CHAPTER 4. USING THE FLIPPED CLASSROOM APPROACH TO TEACH QUALITATIVE COMPARATIVE ANALYSIS

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Introduction

The aim of this chapter is to report on the experience with innovative teaching during an elective course on research methods for Master's (MA) students of international relations studying at Masaryk University in Brno. The Research Methods in Social Science course covers three different research methods, one of which is the Qualitative Comparative Analysis (QCA) method. All methods are allotted two sessions comprising 180 minutes each. Only four students were enrolled in the course and I had full control over the contents of the classes and was given free rein to innovate these. However, the overall assessment has to fit the parameters of the course so that these could not be changed. My colleagues co-teaching this course supported the idea of employing a more student-centred approach during the sessions.

There is not one standard way of teaching at the Department of International Relations and European Studies at Masaryk University. Most of the core courses have big classes and are taught by means of frontal lecturing sometimes combined with discussion seminars. Czech students, who make up the majority in most courses, often prefer less interaction during class time. In addition, there are several colleagues who lecture very well, and consequently are highly appraised by students. Usually, teachers adjust their styles to fit the size of the classroom, reflecting on their courses, and update these accordingly when applicable. Some of the younger faculty members even experiment with a diverse range of teaching methods. Although there might be occasional chagrin about these 'innovative' ways of teaching (especially from the older faculty members), the head of the department encourages the idea of implementing new teaching methods and also supports teachers in enhancing their teaching skills. Consequently, the effectiveness of a teaching innovation that uses the flipped classroom model instead of frontal lecturing will be explored in this chapter. To evaluate the outcomes of student learning the thematic analysis is used and it has been found that the new learning method is successful.

Description of the teaching challenge

The overall aim of the course sessions for which I have been responsible is to help students to apply the qualitative comparative analysis as a research method. Students will be expected to (1) understand its mathematical foundations (Boolean algebra, necessary and sufficient conditions),

(2) apply these properly (conceptualization, truth-table construction, data calibration), (3) comment on its use in the assigned readings and (4) evaluate its usefulness regarding their future MA theses. Students attending the course have typically previously never come in contact with the QCA method. In earlier sessions I had assumed a lecturing style that allowed for some interaction with students. However, this method left both students and teacher exhausted. Students' attention would wane by the third hour of the session despite the course being elective which would otherwise ensure students to be highly motivated and willing to comply with the course requirements.

The teaching challenge then, has become to enhance student learning of the QCA research method while overcoming the abovementioned teaching and scheduling conditions. The aforementioned learning objectives align to fairly high levels of Bloom's taxonomy – i.e. application and evaluation (Armstrong 2018; Center for Excellence in Learning and Teaching 2018) – and in a relatively short period of time students are expected to maintain their attention and actively participate during class.

Pedagogic concept applied and expected outcomes

I addressed this teaching challenge by banking on the fact that students attending the sessions are already familiar with the concepts by being required to submit a reading summary before classes which naturally lends itself to utilising the flipped classroom model. Flipped classrooms have the potential to enhance student learning by shifting the bulk of the informing process (McAlpine 2004) outside of class while leaving space for active engagement within the classroom. This leads to higher student involvement and better assimilation of the content. The flipped classroom approach is thus assumed to be suitable for the acquiring of procedural knowledge, which relates to how things are done (the coding of data, calibrating these and the conversion into a truth table) (Milman 2012; Whyte 2018). Moreover, a well-implemented flipping of the classroom coupled with opportunities and encouragement towards cooperative learning are believed to lead to better academic performance (Foldnes 2016). It is also suggested that students learning via the flipped classroom method appreciate the mix of lecturing and cooperative learning activities that have a direct connection to the content material (Cavanagh 2011).

Based on what the literature predicts regarding the outcome of the flipped classroom, I expect that applying this method during classroom sessions would help students assimilate the extensive content and at the same time remain engaged.

Nature of the innovation

Content-wise, the threshold and core concepts need to be identified (Meyer and Land 2003) and the practical skills employed need to be put in their appropriate sequences, which in turn leads to rethinking the assigned readings and adding explanatory videos to strengthen students' pre-

class home preparation. Students enrolled in the course are required to submit a summary of the readings before each session, as this has been a part of the course requirements before the introduction of the method. Unfortunately, it was not possible to check these summaries before class because they were only due after the actual session took place. However, previous experience has shown that it becomes evident that students who regularly complete their readings and hence enjoy familiarity with the content distinguish themselves by the level of their interaction during sessions.

A questionnaire was designed to measure the level of pre-course familiarity students have with QCA and this questionnaire was distributed via the university's virtual learning environment, which also serves as a tool for the mock collection of data. The questionnaire reveals that two out of four of the attending students are familiar with QCA through previous courses. This information has been used to pair students so that those familiar with QCA would be able to help their novice peers and this in turn enhances the collaborative aspect of learning.

