Rethinking Hybrid Teaching: The Hybrid Rhombus Model as an Approach to Understanding Hybrid Settings

Daniel Handle-Pfeiffer, Christoph Winter, Christian Löw, Claudia Hackl
Center for Teaching and Learning, University of Vienna, Austria.

Abstract

After extended periods of remote-only teaching at university, lecturers tried to come back to lecture halls. Due to restrictions not all students could participate on-site. Therefore, hybrid teaching models proliferated. To reflect the transformative effects on teaching practice, we conducted focus groups with lecturers and found that didactic models aimed at capturing dynamics of the in-situ learning experience do not provide sufficient understanding of the bifurcated nature of hybrid teaching. The hybrid rhombus model is an approach to conceptual understanding of the newly developed situation of teaching in a hybrid way. This paper gives a brief description of the model description and the empirical background, to contribute to the debate of hybrid teaching in relation to digital or on-site teaching.

Keywords: digital teaching; hybrid teaching; COVID teaching; hybrid model;

1. Introduction

After COVID pandemic countermeasures had constrained university operations at large, partially relaxed mandates of physical distancing allowed for some on-site presence and popularized hybrid attendance models in education that comprise synchronous teaching of students present on site and attending remotely (Reinmann 2021). As a didactics center for digital teaching and learning that is part of the University of Vienna, we set out to research the hybrid situation and how it transforms teaching practice, both to learn how teachers are best supported during this crisis and to explore the overall potential that hybrid models hold for university level teaching. With this paper, we want to briefly characterize and argue for the *Hybrid Rhombus* as a model to further derive successful conditions of hybrid teaching and contribute to ongoing discussion of the transformative effect pandemic measures had on teaching practice.

1.1. Related Work

1.1.1 Hybrid Teaching

Gabi Reinmann (2021) remarked that the term of "hybrid teaching" is used diversely within the university context. We adopt the concept of "synchronous hybrid teaching", as an interaction of teachers and two groups of students learning simultaneously (synchronous) in a session. One group is present in the lecture hall together with the teacher - the on-site group - whereas the other group participates in a virtual environment - the remote group.

As Raes et al. (2020) remarked, research into synchronous hybrid learning is still in its infancy and research gaps exist e.g. at the relation of student learning experiences and pedagogical scenarios. Hybrid settings come with different pedagogical, organizational and technological challenges and benefits (Raes et al., 2020). We will focus on the two most relevant aspects, that are crucial for the introduction of the *Hybrid Rhombus*: The intention of the University to establish synchronous hybrid teaching as well as some characteristics regarding communication and interaction in a hybrid classroom.

The organizational benefits for students are often mentioned (Raes, 2022). Students can choose whether to attend the course remote or on-site, which leads to a greater flexibility for the learners to schedule their semester (Hastie et al., 2010). From an institutional point of view, the effective use of classroom space is another reason to introduce a synchronous hybrid teaching concept (Lakhal, 2017). That was especially relevant for the University in times of COVID, since it was possible to reduce the numbers of students who shared one classroom.

A disadvantage in terms of communication is, that the two groups (on-site and remote) experience the class differently/ in different ways (Szeto 2014). Huang (2017) stated, that in

comparison with the on-site group, the remote group might feel excluded from the class. Even more when they have to struggle with technical problems. From a teaching point of view, it is crucial to create an environment in which both groups are able to make similar learning experiences (Raes 2022).

1.2.2 Extending the Didactic Triangle

The didactic triangle (see e.g. Bönsch 2006, p. 149) is a fundamental theoretical model used frequently to classify and incorporate innovation and advances in the field of didactics. Goodchild and Sriraman (2012) argued for extending the didactic triangle in light of technological advance in the classroom, e.g. offering additional flexibility in teaching procedure, but demanding increased attention by the lecturer. Lampiselkä et al. (2019) used the didactic triangle as a taxonomy to identify focus areas in science education research.

2. Research Interest and Methodology

Based on our inner-institutional purpose of supporting teachers and students, shaping and evaluating available technological tools and obtaining a rich picture of teaching practice as decision input for university upper management levels, we set out to capture the transformative effect of hybrid teaching practice, guided by the research question: *"How do novel hybrid teaching paradigms relate to teaching practice?"*.

2.1. Focus Groups

We conducted three online focus group sessions that took place after a semester of physically distanced (i.e. digital and hybrid) teaching had just concluded and experiences were fresh in the participant's memories. The sessions had a duration of 45 minutes and were organized after a semi-structured discussion guide covering six mayor topics: personal experiences with implementing hybrid teaching, successful and unsuccessful teaching techniques, essential requirements for a successful hybrid teaching setting, changes for their own next hybrid teaching setting to ensure it is (even) more successful and advice for colleagues – always considering different levels such as didactical, technical, organizational elements in hybrid teaching.

