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Content

1. Introduction and relevance of the topic

Digital education has been slowly but steadily entering the teaching-learning process over the last decade, sometimes discreetly, sometimes spectacularly. However, despite all the indirect or direct, slower or more advanced groundwork, the coronavirus epidemic in 2020 has suddenly presented the world's educational institutions and systems with a challenge, regardless of the type of school. The practical pedagogical responses to this challenge are instructive in many ways, some of which may have become part of the daily routine even after the epidemic has passed.

My interest and research focus on the teacher's classroom activity, particularly on their pedagogical communication in a form of work that is not yet used in everyday life, which I call hybrid education. This form of education, based on the COVID experience, is a concept in which, in addition to offline lessons, online opportunities are added to the process in a timetable. The practical implementation of the research topic was justified by the fact that a high school in Budapest undertook nothing less than the introduction of hybrid education in the foreseeable future, after adequate preparation.

The need was explained by the positive online experiences during the coronavirus epidemic and the consistently high number of new students enrolling at the school, because although popular, the infrastructure of the institution would probably not allow for the creation of an additional class(es) in a grade over the years, in addition to the current three. One solution would be to consider a mixed form of education.

According to the concept, from grade 10 onwards, one of the five teaching days per week would be spent at home in distance education, according to the timetable. Initially, the teachers' working time would not be affected by this change, since, on the one hand, the whole year group would not stay at home, but one class per day, and, on the other hand, teachers would teach in several classes of several year groups in parallel, which would not be affected by the hybrid working pattern in the first period. Accordingly, an important consideration in the planning of the home timetable day is that subjects requiring one hour per week and personal attendance, such as physical education, should not be included in the chosen day. In particular, subjects taught for at least two hours a week, which can be surrounded by days of classroom instruction, should be considered.

It is now known from primary experience that the introduction of the new system in the foreseeable future will require several years of preparation and training for the teaching process. My research took place during the preparatory phase, when I had the opportunity to observe, among other things, the modelling of a subject in a hybrid environment and the pedagogical communication of the teacher for 4 weeks.

2. Research objectives, research questions and hypotheses

The research presented here is exploratory and descriptive. More broadly, the research topic is a pilot study based on a complex methodology, closely linked to a descriptive communication research, including interaction analysis, metaphor research and a viewpoint research. My research is a mixed methods research, in which certain principles of methodological triangulation are also present (Sántha, 2009).

In addition to exploring the views of teachers and students in the same grade on digital and hybrid education, I will examine the evolution of pedagogical communication in hybrid education by continuously narrowing the sample based on the teaching of one teacher in one classroom during the modeling period. Starting from quantitative questionnaire data and drawing on the specificity of qualitative research, my investigation focuses on the observation of 14 lessons of a single teacher using Flanders' method, with the short-term aim of analysing the phenomena presented in as much depth as possible. In the longer term, I aim to use the experience of this research and method to identify directions and possibilities for larger-scale research. The focus of my research is explicitly on the description of pedagogical communication between hybrid frameworks, but it is not an impact study.

The method plays a role in determining the sample size. For the questionnaire survey, I tried to include all teachers in the institution and all students in the selected year group. In the pre-modelling communication and ICT-focused lesson observations, the criterion was to have a cross-section of subjects with high weekly hours and the year group under study with as many teachers as possible, as we wanted to select the class, subject and teacher from these to carry out the modelling. Flanders' method does not allow for a large sample size, as a thorough, internal and detailed analysis of one teacher would provide a considerable amount of data, and therefore the sample was narrowed down to one teacher and one class for the modelling period. In the present study, I recorded 7992 interactions in 14 lessons of the observed teacher.

The following questions and hypotheses lead to the investigation of the research problem:

Q1: How can the concept of hybrid education be defined?

H9: For the majority of the respondents, the concept of hybrid education includes online education prominently and directly.

Q2: What are the views of the surveyed students and teachers on hybrid education?

H1: The students and teachers surveyed had similar perceptions of the positive and negative experiences of education during the coronavirus epidemic.

H2: Both students and teachers surveyed had positive attitudes towards hybrid education.

H3: According to the students surveyed, one of the positive benefits of online education is convenience.

Q3: How do the students and teachers surveyed rate their environmental and personal competencies for online education?

