Synchronous Hybrid Classroom in Continuing Education – Tackling Challenges of Exchange and Networking

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Abstract. Digitalization is changing work content, jobs, and processes, making lifelong learning and investment in further education increasingly important. At the same time, it opens new opportunities for providers of continuing education programs by digitalizing teaching/learning settings. In a synchronous hybrid classroom, a video conferencing system enables simultaneous on-site and remote participation. Thus, this format offers potential for continuing education through the freedom to choose from where to participate in the classroom. Continuing education participants are often very busy at work and/or with care obligations and could therefore benefit from local flexibility through remote teaching. However, it is the exchange and networking opportunities that many participants expect from continuing education and which have so far usually been realized through face-to-face interaction. The implementation of synchronous hybrid teaching is associated with several challenges. Beside challenges of technological implementation and the demands on technical and didactical skills of the lecturers, there is a risk that the exchange and networking between participants will suffer. This paper develops key research questions regarding the future design of synchronous hybrid classrooms especially for the target group of continuous education participants. Different methods are presented, with which the necessary evidence could ideally be obtained.

Keywords: Continuing Education; New Learning Formats; Exchange and Networking Opportunities

1 Introduction

The modern (working) world is complex and characterized by continuous change, uncertainty, and ambiguity. Shaped by digitalization and automation, work content, work structures and activities as well as professions and occupational fields change [1, 2]. Existing knowledge becomes outdated, new competences are required and lifelong learning becomes necessary. To sustain employability, the development of skills is needed [e.g. 3]. Employers and employees therefore regularly invest time and money in continuing education and training activities and are interested in ensuring that participants benefit from them to the maximum.

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The education sector and in particular the continuing education industry has been greatly impacted by the COVID-19 pandemic. Before the COVID-19 pandemic, providers of continuing education in Switzerland relied mainly on face-to-face teaching and very few pursued blended learning or online concepts. Due to the lockdown, educational institutions worldwide were immediately forced to stop face-to-face teaching, including universities in Switzerland. Thus, the pandemic brought a real digitalization push: According to the current continuing education study in Switzerland [4], 85% of the providers surveyed stated that they had adapted their continuing education offerings by digitizing the teaching/learning settings. However, the way in which continuing education was adapted varied widely, from online instruction using video conferencing software to a higher proportion of guided self-study. There is evidence that continuing education participants have different preferences regarding new teaching and learning formats. While some participants are positive about online instruction and increasingly accept virtual instruction, other participants prefer face-to-face instruction [4–6]. For many, face-to-face teaching is still the best way to ensure direct exchange among participants and to promote networking. On the other hand, online and blended learning formats open new possibilities to cooperate and network with even more participants and lecturers – also abroad and outside the organization. The synchronous hybrid setting offers the advantage that it considers the preferences of the different parties, since this form allows participants to choose whether to attend classes on-site or online.

For education in society 5.0, questions therefore arise as to how continuing education should be designed in the future to optimally combine digital possibilities and the different needs of continuing education participants for digital instruction as well as for exchange and networking. It seems fruitful to investigate synchronous hybrid settings in continuing education, because it offers potential to combine both aspects.

In the following, we first shed light on continuing education and the motives of participants in continuing education. Then we present the available evidence on synchronous hybrid teaching. Finally, we discuss whether synchronous hybrid teaching is a useful option for continuing education and outline the open questions that still need to be answered. We end with an outlook on how the research questions could be investigated.

2 Continuing Education

OECD, UNESCO and Eurostat distinguish between three forms of learning: formal education, non-formal education, and informal learning [7]. Continuing education is classified as non-formal education: “Non-formal education includes institutionalized, deliberate education planned by an education provider outside the formal education system. This can include, for example, courses, conferences, seminars, private lessons, or on-the-job training” [8]. At the macroeconomic level, continuing education contributes to the competitiveness of countries and economic development and has a positive effect on society. The private and the public sector benefit from people updating their skills with adequate continuing training programs [9]. Therefore, employer often encourage participation in continuing education and contribute to the costs. In the context of the

changing workplace, life-long learning helps employees to foster their adaptability [e.g. 10]. Under the umbrella term "continuing education" there are many different formats that differ in terms of objectives, duration, and design [11]. Continuing education usually aims to link knowledge with action. The focus is on applying what has been learned and interacting with other participants [12].