2.2. Participants

We recruited 12 employees of the University of Vienna who had employed hybrid teaching in the prior semester, specifically between October and end of November 2020, when governmental pandemic measures allowed for partial on site student presence. All participants are experienced, authoritative lecturers and researchers who collectively represent a diverse area of academic fields and related teaching paradigms (natural sciences, humanities and cultural studies). Furthermore, several participants hold additional faculty

management roles (vice dean, director of study program) that bring them into regular contact with other teachers and their students within their respective faculties.

2.3. Analysis

Each focus group session was conducted by a moderator and observed by an additional member of the researchteam who took extensive notes of discussion progress and verbatim quotes. After the sessions, moderators were asked to also add interesting participant contributions to the notes. Following the analytical method of Thematic Analysis (Braun & Clark, 2006), the resulting dataset was annotated in several consecutive iterations. This resulted in a thematical overview of practical experiences and reflections, which, upon further discussion among the researchers, led to the didactical model at hand.

3. Results

First and second hand experiences with synchronous hybrid teaching were consistently described as challenging, bordering overwhelming. Participants reported unfamiliarity with then-new streaming technology that in turn was observed to work unreliably with existing audiovisual lecture hall equipment. On organizational and didactic levels, transposing explicit (e.g. conveying content) and tacit (e.g. keeping in touch with students on their progress) elements of teaching practice into an in-part digital realm caused unanticipated but crucial-to-success tasks and responsibilities to emerge.

In preparation of synchronous hybrid course meetings, specific and detailed, additional planning efforts are necessary to organize, communicate with and monitor the progress of on- and off-site cohorts.The act of holding a synchronous hybrid lecture itself comes with additional work as well: participants reported unexpected amounts of cognitive load that can be categorized as either (1) technological monitoring and support of participants of either cohort or (2) additional didactic efforts, resulting in feelings of stress that stem from keeping track of students and their learning experience in either cohort, as well as relational or attentional strain w.r.t. the task of moderating student participation in either cohort simultaneously, which was reported as specifically challenging.

In the subsequent analysis of these results, we formulated possible ways of mitigating these challenges, i.e. familiarization with and pre-check of technological equipment (also with students w.r.t. the technical requirements of their respective cohort) or team-teaching structures (participants reported successes with tasking on-site students with off-site cohort chat moderation).We found that on a theoretical level, didactic models aimed at capturing dynamics of the in-situ learning experience do not provide sufficient understanding of the bifurcated nature of hybrid teaching. Departing from the didactic triangle, this led us to

extending the triadic interactive structure into the off-site realm, resulting in the *Hybrid Rhombus* (see Fig. 1 for a schematic overview).

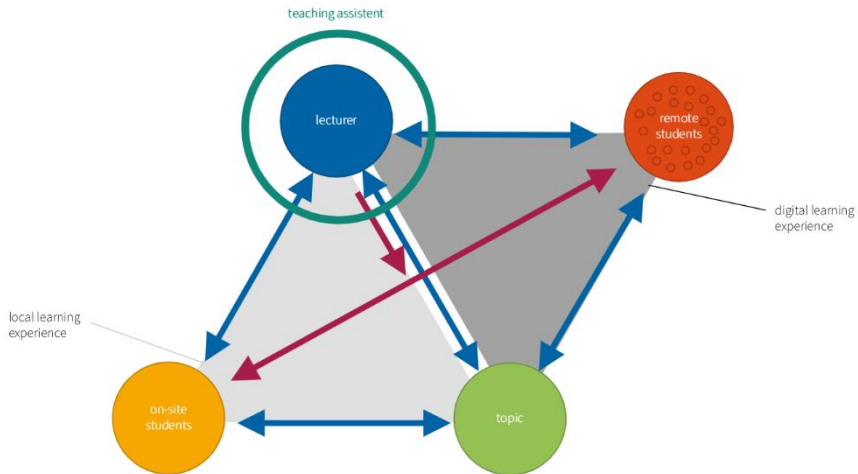### 3.1. The Hybrid Rhombus Model

Figure 1. Hybrid Rhombus.

The didactic triangle shapes interactional dynamics of teaching/learning processes as a triad between lecturer, student(s) and the topic at hand. We suggest that, in settings of hybrid teaching that incorporate remote and on-site cohorts into the same in-situ session, differences in teaching and learning experiences among remote and on-site cohorts are substantial:

We differentiate students, who attend the lecture in the hall ("on-site students") and students, who attend digitally via videoconferencing tool ("remote students"). Since remote and on-site students experience topic and lecturer in different media and communication modalities, they approach both the subject and the learning process from literally different perspectives. The cohort's learning experiences are differently paced, following different levels of immediacy and social immersion related to physical presence and digitally mediated attendance.

