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Imagine it's "Corona" - and no one has noticed

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Abstract

Der deutschsprachige „Ableger" der seit 20 Jahren im Regellehrangebot der Professur Informationsmanagement an der Fakultät Wirtschaftswissenschaften der TUD fest verankerten, internationalen Gruppenlernprojekte im virtuellen Raum (VCL – virtual collaborative learning) [1] hat sich längst emanzipiert. Im Wintersemester 2020/21 fand mit der 66. VCL-Veranstaltung im Bachelor-Modul „Fallstudienarbeit im virtuellen Klassenraum" eine bereits bewährte, hochschultyp-übergreifende Lehrkooperation zwischen der TU Dresden und der HTW Dresden [2] zum vierten Mal ihre erfolgreiche Fortsetzung – trotz „Corona". Das etablierte didaktische Format eines selbstgesteuerten, fallorientierten Lernens in standortübergreifend gemischten Kleingruppen unter tele-tutorieller Begleitung konnte aufwandsarm an die pandemiebedingten Restriktionen angepasst werden. Die langjährigen Vorarbeiten haben sich gelohnt!

The German-language "offshoot" of the international group learning projects in virtual space (VCL – virtual collaborative learning) [1], which have been firmly anchored in the regular teaching programme of the Chair of Information Management at the Faculty of Business and Economics of the TUD for 20 years, has long since emancipated itself. In the winter semester 2020/21, the 66th VCL event in the Bachelor's module "Case Study Work in the Virtual Classroom" was the fourth successful continuation of an already proven, cross-university teaching cooperation between TU Dresden and HTW Dresden [2] – despite "Corona". The established didactic format of self-directed, case-oriented learning in mixed small groups from different locations under tele-tutorial guidance could be adapted to the pandemic-related restrictions with little effort. Many years of preparatory work have paid off!

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1. Preliminary remark

Case-based learning as a student-centred, authentic offer for the realisation of situational learning environments has a long tradition in economics. Defined by the Association for Case Teaching as "a means of participatory and dialogical teaching and learning by group discussion of actual events" [3], this didactic approach is ideally suited for the

- combination of theoretical/methodological knowledge with practical practice (transition from the second to the third competence level of Bloom's Taxonomy [4]),
- linkage of individual learning with joint (collaborative) problem solving, developing social competences, and
- enabling of situational learning by using authentic scenarios with open-ended problems to bring the learning environment closer to a typical later professional context of action and to facilitate the transfer of "inert knowledge" from studies to practice [5].

In addition, case-based learning is very well suited to be mapped in a digitalised arrangement, even under the intensified "Corona conditions" (fully online learning and social distancing).

In the following, we present the arrangement in the form of a modified, collaborative flipped classroom format, go into the course sequence and the associated subject-specific and interdisciplinary learning objectives, discuss the business case study and the work assignments in detail and finally reflect on our lessons learned.

2. Digitised didactic format

The foundation of the didactic format behind the cross-location learning project presented here was laid as early as 2001 to 2004 in a dissertation at the Chair of Information Management at the TU Dresden (TUD) [6]. It was iteratively developed further in the following years and adapted to international contexts [7, 8]. Virtual Collaborative Learning (VCL) is project-oriented and primarily addresses the development of soft skills such as self-organisation, collaboration, digital and intercultural competence, which are central components of 21st Century Skills [9]. VCL projects such as the course presented here are based on a complex framework developed iteratively in several dissertation projects with four interlocking components (see Figure 1).