The teaching innovation discussed in this chapter consists of an almost complete redesign of all session plans. The lectures have been restructured into mini-lectures and various learning activities are introduced to assist students to revise and deepen their theoretical knowledge from pre-class readings and to facilitate the application of procedural knowledge. Before innovating the sessions, I used to lecture for around forty-five minutes which was followed by short breaks. Now the longest lecture takes no more than twenty minutes. During these mini-lectures I only include information that needs further explanation. Breaks are also included during which the lecturer poses questions to students or administers short quizzes to ascertain the level of students' understanding.

The second step is the designing and revising of learning activities where students are expected to apply the concepts they learned before class. One of these activities consists of using mock data obtained in the pre-course survey from students for the purpose of demonstrating the sequence of analytical steps taken in QCA by manually coding it in collaboration with students and then transforming it into a truth-table. In addition to this practical demonstration, supplementary exercises are added: (1) an activity to revise the set theory by using post-it notes and ropes to illustrate borders between sets that were created by writing words on the notes, (2) a short multiple-choice quiz to check students' knowledge of the necessary and sufficient conditions in logic, (3) a Boolean minimization exercise, which entails cooperative interpretation of data from the existing articles and (4) the re-formulation of the abstract of a research article that uses alternative methods to apply the QCA method.

Data collection and research methods

Unfortunately, it has not been possible to design a comparative study to evaluate the outcomes of the innovation that uses a control group. No parallel courses or sections were taught in the

Fall of 2018 and the final marks from students of the previous year could not be used because the teaching innovation covers only one third of the content of the course. Moreover, the small number of students (four) taking the course does not lend itself very well to quantitative analysis. Therefore, it has been decided to use a qualitative approach, namely the thematic analysis of text corpora collected from student assignments and other sources as described below.

Thematic analysis is a qualitative research method used to identify themes (patterns) in a corpus or dataset of textual data. Moreover, it allows for the analysis and reporting of these themes in detail. Thematic analysis has various uses and its application is broadly deductive (top down) as the data are analysed within a theoretical framework. The analysis in this study was framed by means of posing three research questions (Braun and Clarke 2006):

(1) Were the learning objectives achieved during the QCA sessions?
(2) Have the newly introduced active learning tasks and the flipped classroom model helped students to achieve the learning outcomes?
(3) What are the lessons to be learned from the process?

I look for themes on a semantic level in this research and choose to focus only on explicit themes. This does not entail that latent ideologies or underlying issues are attempted to be uncovered, but instead that the theme as a unit of meaning should be identified. Such a theme would be classified as such when it captures something within the text in relation to the research question and represents some level of repeated response or meaning within the dataset (Braun and Clarke 2006). The importance of a theme is then brought to the surface by its relative quantity of occurrences across datasets.

The dataset consists of textual data collected from six different sources from three different subjects and is typically translated into English, however, not all students were able to provide feedback in English (see table 1 on page 39 for a summary of data sources).

When analysing the data six recommended steps were followed for the undertaking of the thematic analysis (Braun and Clarke 2006): (1) becoming familiar with the data, (2) generating the initial codes which were contextualised through the three research questions (theory-driven), (3) searching for themes amongst the codes and collating those and putting these into relation with each other, (4) reviewing the themes by refining and judging these according to their coherence, (5) defining and naming the themes, and (6) writing up the report.

Due to the small number of students the dataset is small, which certainly limits any generalisation based on this case study. Nevertheless, it is possible to enhance the validity of the research by triangulating various data from several sources. The coding process itself has been carried out by one coder (me). The selected themes appeared quite homogeneous across the dataset.

Table 1. Data sources used for building the dataset

Subjects	Sources	Purpose and/or nature of data	Language	Respondents
Students	Pre-course questionnaire distributed via university learning environment	About students' previous knowledge of QCA as a method	Czech	4 out of 4
	A minute paper after the first session	About students' understanding of the QCA as a method and evaluation of the instructor teaching style.	Czech or English	3 out of 4
	Post-session questionnaires distributed after both sessions on QCA	About active learning components of the sessions and quality of teaching.	Czech or English	3 out of 4
	Student homework assignments for the QCA sessions	These were submitted for assessment; Used for evaluating the student learning outcomes, but did not become part of the dataset for thematic analysis.	Czech	4 out of 4 for both sessions
Colleagues	Class observation form provided by the Erasmus+ course	Both answers to the question in the form (mostly about classroom management and student-centeredness) and related verbal comments	English	2 for the first session 1 for the second session
Teacher	Recorded personal observations	Reflections written during the first session and notes taken after the second session.	English	1

Findings

Three wide themes (italicised in the text) have been identified across the dataset, broadly corresponding to the three research questions. In this section, these results are reported as a story that has emerged from the data (Braun and Clarke 2006) and is illustrated by quotations.

The first theme is related to students achieving the learning outcomes and can be described as '*progress*'. By progress, not only the *progress through the process* shown as a dynamic aspect of students *mastering* various specific concepts is meant but also the progress with procedures previously not understood. For example, students said that 'I understand what QCA is [...] and I also understand the steps we took in Excel' and 'I've learned a lot about applying QCA to various research in IR...'.

