Perspectives of Learners on Videos as Learning Resources with A Special Focus on Their Format Aspect and Derivations for Related Feedback Processes

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Abstract

This article focuses on findings from the Digital4Humanities project[1], which has been producing video tutorials with lecturers from across Europe for the last 2.5 years, explaining digital research tools to Humanities students. These videos were evaluated by participating teachers and students of the project. The mainly qualitatively based answers from the students can be grouped into four overarching categories that describe the differentiation of the videos - in terms of content, design, format, and additional materials. Format-related aspects are critically evaluated by students since a lack of contact and feedback loops with fellow students or lecturers can have negative effects for them. This has also been proven by other studies. One solution to this problem is to establish and maintain regular feedback collection and submission formats during courses that use asynchronous learning materials. It will be shown why the establishment of communication and feedback channels can be helpful, how formative, and summative feedback formats can be used in different scenarios and how these can be implemented in concrete terms. Finally, a created and reusable resource is presented (in the form of an importable virtual course) that interested parties and teachers can use to establish feedback in their own courses.

Keywords: Digital Humanities, E-learning, Feedback culture, Higher education, Teaching and Learning

1. Introduction

Over a period of 2.5 years the Digital4Humanities project dealt with the need for digital competence in the Humanities and how they are communicated to students. Essential theoretical and learning-centered assumptions against which these considerations are based include

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framework conditions for future learning and teaching in a digital world and the future field of activity of students on the labor market 4.0 (e.g., Carretero et al., 2017; Bellanca & Brandt, 2010; Redecker, 2017; Centeno & Okeeffe, 2020). As part of this project, video tutorials were designed, used, or reused by lecturers across Europe, the focus of which was computer-aided methods and executable software for processing research topics in the Humanities context. So far, 46 videos have been created in this project (further videos are also planned after the end of the project). The videos produced cover the following topics (Table 1).

Table 1: Overview videos and topics

Introduction: Historical 3D-reconstruction (4 videos)	Querying museum data (3 videos)
Digital 3D-reconstruction (9 videos)	Machine learning in Literature (3 videos)
Digital 3D-reconstruction: recording and data processing (5 videos)	Construction grammar and frame semantics (2 videos)
Photogrammetry (2 videos)	Data protection in scientific practice (4 videos)
Digital research in Art History (2 videos)	Data Literacy (4 videos)
Digital storytelling (8 videos)	

Source: Own representation

These videos were evaluated by the participating teachers and their students using online questionnaires with partially standardized questions. In the following, the focus is on the students' answers, as they were the main target group of the videos. A brief overview of the sample and the background to their study is given. The evaluations of the videos by the students, which are mainly based on qualitative answers, are presented. They can be classified more precisely using the procedure of inductive category formation (according to Mayring, 2022). In addition to the aspects of design, content and the provision of additional materials, the aspect of format becomes visible as a superordinate category of videos. The media format of the video is characterized above all by a high degree of asynchrony, which cannot be changed per se by individual involvement in the creation process. In the Digital4Humanities project, negative assessments of the video format of the learning content were also expressed by the students surveyed. These are presented in more detail below. From this, further optimization potentials about teaching formats that are digitally based or use asynchronous learning materials can be derived. A suggestion for optimization relates to the structure and maintenance of digital feedback channels in courses, which are then discussed.

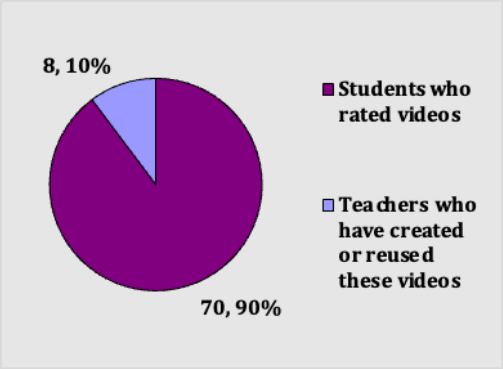
2. Characteristics of the created videos, collection and analysis method

When creating the videos in the project, validated criteria from existing recommendations for videos in higher education were used as guidelines. Among other things, the focus was on the length and scope of the videos, which should ideally be 10 minutes and no longer than 20 minutes in order to attract the user's attention and achieve a learning effect (e.g., FAU, 2014; Fischer & Spannagel, 2012; Sperl, 2016). Shorter videos are generally better for learning, although the asynchronous format also allows you to pause a video that is too long and watch it later. In addition to length and scope, there are also aspects that videos in the university

context should fit in terms of structure and design to appeal to users (e.g., Schön & Ebner, 2013). They should have a structure and outline that is briefly explained at the beginning, have an introduction and a conclusion, and offer possibilities for understanding what is being shown, by giving time for recaps. Furthermore, they should provide appealing graphics, legible fonts or consistent animations and regarding to the audio track a clear pronunciation, no background noise, and a good sound quality.