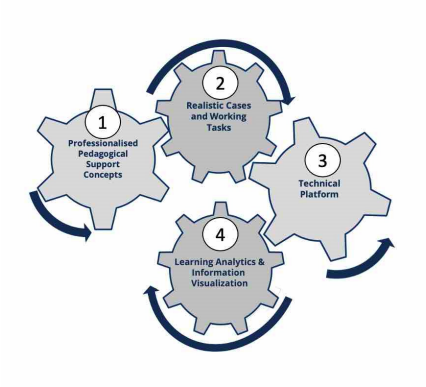

Fig. 1: Four interlocking components of the VCL framework

Component 1: An essential feature of VCL projects are small groups that span locations (often international) and are as interdisciplinary and heterogeneous as possible. Their representatives work together exclusively online (virtually) and in a self-organised manner and bring various individual competences into the collaboration for the jointly responsible result. The participants receive support in this complex setting from learning process facilitators (e-tutors [10]) who have been specially trained for this purpose at the TUD's Chair of Information Management. In order to be able to check the intended development of interdisciplinary competences (teamwork, self, time and project management, media competence and, in international projects, also intercultural and foreign language competence), the e-tutors apply concrete indicators for formative use in the supervised learning groups. On the basis of these indicators, they provide orientation and interpretation aids for the tasks, feedback on team performance and determine learning progress at group and individual level to support the final assessment of performance.

Component 2: For VCL projects, authentic, complex case scenarios are developed that are specifically adapted to the learning objectives of the course and the respective knowledge

levels of the participants. The cases should be only weakly structured in order to leave the learning groups as much room as possible for interpretation and independent decisions on procedure, methodology and the negotiation of alternatives. So the interdisciplinary collaboration and project management skills [11] are strengthened. For the case-based, collaborative learning, which takes place over approximately two to four months depending on the setting, weekly tasks are usually provided whose solution paths are predominantly open (not predetermined), but require punctual submission of result artefacts (protocols, documentations, analyses, calculations, prototype websites or apps, etc.). In the form of realistic work assignments, these tasks link the case scenario with the methodological competences to be deepened (subject-specific learning objectives of the course) and at the same time integrate the use of suitable digital tools from the technical platform (interdisciplinary digital competence).

Component 3: In order to make interactive, case-based learning in cross-location, mixed small groups in virtual space as smooth as possible and to grant participants flexibility in terms of temporal (synchronous, asynchronous) and local (mobile, stationary) access, a powerful collaboration platform is required. This should provide suitable functional modules for communication and coordination of group work, as well as for the implementation of individual work assignments. In order to strengthen the situative nature of the learning environment, we have been using for a year now the Microsoft 365 platform under the collaborative MS Teams interface, which is widely adopted in the professional environment. It is provided as a cloud service on European servers in compliance with the relevant regulations according to the General Data Protection Regulation.

Component 4: Since 2019, the didactic indicators used as intervention tools have been gradually processed on the basis of social learning analytics, mapped as dashboards and, since 2020, additionally supplemented by chatbots, which provide relevant information in dialogue form as active conversational agents [12]. Thus, the daily, time-consuming learning process support by e-tutors in terms of resources can be relieved and a higher range of support be arranged, to justify the decisions for certain didactic interventions more clearly and ultimately. Furthermore, the documentation of the intended competence development can be objectified. This data-driven information supports two sides:

- The e-tutors can be made aware of mistakes in project management, but also of interaction deficits in the groups they accompany (example: indicating the exclusion of a group member from the communication processes triggers an intervention to check whether it is possibly bullying by the others or social loafing by a "free rider").
- The individual learning groups can be shown their performance progress over time or their position in relation to the other groups (competitive gamification elements as extrinsic motivators).

The international VCL projects in the Master's and Diploma programmes at the TUD usually consist of an intensive six- to eight-week virtual project work with subsequent separate additional examination performances adapted to the respective local module requirements of the international partners involved. At the TUD, for example, an individual written reflection phase follows in the second half of the semester in the Master's/Diploma module "Collaboration in the Virtual Classroom" to complete the 150 h workload, which is supplemented by surveys, individual interviews or focus group workshops in the context of research-oriented learning by evaluating the setting.

For the implementation of the "Corona" course discussed in this article for advanced Bachelor's students of different business programmes at the TUD and HTW Dresden, the VCL concept discussed here was modified. Each university integrated the joint event into already existing modules, based on local examination regulations (TUD Bachelor module: "Case study work in virtual space", HTW Bachelor module: "Business models and digitalisation").