The continuing education market in Switzerland is competitive and according to estimates there are around 3,000 continuing education providers in Switzerland [13]. Other providers include small, medium, and large private providers organized on a private-commercial or private-nonprofit basis [4]. Before the COVID-19 pandemic, 90% of continuing education providers in Switzerland focused on face-to-face instruction [14]. About half of them relied on largely "technology-free" face-to-face instruction, while the other half focused on digitally supported face-to-face instruction. Fewer than 10% used blended learning and only 2% of providers offered online instruction. According to a current continuing education study [4], 85% of the providers surveyed stated that they had adapted their continuing education offerings by digitizing the teaching/learning settings. But the way in which continuing education was adapted varied widely, from online instruction using video conferencing software to a higher proportion of guided self-study. However, it seems clear that digitalization efforts in the continuing education industry will be sustained. Over 80% of the surveyed providers also plan to incorporate some or all the adapted digital offerings into their permanent programs [4].

2.1 Continuing Education Participants

For the individual, training courses offer the opportunity to maintain their personal employability or to pursue their self-development [9]. Over the last 10 years, participation in continuing education has increased in Europe and Switzerland is one of the countries with the highest rate of continuing education [15]. For example, 62.5% of the population in Switzerland between the ages of 15 and 75 attended a continuing education program in 2016 [8]. The highest participation rate is shown by persons aged 25 to 34 (76%). Among the older age groups, participation in continuing education decreases and is about 70% for the 35- to 44-year-olds and 68% for the 45- to 54-year-olds. This peak participation rate among the youngest age group is not necessarily observed across countries. In Germany, for example, the participation rates in 2018 were the same among 18- to 34-year-olds and 35- to 49-year-olds, at 57% each [16].

According to a survey by the BFS [8], participants most frequently attended continuing education courses for professional reasons, and only a small proportion attended further education courses purely for non-professional reasons. The main reasons for their participation were "stay up-to-date / maintain knowledge" (89%), "be able to do work better / increase career opportunities" (85%) and "personal interest in the subject" (80%). Slightly more than half of the continuing education activities were sought out because of organizational and technological change in the workplace (57%). Studies that examine reasons for non-participation in continuing education support the assumption that participants only take part if they expect a benefit for the future that is higher

than the costs caused by the continuing education [11]. The main reasons cited are a lack of expectation of benefit as well as time and financial restrictions [17].

There are increasing indications that access to continuing education will have to be more individualized and differentiated in the future to be well received by the target group. Jansen et al. [6] evaluated the conversion to distance learning in the continuing education programs of a Swiss University of Applied Studies. More than 400 current participants took part in addition to program managers and lecturers. The results showed that this target group sees the benefits of online instruction and just over half would like to be able to participate more "remotely" in the future. Therefore, the question arises how continuing education should be designed in the future to optimally combine digital possibilities and the different needs of continuing education participants for digital instruction as well as for exchange and networking. It seems fruitful to investigate synchronous hybrid settings in continuing education, as this form allows participants to choose whether to attend classes on-site or online.

3 Synchronous Hybrid Classroom

In addition to face-to-face interaction and purely virtual interaction, there is a learning environment that combines these two formats. In a synchronous hybrid classroom, one part of the class attends on site and the other part participates virtually at the same time while connected to the same platform. Technical settings such as a platform with a video conferencing system, possibly combined with a chatroom and a synchronous brainstorming tool enables simultaneous on-site and remote participation.