Since the topics varied according to the interests and focus of the participating teachers, different video formats were created. For theoretical and historical content often slidecasts were produced (they show a recorded slide presentation), for demonstrating a software or tool screencasts were the first choice (they show an interaction on a user interface). Both can be assigned as important formats for e-learning in the university context (Persike, 2019). Referring to these videos, the teachers and their students were asked about their opinion on the creation process, the content, and the implementation of these videos as well as the associated (personally perceived) learning effect.

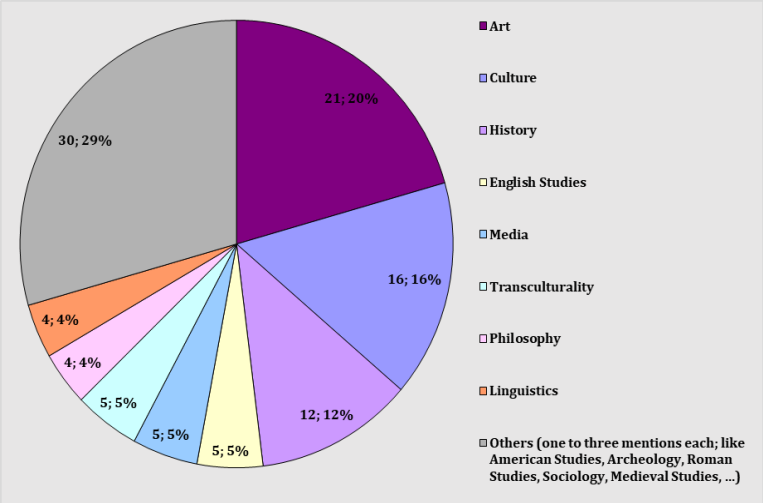
Figure 1: Overview of the number of respondents



Source: Own representation

It can also be helpful to disaggregate the students from the survey according to the context of their field of study. On the one hand, this shows the variety of student backgrounds against which the videos were received, on the other hand, the background can also be a factor influencing the ratings of the videos.

Figure 2: Study background of the participated students (absolute mentions and relative frequencies)



Source: Own representation

The students were asked about positive and negative aspects of their lecturers' videos. These responses can generally be categorized into overarching characteristics of the videos (Table 2). The evaluation of this question was based on Mayring`s inductive category formation (e.g. 2015). For this purpose, the online content analysis tool QCAmap (Fenzel & Mayring, 2017; QCAmap, n.d.) was used, which, in addition to the coding, also makes the frequency of the statements made and the respective derived categories visible. Based on this, the format-related criteria can be classified in their positive and negative characteristics (Table 3).
Furthermore, students were asked for their opinion regarding digitally based teaching itself (since this was the context of most courses in which videos were offered in the application scenarios in the project). In this regard, the negative assessments about these framework conditions are of particular interest (Figure 4), because students cite similar points here as with the negative reviews of the videos. Finally, format-related challenges when learning with digital content or in digital environments are discussed in more detail in point 4. Concrete optimization potentials can then be derived, which will continue to be shown.

3. Results

The coding of the students' answers results in 4 central categories that describe the videos from the project. These are content, design, format, and related or additional materials. Below is an overview of these with a brief description and examples from the material.