In order to meet the restrictions caused by pandemic and at the same time not to leave

the students without guidance for too long in their independent online group work, the continuous, four-month case-based learning in VCL format presented here was divided into three compact phases from October 2020 to January 2021 by two workshops, each of which took place for 4 hours as online conferences, according to the flipped classroom principle [13], and concluded by a third workshop with short synchronous online group work in breakout rooms. The resulting modified flipped classroom thus differed from the usual standard in two respects:

- **Phases of knowledge acquisition**: instead of individual learning by means of materials provided online (e.g. e-lectures), →three phases of case-based, collaborative learning in online working groups composed across locations and disciplines.
- **Phases of knowledge consolidation**: instead of small group work in 90-minute classroom sessions in real seminar rooms, →four-hour synchronous online conferences with presentations of the group results and an online workshop at the end with synchronous group work.

Figure 2 depicts the resulting arrangement in its temporal and thematic progression.

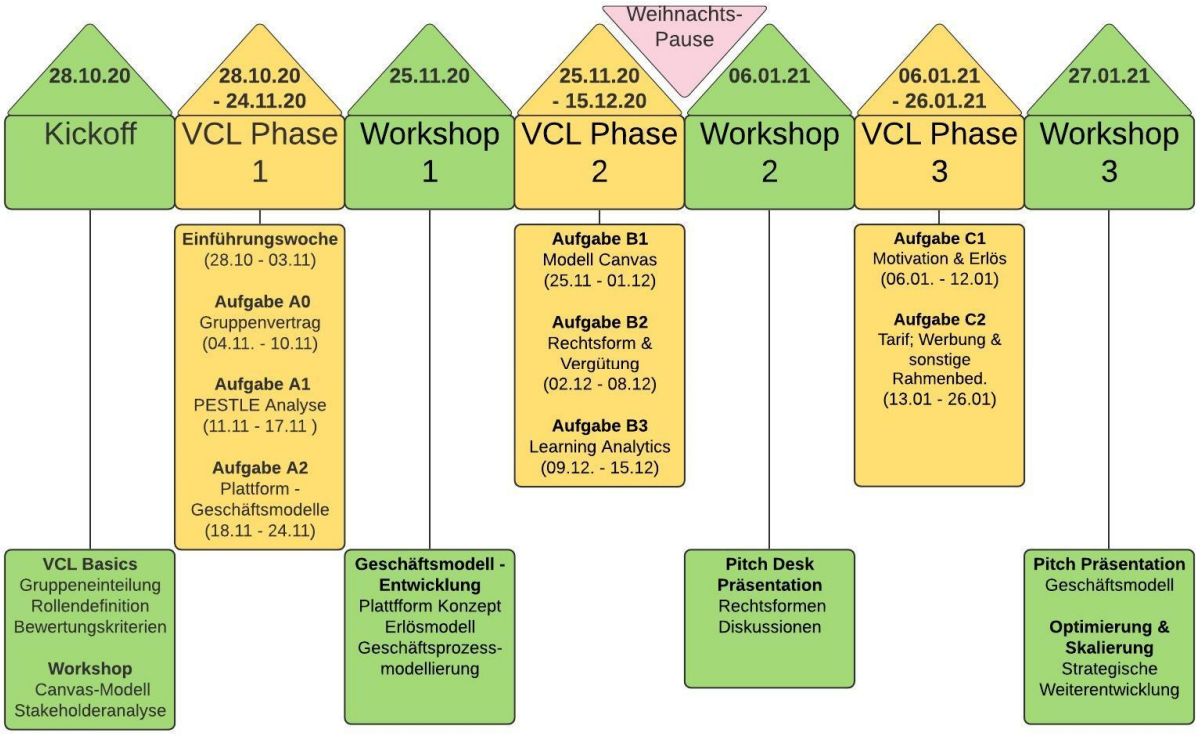

Fig. 2: Timeline of the course "Case Study Work in Virtual Space" according to the modified Flipped Classroom Format

3. Course of the project

As part of our competence-oriented VCL project approach, almost 80 students from TU Dresden and HTW Dresden worked exclusively online in a common collaborative environment in 12 mixed teams of 6-7 participants each on a case study on the topic of e-mobility in Dresden in the winter semester 2020/21. They were accompanied by three experienced e-tutors under the professional and didactic direction of the authors of this article .

In 4 months of virtual collaborative work, the participants - Bachelor and Diploma students of both universities in their 5th or higher semester - created new platform business models which were to be presented and reflected upon in two online pitches in front of a jury consisting of the authors of this paper, resulting in sharpened project outlines at the end.