In the literature this teaching format can be found under the designation "blended synchronous" [18] or "synchronous hybrid" [19]. "*The concept of the hybrid virtual classroom comprises one group of learners who participates in the course on campus, and simultaneously other individual learners participate in the course remotely from a location of their own choice by connecting to the same platform*" [20]. Synchronous hybrid teaching must be distinguished from distance learning (purely virtual teaching, synchronous or asynchronous) and blended learning (mix of teaching units in presence and in distance learning, synchronous or asynchronous) [21]. This teaching format is most prevalent internationally in higher education, where providers are faced with increasing student enrollments and simultaneously decreasing budgets [22]. Hybrid synchronous teaching is seen as an alternative to asynchronous online teaching because it offers students the opportunity to interact more and be less isolated [23].

3.1 Benefits for Participants and the Organization

In the context of our networked society where we are interconnected and pursue very different life plans, it is important that education is not dependent on location [24]. The synchronous hybrid learning environment meets the student's need to be able to learn with a high degree of flexibility: they are free to choose from where they take part in the lessons and can thus also save travel time. This choice allows students at all stages of their lives to participate in learning opportunities and the organization can appeal to

a broader base of students [20]. In this respect, a synchronous hybrid classroom enables a more equitable access to knowledge and a more inclusive education [25]. Synchronous hybrid teaching opens possibilities to cooperate even more with universities and lecturers abroad and outside the organization (e.g. a group joins in from abroad). In this way, students benefit from more perspectives, ideas and expertise [26]. This given flexibility also ensures that continuity of instruction can be provided and additionally promotes student retention [24].

3.2 Challenges for Lecturers and Participants

Besides the numerous advantages, the implementation of synchronous hybrid teaching involves several challenges. In addition to technical challenges [e.g. 25], lecturers need technical and didactic skills to handle the system and to design lessons in such a way that the two groups ("on-site" and "remote") have a similar learning experience [20, 27]. This is because lecturers need to engage with two groups at the same time and coordinate and facilitate the exchange between remote and on-site participants [24].

For the "remote" participants who join virtually, there is a risk that they slip into a purely observational role, as they have insufficient understanding of the voices in the room and therefore (can) participate little in the discussion. In turn, it can be awkward for "on-site" participants and interrupt their flow of conversation if they must watch the camera and microphone to say something [25, 28]. Because non-verbal cues are very limited in this setting, it is difficult for participants to know when to speak [29]. In addition, there is evidence that student engagement in a purely online setting is highly variable [6, 24]. Another study showed that remote students reported significantly lower levels of relatedness than their on-campus counterparts in synchronous hybrid settings [23]. These two challenges are important in the context of the self-determination theory [30] and the social presence theory [31], which state that interaction and networking among students is central to their learning success. When the need for social interaction is not fulfilled, students become disengaged, leading to declines in motivation and learning success [32].

4 Format for the Future? Synchronous Hybrid Classroom in Continuing Education

As mentioned in the previous section, synchronous hybrid teaching has been used mainly in higher education and, to our knowledge, there are no studies in the context of continuing education. Following a recent literature review, Raes et al. [19] conclude that only a few studies are available on this variant of hybrid teaching. The 47 studies they included point to the advantage of local flexibility but also highlight the associated technical and didactic difficulties [25, 28]. Research and practice on synchronous hybrid teaching are still in its infancy. Since so far mainly exploratory and qualitative studies are available that have primarily focused on organizational implementation and technological design. Good microphone/streaming technology is a prerequisite for synchronous hybrid teaching, but even the best system does not ensure that participants

will benefit from teaching in this setting. There is still the question of how to promote exchange and networking in this setting and how to design synchronous hybrid instruction so that it leads to good quality learning experiences. After all, it is precisely the exchange and networking opportunities that continuing education participants expect from a continuing education program. Research is needed that examines the different scenarios and their consequences on students' learning experiences. Furthermore, existing studies are concerned with the context of training of lecturers and do not shed light on the requirements of the target group of continuing education participants. We can use these unresolved issues to formulate a more specific research agenda for future studies examining the potential of synchronous hybrid learning in continuing education.

