratings. It consisted of three subscales and captured the perceived authenticity of the scene, the teacher, and the focal student (see Table 1).

Table 1. Measurement of the Criterion *Realistic*.

Scale	N	Example Item	α
Authenticity of the scene	5	"The classroom events portrayed in the scene come across as believable."	0.81
Authenticity of the teacher	3	"A real teacher would never behave in the way the teacher did in that scene."	0.9
Authenticity of the focal student	3	"[Name] comes across as authentic."	0.9

Engaging: The cases were designed to be as detailed and multi-perspective as possible to engage and appeal to the participants emotionally and cognitively. To measure how

engaging the participants perceived the cases to be, we used a questionnaire that we developed with five items and a five-point Likert scale (see Table 2).

Table 2. Measurement of the Criterion *Engaging*.

(1)	I enjoyed working through the cases.
(2)	The cases were described in such a way that I could easily imagine the individual classroom situations.
(3)	In working through the cases, I felt like I was dealing with challenging classroom situations.
(4)	Working through the cases was enjoyable to me.
(5)	It was interesting to me how the classroom situations in the cases unfolded.

This criterion was tested in a university seminar on classroom management ($N = 70$ bachelor-level preservice teachers). For testing, we developed the cases that had previously been used in the form of scripts into more readable text vignettes. To stay within the time frame of the seminar, we selected cases for students to work through. We decided to develop two vignettes for each behavioural profile based on the scripts, concentrating on the non-clinically-relevant behavioural profiles.

In the following, we provide a descriptive evaluation of the results.

4. Analysis

Dealing with Missing Values

The proportion of missing data per variable was well above 5%. This eliminated the method of listwise case deletion [63] as it would result in too much data loss [64].

We then statistically analysed the systematics of the cases with missing values. The Little test [65] revealed that the data were missing not at random (MNAR), which meant that no imputation method could be applied [66]. Evaluation of the patterns of missing values in the SPSS statistical software showed that the most common reason for missing values was early dropout. We had expected participants to drop out early frequently as they worked through the cases and therefore varied the order of the scripts to reach similar sample sizes.

In view of these findings, we decided on the following procedure: If fewer than two questions in the entire questionnaire were answered, the case was excluded because we assumed that the participant had not given a serious answer to the first question. All other cases were left unchanged. This reduced the participants to a total of $N = 228$. The scripts for math and political science ($N = 75$) and for German I and German II ($N = 173$) were combined into one link.

5. Results

5.1. Evaluation of the Text Vignettes for the Criterion Challenging

Students correctly identified a mean of 57.6% of the behavioural profiles typical for disruptions. Correct identification varied between 12.6% and 95.7%. The profile 'devaluation of the teacher' was correctly identified most frequently on average, and the profiles 'reactant behaviour' and 'dominant behaviour' were correctly identified least frequently on average. The two behavioural profiles with the largest number of cases ('reactant behaviour' and 'avoidance of challenges') showed the greatest range in response behaviour (see Table 3).

Table 3. Measurement of the Criterion *Challenging*.

Profile	Correct %	M
Conduct disorder (1 case)	76.5%	76.5%
ADHD (2 cases)	76.9–81.2%	79.1%
Dominant behaviour (2 cases)	38.4–39.8%	39.1%
Devaluation of the teacher (2 cases)	78.9–95.7%	87.3%
Seeking peer attention (3 cases)	58.0–67.5%	59.5%
Reactant behaviour (4 cases)	12.6–51.5%	34.5%
Avoiding challenges (6 cases)	32.3–77.6%	58.1%

5.2. Evaluation of the Text Vignettes for the Criterion *Realistic*

All mean values for the assessed authenticity of the scene, the teachers, and the twelve focal students were above the theoretical mean of 3 (see Table 4). The authenticity of the overall situation was rated 3.76 on average across all scenes, and the authenticity of the teachers was rated 3.57 on average. The focal students were rated highest on average at 3.93.

Table 4. Measurement of the Criterion *Realistic*.

Authenticity of Scripts 1–4	Range	M	SD
Scene	3.51–3.89	3.76	0.58–0.71
Teachers	3.27–3.67	3.57	0.75–0.88
Focal students	3.42–4.22	3.93	0.63–0.95

5.3. Evaluation of the Text Vignettes for the Criterion “Engaging”

The calculated mean value of the scale for recording the criterion *engaging* was 3.95 and is thus higher than the theoretical mean value of 3 (see Table 5). In particular, the items for the vivid portrayal of the scenes and for the stimulation of reflection through a challenging situation received very high ratings.

Table 5. Measurement of the Criterion “Engaging”.

Item	M	SD
I enjoyed working through the cases.	3.43	0.753
The cases were described in such a way that I could easily imagine the individual classroom situations.	4.47	0.717
In working through the cases, I felt like I was dealing with challenging classroom situations.	4.19	0.786
Working through the cases was enjoyable to me.	3.94	0.796
It was interesting to me how the classroom situations in the cases unfolded.	3.74	0.793

6. Discussion

To learn how to deal with classroom disruptions, it can be particularly effective to work with staged videos. They offer the unique possibility of using dramaturgical focus to emphasise specific characteristics of disruptive behaviour [18]. To produce high-quality staged videos, careful script development is of central importance.

This article described in detail the systematic and theory-driven development of scripts to produce staged videos for dealing with classroom disruptions. This process essentially involved four steps:

1. Describing the core theoretical concepts and framework.
2. Writing the scripts in accordance with the criteria *relevant*, *challenging*, *realistic*, and *engaging*.
3. Comprehensive expert validation.