H4: The students and teachers surveyed consider that they have the necessary conditions at home and at work for online education.

H5: The students surveyed feel confident in the online world.

Q4: How was pedagogical communication achieved in the observed offline and online learning environments?

H6: There is a difference in the views of the surveyed learners and teachers regarding the observed teacher's online and offline classroom communication.

H7: There is a difference in the views of the students surveyed on the observed teacher's online and offline classroom communication.

> ***H7/a*** According to the students surveyed, the observed teacher asks more questions offline than online.
>
> ***H7/b*** Students surveyed think the observed teacher explains less online than offline.
>
> ***H7/c*** Students surveyed think the observed teacher talks less offline than online.

H8: According to the self-evaluation of the observed teacher, there is no difference in his communication in online and offline lessons.

H8/a The surveyed teacher feels that he asks the same number of questions offline as online.

H8/b The teacher perceives that he explains as much online as offline

H8/c The teacher perceived that he talks as much offline as online.

Q5: What online elements appear in offline lessons?

3. Research methods

I wanted to investigate the research questions using a complex methodology to get the most accurate picture of the meaning of hybrid education, student and teacher attitudes and views on this form of education, the experience of a month-long modelling with a focus on the teacher's online and offline communication, and the background of the teacher's decisions related to his activities.

Therefore, in the introductory phase of the research, I explored the meaning and background of the concept of hybrid education through metaphor exploration. Subsequently, I used closed-ended and open-ended questionnaires to gauge the experiences, experiences and views of teachers and Year 9 students in the institution under study about online education.

The questionnaire was completed by teachers in digital form on a Google form due to their individual schedules, while students completed the questionnaire on paper in both phases in a school setting. Once the data was received, I also digitised the manually completed questionnaires into a Google form for consistency and then partially aggregated them using the Google interface, and analysed the answers to the free-response questions using an automatically generated Excel spreadsheet with manual coding and functions.

Taking into account the data from the questionnaire, I developed a hybrid framework for the modelled period, which was informed by the classroom observation of the different subjects of the selected year group from a communication and ICT perspective, which was important for the sample, the ICT options and the way of application. For this purpose, as a so-called exit questionnaire, I used an observation scale consisting of nineteen questions immediately after the lessons, the indicators of which were based on teacher competencies 5 (facilitating and developing groups and communities of learners, creating opportunities, openness) and 7 (communication and professional cooperation, problem solving) of the teacher evaluation, supplemented by additional statements on digitalisation, online and ICT.

Based on this, in the third phase, the class, the teacher and the subject were selected, and in the second semester, a hybrid teaching was modelled for a short period of time. In practice, for one month, one third of the literature lessons of a tenth grade class were taught online and two thirds offline by the teacher on Google Meet. The institution plans to develop its own platform if hybrid teaching is implemented, but this was not available in any form during the pilot period. The students decided by vote, taking into account their own preferences, whether the online sessions should take place on Microsoft Teams or Google Meet. Given the timetable, the online session was in the middle of the week, so there were attendance hours before and after, meaning that no more days went by without a face-to-face meeting. For the online sessions, the teacher used different forms of work for the sake of the experiment, from the classic frontal to individual, pair and group work, and then a combination of these in a complex exercise. All of this was documented by participant observation in the form of a attendance diary and a Flanders observation sheet.

The clock observations during the modelled period were made according to a quantitative-based methodology of the positivist school. That is, for 14 lessons, I conducted structured observations as an external observer in the background using Flanders' predefined codes for interaction analysis, and then later recoded the interactions by listening to the audio of the lessons to eliminate subjectivity.

Following the lesson observations, I used the supported recall method of interpretive qualitative methodology to explore in more depth the relationships between what I saw and the teacher's communication and his views and decisions. My aim was thus to understand the actions and decisions of the teacher under study by exploring his thoughts, opinions and intentions related to situations that appeared consciously or accidentally in his lessons. The method required active researcher presence and continuous interaction between the observer and the observed.

Finally, I conducted a feedback questionnaire and an interview with the teacher after the model period, which focused on the experiences of the observation period, the teacher's communication, and repeated some questions from the questionnaire of the first phase of the research, such as the attitude towards hybrid education or the conditions at home, in order to see if the students' views changed compared to before the model period.