The collaborative work was based on three roles to be assigned independently in the teams (project manager, project reporter, project members).

Fig. 3: Logo of the fictitious company as case scenario (cover story) for collaborative case-based learning

They organised their teamwork independently and made ample use of the functionality provided by the collaborative platform MS Teams. The small groups held numerous virtual video meetings with each other, used shared calendars, communicated via chats and threads and edited files (partly synchronously). The participants independently divided the processing of their weekly tasks according to their assumed roles. The teams developed comprehensive platform business models on the topic of e-mobility in Dresden. They were introduced to the topic via a total of 9 work assignments and were able to present their ideas in 2 workshops in 10-minute pitches per team.

First VCL phase: At the end of October, after the synchronous online kick-off conference, the teams began to draw up group contracts in which they defined their forms of collaboration, defined the distribution of roles and tasks and also addressed appropriate solutions for any problems that might arise in the collaboration. Furthermore, they were given the opportunity to ask their e-tutors initial organisational or technical questions in a virtual get-to-know-you meeting. So they were prepared for the online monitoring and moderation, taking place on a daily basis during the 4 months. After the teams had familiarised themselves with the platform, they prepared a PESTLE analysis on the topic of e-automobility. The participants then applied their knowledge of platform business models to their case scenario, followed by an exploration of pitches and the presentation or structuring format canvas in preparation for the first interim presentation.

In the next phase, the participants had to research pricing models and legal forms and were able to use as guidance impressions from a presentation given by the start-up *Africa GreenTec*. The teams then prepared for the second workshop and pitch at the beginning of January. This phase was interrupted by the Christmas and New Year break.

At **the end of** the project, the students dealt with motivation theories, revenue models, collective agreements and advertising concepts. In the final third workshop at the end of January, the teams worked on a "transfer task" in 12 break-out rooms, in which they used the soft and hard skills they had acquired as well as the tools provided. By means of a "customer journey", they had to put themselves in the customer's perspective of their start-up approach to e-mobility in Dresden developed in the project. Their journey along the business contacts with the projected company had to be visualised collaboratively on the virtual whiteboard Miro using various "touchpoints" and then explained in the plenary. Numerous innovative ideas emerged. Under intensive supervision by the teachers and close monitoring by the e-tutors they were developed with great commitment by the students (almost) to the point of start-up maturity and defended with heart and soul.

4. Case-based learning in detail

The selected complex case study *Dresden NRG* served the acquisition and development of professional and interdisciplinary competences. The subject-specific business competences were in detail:

Business models: In a world characterised by digitalisation, the modelling of adapted and new business models is becoming increasingly important. There are many examples of business models that are based on platforms or serve two markets, so-called two-sided markets. For example, Uber as a mobility platform brings drivers and passengers together, or AirBnB brings accommodation providers and demanders together. There are also examples

of platform economies and two-sided markets in the business-to-business (B2B) sector, e.g. the Zentrada network for the wholesale of consumer goods. These examples provide precisely the impetus to critically question and further develop existing business models with regard to the changing framework conditions in order to map new opportunities in new markets through new products and services.

Today, business model development is the standard method for exploring and developing future strategy options. Business Model Canvas is a proven model for this purpose, which presents the fields of action for the development of business models in a structured way. The core of every business model is the generation of added value for target groups through value creation within the company. The Business Model Canvas thus serves as a guideline for the targeted development of business models. The nine key factors represented in it and their interdependencies can be seen in Figure 4.

In preparation for the course, the students already had worked out the basics of business modelling on their own. In the online KickOff workshop, the lecturers deepened this central expertise using illustrative examples and thus prepared the teams for its application to the *Dresden NRG* case scenario in the subsequent first VCL phase.

Project management: The central cross-sectional competence for all requirements and activities in the professional world is project management. It reflects the dynamics of business field and project implementation in practice. In the current digital transformation of business and social processes, agile project management methods are generally of great importance as a basis for future developments in companies and for the rapid generation of competitive advantages, not only as a method in the area of IT and digitalisation.