4. Two studies with preservice teachers to systematically review the criteria used.

The following section discusses the results of the two studies with preservice teachers as well as the criteria *challenging*, *realistic*, and *engaging* that were tested in these studies.

6.1. Was the Criterion “Challenging” Implemented Successfully in Script Development?

According to Kim et al. [32] and Piwovar et al. [18], tasks should vary in difficulty. This criterion can be considered to have been met because the preservice teachers varied widely in the degree to which they correctly identified the behavioural profiles (range of between 12.6% and 95.7% correct answers).

On average, the preservice teachers correctly identified slightly more than half of the profiles. This indicates, on the one hand, that there is still room for improvement in the underlying skills and competencies, and on the other, that we avoided causing participants’ frustration by giving them tasks that were too difficult.

It must be noted, however, that the variation in difficulty tends to be between rather than within the individual behavioural profiles. In other words, some behavioural profiles are easier or more difficult to recognise than others. In the future, we plan to develop further cases that will also show variation in difficulty within the individual behavioural profiles (as has already been done successfully with ‘avoiding challenges’, see Table 3).

The fact that the preservice teachers had difficulty in correctly assigning the profiles ‘reactant behaviour’ and ‘dominant behaviour’ is not surprising, as these two profiles are particularly difficult to distinguish from one other [39]. Both are strong ‘control’ motives [49,50], and distinguishing between approach and avoidance motives requires significant expertise.

These results emphasise that when filming staged videos, special attention should be paid to how actors can use different gestures, facial expressions, posture, and intonation to portray these two motives.

6.2. Was the Criterion “Realistic” Implemented Successfully in Script Development?

Staged videos need to be *realistic*. To be perceived as such, the cases should be depicted in as authentic a way as possible. The results of the authenticity questionnaire show that all scores were, on average, above the theoretical mean of 3 (see Table 5) and thus above the results reported by Deng et al. [4] and comparable to those of Codreanu et al. [20] and Gold et al. [8].

Due to our study design, this conclusion only applies to bachelor’s and master’s students. However, according to Deng et al. [4], these preservice teachers are more critical of authenticity than experienced teachers. The teacher feedback provided as part of our expert validation was also consistently positive. We therefore judge the authenticity of the scripts to be highly satisfactory.

6.3. Was the Criterion “Engaging” Implemented Successfully in Script Development?

The cases should be written in as complex, detailed, and multi-perspective a manner as possible in order to provide participants with sufficient cognitive engagement [67–69]. We tested whether the cases were *engaging* in a university seminar with preservice teachers at the conclusion of the study described above. The survey results suggest not only that the participants were able to immerse themselves in the cases well, but also that they enjoyed working on them (see Table 5).

Overall, the operationalization of the criteria paid off. It allowed the criteria to be checked separately in the validation process. This gave us the opportunity to optimise the scripts in a targeted way before shooting the videos. For instance, we occasionally readjusted (in consultation with the experts) the actors’ choice of words in the scripts to better distinguish between the challenging behavioural profiles ‘reactant behaviour’ and ‘dominant behaviour’. This also allowed us to develop more detailed instructions for the different roles prior to shooting. We were able to revise the scenes that had the lowest authenticity scores based on comments the participants had made regarding the language style in open-answer survey questions.

Given the feedback from the expert validation, the results of the study with preservice teachers, and our revisions, we believe that we have developed scripts that are valid in terms of content and are of high quality.

However, some limitations must also be taken into consideration. The way in which the participants in the first study were recruited meant that different numbers of participants worked on some of the scenes. The group sizes for two of the scripts was very low. The analysis was therefore limited to descriptive evaluations.

Furthermore, the different behavioural profiles appear in the scripts with varying frequencies. This resulted from the need to create plausible interactions between the focal students and the teacher. For instance, it would be inappropriate for a student to display extremely dominant behaviour toward a very strict, intimidating teacher. The results must be viewed critically in light of this imbalance.

7. Directions for Future Research

In this study, preservice teachers worked through the cases to identify individual causes of disruption [39]. However, the scripts were also designed to train the preservice teachers in noticing [15,17]. To this end, we described a series of minor, short-term, non-salient disruptions in each scene (see Figure 2). Because noticing is linked primarily to selective visual perception [70], it was not possible to administer a written test with the text vignettes, and validation will be based on the filmed videos.

With regard to the skill of noticing, it would also be interesting to analyse how the use of different video editing techniques such as cueing (purposeful direction of the viewer's attention through visual prompts) could be used to help students in developing this skill [71]. Furthermore, it would be useful to explore what insights could be gained through eye tracking [72,73] as participants work through the noticing sequences.

Furthermore, combining findings with studies where simulations based on scripted videos are used could be very interesting (e.g., [74]). Another possibility for training professional vision is provided by new technology such as virtual reality [75], which offer the possibility to vary the scripted characteristics in a very flexible way.

8. Conclusions

We can conclude that the careful development of a theoretical frame of reference and the systematic application of the four criteria of *relevant*, *realistic*, *engaging*, and *challenging* led to the development of scripts with valid content. The cases constructed here offer great potential for teacher education. They can facilitate the development of professional vision in the classroom and support the development of classroom management skills in a variety of ways. We hope that the transparent and detailed presentation of the script development process with subsequent content validation will provide useful orientation for future projects and research on the production of staged videos in the field of teacher education.

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