While both cohorts can follow the session live, establishing reasonable rapport with all students at the same time is however difficult for the lecturer, given the differences in pacing, immersion and communication; conceptually, we suggest this should be understood as a form of bi-directional attention that comes with twice the cognitive and relational effort.

Here it should be added that, the remote students do not act like the on-site students, because every one of them should rather be seen as isolated or individualized with a technical barrier to interact with others: if a remote student has a technical issue, they can not follow the class,

need to contact the lecturer and the whole room is affected by it. Therefore, the teaching is interrupted. On the other hand, if an on-site student has a problem, they could ask their seatmate and these two could deal with the problem and teaching is not affected. While we deal with two "groups", a new way of exchange occurs in the communication between on-site students and remote students (red arrow), that is not easily comparable to other interactions; e.g. due to technical restrictions and GDPR practice, remote students do not see the on-site students.

4. Discussion

The hybrid rhombus formalizes structures that emerged in the prior empirical work, and especially makes visible how interaction and communication is inhibited by the technical barrier. Therefore, on the teaching side, planning and rethinking interaction and communication is key to success. While teaching and presenting content, a second person (teaching assistant or student) should moderate the chat or prepare forms of interaction, comparable e.g. to how Cain et al. (2016) relied on technological and pedagogical qualified assistants as "Technical Navigators" ("TechNavs").

The empirical work hinted at overburdening on two levels: On the didactic level we see a major challenge for practitioners in shaping how and when to interact with any or both cohorts and ensuring sufficient communicative rapport between them; generally with balancing their attention between teaching and moderating. On the technical level, participants reported additional efforts for operating the equipment and dealing with technical problems of remotely connected students. Particularly in the relations of teacher to on-site, the hybrid rhombus implies the increased effort in relationship maintenance (the need to overlook and interact with two groups) and minimizing of disturbance (e.g. technical, difficulties following the lectures,...)..

Notably, the hybrid setting is not a new way of teaching in itself. If we think about streaming, hybrid teaching has been practiced for some years. What is really novel is the use of backward channels, e.g. chat, audio/video and the need of lecturers to design the lesson as they do on-site. This backward channel changes the interaction between teacher and students completely. The remote learning group can raise questions via chat or audio/video for a better understanding. This additional communication feature allows them to address and discuss individual questions with either the teacher, the whole class or with their colleagues (Wang, Huang 2018). Here we can isolate and discuss an example: In traditional teaching, a lecture is characterized by a high amount of frontal lecturing. There, lecturers tend to ask questions for various reasons. Transferred into a hybrid setting, asking a question implies (1) the possibility and channel to answer. E.g. the on-site students can answer by raising their hand, the remote group could use chat, audio, video or raising their hand digitally. (2) the possibility

to follow the students answer. E.g. the on-site student can hear the answer, because they are in the same room. The remote student can just hear it, if the on-site student talks to a microphone. Therefore, a microphone has to be handed to the on-site student or the teacher has to paraphrase the answer, taking up additional time.

With this paper, we want to contribute to the reflective, scientific discussion of hybrid teaching practice in the wake of pandemic-related lockdowns, by utilizing the Didactic Triangle as a fundamental and very common pedagogical structure model. Future work will also explore the value of other, e.g. student-centered approaches like flipped classroom (Bergmann & Sams, 2012; Bishop & Verleger 2013), or active learning concepts (Prince 2004). Furthermore, this study is based on the perspective of experienced lecturers and thus incorporates the own perspective of students only indirectly. In a next step we plan to also involve students directly on their experiences with hybrid teaching.

5. Conclusion

The hybrid rhombus illustrates the hybrid situation and introduces a model for rethinking and redesigning hybrid lectures. The model shows core issues. The idea is still at a developing stage and further research is indicated, as described in the prior section.

While taking a deep dive into the model of hybrid rhombus we are aware that hybrid teaching is not just a remote approach and easily digitized teaching. The model can sensitize and support further thinking of bringing on-site and digital teaching together.

To carry out the didactic approach and provide the technical and spatial basics we will redesign a lecture hall, which should fit the basic needs for performing teaching in a hybrid setting. Therefore, we came to the compromise of the following assumptions: This lecture hall should be used for teaching on-site, digital (overcoming remote) and hybrid. The focus of this room is the interactions between lecturer and students in different group sizes and not frontal lectures. Besides that, the room should be flexible and therefore afford lecturers and students the possibility to reshape it to suit their needs.

Acknowledgments

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