4.1 Intention No. 1: Focus on the Needs of the Participants in the Synchronous Hybrid Classroom

The needs and expectations of participants in continuing education have changed. They increasingly want to decide for themselves for which parts of their training they want to take part on-site face-to-face and for which parts they want to take part virtually [4]. This choice appears to be a particular advantage for the target groups of continuing education programs: These individuals often consciously opt for continuing education with face-to-face instruction rather than pure distance learning, as they are interested in more than simply acquiring knowledge and want to exchange ideas and network with others [11, 33, 34]. Face-to-face classes offer ideal conditions for this, as participants can exchange ideas informally during the common coffee and lunch breaks, in addition to the planned exchange in small groups or in plenary sessions. This exchange with other participants is central to informal learning [35]. At the same time, however, this target group is often very busy at work and/or with care obligations, and classroom instruction with compulsory attendance on site presents them with major organizational challenges. By offering flexible learning paths, continuous education providers can respond to the changing needs of their customers. In the context of the increasing relevance of lifelong learning, synchronous hybrid teaching also lends itself to continuous education [19, 20]. To find out what the participants' real needs are and to be able to assess the potential of this format for continuing education, research is needed on how (potential) participants in continuing education evaluate this format and how exchange and networking between participants can best be promoted. The question that comes up is: *How do (potential) participants in continuing education rate different scenarios of synchronous hybrid teaching depending on the concrete implementation and compared to teaching in a purely face-to-face or online format?*

4.2 Intention No. 2: Focus on Creating Opportunities for Networking and Exchange in the Synchronous Hybrid Classroom

Previously, several challenges of the participants in synchronous hybrid settings have been outlined (interruption in the flow of conversation, inactive remote participants, limited non-verbal cues, different levels of relatedness). These findings indicate that the learning experience might be different for on-site and remote participants. In

addition, it became clear that interaction and networking among participants of continuing education is crucial – for their learning success, but also because these two dimensions are expected by the participants and are therefore both expectation and motivation for participation in continuing education.

A way to address the challenge of interruption in the flow of conversation and inactive remote participants is to promote active learning through group work [18]. In the synchronous hybrid setting, break out rooms of virtual video conferencing tools can be used for that matter. In addition, you could look at the influence of mixed group work, e.g. if one deliberately mixes remote and on-site participants. Existing research [23] gives an indication that students who participate remotely in synchronous hybrid classes feel less related than students who participate on-site. To address this, you could look at the influence it has when it is not always the same people in one group, e.g. when participants can choose each time whether they participate remotely or on-site. Finally, it became clear that it is a great challenge for lecturers to design and moderate lessons in a synchronous hybrid setting because of the two groups. We assume that the group size therefore has an influence on the success of the lessons and thus also on the exchange possibilities. A relevant question that arises regarding sharing and networking opportunities in the synchronous hybrid setting is: *What influence does the design of group work have on the individual evaluation of exchange and networking opportunities? What impact do different aspects of group work have on individual perception of sharing and networking opportunities?* Furthermore, it would be important to find out what impact it has on the satisfaction with exchange and networking opportunities if the participants can freely and/or spontaneously decide whether they participate on-site or remotely for each day of instruction. Is it important for participants' rating of the exchange opportunities that there is a fixed proportion of the on-site group? (e.g. 1/3 of the class should always be on-site). Does this have an influence on the motivation of the participants? In addition, it seems fruitful to find out more about the impact of the group size in general on these topics.

We outlined two relevant focal points that should be considered in future studies on the potential of synchronous hybrid classroom for the target group of continuing education participants. In the following part we explore for this purpose new directions of research.

5 Exploring new Directions for Research

Various approaches appear to be useful to investigate the research questions identified. In the following we address the methods formative and summative evaluation, field experiment and the factorial survey.

5.1 Formative and Summative Evaluation

To investigate the learning experiences of continuing education participants in synchronous hybrid classrooms, continuing education programs that already implement synchronous hybrid teaching could be examined. In a formative and summative evaluation [36, 37], participants and instructors are asked about different criteria. Thus,

participants would receive a questionnaire after each session of the program or at the end of the program to assess their learning experience and rate the possibilities for exchange with other participants and the lecturer, the possibilities for networking and other variables such as distraction, goal achievement and satisfaction. Information on the specific design of the setting is obtained from the instructor. Program evaluations are carried out regularly by many training providers to ensure quality [38] and should therefore be able to be supplemented by additional questions on the experience of the synchronous hybrid setting.