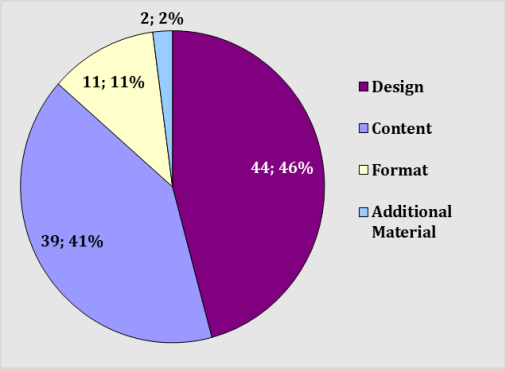
Table 2: Categories that characterize the videos

Category	Design	Content	Format	Additional materials
Description	Includes the audio and visual aspects of the video - these can be designed individually by the creators of the videos and can therefore also be changed	Includes the content aspects of the video - these can be designed individually by the creators of the videos and can therefore also be changed	Includes the format-related aspects of the video (tied to the media differentiation) - the format can only be individually designed by the creators of the videos to a limited extent and depends on the video form that is chosen (e.g., slide-casts, screencasts, documentation, ...)	Includes aspects related to additional materials or references related to the video and its content - these can be designed and provided individually by the creators of the videos and can therefore also be changed
Examples from the students´ answers	Length of the video (time and amount of presented parts), illustrations, animations, speaking voice, tempo, music (jingle, background music), sound/ audio quality, colors, text (arrangement, font), in general: sobriety/ overweight of elements, …	Intelligibility, explanation of the problem, demonstrations and practical use, connection of theory, history and practice, structure, step-by-step approach, complexity, informativity, …	Following someone who is explaining the topics rather than reading through a text, possibility to pause and continue individually, watch parts multiple times according to own understanding, inquiries not possible directly, passive listening, media variety in the lecture	Missing context material (data sets, further text material, connection material that can be used voluntarily), other/ similar tools or software that follow the presented ones

Source: Own representation

The coding also enables a frequency analysis of the mentioned criteria (multiple coding was possible). This distribution is shown in the figure below.

Figure 3: Frequency of the aspects characterizing the videos (absolute mentions and relative frequencies)



Source: Own representation

Design aspects, content criteria and the provision of adequate additional material are primarily dependent on the teachers and the creators of the teaching materials and are therefore individual. The media format of the (learning) video, on the other hand, is characterized above all

by its asynchronous availability. This asynchrony cannot be influenced or changed per se by the teacher or creator of the videos. At most, activating elements can be built in here, or the format can alternate with other asynchronous and synchronous formats, making it more complex.

The criterion of the format is therefore a more superordinated criterion and describes the medium or the media form within the content is presented and differentiated in the respective design form. This format determines in advance the possibilities and options for designing the respective content. In principle, the respondents in the project can see that the asynchronous nature of the format has both negative and positive aspects. These aspects can be assigned to higher-level potentials and risks for the learning process (Table 3)

Table 3: Positive and negative rated format aspects of videos in the project and attributed potentials or risks

Positive aspects	**Potentials**
- watch parts of the video or the whole video multiple times	Repetition; Own tempo
- if anything is unclear, you can rewind, or press pause to take notes	Individual deepening
- variety in the lecture; watching a person who is explaining topics with video illustration; opposite of text reading	Media variety
- the entire lecture is uploaded as an MP4 file and can be downloaded by every student	Accessibility
- general possibility to stop/ repeat if you want	Individuality
Negative aspects	**Risks**
- you cannot ask direct questions to the lecturers	Lack of contact
- passive listening	Passivity
- inquiries directly in the format are not possible	Lack of communication

Source: Own representation

It turns out that there are more positive assessments of the students regarding the asynchrony of the format than negative ones. Nevertheless, the negative aspects are criteria worth mentioning that have also been found in many other studies, e.g., as obstructive factors for videos in digitally supported teaching. And the aspect of asynchrony characterizes many digital learning formats (e.g., Moorhouse & Wong, 2022).

That digital learning formats can inhibit social communication and interaction as a negative characteristic, was also mentioned by the respondents from our project. A word cloud (Figure 4) was generated from the students' answers to the question about negative aspects of online-based learning formats, which clarifies this. The frequency of the mentioned words is visualized by the size of the words.

It becomes clear that the lack of contact with the community and the teacher, the mostly imperceptible opportunity for exchange and communication (among each other) and the associated negative impact on individual motivation in the learning process are perceived as difficulties and deficits on the part of the students.

A lack of communication or contact options with teachers and fellow students therefore harbor risks of online learning offers. A parallel can be seen here compared to the risks of videos (lack of contact, lack of communication, passivity in Table 3).