Although Flanders' interaction analysis can have several effects on the improvement of the teacher's individual communication, on the improvement and strengthening of the success of pedagogical communication and direct communication between the teacher and the students, in

this paper I only aim to investigate, using theory and methodology, whether there is a difference in the interactional verbal communication between the teacher and the class in offline and online lessons in the institution observed during the period of the model. In evaluating the processes presented in this thesis, my conclusions are therefore limited to the particular teacher in the institution, but I am confident that the case study will reveal general correlations that will be worth exploring independently of the institution in the future. Furthermore, bearing in mind the original, longer-term aim of the research, which is to support the institution under study in creating the conditions for the introduction of hybrid education, the data obtained will also allow for targeted development of the teacher's individual and classroom communication as a personal foundation for hybrid education.

I know that it is not possible to draw general conclusions about teachers and about online and offline communication based on the observation and analysis of one teacher. My aim is to use the aspects that emerge from the observations as a possible direction for future research on other teachers and subjects.

4. Research responses, evaluation of hypotheses

Q1: How can the concept of hybrid education be defined?

H9: For the majority of respondents, the concept of hybrid education includes online education in a prominent and direct way.

A map of the codes obtained reveals the dual nature of hybrid education at the centre, with which all other key concepts and conceptual subcategories with a significant number of elements show a link. It is also closely related to novelty and uncertainty as attributes, while the framework is formed by the key concepts of flexibility, familiarity (nothing new under the sun), and opportunity and the few subcategories per se, which also have several direct and indirect links and directions. No category has been marginalised.

Looking at the proportions of the five key concepts, we can see that the metaphors most often refer to the duality of hybrid education (N=15), followed by the uncertainty factor (N=9), familiarity with education or other aspects of life (N=5), and novelty and flexibility (N=4).

In summary, although the meta-research presented above (N=20) cannot be considered representative due to the small number and composition of respondents, the results obtained contribute to a deeper understanding of the concept of hybrid education as it is used today by revealing the views and feelings of respondents. For example, the fact that, since the outbreak

of the coronavirus, hybrid education has sometimes been used as a synonym for online education, but certainly in the context of online and offline forms of education. We have also been asked what qualities a hybrid teacher has or should have in the minds of the respondents, if we accept that there is a right to use this term, i.e. that there is such a thing as a hybrid teacher.

It can therefore be argued that online education during the pandemic period had an impact on people's views, whether they were directly or indirectly involved in the process. The depth and nature of the impact was not explored in this research, but it did highlight that this period, in addition to the difficulties experienced, offered an inspiring and ambivalent opportunity for learners to organise their own learning (or to ignore the learning process as individuals) and for teachers to develop their skills, especially in terms of methodology and digital literacy. Hypothesis H9, formulated last but discussed first in the logical order, is confirmed in this sense, since, although not in a representative sample, the link between hybrid and online is clearly present in the majority of respondents.

Q2: What are the views of the students and teachers surveyed on hybrid education?

H1: The students and teachers surveyed had similar perceptions of the positive and negative experiences of education during the coronavirus epidemic.

Approaching the students' perspective, 43.9% of the respondents rated the school work under the concept of digital education as "medium" based on the two periods of the coronavirus epidemic. In other words, there were some difficulties that they were able to overcome, but in some subjects they fell short of what they expected. In any case, it is an encouraging experience that 24.2% of the 66 respondents rated their education as "good" in this period, judging that, apart from minor bumps, lessons were mostly going well, and they were progressing "ok" with the curriculum as they expected. The proportion of students who said they could not get used to the online learning, who missed most of the lessons and who felt that the period was completely useless and that they could have repeated the year was disappointing, at only 7.6%.

The results were similar from the teachers' perspective: based on their personal experience, 58.8% of teachers felt that digital education was "average", while 17.6%-17.6% felt it was good or sufficient. The latter felt that "they had gone through this period with a minimal sense of achievement, they could barely make progress according to their own understanding, the training was good to keep the students on level ground, but they probably did not acquire any new knowledge". No teacher rated the online teaching as insufficient. Overall, there was a very similar feeling, but students rated the digital education they had experienced during the period

of the Coronavirus as slightly more rigorous (average 3.04) than teachers (average 3.12). In percentage terms, 43.9% of students rated it as medium, 24.2% as good, 13.6% as fair, 7.6% as excellent and 10.6% as unsatisfactory. In contrast to teachers, 58.8% of the sample rated the period under study as medium, 17.6% as good, 17.6% as fair and 5.9% as excellent. There was also a similarity between the two groups in that the majority rated the second of the two periods of the coronavirus epidemic as more positive.