Through a survey after the sessions, information is obtained about how participants experienced the synchronous hybrid setting. Their evaluation depends on the specific implementation in the program, e.g. what technology was used, how was group work organized, what is the instructor's experience with this teaching format. When comparing different courses that all use synchronous hybrid classrooms, it is difficult to identify the factors that have the greatest impact on participants' learning experience and perceived exchange and networking opportunities. For example, it is difficult to determine whether choice (remote or on-site) or size of the respective groups are determining factors.

5.2 Field Experiment

A field experiment in a real-world setting offers the possibility to systematically vary different factors [39]. They are characterized by a high degree of realism of the situation and thus a high external validity. In return, one must accept limitations regarding internal validity: confounding variables cannot be controlled or only with difficulty. A field example could be used to find out what minimum group size is necessary on-site to meet the needs of the participants. Furthermore, one could vary whether participants in a multi-day program can decide spontaneously whether they want to participate on-site or remotely, or whether they must decide at the beginning of the entire program. Thus, instructors of continuing education programs could all receive the same training on how best to implement the synchronous hybrid setting (for example technical aspects, design of group work) to control for disturbance variables. Selected variables would then be manipulated. However, randomized assignment of participants to on-site and remote groups would not be feasible, since the training participants are paying customers who therefore cannot be forced into a group.

5.3 Video Vignettes in a Factorial Survey

Since many continuing education participants have not yet had the opportunity to gain their own experience with a synchronous hybrid classroom, a factorial survey with video material can be a suitable way to find out how they evaluate different scenarios of this format. This research method combines the advantages of the classical experiment with the advantages of a questionnaire survey [40]. In a standardized survey, the influence of characteristics of e.g. situations on people's perceptions and judgments is elicited [41, 42]. Short descriptions of a fictitious situation (vignettes) are presented to the respondents that differ systematically in the characteristics to be investigated.

These descriptions are not presented as descriptions, but as short videos, each showing a concrete teaching situation. Regarding the synchronous hybrid classroom, this means that the setting presented is systematically varied. Thus, the participants of the study receive video examples in which it is illustrated as if they participate "remotely" or "on-site" in class. Furthermore, in these videos it can be varied, for example, how the exchange between the participants and the lecturer works and how large the group of remote or on-site students is. Respondents can be randomly assigned to the "on-site" or "remote" situation and a comparison with pure face-to-face and online instruction is possible. Thus, data can be obtained based on which evidence-based recommendations can be made without having to burden paying continuing education clients with an experimental setting.

All three approaches can be ideally complemented to explore the research questions related to synchronous hybrid settings. A factorial survey could be used to determine the needs and fears of continuous education customers regarding the implementation of this setting. In a quasi-experimental field experiment, the variables that proved to be crucial could then be manipulated and their effect on e.g. participant satisfaction with the exchange possibilities could be measured. Finally, the implementation in continuing education programs should be accompanied by a formative and summative evaluation to gather further insights regarding the teaching format.

6 Conclusion

Increasing digitalization has created new opportunities in the continuous education market that interact with the needs of the heterogenous group of potential continuous education customers. The synchronous hybrid format, for example, offers participants freedom of choice with the ability to attend courses either on-site or remotely. So far, however, little is known about how this setting is ideally implemented and which technological and didactic skills the lecturers need so that the goals of continuing education participants regarding exchange and networking can be achieved. For providers to take advantage of this potential, evidence is needed regarding the specific needs of participants in terms of their learning experience and in particular their exchange and networking opportunities. This should be gathered through factorial surveys, field experiments and formative and summative evaluations. With this evidence, concrete design recommendations for synchronous hybrid settings can be derived. These design recommendations are also valuable for companies for their implementation of meetings and internal training courses.

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