Figure 4: Wordcloud regarding the negative statements of students asked on digital teaching formats

Source: Own representation

Based on these results, commonalities regarding the format aspect of videos as a learning resource and online learning formats in general can be identified. Due to their asynchrony, they favor a lack of communication and cooperation channels and can thus impair the individual motivation of the students. In the following, we therefore discuss possible solutions to this lack of communication channels. In this regard, feedback formats are shown as a possible option that can serve to increase communication, cooperation, and motivation of the students.

4. Discussion and derivations

As can be seen from the presented results, learning with asynchronous and digital units implies some challenges for the students. Alawamleh et al. (2022) point to similar challenges and complement the lack of motivation and communication with a difficult understanding of the learning material and a feeling of isolation. Boling et al. (2012) investigate that most of their students perceived online courses as individualizing, but at the same time classified them as restrictive in terms of interaction with others. The participants in their study learned primarily with text-based learning materials and literacy tasks (Boling et al., 2012). Accordingly, the precise differentiation of the learning material that can be used asynchronously also plays a role. Because, as described above, a variety of media, for example through the combination of videos, texts, and tasks, can be perceived positively by the students.

Vonderwell (2003) names the problems that exist on the part of the students and among themselves in the impersonality of the learning atmosphere. McConnell (2006) goes on to say that such an atmosphere can make students feel alone or in the shadow of other students, which in turn contributes to their reluctance to share their ideas publicly (e.g., in discussions). Alawamleh et al. (2022) aggregate the problems in their study: on the one hand, a main problem area would be formed by interpersonal aspects (e.g., feeling alone, being afraid to share one's own ideas), another results from the general lack of opportunities for engagement and the interactivity within the virtual environments. Finally, the lack of channels of expression in online teaching leads to misunderstandings (e.g., lack of mediation of facial expressions, gestures, dynamics of the voice) (Alawamleh et al., 2022).

But mainly, digital teaching formats can also have a positive effect on learners. Studies examining the use of digital learning materials and their impact and learning outcomes show an improvement in understanding and applicability of what is learned (as measured by test scores), higher student engagement with the course material, an altered understanding of learning itself, a greater sense of belonging among themselves and less withdrawal (Nguyen, 2015). Online learning often appeals to many students because it is versatile, universally accessible and offers some simplification of the learning process (use is independent of location and time) (Alawamleh et al., 2022). But what criteria do these arrangements have to meet in order to counteract the communicative-collaborative criteria that learners sometimes perceive as a hindrance?

Kupczynski et al. (2008) show that student engagement in an asynchronous environment increases when it is possible to post messages, read, reply, and think about responses (Fedynich, 2013) - i.e., when communication possibilities are created that are very similar to real seminar or lecture situations. But communicating with students in an online setting requires more planning than communicating with students in offline environments (Alawamleh et la., 2022). Azmat and Ahmad (2022) point to video meetings or virtual group tasks for students to create them. A variety of usable communication channels can also contribute to this. Alawamleh et al. (2022) suggest that teachers should communicate with their students and vice versa in parallel through informal and formal channels (e.g., instant messaging, online chat groups, audio calls, private video calls and online platforms or emails, message, memo, or mood boards). These communication opportunities should be actively offered and promoted by encouraging participation through the provision of various types of incentives, for example, by awarding extra marks through short quizzes (Alawamleh et al. 2022). Abramovich (2016) introduces the idea that digital badges could also act as an incentive tool to encourage students to provide feedback.

As online learning will continue to be an integral part of higher education (Croxton, 2014), attention needs to be paid to the student engagement. Offering communication channels can only be seen as a basic requirement for expanding communication and cooperation. How these are directly designed also plays a role.

4.1 Establishment of feedback channels

Feedback can be seen as a form of communication with students and in a group of learners. But although there is increased interest in higher education in developing better feedback processes yet there is no common framework or practice on it (Yorke, 2003). Boud (2000, p. 155) adds that, despite its fundamental nature, feedback is so 'common' that it is sometimes ignored. Jurik et al. (2014) showed that questions and feedback have a positive effect on individual student characteristics (cognitive abilities, previous knowledge, self-perception, and interest in the subject), which in turn can positively influence learning activity and learning motivation. In a meta-analysis of over 250 studies, Black and Wiliam (1998) examined a wide range of educational settings and feedback formats and found that feedback confers

significant learning benefits. Teachers should therefore be encouraged to incorporate more effective feedback taking and giving into their courses (Jurik et al., 2014).