H2: Both students and teachers surveyed have a positive attitude towards hybrid education.

The relevant question in the questionnaire defined hybrid education in simple terms as: a part of the lessons are held at school and a small part at home in an online format. Although the respondents were not informed in advance that this way of working could be an option for them in the foreseeable future, or how and in what way it could be implemented in their institution, taking into account their previous experience, the response to the question reveals the primary attitude. The majority of students would be happy with it, would support the initiative (46.7%) or would like to spend more time at home than at present (24.6%). 12.3% did not give a clear opinion on the "whatever" option, adapting to the current decisions because of their lack of interest. Another 4.6% could not decide. 7.7% would accept but would express disagreement and only 2 (3.1%) would not support hybrid working at all.

A similar proportion of teachers would have a positive attitude towards hybrid working (47.1% would welcome it, 17.6% would not object). It is important to note that the definition of online as a result of working from home was not included in the questionnaire for this part of the sample, but there is a reference to it in their response option, focusing on the students' time at home. This is because the original plan was that only one year group would be affected by the pilot implementation, i.e. the rest of the teacher's lessons would be in-service and the online lessons could be at any time of the day. This should therefore also be taken into account when interpreting the responses, as it is likely to be less motivating if there is no physical difference between online and offline teaching. However, this is not reflected in the responses, it is not possible to know exactly how teachers interpreted the perceived realisation for themselves. This may be the reason why 23.5% of respondents did not express a clear attitude: they would be happy with it and not happy with it. The negative range for this sample also includes 1 to 1 candidates, i.e. those who would not support or would express disagreement with hybrid education.

So both groups are indeed positive about hybrid education, but the hypothesis cannot be clearly confirmed due to the lack of conceptual specification in the teacher questionnaire.

As a complementary point, it is important to note a nuanced result: before the modelled period, 47.7% of the total cohort (65 respondents) would be happy to have online classes next year in addition to the school-based ones, while 32% would not be emotional but would accept it. If we narrow down this sample to the students in the modelling (N=26), we find that 50% would support it, while 30.7% would accept it and 7.6% are undecided, both happy and not happy. This compares with only 28% of the same sample who would be happy with it, 32% who would accept it and 24% who would be both happy and not happy with it in the follow-up survey (N=25) after modelling. In other words, the initial 80% enthusiasm dropped to 60% after the exercise, while the percentage of those who were undecided more than tripled.

H3: According to the students surveyed, one of the positive benefits of online learning is convenience.

Indeed, the convenience factor was reported as a positive experience by learners during the coronavirus epidemic. The reference to convenience is present in all the answers, but the hypothesis is not clearly true in the results, as it is not seen as a natural benefit, but mainly as a loophole, something that is not "legal", a phenomenon of "blending in" behind the norm. The reason for this is presumably that they identify convenience not with energy and labour optimisation, but with the possibility of getting away with it. However, specific questions on this did not appear in the survey, so this remains at the level of conjecture.

Q3: How do the students and teachers surveyed assess their environmental and personal competencies for online education?

H4: The students and teachers surveyed consider that they have the necessary conditions at home and at work for online education.

For any form of online education to be possible, it is necessary to have appropriate conditions at home, which does not only mean technical conditions (see EMMI notebook programme). In addition to the mediating device, broadband internet access is essential and, last but not least, a comfortable but at least suitable learning environment for the learner. In other words, a space that is not disturbed by other circumstances, including those of other people living in the same household.