In the course, the students were familiarised with the Scrum method, a simple method of not only producing results quickly by means of iterative, time-interleaved cycles (sprints), but also being open to spontaneous internal and external changes. The resulting transparency ensures a better assessment of the development process [14]. Through feedback from the lecturers in the two pitches between the VCL project phases, the students were able to experience the inherent dynamics of the project and learned to react in an agile manner and adapt their modelling in iterative coordination processes in the learning groups.

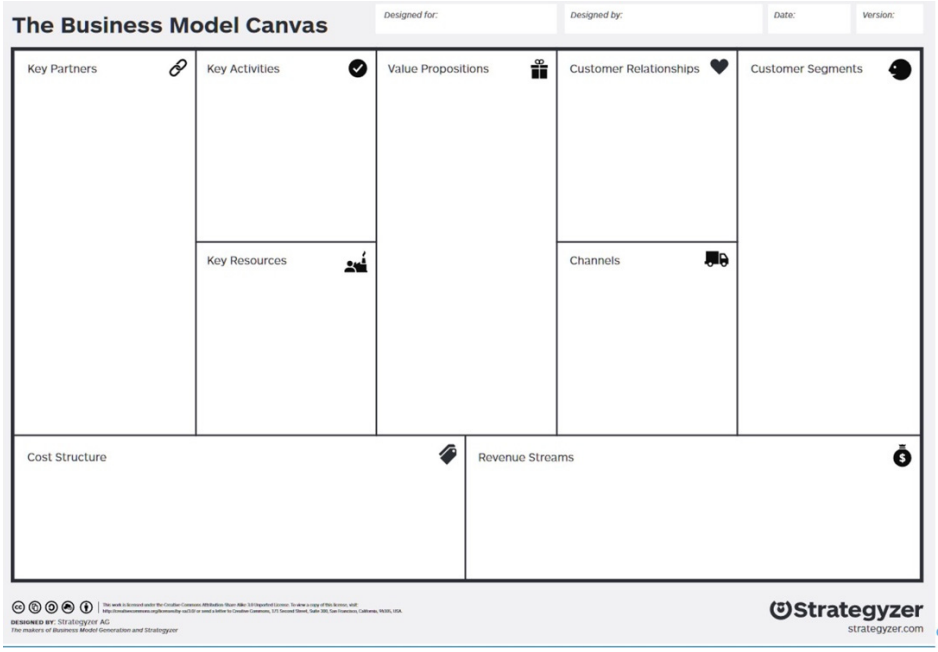

Fig. 4: Business Model Canvas as depicted by Strategyzer.com (Source: https://assets.strategyzer.com/assets/resources/the-business-model-canvas.pdf)

Marketing: A customer journey describes the individual purchase experience process of each customer. The goal of marketing is to describe this process and to measure and map it within the framework of performance marketing. A customer journey consists of so-called customer touchpoints. These touchpoints are points of contact between companies and customers. They are often referred to as "moments of truth". These touchpoints also stand for proximity, familiarity and a knowing understanding. Touchpoints are changeable and individual for each person, each customer. Marketing must therefore strike a balance between (cost-intensive) contacts as touchpoints with potential or existing customers and performance in the sense of performance-oriented management of customer relationships, based on key performance indicators.

The teams realised the implementation of the customer journey for their target groups in the concrete case context in orientation to Figure 5 in the synchronous online final workshop in parallel break-out rooms with the help of the tool Miro integrated in MS Teams. In order to segment and describe the target groups, they created so-called personas in the sense of representative customers with socio-economic characteristics, with attitudes, values as well as with information on media use. In addition, the students created an advertising concept for the platform or the project based on this.

In addition to the central business skills in the field of entrepreneurship, the students were also able to deepen their soft skills. The self-directed negotiation processes in the learning groups strengthened self- and social skills, and the intensive work with a start-up idea for a digital platform promoted entrepreneurial thinking and digital competence. The participants were also able to establish social contacts across university boundaries and demonstrate their ability to work in a team. Through several months of dealing with MS Teams as a complex collaboration platform widely used in business practice, they were able to acquire or