Not only the feedback from teachers to students is important to improve learning settings. Especially when teaching with digital formats, the teachers are dependent on feedback from their students to check the efficiency of their digital materials. Certainly, the students can have some levels of inhibition when it comes to giving honest and constructive feedback to their teachers. As Doppler and Lauterburg (1998) point out, most people are reluctant to share their observations with others for fear of being hurt. This situation gets even worse when hierarchies exist in their relationship. For this reason, superiors rarely receive open feedback from their employees, as there is a fear of sanctions. Doppler and Lauterburg (1998) go on to say that this can lead to a failure to develop essential social skills. A similar dynamic can be seen in the environment of teaching and learning, above all through the dependence of the grading of achievements by teachers on learners. To minimize those inhibitions, teachers have the task to continuously build a feedback culture that allows their students to open and get used to giving constructive feedback.

In this way, teachers receive feedback from learners about their behavior which also gives them information about the assessment of the quality of the teaching-related activities (Landwehr, 2007). By generally giving and receiving feedback, they also show sensitivity towards the learners, since expectations can be queried and thus compared with the actual situation (Landwehr, 2007). This not only creates an articulation space for the subjective experiences of the learners, in which expectations and wishes can be officially and extensively expressed (Landwehr, 2007). An atmosphere of self-efficacy is also created since the learners are noticeably responsible for the course and quality of the teaching through their involvement in this process. Getting to know other perspectives and opinions leads to a dialogue, to reflection on other perspectives and can train perception itself (Landwehr, 2007).

4.2 Feedback formats

Feedback culture includes, in addition to the general understanding that feedback is a serious and real opportunity for optimizing own actions (Landwehr, 2007), very specific formats and forms for obtaining, giving, and evaluating feedback. In the literature, a distinction is often made between formative and summative feedback.

Formative feedback is the continued giving and receiving of feedback. Information is communicated to the learner or the teacher over a period (Schute, 2008) (e.g., a course). It is therefore suited for short requests on functionality or utility of specific digital learning units and their contents. Formative feedback is given at a time when the person can still correct or improve their performance or activities and implement them (Schute, 2008). As information about a reaction, this can be differentiated in various forms (forums, e-mail support, online advice, or small feedback loops) and take place at different times in the learning process (Schute, 2008). Formative feedback helps students take control of their own learning, i.e., become self-regulated learners and take a more proactive role in this process (Nicol & Macfarlane, 2007).

Summative feedback is a final and condensed assessment of the entire process. Therefore, it is used at the end of the learning experience (e.g., at the end of a course) (Stufflebeam & Shinkfield, 2007). Part of a summative feedback can be, among other things, the subjectively perceived learning progress, a comprehensible evaluation of the learning progress according to criteria of verifiability or the general evaluation of the satisfaction with the teaching and learning process. In addition, summative feedback can be obtained at the beginning of the semester to assess the current level of knowledge of the students, their expectations, or their previous experiences. This survey can then be compared with the summative survey at the end.

While formative feedback contains one to a few questions concerning a specific session or learning unit, summative feedback covers different questions to several topics that concern the whole course and learning progress. This possibly has the consequence that the evaluation of summative feedback can demand more time than the evaluation of formative feedback. Yet, the use of digital feedback tools can save time in both cases.

Table 4: Formative and summative feedback

Formative Feedback	Summative Feedback
- several surveys throughout the course - mostly a few standardized questions; consistent over time - can be completed and analyzed relatively quickly - quantitative analyzes enable the visualization of the results (e.g., frequency representations of certain statements)	- one survey during the course (also: two surveys – at the beginning and at the end) - mostly differentiated sets of questions - mostly a mixture of quantitative & qualitative queries - larger time budget for the analysis of the diverse data - quantitative analyzes can be enriched with qualitative results (detailed statements about opinions and causes)