It is certainly encouraging that 50% of student respondents said that they have a suitable learning environment and technical conditions (internet, laptop, etc.) at home, and that no one and nothing would disturb them during their online lessons. A further 29.7% said that they had mostly adequate facilities and that they could easily eliminate any distractions that would not affect their online lessons. 14.1% see certain situations that would compromise effective class participation. Their learning environment can be designed, the technical conditions are given, but they can imagine circumstances or situations that would prevent them from participating fully in the lessons. Two learners could not decide whether the conditions would be given at home and a further 2 learners responded that the conditions essential for this to be possible are not given: no private or no learning environment at home, technical conditions are very limited or they have to share the environment/tools with several family members.

For teachers, the figure is even more encouraging: 70.6% feel that they have the right working environment and technical conditions (internet, laptop, etc.) at school and at home, and that no one and nothing would interfere with online teaching. A further 17.6% also reported adequate working environments and that any distractions are easily eliminated and do not affect their work. 1 teacher perceives circumstances in her working environment that could, in some cases, make his lessons impossible and another colleague stated that he does not have a private working environment, has to share common spaces and technology with colleagues during the day and with family members at home, which affects her performance. There were no teachers for whom the conditions for working online were not at all right.

In other words, narrowing down the views, both groups believe that they could mostly provide the right conditions for hybrid teaching to work smoothly.

H5: The learners tested feel confident in the online world.

The measurement of ICT competencies of teachers and learners is not covered in this dissertation. In the second phase of the research, the questionnaire was only designed to assess how the two groups of respondents rate their existence and activities in the online world on a five-point scale, which they use in their daily lives. My hypothesis H5 only covered the students' views.

Students were more critical of themselves compared to teachers, with an overall average of 3.81 from 66 respondents. The majority (46.2%) rated their online activity as good. Only 23.1% thought that they were excellent in the online space, able to do all the tasks and not technically challenged by the use of the tools, while at least as many (24.6%) considered their skills to be

average, i.e. that they had technical difficulties with a tool or programme but could mostly overcome them with help and could do some of the tasks well. Two students rated themselves as fair and only one student felt that they could not manage tools and programmes with help, had no sense of achievement at all and felt like an outsider in the online world. Overall, therefore, when averaged over the data obtained, the sample surveyed felt that they were doing well in the online world, but it cannot be clearly stated that this is associated with confidence.

Q4: How was pedagogical communication achieved in the observed offline and online learning environments?

H6: There is a difference in the views of the students and teachers about the observed teacher's online and offline classroom communication.

I interviewed the teacher before and after the modelling on this issue. he had a preliminary belief that there would be no difference in either part of her communication in online lessons compared to offline. At the end of the observations, now that he had practical experience, he modified his answer in that he thought that the question and the amount of speech within his communication was the same on both platforms, but the amount of his explanations was more online than offline and he thought that it was perhaps slightly easier to understand his explanations online.

H7: There is a difference between the observed teacher's online and offline classroom communication based on the views of the students surveyed.

The students were interviewed after the modelling. I assumed that their views not only differed from the teacher's on the topic, but also that they perceived a difference in the observed teacher's online and offline classroom communication. Related to this, I examined the students' responses along three sub-hypotheses. The first of these is that H7/a according to the students surveyed, the observed teacher asks more questions offline than online.

H7/a According to the students surveyed, the observed teacher asks more questions offline than online.

This group of questions was answered by 23 respondents (N=23). Within the teacher's lecture mode, the majority of respondents (57%) believed that the amount of questions was the same as in the face-to-face classes. In this respect, they were therefore of the same opinion as the observed teacher. If we add the row for the number of questions in the Flanders interactions count (inset in Table 21), i.e. the actual number of questions, we see that although teacher

questions and explanations did indeed dominate the lessons, offline there were still more than 100 questions per lesson, while online only 86. This is a difference of 16.5% in favour of offline.

So, my sub-hypothesis H7/a was not confirmed, although it would have been correct in terms of the content statement, because the teacher did ask more questions offline, but it was not true in terms of the students' views, because the students perceived that there was no difference in the amount of questions.

Question	offline number	number/45 min	online number	number/45 min	difference
4	1051	100,62	377	86,32	16,566%

Section from Table 21: Quantity of questions per minute.

H7/b According to the students surveyed, the observed teacher explains less online than offline.