Findings from student feedback is supported by the analysis of student homework which reveals that content-related analytical/interpretative tasks were completed satisfactorily by all (four) students. Student homework thus provides more evidence of student *progress* while embracing threshold concepts and the required procedural skills. This finding has been supported by my observation in class where students demonstrated their mastering of learning objectives one to three by interacting with the lecturer (me) and the material accordingly.

It could further be observed from student participation in class that students were *demonstrating knowledge* by asking the teacher content-related relevant questions and interactively cooperating during class. *Progress* was also clear from students' *initial ignorance and insecurity* about using QCA that was evident from the pre-course survey and their ultimate *confidence in considering the method* to be used for their MA theses as shown in the questionnaires administered after the final session. Even those familiar with QCA before taking the course but felt unsure if they would use it showed *progress*. They felt confident they could use the method if it would be in line with their dissertation topics: 'I thought about it before and it confirmed it for me. Also the parts I was worried about, but most of these are clear to me now', 'I can imagine it [using QCA] for my MA thesis', and '[QCA] made me excited and has even led to my decision to use it in my thesis in the future'.

The second theme centred on the flipped design and the learning activities themselves. The overall design of the course was found to be *aligned with the learning objectives.* Student reactions to the learning activities during time spent in class could be described as 'appreciative' in various ways. Students found learning activities *fit for the purpose* of facilitating their learning as these provided illustration and explanation of the studied method. Students expressed this as *connecting theory and practice*, which was an aspect most valued by them: 'today and also last time there was a confrontation with real research and you described it as it really is', 'the main contribution [of certain exercises] was the transfer to social reality', and 'it helped me understand [how research works] in practice'.

In addition to these general qualities of learning activities, students and to some extent also the observers visiting the sessions pointed to *different aspects or learning activities as being helpful,* e.g. student-student collaboration, especially pairing those students with some knowledge of QCA with those without it. This element of peer instruction has also been particularly valued by the students.

Students also described the sessions as *engaging,* which indicates that the teaching challenge described at the beginning of this chapter has successfully been addressed: 'a very interesting method and a catchy presentation', 'it was interactive the whole time', 'students cooperated', or '[the exercises are] more interesting and better than the textbook'.

However, regarding the design of the learning activities, a third theme emerged; *imperfect preparation*. First, my colleagues also suggested preparing more examples in the future before sessions so that it would not be needed to improvise so often. Second, the learning activities would require some 'polishing' to look 'more professional' as one of the observing colleagues put it. This theme also resonated in the student feedback. Most of the comments concerned the exercises that indeed needed to be *improvised,* because the number of students was not sufficient for the exercise that was originally planned. When reviewing the number of students before class I realized that it would not be possible to use the exercise I devised before and I came up with suboptimal questions and became nervous, which students noticed. This theme, even if encountered with the least frequency as compared to the other three themes, poses a challenge to my further practice.

Conclusion

The aim of the teaching innovation was to enhance the learning experience of students in a content-intensive part of a course on research methods. This challenge has been addressed by redesigning the course using the flipped classroom model: by asking students to learn theory through pre-session readings instead of frontal lecturing during sessions and introducing active learning tasks to increase student engagement while facilitating the application of theory by students via learning by doing. Qualitative data were collected before, during, and at the end of each of the two course sessions when the students were expected to learn the qualitative comparative analysis method. They were triangulated by three subjects– students, observers, and myself. The thematic analysis was applied to the collected data that point to three broad themes: (1) student progress through the process of learning the method, (2) different aspects or learning activities as being helpful to achieve course aims and (3) my imperfect preparation as a teacher. Overall, these outcomes confirm the expectations that were mentioned in the literature on the flipped classroom model, that is, students were more engaged than when being exposed to frontal lecturing, they appreciate the collaborative aspects of learning and they report valuing QCA as a research method.

At the same time, it needs to be added that more time and effort could be put into the preparation of future classes, as I underestimated how much time the preparation would take. Feeling underprepared breeds nervousness and having to improvise leaves one stressed and frustrated. As this happened at the beginning of the first session, it was further coupled with stage fright as an observer was present in the classroom as well. This was a situation which called for carrying on with what needed to be done at that time. To avoid such situations in the future, I will more consciously seek out information regarding the number of students enrolled in the class and consider its implications for in-class activities prior to the teaching of the first session. Furthermore, it cannot be expected that in the future there will be a sufficient number of students available who are already familiar with QCA so that peer collaboration can take place. Moreover, not only should collaborative group exercises be prepared differently in such a case, but the number of exercises might have to be adjusted accordingly. Notwithstanding these issues, the positive outcomes of the innovation have prompted me to keep the class format unchanged because it allows me to engage students and help them to understand QCA as a method, evaluate its usefulness, and apply it in practice.

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