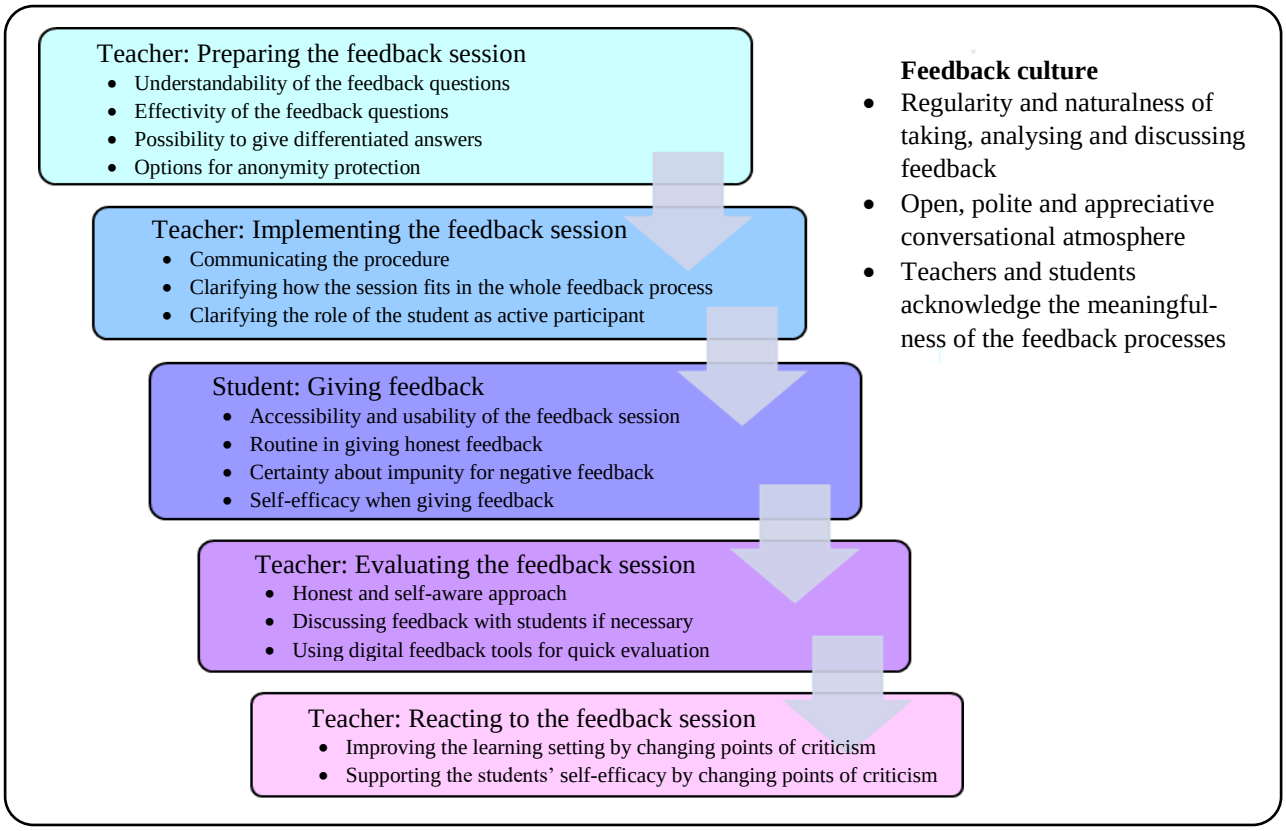
Source: Own representation

Heron (2011) emphasizes the need to find an effective balance between different forms of feedback. According to Gibbs (2006), too much focus on summative techniques can result in students diminishing their efforts to engage continuously and persistently. Ideally, therefore, both feedback strategies are used in a complementary manner to build a sustainable feedback culture, because formative and summative feedback formats are not to be seen as opposites (Houston & Thompson, 2017). The assessment of learning (which can be termed summative) is limited without corresponding input to assessment for learning (which can be termed formative) (Quality Assurance Agency for Higher Education, 2007).

4.3 Exemplary process for generating and implementing feedback

Feedback processes are affected by the type of the feedback and the format in which it is to be collected. As mentioned above, the general attitude towards the feedback culture and the openness of the feedback recipients also plays a role in the effectiveness of the process.

Figure 5: Process for the preparation, collection and evaluation of feedback



Source: own representation

According to Lambrechts et al. (2013) first, it should be explained to everyone involved in the process what is meant by feedback and which criteria must be met for its implementation. Next sufficient and continuous feedback should be given so that learners and teachers can learn something themselves through the feedback process. Finally, suggestions should be made that provide additional information and, for example, address how the learning process can be promoted individually. Figure 5 shows that the feedback process itself should also be evaluated.