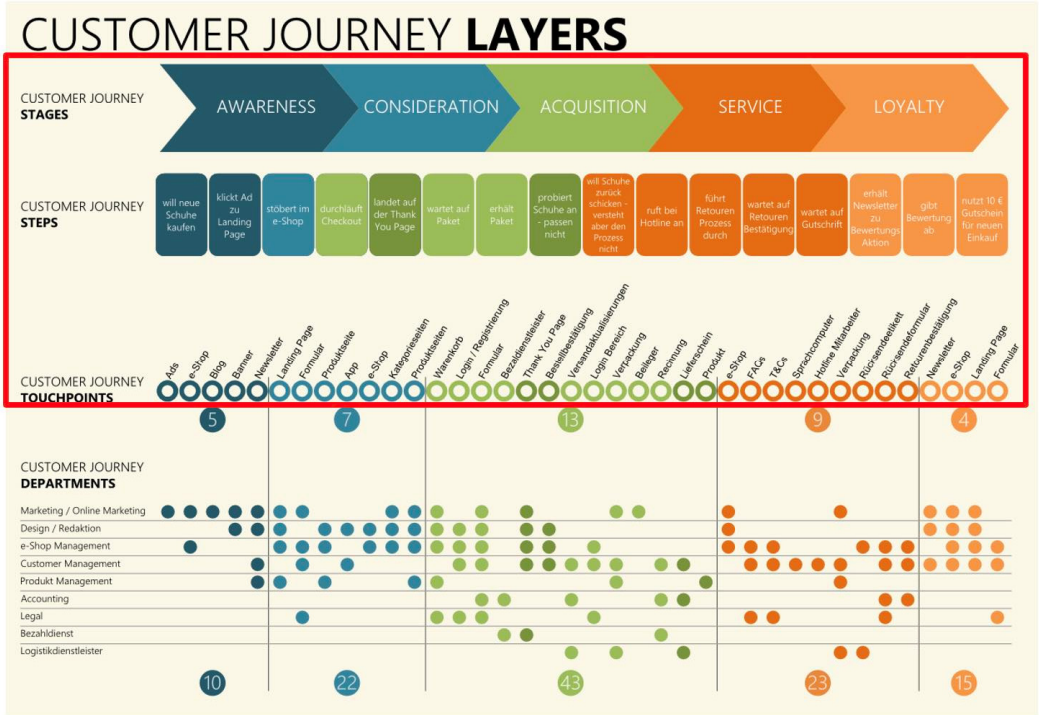

Fig. 5: Customer Journey Map.
(Source: http://www.omkantine.de/wp-content/uploads/2016/04/4_Customer_Journey_Departments.png)

deepen important technical skills and thus ideally prepare themselves for the later requirements in professional practice.

Through the combined addressing of subject-specific (moderated by the HTW) and interdisciplinary/social goals (accompanied by the TUD), the module provided the participants of the TU Dresden with a lively contribution to the focus area "Learning and Human Resource Management", in which it is structurally arranged.

Of course, all participants at both locations/institutions received their achievements rewarded in the form of 5 ECTS points and task-specific weighted grades according to the examination formats anchored in the respective modules (at TUD: project work).

5. Our Lessons Learned

Overall, we were able to determine that the VCL format, which has been established for years and is embedded in a flipped classroom architecture, proved to be excellent (especially) in the context of the restrictions caused by the pandemic. For reliable planning, the three project milestones, originally intended to be organised as face-to-face workshops to deepen knowledge via pitch presentations and joint discussions, were already in September 2020 transformed into synchronous online conferences via MS Teams. Due to this powerful platform, the conferences seamlessly integrated into the collaboration environment.

As a **lesson learned** for the "time after Corona", we can state that the arrangement offers the possibility of a flexible return to a hybrid format. The milestone workshops between the interactive, exclusively online project phases and, if necessary, the supplementary professional consultation windows with the teachers will certainly be moved back into the real space due to the additional potential that can be realised through the usual, flexible personal communication.

Then the circle closes and the positive insights gained from earlier projects[1] regarding synchronous appointments interspersed in VCL projects to deepen knowledge and reflection via personal group work in face-to-face seminars come into play again. However, this new modified flipped classroom will be hybridised to the extent that the data and functionality of the collaboration platform and its tools can be accessed on a mobile basis and participants who are unable to attend can be integrated without friction.

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