The second sub-hypothesis related to the amount of explanation the teacher provided. Based on the students' responses, the perception of this question was very divided: 30% thought that the teacher explained more, 32% thought less, 22% felt the same and 13% did not observe. The teacher felt afterwards that he had explained more online than offline. In contrast, the actual figures show that the difference in the observed lessons was only 1.12% in favour of offline, so it can be said that there was no marked difference in the amount of explanation between online and offline lessons. My sub-hypothesis H7/b was nevertheless confirmed, as although minimal, the majority of students felt that the teacher provided fewer explanations in online lessons. In other words, there is a difference between the students' and the teacher's perception and the actual implementation.

Comment	offline number	number/45 min	online number	number/45 min	difference
5	1307	125,13	539	123,75	1,122%

Cross-section from Table 21: Quantity of explanations per minute.

H7/c According to the students surveyed, the observed teacher talks less offline than online.

The third sub-hypothesis focuses on the overall teacher talk, i.e. TBR in the Flanders. Here too, no clear result emerges, with 31% feeling that the teacher spoke more online, 30% less and 39% in the middle, i.e. the same proportion of teacher talk online as offline. The observed teacher felt that they spoke the same amount on both platforms.

In general, TBR accounted for 60.7% of the 14 lessons studied, which means that there was a clear teacher dominance in pedagogical communication. However, if we look at the difference

between online and offline, we can see that this proportion was 58.34% for online lessons and 63.04% for face-to-face lessons, i.e., looking at the total teacher talk, offline actually spoke more than online during the modelled period. From the observation records, we now also know that online, students had to do more tasks, for which the teacher provided more time. In other words, online they were more active. Based on all this, sub-hypothesis H7/c cannot be clearly confirmed or refuted because none of the answer options was in a clear majority. However, it does suggest that the actual perception of the learners and the teacher is presumably pointing in the same direction, i.e. that there is a platform-independent share of teacher talk.

H8: According to the self-evaluation of the teacher under study, there is no difference between online and offline classroom communication.

> *H8/a The surveyed teacher feels that he asks the same number of questions offline as online.*
>
> *H8/b The teacher perceives that he explains as much online as offline*
>
> *H8/c The teacher perceived that he talks as much offline as online.*

The teacher was assumed to have no difference in his online and offline classroom communication (H8) based on self-assessment, i.e. he felt that he asks as many questions offline as online (H8/a), explains as much online as offline (H8/b) and talks as much offline as online (H8/c). Based on their responses, they felt that the amount of questions and the amount of talking was the same on both platforms, but the amount of explaining was more online than offline. In other words, in this respect it can also be said that there is indeed no difference in two of the three elements, while there is a difference in the teacher explanations, thus hypothesis H8 is confirmed.

Thus, with regard to pedagogical communication, there is a difference between the perceived, lived experience and the facts in the amount of different interaction elements, although the parties involved in the communication process had similar opinions on several issues.

In summary, the main hypotheses concerning the students and the teacher are that there is no difference in the views of the students and the teacher, when looking at the observed items, for two out of three of the observed items, regarding the observed teacher's online and offline classroom communication, i.e. no H6. Namely, the teacher believed that the amount of speech and questions were the same on the two platforms, as did the majority of learners who believed that there was no difference in the amount of questions and although the data did not show a

clear dominance, the amount of speech tended to be minimally skewed towards the same. However, the teacher's explanations were perceived in completely opposite ways: the teacher thought there was more talking and the students thought there was less, while the Flanders analysis figures showed that there was no marked difference between the two platforms. Based on these results, therefore, hypothesis H6, that there is a difference in the views of the parties, cannot be confirmed.

Q5: What online elements appear in offline lessons?

I did not formulate hypotheses for this research question, as I wanted to assess what concrete or indirect elements appear in the offline lessons of different teachers of different subjects in the institution in preparation for the modelling.The general finding was that, based on the SAMR model, in the majority of the lessons observed, the use of tools was at the level of substitution and extension, with references to online content and elements being more prominent in some cases and absent in others.Furthermore, for all the tools, the online connection was not relevant and necessary, and the digital technology could be used offline after teacher preparation.

5. Application of results, further research options

The period of the crown virus epidemic has brought many different experiences in education. One way of taking this further is the concept of so-called hybrid education, whereby part of the weekly lessons in a given subject are taught offline in face-to-face classes and part online.The backbone of the research presented in this dissertation was a period of time spent modelling hybrid education in a high school in Budapest.