Within the process, the feedback can be collected and evaluated in various formats. Ice et al. (2007) examine how feedback formats affect the students' perception of the content of the feedback. Students reported greater satisfaction with embedded asynchronous audio feedback than with text-only feedback (Ice et al., 2007; Cavanaugh & Song, 2014). Nortcliffe and Middleton (2016) compare the results for two cohorts receiving recorded audio feedback and verbal and written feedback, respectively. They conclude that differentiated written comments are more effective than audio feedback because it takes time and technical resources to receive them, and it is an additional effort to note down the main points. Since our consideration is mainly about digital courses or learning materials, we would also recommend digital tools for collecting and giving feedback (you can find some of them under the link given under point 4.4.).

Survey results continue to indicate that in addition to the format of the communication, the detailed discussion of the feedback content also plays a role. This means that evaluating feedback may require more preparation, because students must first understand the results before they can implement them (Weaver, 2007). On their part, comments that are too general or imprecise without justification, only negative feedback, or feedback without reference to comprehensible evaluation criteria are not considered meaningful (Weaver, 2007). The same applies to teachers who receive feedback on learning materials or content from their students.

4.4 Sample questions and activities to embed into teaching

Deciding on the format of feedback to be collected also affects the design for the collection process. Carless (2007) mentions a few activities such as using peer feedback techniques or self-reflection to get opinions from students.

From a methodological point of view, feedback can be collected using qualitative (open) questions, quantitative (standardized) questions or a mixture of both formats (partially standardized). Qualitatively based feedback formats are text-based and thus enable the students to give a free and individual answer. Quantitative feedback formats are standardized, i.e., variable based. They usually offer answer options (based on scales). Partially standardized question or feedback formats combine both forms. The decision for a format always depends on the objective and the insights that are to be gained with the respective feedback process. In addition to simple questionnaires, digital, interactive formats can also be used (e.g., the expectation query, a mood barometer, or the 3-question feedback (Teaching & Learning Academy, 2020)).

Table 5: Sample questions for formative and summative survey

	Qualitatively based	Quantitatively based
Related to the content	**formative**	
	What aspects of the unit did you find particularly helpful in understanding the topic? (Free text)	How well did the digital learning unit help you to understand the topic? (5 level Likert scale, e.g., very good – not good at all)
	summative	
	Describe in a few sentences what you would improve about the course. (Free text)	How did you like the course? (5 level Likert scale, e.g., very good – not good at all)
Related to the format	**formative**	
	Did you have problems accessing/playing/digitally editing the content? If yes, please describe them. (Free text)	Did the learning unit you just used work without technical problems? (yes/no option)
	summative	
	Which of the offered formats of learning materials did you use and how was your experience with it? (Free text)	Which formats of learning materials do you use most and which least? (Specification of answers options e.g., videos, exercises, quizzes, …).

Source: own representation

In a freely usable and downloadable Moodle course, we have put together how these and other questions as well as different formats for obtaining feedback can be integrated into your

own courses: https://moodle.net/resource/8km3vg0cv6b8-feedback. After (free) registration, interested parties and teachers can download the resource here. Subsequently it can be imported into a Moodle environment (in your Moodle environment go to Settings > More > Course Administration > Restore and upload the file from your computer). Or go to https://kurs.uni-jena.de/course/view.php?id=114 and create a free account to watch the course there. Now you can go through the activities and questions and adapt them individually.

5. Conclusion

In our analysis of the videos produced as part of the Digital4Humanities project, we found positive and negative aspects for the learners. In this article we first shared some important insights from students on the evaluation of video tutorials as a learning resource and on digital teaching itself. We continued to focus on the negative feedback to show where digital learning materials can be improved.

Besides the improvement of video formats and contents to activate and guide the students, it is especially the lack of contact and communication that needs attention. We have therefore tried to clarify the relevance of feedback for learners and teachers in higher education. Communication and feedback are essential tools to counteract the subjectively negative effects of digital teaching. But the topic of feedback to students is an under-researched area although student responses show feedback is valued (Weaver, 2007). In order to give teachers and learners an incentive to deal more intensively with the topic and to implement it in concrete terms, we have presented exemplary process modules as well as possible questions and tools. We would like to invite you to try this out, to participate in the development of feedback formats in higher education and to give us feedback if you are interested.

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