The research presented was an attempt to find and take away from the student and teacher experiences accumulated during the coronavirus epidemic and the post-covidal symptoms that have persisted in education since the virus, what can be useful for education. In other words, we have not sought to assess the impact, but merely to describe, by taking a slice of reality and based on a deeper analysis of a teacher in an institution, which points, although they may seem self-evident and instinctive, such as pedagogical communication, can, if consciously focused, provide a different experience for the participants in a teaching and learning process organised in a hybrid framework.

The innovate of the research lies in the fact that, although it is assumed that there is a verbal difference between online and offline pedagogical communication, practice shows that there is

not, through the example of the teacher studied. In other words, there is no difference, for several reasons.

Below I will elaborate on one of our hypotheses.

We have seen that the observed teacher instinctively, sometimes rigidly, uses offline tools to act in classic pedagogical situations, both offline and online, and after many years in the teaching profession, finds himself in situations he found himself in as a beginner (time management, not taking students into account, self-justification, managing emotions, etc.). Yet online pedagogical communication should not seek to mimic what happens offline. Neither in its objectives, nor in its means, nor in its activities.

In other words, we assume that the teacher should have the "special" knowledge that fits into the TPACK model, which allows him to be effective on both platforms, because then he will not fall into these mistakes. However, the school must prepare its teachers for this effective online pedagogical communication in advance, either in the medium or long term. It is beyond the scope of this research to pursue this topic, but it can serve as a basis for future research on what makes online pedagogical communication effective.

So the justification for hybrid education depends not only on infrastructure and environmental factors, but also on the people involved in the teaching and learning process. This is because it requires a high degree of autonomous and self-regulated learning, motivation, cognitive flexibility, visual literacy and digital competence on the part of the learners, while the teacher needs the ability to apply the above-mentioned knowledge in parallel with the knowledge of management (coordination), technology, content and pedagogy, which he can integrate safely and critically into his pedagogical problem-solving.

The experience and results of the research have shown that the preparation, organisation and implementation of hybrid education, also because of its complexity, requires a high level of commitment, positive attitude and autonomy from the actors involved in the process. Part of the dissertation aimed to assess and explore the related views and attitudes, which can be considered as a starting point for future research on the topic. The second half of the thesis was concerned with a descriptive analysis of verbal pedagogical communication in online and offline settings.

In the results obtained, the outcome is less significant, as the data were compiled from the observations of only one teacher, so it is possible that different proportions would have been

obtained for different teachers. In terms of further research possibilities, the application and adaptation of the Flanders measure to an online platform was all the more relevant. Although Flanders is primarily concerned with verbal utterances, it is not possible to draw a sharp distinction between non-verbal cues in pedagogical communication, as they are incorporated into verbal utterances in all situations in terms of interaction. To avoid this, and taking into account the specificities of online communication (even by including multitask), it is indeed useful to shape Flanders' original codes, but for the sake of online/offline comparability, I have tried to limit my research to verbality in my observation of communication, with the aforementioned proviso that non-verbal cues are present in determining speaker intentions for a clear decision on codes. So I thought that in the first part of the research, verbality is the element that is present in both cases and by which the data can be compared. However, a possible further avenue of research could be to carry out a deep dive, in which elements and codes that are largely or exclusively observable online are given a specific place. These could even be used to investigate the effectiveness of pedagogical communication or hybrid education, which was not the aim of this thesis.

The data on learner recall also point in a new direction in terms of the correlation between offline, online and hybrid forms of education, also with a focus on effectiveness. How to achieve the development of student memory and the incorporation of experiences and content into long-term student memory. This question is also beyond the scope of the present research, but opens the way for further investigation. From this point of view, a possible future research might be worthwhile to observe the difference between different types of lessons, as it is possible that due to the selection of memory, it is the experiential rather than the content that is retained (especially at the beginning) as experience and information from online lessons. Therefore, our hypothesis for the starting point of a future study is that in online settings, lessons that introduce new knowledge rather than repetitive, practicing, consolidating new knowledge may support the preceding and following offline sessions. However, all this is beyond the scope of the current research and could be the objective of new investigations.

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6. Scientific publications related to the thesis points

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1.) Habos, Dorottya

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